The Use of Video Prompting on the Acquisition, Maintenance, and Generalization of a Line Dance by Adolescents with Autism Spectrum Disorders

DISSERTATION

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Abstract

Educators are in need of appropriate interventions for teaching individuals with autism spectrum disorders (ASD). A widely used (Bellini & Akullian, 2007; Delano, 2007) and evidence-based (Horner et al., 2005) instructional intervention for individuals with ASD is video modeling. Video modeling involves the learner viewing a video demonstration of a targeted behavior and subsequently performing what was viewed. A variation of video modeling is video prompting in which the learner views a video demonstration that is a single task analysis step or chunk of a targeted behavior followed by practice of that step/chunk. Video prompting has successfully been used to teach a number of behaviors to individuals with developmental disabilities including self-help skills (Norman, Collins, & Schuster, 2001), daily living skills (Cannella-Malone et al., 2006), and cooking related tasks (Graves, Collins, Schuster, & Kleinert, 2005; Sigafoos et al., 2005). When selecting appropriate gross motor activities to teach individuals with ASD, physical educators must consider their developmental delays and deficits in movement behaviors (Pan, Tsai, & Chu, 2009). Dance is a common activity offered in physical education programs (NASPE, 2005). By performing appropriate dances, individuals with ASD may be able to benefit both physically (e.g., enhanced coordination and balance) and socially (e.g., enhanced inclusive recreation and leisure activities).
Dance has positively impacted children and adolescents with disabilities as evidenced by increased participation and cooperation (Crain, Eisenhart, & McLaughlin, 1984). However, additional research is needed to investigate instructional dance interventions for children and adolescents with ASD. The current study employed a multiple probe across participants design to evaluate the effects of video prompting as an intervention for dance instruction. Seven participants with high-functioning ASD participated in the study. Six males (ages 12 to 16) and one female (age 15) received Cupid Shuffle dance training in a one-on-one instructional format. The researcher showed one video vignette (clip) at a time on a MacBook Pro® laptop computer. After viewing a vignette, participants were given the opportunity to reproduce the modeled steps. The researcher provided positive reinforcement, such as praise and/or a high-five for correctly performed steps. To correct errors, a 4-level least-to-most prompting system was implemented. Maintenance, generalization, and social validity were assessed. Results showed that six participants acquired the Cupid Shuffle from the video prompting intervention. Moreover, three participants demonstrated 100% maintenance and one participant demonstrated 99.1% maintenance at 1-week post-intervention. One participant demonstrated 100% maintenance at 8-days post-intervention. Participants achieved overall generalization probes percentages of 44–68%. In terms of generalizing the newly learned dance to a new situation by dancing alongside the trainer to music, four participants achieved overall generalization percentages of 89–100%. When generalizing the newly learned dance to the new situation of dancing alongside peers to music, three participants achieved overall
generalization percentages of 97–100%. Furthermore, parents and participants who completed social validity questions reported that the goals, procedures, and outcomes were acceptable and important.
Dedicated to my Heavenly Father

Dylan, Grant, Nick, Ted, Rick, Margaret, Fred Gies

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Field of Study

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Emphasis: Adapted Physical Education

Cognates: Research Methodology, Special Education, Applied Behavior Analysis
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Chapter 1

Introduction

Autism Spectrum Disorder

Autism spectrum disorder (ASD) began gaining national attention in 1990 when it was identified as a separate disability category in the Individuals with Disabilities Education Act (IDEA). IDEA defines autism as follows:

Autism means a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance. Other characteristics often associated with autism are engagement in repetitive activities and stereotyped movements, resistance to environmental change or change in daily routines, and unusual responses to sensory experiences. (U.S. Department of Education, 2010)

No cure currently exists for this life-long disability, and its specific etiology has not been identified (Oller, Jr. & Oller, 2010). Likely causes are attributed to environmental, biological, and genetic factors.
**Characteristics.** Depending on the subcategories (i.e., autistic disorder, Asperger syndrome, and pervasive developmental disorder—not otherwise specified), ASD markers may include delayed or undeveloped communication; lack of social interaction; perseverance on preferred people, objects, and/or activities; and behavioral deficits and excesses (American Psychiatric Association, 2000). Behavioral deficits include a number of functional behaviors, such as complying, attending, imitating, playing, and talking (Oller, Jr. & Oller, 2010). “It is thought that about 50 percent of these children are mute—possessing few or no verbal skills” (Scheuermann & Webber, 2002, p. 7). Moreover, it is common for individuals with ASD to engage in additional inappropriate behaviors, such as self-injurious and aggressive behavior (e.g., tantrums), as well as stereotypic behaviors such as hand flapping, gazing, rocking, spinning, twirling objects, and turning lights on and off (Oller, Jr. & Oller, 2010; Scheuermann & Webber, 2002). When these behaviors are excessive, they interfere with learning, may lead to aversive consequences, and may prevent the individual from being included in everyday settings.

**Activity-related deficits.** Available evidence points to developmental delays and deficits in the movement behaviors of individuals with ASD (Berkeley, Zittel, Pittney, & Nichols, 2001; Morin & Reid, 1985; Pan, Tsai, & Chu, 2009; Reid, Collier, & Morin, 1983; Staples & Reid, 2009). In spite of their movement problems, Rosser, Sandt, and Frey (2006) suggest that it is a misconception that individuals with ASD are less active than their peers without disabilities. These researchers found there were no significant differences between the physical activity levels of children with and without ASD. Part of this unexpected finding may be due to the unique types of physical activities that children...
with ASD engage in, such as wandering around, being chased, and running aimlessly in various environments. Preferred physical activities for children with ASD consist of participation in leisurely swimming, jumping, throwing, and taking walks with caregivers. In general, it is well known that children with ASD do not enjoy or experience consistent success in competitive activities due to their deficits in communication, social, and behavior domains, and more specifically due to their difficulty in understanding abstract concepts and sensory processing deficits (Oller, Jr. & Oller, 2010). Considering developmental delays and deficits in movement behaviors, it is important for physical education teachers and other specialists to plan and teach appropriate motor activities.

**Statistics.** The Centers for Disease Control (2009) report that an average of 1 out of 150 children in the United States has an ASD. Of notable interest is that the prevalence of ASD in boys is four to seven times greater than girls. The Autism Society of America (2008) asserts that the lives of approximately 1.5 million Americans are currently being affected by ASD. An important implication from this statistic is the heavy financial burden that the disability places both on families and the United States Government. According to the Autism Society of America, it costs an estimated 3.5 to 5 million dollars to support a lifetime of care for one individual with ASD. Moreover, the Autism Society of America estimates that the United States Government is spending close to 90 billion dollars per year in expenses related to ASD. Examples of such expenses include research, medical care, caregiver costs, therapeutic services, and education. Educational spending includes providing children with ASD a free and appropriate education in the least restrictive environment (IDEIA, 2004).
Educational considerations. A key component of IDEIA is the Individualized Education Program (IEP) that addresses unique learning needs of a student with a disability (Winnick, 2011). And, according to IDEIA, physical education is a required component of the IEP. According to regulations associated with IDEIA,

Physical education means - (i) The development of - (A) Physical and motor fitness; (B) Fundamental motor skills and patterns; and (C) Skills in aquatics, dance, and individual and group games and sports (including intramural and lifetime sports); and (ii) Includes special physical education, adapted physical education, movement education, and motor development. (Office of Special Education and Rehabilitative Services, 34 CFR 300)

As needed, students with ASD who are receiving special education services have written physical education goals and objectives that address learning in the areas outlined in the definition of physical education (e.g., dance) included in their IEP (Winnick, 2011). In addition to being included in the definition of physical education, the National Association for Sport and Physical Education (NASPE, 2005) recognizes dance as an integral part of physical education. NASPE offers further support for dance: “Its uniqueness as a physical activity, however, is that it is also an art form, affording opportunities to create, communicate meaning, and interpret cultural issues and historical periods” (p. 6). Because of these reasons, it is reasonable to assert that dance activities are appropriate tools for achieving social, health, and both physical and motor fitness benefits for children with ASD.
**Dance**

Dance is an appropriate educational activity for individuals because it can integrate physical, cognitive, social, and aesthetic content. For example, dance can promote both kinesthetic and cognitive awareness (Stinson, 1982) while performers release tension through various locomotor and non-locomotor movements completed to music and surrounded by friends. Teaching dance activities may be beneficial, because students can be afforded opportunities to improve in both movement principles (e.g., balance, transfer of weight) and movement concepts (e.g., time, space) (Boswell, 2005). Moreover, dance activities allow for development of both health-related fitness components (e.g., aerobic fitness, flexibility) and skill-related fitness components (e.g., coordination, balance) (Ross & Butterfield, 1989). Research has shown that dance is a positive educational experience for children without disabilities and that dance programs boost self-esteem, body image, and flexibility while decreasing body fat percentage (Garret, 1994).

**Appropriateness for individuals with ASD.** Dance is an appropriate activity for individuals with ASD because it is functional. Dance activities can be used to teach social, motor, and recreational behaviors (Scheuermann & Webber, 2002). For instance, dance can be used for socialization training, and participation in dance activities allows for social contact with peers. Further, learning how to dance increases the likelihood that individuals with ASD will be able to participate within inclusive settings, such as school dances and other social events (e.g., weddings).
After individuals learn fundamental dance moves, they can then learn sequenced dance routines, group dances, and social dances. Dance is also beneficial for individuals transitioning into adulthood, given that many young adults without disabilities frequently attend dance clubs or other social events (e.g., parties) where dance is performed. In sum, dance can serve as a lifetime physical activity.

**Structured dance.** Dance of a structured nature seems most appropriate for individuals with ASD. Also coined as “patterned” or “recreational,” structured dances are those that have set patterns of steps consisting of non-locomotor (e.g., reach), locomotor (e.g., jump), and/or combinations of locomotor (e.g., slide) movements (Boswell, 2005). Some examples of structured dances are international folk dances (e.g., square dance), social dances (e.g., salsa), and contemporary line dances (e.g., Electric Slide). Generally speaking, structured dances align with particular musical accompaniment of a specific beat.

Structured dances can be appropriate for individuals with ASD because dance movements and routines can be simplified or extended in order to meet the individual needs of each student, and patterns can be taught using strategies such as part-whole methods (Boswell, 2005). Boswell (2005) asserts that patterns can be acquired by individuals in minimal time and being able to apply learned patterns to music may promote a sense of accomplishment and increase self-efficacy. Further, individuals with ASD can be provided with opportunities to dance alongside peers while also acting as independent participators.
Modeling

One intervention that may be effective for teaching structured dances to individuals with ASD is modeling. Modeling is commonly used by educators in order to teach individuals with and without disabilities. Professionals in both physical activity/education (e.g., Sherrill, 2004) and special education (e.g., Cooper, Heron, & Heward, 2007) endorse modeling as an instructional intervention for individuals with developmental disabilities. Furthermore, modeling is an empirically validated instructional intervention that is commonly used in physical activity settings (McCullagh & Weiss, 2001). Siedentop and Tannehill (2000) are proponents of using modeling as an instructional intervention in physical education:

Demonstrating a behavior or skill is critical for most students when learning a motor skill. Additional demonstrations can be provided to an entire group or one-on-one for students who need an additional model. These follow-up demonstrations might focus on one specific aspect of a skill or a sequence of steps to model or highlight difficult concepts to grasp. (p. 123)

Special educators view modeling not only as a form of demonstration, but also as an antecedent prompting strategy (Cooper et al., 2007). Cooper et al. (2007) further assert that modeling is an effective instructional intervention for teaching target behaviors in which the individual already has mastered at least some of its components. For example, teaching a side-step dance movement to an individual using modeling requires that the individual can stand on both two feet and one foot.
**Video modeling.** One evidence-based instructional intervention (Horner et al., 2005) for teaching individuals with ASD that incorporates modeling is video modeling. Bellini and Akullian (2007) provide a definition of video modeling and description of its use as an instructional intervention:

Video modeling is a technique that involves demonstration of desired behaviors through video representation of the behavior. A video modeling intervention typically involves an individual watching a video demonstration and then imitating the behavior of the model. Video modeling can be used with peers, siblings, adults, or self as a model (video self-modeling). (p. 266)

Researchers have successfully used video modeling to teach a wide variety of behaviors such as daily living skills (Rehfeldt, Dahman, Young, Cherry, & Davis, 2003), communication skills (Apple, Billingsley, & Schwartz, 2005; Buggey, 2005; Charlop-Christy, Le, Freeman, 2000; Wert, & Neisworth, 2003), and play behaviors (D’Ateno, Mangiapanello, & Taylor, 2003; Dauphin, Kinney, & Stromer, 2004; Nikopoulos, & Keenan, 2003, 2004) to individuals with ASD. Moreover, video modeling has been empirically validated for teaching physical activities to children with disabilities (Porretta, Samburg, & Gillespie, 1999) and children without disabilities (Weiss, McCullagh, Smith, & Berlant, 1998). For example, McCullagh, Stiehl, and Weiss (1990) used video modeling with concurrent verbal cues to improve qualitative and quantitative aspects of children’s dance performance. The female participants, ages 5 to 9, who viewed a video demonstration of a five-part dance skill sequence performed significantly better on both dance form and quality than the participants who did not view a model.
Skills learned were bowing forward, hand rolls, a waist-high kick, placing hands on knees for 8 s, and an outward slide.

**Video prompting.** One variation of video modeling is video prompting, which consists of watching a video demonstration that is a single task analysis step or chunk followed by practice of that step/chunk. Video prompting interventions have been used to teach several behaviors to individuals with developmental disabilities, including self-help skills (Norman, Collins, & Schuster, 2001), daily living skills (Cannella-Malone et al., 2006), and cooking related tasks (Graves, Collins, Schuster, & Kleinert, 2005; Sigafoos et al., 2005). It is feasible that video prompting could also be used to teach a line dance activity to individuals with ASD.

**Social Learning Theory**

Modeling research is generally underpinned by Albert Bandura’s social learning theory (1977), which is an information processing paradigm that evolved into today’s social cognitive theory (1986). Bandura formulated social learning theory to address the phenomenon of modeling that he asserts occurs through observational learning. The process of observational learning takes place when an observer watches a demonstrator perform a behavior that receives reinforcement and then goes through information processing activities that lead to imitation and acquisition of that behavior.

Observational learning consists of four subprocesses that are (a) attention, (b) retention, (c) motivation, and (d) reproduction (Bandura, 1977, 1986). Attention is the beginning whereby the observer is watching the model and perceiving salient cues. Next, the observer codes the incoming information into memory. Third, the observer reproduces
the stored blueprints into a behavior. Finally, motivation refers to the fact that the observer must be either intrinsically and/or extrinsically motivated in order to reproduce the target behavior that was observed. In regards to the current study, further evidence to support observational learning/social learning theory may be produced if modeling is shown to be effective for teaching dance to individuals with ASD.

Statement of the Problem

Educators need appropriate and varied interventions for teaching individuals with ASD. One instructional intervention recommended by educators is modeling (e.g., Reid, O’Connor, & Lloyd, 2003). Video prompting, a variation of video modeling, may be an effective instructional intervention for teaching dance activities to individuals with ASD. By performing appropriate dances, these individuals may be able to benefit both physically (e.g., enhanced coordination and balance) and socially (e.g., enhanced inclusive recreation and leisure activities).

Purpose of the Study

The purpose of this study was to examine the effectiveness of video prompting as an instructional intervention on the acquisition, maintenance, and generalization of a structured line dance by adolescents with ASD.

Primary Research Questions

The primary research questions were as follows:

1. To what extent can adolescents with ASD acquire a structured line dance utilizing video prompting?
2. To what extent can adolescents with ASD maintain the structured line dance following video prompting?

3. To what extent can adolescents with ASD generalize the structured line dance following video prompting?

**Significance of the Study**

Evidence-based interventions are needed for effectively teaching individuals with ASD the movement behaviors necessary to participate in physical activity settings alongside their peers without disabilities. This study may provide evidence to enhance the socialization experiences of adolescents with ASD. Moreover, it has the potential to further validate video modeling strategies as effective instructional interventions for individuals with ASD in physical activity contexts. Finally, this study may result in primary evidence to support the use of video prompting to teach movement behaviors to individuals with ASD.

**Definition of Terms**

The following were operational definitions of key terms in this study:

**Closed skills.** Skills that are performed in stable or predictable environmental settings (Schmidt & Lee, 2005).

**Cupid shuffle.** A (structured) line dance that is composed of four side steps to the right, followed by four side steps to the left, followed by four alternating heel kicks, followed by eight movements that result in a 90 degree counterclockwise turn, and then repeated a total of four times to create a 360 degree rotation, and then continuously repeated until the song ends.
**Discrete skills.** Skills that have a definite beginning and end (Schmidt & Lee, 2005).

**Part-whole methods.** The learning strategy in which the task is broken down into its parts for separate practice (Schmidt & Lee, 2005).

**Social validity.** Refers to the extent to which target behaviors are appropriate, intervention procedures are acceptable, and important and significant changes in target and collateral behaviors are produced (Wolf, 1978).

**Target behavior.** The response class selected for intervention; it can be defined either functionally or topographically (Cooper et al., 2007).

**Limitations**

Limitations of the study were as follows:

1. The results of this study cannot be generalized to all individuals with ASD.
2. The results of this study cannot be generalized to other dances.
3. Though parents, teachers, and other caregivers were explicitly told not to engage the participants in any type of dance activities during the course of the intervention, the inability to control for dancing outside of the instructional setting could have impacted results.

**Delimitations**

Delimitations of the study were as follows.

1. Seven adolescents aged 12 to 16 years were included in the study.
2. All the participants had the physical ability to perform the structured line dance.
Chapter 2

Review of the Literature

This chapter consists of three main sections including (a) Dance Interventions, (b) Video Modeling, and (c) Social Learning Theory. The first section provides a review of the literature regarding dance interventions for children and adolescents with and without disabilities. The second section provides information relative to video modeling for individuals with and without disabilities. Video modeling is divided into six subsections (video prompting, comparison studies, self as model, point-of-view, peer models, and adult models). The third section is an overview of Social Learning Theory, which is the theoretical framework that underpinned this study.

Dance Interventions

Over the years, researchers have used dance to positively change both physical and psychological outcomes in children and adolescents. Findings from these studies support dance as a meaningful and functional activity. This is especially true for children and adolescents with disabilities. This section focuses on studies of individuals with and without disabilities.
**Children and adolescents without disabilities.** Some researchers have used dance interventions in order to positively influence both physical and psychological outcomes of children and adolescents without disabilities. For instance, McCullagh, Stiehl, and Weiss (1990) compared four instructional interventions and their effects on form and sequencing of a dance activity. The dance activity consisted of five sequenced skills (bow, roll hands, kick, hands-on-knees, and slide). Eighty children were split into two age groups (5 to 6 and 7 to 9). Within each age group, the researchers randomly assigned the participants to either (a) verbal explanation only, (b) verbal explanation plus verbal rehearsal, (c) peer model with concurrent verbal cues from a researcher, or (d) peer model with concurrent verbal cues from a researcher plus verbal rehearsal. Children in the no rehearsal groups also received knowledge of results. Dependent measures were (a) the number of trials needed to achieve the correct sequence, (b) a value assigned based on sequencing each skill correctly, (c) the number of trials needed to achieve correct performance, and (d) a value assigned based on performing each skill correctly. The results showed that the older children outperformed the younger children on all of the dependent measures. Furthermore, children in both of the peer model groups had significantly higher dance form scores than children in the verbal explanation groups. In contrast, children in the verbal explanation groups had higher sequencing scores than children in the model groups. The researchers asserted that children may operate visual coding mechanisms when viewing demonstrations that leads to enhanced skill quality, while they may operate verbal coding mechanisms when listening to verbal explanations that leads to enhanced sequencing.
Also targeting both physical and psychological outcomes, Garrett (1994) used mixed methods (i.e., qualitative and quantitative pre- and post-test, two group design) to learn what effects a dance intervention would have on the self-esteem, body image, and selected physical fitness components of female adolescents in grades 9 to 12 compared to a regularly scheduled physical education program. Intervention components were (a) dance skill acquisition, (b) dance composition and performance, and (c) observation and reactions to dances of others. Teaching strategies used during the dance intervention included (a) teacher and peer modeling, (b) physical prompting, and (c) visual/musical cues. The results showed the dance intervention had significantly more beneficial effects on the self-esteem, body image, flexibility, and body fat percentage of the participants than the physical education program. Garrett provided potential reasons for positive effects on self-esteem: The dance intervention allowed for (a) expression, (b) positive risk-tasking, (c) social interaction with peers, (d) opportunities to increase both self-control and self-confidence related to body movement, and (e) integration of physical, cognitive, social, and aesthetic content. Moreover, Garrett concluded that (a) the holistic nature of dance allows students to improve competence in many areas, (b) music and rhythm are motivating, and (c) dance is a valid educational tool.

More recently, Kouli, Rokka, Mavridis, and Derri (2009) tested the physical and psychological effects of an aerobic dance intervention on 33 students aged 10 and 11 years. The intervention group participated in a 12-week aerobic dance program that met 3 times per week for 45 min. This was compared to a control group of 24 students who followed their standard physical education program. The two dependent variables were
health-related fitness components measured by the Prudential Fitnessgram test battery (Cooper Institute for Aerobics Research, 1992) and intrinsic motivation measured by the Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989). The results showed a significant improvement in abdominal muscle endurance, trunk flexibility, hand strength, posterior femoral muscle flexibility, and cardiorespiratory endurance of the intervention group participants on the health-related fitness battery. Moreover, they also showed a significant increase in both enjoyment and effort components of intrinsic motivation. The researchers concluded that an aerobic dance intervention is a non-competitive and entertaining way to improve health-related abilities and intrinsic motivation.

In order to measure physical intensity and volume as well as student attitudes, Fromel, Stratton, Vasendova, and Pangrazi (2002) investigated teaching style and dance form. High school females \( n = 138 \) in existing physical education classes served as the participants. Intensity was measured by Polar heart-rate monitors and volume was measured by pedometers. Student attitudes toward physical education dance lessons were measured by a 24-item questionnaire (i.e., pupils’ attitudes toward the physical education dance lesson). Teaching styles were (a) direct and (b) problem-solving. Forms of dance were (a) country, (b) rock, and (c) social. The results showed that neither the direct or problem solving teaching styles resulted in a significant difference in physical activity intensity. For volume, there was a significant positive difference for the direct style versus the problem-solving style. Rock-and-roll did have a significant impact on intensity as well as substantially greater impact than either country or social dance. Moreover,
country produced a significantly greater amount of steps than either social or rock-and-roll. As far as attitude, the participants in the problem solving lessons exhibited a significantly more positive attitude than the participants in the direct style lessons. Regarding dance form, both the rock-and-roll and country groups demonstrated significantly more positive attitudes towards the dance lessons for both direct and problem solving styles than the social group. However, the researchers noted that students had positive attitudes towards all dance forms; moreover, all forms caused substantial amounts of physical activity. The researchers concluded that both dance style and form can significantly impact intensity and volume, but dance form has more impact than dance style.

Other researchers have focused solely on physical outcomes as dependent measures in a dance intervention study for children and adolescents without disabilities. Ross and Butterfield (1989) investigated the effects a 36-week dance education intervention on selected psychomotor skills of 54 girls and 66 boys aged 5 to 14 years. During the first 24 weeks of the intervention, the participants learned movement concepts based on Laban’s (1963) basic movement (e.g., force, space) and specific movement themes (e.g., pathways, mime-skills). In the final 8 weeks of the intervention, the participants rehearsed a culminating, choreographed routine. The researchers used video feedback so that the participants could review and improve their movement performances. As the intervention progressed, the researchers added props, instruments, and music to maintain the participants’ enthusiasm. The results showed that the dance/movement education intervention had significant positive impact on many motor fitness
skills, such as pull-ups, sit-ups, push-ups, standing broad jump, shuttle run, as well as dynamic balance across the participants on all grade levels. In terms of fundamental motor skills, the dance/movement education intervention caused improvements in running, jumping, and hopping across both the boy and girl participants in grades K to 3. The researchers concluded from their results that dance is a supported physical education instructional tool.

Pelclova, Fromel, Skalik, and Stratton (2008) investigated two approaches to teaching dance and two types of dance content in secondary female physical education classrooms in order to determine physical activity engagement. The two teaching approaches were (a) traditional and (b) progressive. Standard teaching methods were used in the traditional approach, whereas the progressive approach added a student role variable. That is, the researchers embedded (a) decision making, (b) self directed activity, (c) critical and creative thinking, (d) problem solving, (e) metacognition, (f) social development, and (g) self-assessment into the educational process. The results from Polar heart rate monitors did not show significant differences for physical activity between the two groups, which shows that an enhanced student role during lessons did not negatively impact physical activity engagement. Additionally, the researchers compared dance versus aerobic dance relative to the United States Department of Health and Human Services recommendation of at least 50% physical activity time in physical education lessons (USDHHS, 2000). Both led to the participants achieving the USDHHS recommendation. Although nonsignificant, aerobic dance lessons caused higher physical activity levels than the dance lessons. Results from this study showed that dance can be
used to achieve national physical activity guidelines. The researchers concluded that aerobic dance, with its cardiorespiratory endurance focus, is naturally more stimulating to the heart than general dance lessons that focus on qualities such as rhythm, spatial, and body awareness.

Researchers have also focused solely on psychological outcomes in dance studies for children and adolescents without disabilities. Kim and Kim (2007) investigated the effects on mood resulting from a single 40 min session of four different physical activities (aerobics, body conditioning, ice skating, and hip-hop dancing). Aerobics entailed continuous aerobic exercise; body conditioning entailed a combination of weight-training, jogging, and flexibility exercises; ice skating entailed ice walking and stepping practice; and hip-hop dancing entailed free-style dance. Forty-five high school and 232 undergraduate students were randomly assigned to one of the four groups. In order to measure mood changes, the researchers used the Subjective Exercise Experiences Scale (McAuley & Courneya, 1994), which is a Likert scale that has items representing three dimensions that are (a) positive well-being, (b) psychological distress, and (c) fatigue. The researchers administered the scale directly before and after each physical activity session. Both hip-hop dancing and aerobics groups rated their positive mood (i.e., well being) significantly higher and their psychological distress significantly lower following the physical activity session. Fatigue scores for these two groups also lowered, though not significantly. Neither the ice skating nor the body conditioning groups experienced a significant mood alteration. The researchers concluded that the
more vigorous physical activities (i.e., aerobics and hip-hop dancing) were associated with more positive mood changes, as well as revitalization and decreased stress.

To examine the differences between middle school boys’ and girls’ personal and situational interest and how those factors correlated with learning outcomes, Shen, Chen, Tolley, and Scrabis (2003) used a 4-week square dance unit with 19 boys and 38 girls. Personal interest shows an individual’s preference towards a particular activity, whereas situational interest shows an individual’s temporary preference in a particular context and is fleeting. The source dimensions of situational interest included (a) novelty, (b) challenge, (c) attention demand, (d) exploration intention, and (e) instant enjoyment. Learning outcomes were conceptualized as physical activity intensity (i.e., effort and persistence) and skill/knowledge assessments (i.e., achievement), and the researchers noted these variables were reflective of motivation. Physical activity intensity was measured using pedometers and Polar heart rate monitors. The researchers claimed that the study addressed “an important issue in physical education: can boys and girls be motivated to overcome socially-constructed gender stereotypes toward a physical activity while learning it?” (p. 399). Girls in the study demonstrated a significantly higher amount of personal interest in square dance than the boys, but in terms of situational interest, both the boys and girls were equally motivated. Further, the boys exhibited higher levels of physical activity intensity than girls, but the girls had higher scores on skill/knowledge assessments. The researchers concluded that situational interest may not be reflective of gender, though personal interest may be. Results of this study suggest that carefully designing physical activity contexts in ways that intend to manipulate the source
dimensions of situational interest can lead to student motivation. However, in order for students to be motivated towards actually learning the skills and content knowledge of a particular activity, physical educators must find ways to enhance personal interest.

**Children and adolescents with disabilities.** Researchers have also used dance interventions to positively impact physical and psychological changes in children and adolescents with disabilities. In 1988, Roswal, Sherrill, and Roswal conducted a study to compare the effects of data-based pedagogy versus creative dance pedagogy on the motor performance and self-concept of 35 adolescents aged 11 to 16 years with moderate intellectual disabilities. For each pedagogy, 40 lessons of 30 min were delivered over 8 weeks. Both pedagogies focused on the same instructional goals that included (a) teaching basic dance skills; (b) developing body perception, agility, and balance; and (c) improving self-concept. However, there were differences between the pedagogies. First, the data-based pedagogy used task analyses and structured practice (i.e., verbal cueing, positive reinforcement, modeling, and physical prompting), whereas the creative pedagogy used movement exploration activities and dance skill games. Second, teachers worked one-on-one with the participants during data-based instruction but in small groups during creative instruction. Third, the data-based pedagogy used rigid behavior management as opposed to the loose guidance in the creative pedagogy. Data-based instruction significantly increased 10 of the targeted dance skills, which led the researchers to conclude, “If teaching specific dance skills that can be accurately assessed and with which progress can be monitored is the primary goal, the behavioral pedagogy of the data-based program is the method of choice” (p. 221). Further, results showed both
pedagogies were equally effective in enhancing motor performance, though not significantly. Finally, neither pedagogy enhanced self-concept to a significant degree.

Crain, Eisenhart, and McLaughlin (1984) also implemented a dance intervention for individuals with intellectual disabilities. They tested the effects of a 10-week dance intervention on the physical and social behaviors of 13 adolescents aged 13 to 15 years with mild intellectual disabilities using a multiple measurement approach. The intervention entailed 30 dance sessions of 30 min each that were instructed Monday, Wednesday, and Friday for 10 weeks by the primary researcher. Sessions covered several units of dance that were (a) movement orientation/body awareness; (b) movement exploration; (c) foundation of basic dance combinations; (d) rhythm; and (e) folk, square, and creative forms. The measurement approach consisted of collecting data from eight different sources (three types of observations, two types of achievement checklists, and three types of interviews). Results of this study showed that the intervention positively impacted both physical and social behaviors of four of the participants, the physical behaviors of two of the participants, and the social behaviors of five of the participants. Furthermore, two of the participants did not improve in either area. Improvements in physical behaviors included (a) moving to rhythm, (b) performing the dance steps correctly and in sequence, (c) positioning oneself relative to a partner, and (d) displaying movement foundation skills (e.g., direction). For social behaviors, improvements included (a) increased participation, (b) increased cooperation, (c) assuming leadership roles, and (d) decreasing shyness/increasing independence. The researchers concluded that dance programs are effective for enhancing the physical and social skills of
adolescents with mild intellectual disabilities, but these gains manifest within a complex association of behaviors and are most likely impacted by external factors such as practice.

Although the previous studies addressed both physical and psychological outcomes, some dance studies for children and adolescents with disabilities have concentrated on improving only physical outcomes. For example, Lagomarcino, Reid, Ivancic, and Faw (1984) tested the effects of a leisure-dance intervention on the dancing skills of adolescents with disabilities in a multiple baseline design study. Four individuals with severe to profound intellectual disabilities aged 14 to 19 years living in a state residential facility participated in the study. The researcher, who was a recreation therapist at the facility, delivered the intervention in training rooms and offices with the help of two recreation therapist assistants. Intervention sessions were 5 to 10 min long. The participants received between 34 to 64 total sessions. During the intervention, an instructor worked one-on-one with the participant to teach three components (leg movements, arm movements, and coordinated leg and arm movements in a serial order).

In regards to leg movement instruction, the researcher provided a verbal prompt for dancing in order to assess whether s/he could appropriately complete the target leg movements. If unsuccessful, the instructor provided remedial instruction until the target leg movements were achieved. Remedial instruction included (a) auditory feedback of both error detection and correction, (b) subsequent instructor modeling of the target behavior with verbal cues of relevant information, (c) subsequent physical rehearsal by the participant, (d) more corrective feedback paired with physical prompting, and (e) repeating remedial instruction steps, if necessary. When the participant was able to
display the target leg movements for 3 to 5 min, the instructor moved on to implement the same instructional strategy for arm movements and subsequently coordinated leg/arm movements. The results showed that neither the dance intervention nor instructor supervision, by itself, made significant impact on dancing behaviors; both the intervention and supervision were needed. Furthermore, three of the participants experienced some success in generalizing the dances at the state residential facility, and the generalization effects for one of those were described as large and durable. The researchers concluded that the dance intervention combined with supervision could lead to at least partial participation in those with severe or profound intellectual disabilities.

In another study, Brash and Ballard (1994) used a multiple baseline across behaviors design to evaluate the effects of a creative dance intervention on the movement behaviors of six adolescents aged 12 to 14 years with intellectual disabilities. The participants were categorized as either low-skilled or high-skilled. The dance intervention consisted of one 45-min lesson per week for 14 consecutive weeks. Up to three lessons, out of the total 14, focused on each of seven total movement element categories (space, use of body, relationships, level, effort, speed, and shape). The goal was to improve the participants’ movement capabilities for each of those element categories. During the intervention, the participants also had opportunities to create their own sequences, share some dance activities with one another, and observe the dances of peers. After the dance intervention concluded, the researchers individually tested each of the participants by prompting him or her to demonstrate the learned movement behaviors. The results showed that the dance intervention was effective for improving movement behaviors of
adolescents with intellectual disabilities in five of the movement element categories (use of body, relationships, levels, effort, and shape). There was also some evidence of improvements within the speed and space categories. Situation generalization and maintenance effects over 3 months were observed. Further results from a t-test showed that there was not a statistically significant difference between the low-skilled and high-skilled participants, which, according to the researchers, showed that a benefit of dance is its allowance for equal participation by individuals of varying skill levels.

In a third study, Edwards-Duke, Boswell, McGhee, and Decker (2002) compared a creative educational dance intervention to a gross motor skill intervention using an alternating treatments design to find out which one would have the greater impact on time-on-task behavior of three children aged 8 to 11 years with behavior disorders. The dance intervention entailed exploring basic elements, such as space, time, and force, and the content included (a) changing directions, (b) pathways, and (c) tempo. The motor skill intervention entailed activities incorporating fundamental motor skills and games/races. Time-on-task was measured using a modified version of the Planned Activity Check Sheet. Overall, the results showed that the dance intervention was more effective for increasing time-on-task behaviors for all of the participants. In fact, the female participant exhibited 100% on-task behavior for all nine 45-min dance intervention sessions, and the two boys were on task for 100% of the session during eight of the nine dance sessions. The researchers discovered that the competitive nature of the motor skill intervention caused negative types of off-task behaviors, and they noted that the dance intervention caused more cooperative behaviors in the boy participants.
Finally, unlike studies focusing on changing physical outcomes, research on dance for children and adolescents with disabilities has also focused on enhancing solely psychological outcomes. Jay (1991) conducted a study with 17 pre-K children aged 3 to 5 years with speech and language delays in order to determine if a dance intervention would influence their creativity. Most children were identified as having coexisting disabilities (e.g., speech/language delay combined with developmental delays). The researcher compared a dance intervention based on Laban’s effort actions (Laban & Lawrence, 1947) to an adapted physical education program. In the experimental group, the participants received 30 min of dance instruction on 3 days per week across 12 weeks that consisted of eight units of effort actions (dab, flick, glide, float, press, wring, punch, and slash). The participants engaged in five to eight lessons of dance exploring for each effort action. In the comparison group, the participants received instruction from a trained adapted physical educator that was described as “task oriented” by the researcher and included simple game activities. Effects of the programs were measured using three variables from Torrance’s Thinking Creatively in Action and Movement (TCAM, 1981) instrument (i.e., imagination, fluency, and originality). The results showed a significant change only in imagination. In reference to the TCAM instrument, this means that the participants were asked to move in unfamiliar ways and were able to significantly increase their amount of unusual movements. The researchers concluded that dance programs that focus on creativity are indicated for practitioners seeking to develop pre-school student imagination.
**Summary.** The studies revealed that dance interventions have produced physical and psychological benefits in typical children and adolescents including positive effects on self-esteem, body image, flexibility, and body fat percentage (Garrett, 1994) and improved motor performance of skills such as running, jumping, and hopping (Ross & Butterfield, 1989). Further, dance interventions have enhanced social behaviors of children and adolescents with disabilities including participation and cooperation, and also physical behaviors such as performing dance steps correctly and in sequence (Crain et al., 1984). Findings from the discussed studies support dance as a meaningful and functional physical activity intervention for individuals with and without disabilities.

**Video Modeling**

A frequently used instructional intervention for teaching behaviors to children and adolescents with and without disabilities is video modeling, in which the learner watches a video (filmed) representation of a target behavior and then repeats it. In video modeling, a model demonstrates how to perform a behavior so that an observer can acquire it through watching the demonstration, an informational processing task known as observational learning (Bandura, 1986). Evidence-based research shows that observational learning in the medium of video modeling is effective for improving dance form (McCullagh et al., 1990) and swimming skills (Weiss, McCullagh, Smith, & Berlant, 1998) of children without disabilities, and also underhand throwing performance (Porretta, Surburg, & Gillespie, 1999) of children with disabilities.

Of particular interest is that video modeling is an indicated intervention for teaching individuals with ASD functional skills such as play-related behaviors (e.g.,
D’Ateno, Mangiapanello, & Taylor, 2003), daily living skills (e.g., Rehfeldt, Dahman, Young, Cherry, & Davis, 2003), and communication skills (e.g., Wert & Neisworth, 2003). Moreover, evidence has shown that video modeling interventions can lead to generalization in the form of response maintenance (e.g., Nikopoulos & Keenan, 2004), setting/situation generalization (e.g., Haring, Breen, Weiner, Kennedy, & Bednersh, 1995), and behavior spread to untrained behaviors (e.g., Dauphin, Kinney, & Stromer, 2004). Bellini and Akullian (2007) assert that video modeling interventions are effective for individuals with ASD because they combine a visual representation of target behaviors and a visual modality for learning.

Several different types of video modeling interventions have been effectively utilized, including variations in the models (e.g., adults) and variations in the delivery (e.g., video prompting). Also, researchers have compared different types of video modeling interventions. This section reviews video modeling intervention research pertaining to individuals with and without disabilities.

**Video prompting.** One variation of video modeling is video prompting, which consists of showing a participant one step, chunk, or segment of a behavior or multi-step task and then asking him or her to perform that step. For example, in teaching a participant to open a door, the video would show the model placing his or her hand on the door knob, which would be followed by the participant acting in the same way. Subsequent steps in the behavior series would be shown one at a time; for instance, the video would show the model turning the knob, and so forth. Video prompting is especially appropriate for forward and backward behavior chains in which the previous
step should be practiced prior to practicing the subsequent step. Several researchers have successfully used video prompting to train a variety of behaviors.

Recently, Zisimopoulos, Sigafoos, and Koutromanos (2011) conducted a study in order to investigate the effects of video prompting on learning computer skills by individuals with developmental disabilities. Zisimopoulos et al. (2011) taught accessing the Internet and downloading pictures to three adolescents aged 12 to 13 years with moderate to severe intellectual disabilities (IQ range: 30–51). The participants’ special education teachers provided individual instruction in the classroom using a desktop computer for training of the target behavior chain that consisted of 29 steps and a laptop computer for delivery of the intervention. The first intervention phase entailed showing 10 point-of-view (POV) vignette chunks each displaying two to four steps and a verbal instruction corresponding to modeled steps. This type of video prompting was referred to as video “chunking” because multiple steps within the target behavior chain were delivered together. In addition, the researchers used the vignette chunks as error correction video prompts; when a chunk was not completed correctly, the participant viewed the vignette again followed by an opportunity for practice, and this procedure was repeated up to two times. Because the participants were not successful, the researchers included a second intervention phase in which all 29 steps of the target behavior chain were delivered as individual video prompts in conjunction with the aforementioned error correction and constant time delay procedures. Verbal praise was given for correct steps. The percentage of task analysis steps completed correctly and independently was the dependent measure. In order to evaluate the effectiveness of their two-phase intervention,
the researchers used a multiple baseline across participants design. The results showed that all of the participants were able to acquire the target behavior chain from video prompting of individual task steps plus video prompting error correction and constant time delay procedures. Further, all of the participants demonstrated a high level of both setting and situation generalization and maintenance up to 18 weeks post-intervention. Interestingly, the researchers allowed the participants to print out and keep the downloaded picture, a strategy that served as positive reinforcement and represented natural contingencies available for that learned behavior chain.

Also targeting technology skills, Edrisinha, O’Reilly, Choi, Sigafoos, and Lancioni (2011) investigated video prompting for teaching photograph capturing, importing, and printing to individuals with developmental disabilities. Four men, aged 33 to 41 years, with ASD and moderate intellectual disabilities were individually trained by the researchers at their residential care center. The intervention entailed video prompting by showing vignettes for each of 11 steps of the target behavior chain that included taking a picture with a digital camera, importing the picture onto a laptop, and printing it out. Vignettes also included a voice-over instruction corresponding to the modeled action. The participants were verbally praised for correct responses. Furthermore, the researchers assisted each of the participants in placing a printed out photo into a personal album after each behavior chain completion. Percentage of task analysis steps performed correctly was the dependent measure in the study. In order to evaluate video prompting effectiveness, the researchers used a multiple probe across participants design. The results showed that all of the participants successfully performed 100% of the target behavior
chain following video prompting. Moreover, three of the participants demonstrated task maintenance at 6 months following treatment. The authors mentioned that none of the participants could read, yet they were still able to apply sight recognition from the vignettes to the “import” and “print” laptop functions. This suggested that video prompting was effective for both teaching modeled behaviors and visual discriminations. The researchers also noted the positive social validity aspects of the intervention. For example, with respect to consumer satisfaction, the participants enjoyed sharing their personal photo albums with others.

Le Grice and Blampied (1994) used video prompting as an error correction procedure to teach technology skills to individuals with developmental disabilities. A total of four adolescents aged 13 to 18 years with mild to severe intellectual disabilities (IQ range: 33–52) participated in the study. Two of the participants were taught how to use a personal computer and two were taught how to operate a TV and VHS for video watching. Skills were task analyzed for instruction. During intervention, the participant was verbally prompted to complete the target task. When a task step was not initiated or completed correctly, the trainer provided a video prompt for that step and provided up to three views. Videos were 10 to 15 s long and showed a familiar peer completing the task. In the videos, salient task features were highlighted by zoom effects, and some voice-over instructions were embedded. The participants viewed VHS video prompts on a color television set. If after three successive video prompts performance was still incorrect, the trainer completed that step and that moved on to verbally prompting the next step. The number of steps completed correctly was the dependent measure. An AB design was used
in order to evaluate video prompting effectiveness. The results were positive showing that
the intervention caused skill acquisition for all of the participants. The researchers noted
that a single viewing was generally enough to cause learning and the need to deliver
video prompts declined over time. Moreover, no external reinforcers were provided.
Some maintenance occurred when tested two to three weeks later. Moreover, positive
effects were shown for both setting/situation generalization and response generalization
with further training.

Cihak, Alberto, Taber-Doughty, and Gama (2006) compared the effects of video
prompting and static picture prompting on the learning of ATM/debit card behaviors by
individuals with moderate intellectual disabilities. The researchers taught ATM withdraw
and debit card purchasing to six middle school students aged 11 to 15 years. The
participants were trained both in their respective resource classroom using simulation and
in a local grocery store. During simulation, pictures of a Presto ATM were projected from
colored transparencies onto a 5 ft 8 in screen, and video vignettes that represented a
single task analysis step were shown on the same screen. Both pictures and videos were
created from a subjective perspective and showed only the model’s arm and hand. When
a static picture was projected, the length was 4 s, and similarly each video vignette lasted
4 s. During projection of both pictures and videos, the trainer provided a verbal directive
to match the displayed behavior that was a step in either the withdrawing or debiting
sequence. The participants had to view the displayed image or video and then repeat the
teacher’s verbal directive aloud. For correct responses, the participants received both
verbal and token reinforcement. Ninety minutes after simulated instruction, the
participants engaged in live trials of the picture and video prompted task sequences at a
grocery store. During this community-based instruction, the trainer used least-to-most
prompting to facilitate criterion achievement (i.e., correct responding without assistance
on two trials). To compare the effectiveness of video and static picture prompting, the
researchers used an alternating treatments design. To strengthen the design, the
researchers counterbalanced the two types of prompts. The results showed that all of the
participants learned both withdrawing and debiting to criterion. Moreover, all of the
participants displayed two-week maintenance on both targeted skills, irregardless of
which prompt type was used. When comparing static picture prompting to video
prompting, the researchers discovered that there were no major differences between the
four participants. The other two participants, both of which had the added disability of
Attention Deficit Hyperactivity Disorder, showed a slight positive difference for static
picture prompts. In addition to supporting both video and static picture prompting, results
of this study also support using community-based instruction in conjunction with
prompting strategies.

Mechling, Gast, and Barthold (2003) used a multimedia computer-based
instruction intervention including video prompting in order to educate individuals with
moderate intellectual disabilities on daily living and community behavior. The
researchers taught debit card purchasing to three high schoolers aged 16 to 18 years. All
instructional sessions occurred within their high school conference room and were
individually facilitated using video modeling, still photographs, and video prompting/
computer simulations. During video modeling, the participants watched a model
complete the entire purchasing behavior chain on a touchscreen laptop computer. The researchers created three POV videos each depicting a different automated payment machine for exemplar variation. At the end of watching a single video, a still photograph of the example machine with an embedded visual instruction was displayed on the computer screen. Following either a 0- or 3-s delay (constant time delay procedure), a video prompt showing a chain step was provided. The same photograph was shown again and the participant was asked to complete the prompted step (e.g., key pin and press enter). Video prompting consisted of the participant viewing demonstrations of each chain step followed by practice on the simulated payment machine. After practice, the trainer provided verbal reinforcement for correct responses or error correction. In order to evaluate intervention effectiveness, the researchers used a multiple probe design across participants. The results showed that the multimedia computer-based instruction intervention was effective for teaching all three high schoolers to make debit card purchases on simulated automated payment machines and similar machines located within community stores and some maintenance up to 46 days was shown. Further, the participants showed some generalized debit card purchasing behavior to community stores. Authors concluded that video recordings in the form of video models and video prompting are a practical way to simulate training of community-based behaviors. They questioned whether the video models (entire task sequences) were actually necessary for acquisition and implied that video prompting alone or with still photographs may be enough. Also, they suggested that interventions include several exemplars that represent
both stimulus and response variations found in the real life setting to maximize
generalization.

Sigafoos et al. (2005) investigated video prompting for teaching daily living skills
to individuals with developmental disabilities. Three adult men aged 34 to 36 years with
moderate intellectual disabilities (IQ range: 43–50) were taught to make a bag of
microwave popcorn. The participants were individually trained in the kitchen area of their
vocational training center. A 10-step task analysis was used in the video prompting
intervention. One step was delivered at a time followed by opportunity for practice. Steps
not completed by the participants were completed by the trainer. All video vignettes
included a voice-over instruction and were filmed from a POV perspective. There were
no extraneous variables such as verbal feedback or prompts. The participants had to reach
criterion of all 10 steps on at least five consecutive sessions to be considered acquisition.
Percentage of steps completed correctly and independently was the dependent measure.
In order to evaluate the effectiveness of their video prompting intervention, the
researchers used a delayed multiple-probe across participants design. The results showed
that two of the participants successfully acquired the target skill and showed 80 to 100%
criterion maintenance up to 10 weeks post-intervention. One of the participants did not
achieve acquisition criterion though he did reach 80% during two sessions of his
intervention phase. Though not all of the participants succeeded in learning the target
behavior, this study gives some support for using video prompting to teach individuals
with developmental disabilities. Authors noted that some individuals may learn better
from seeing the entire task completed (i.e., video modeling) as opposed to only one step
at a time and suggested this comparison is a critical area for future research. They also considered the benefits of video instruction versus direct instruction (e.g., staff-delivered instruction) and acknowledged this gap in the literature. Lastly, the authors discussed the possibility that voice-over instructions embedded within the vignettes could have influenced learning, which is another potential area for future research.

Graves, Collins, Schuster, and Kleinert (2005) used video prompting in order to teach cooking behaviors to secondary students with moderate intellectual disabilities. The trainer taught a 16-year-old, an 18-year-old, and a 20-year-old to prepare Ramen Noodles (stovetop) and/or cheese macaroni (microwave) and/or a sandwich (countertop) in a one-on-one instructional format. Each of the participants was trained on two of the previous behaviors in the kitchen area of their school resource classroom. Videotapes were filmed from a POV perspective and shown using a VCR on a 25 in color TV. Each tape included a voice-over instruction followed by modeling of the entire behavior chain. Then, either a 0- or 5-s delay interval occurred that was followed by a more specific verbal prompt and demonstration of a particular step in the chain. Finally, a colored frame was shown for 20 s that was meant to provide the opportunity for the participant to repeat the respective step. The authors mentioned that no extra verbal prompts or physical guidance were provided during the study but the trainer did rewind a videotape for extra viewing until the participant corrected errors. In order to evaluate intervention effectiveness, the researchers used a multiple probe across behaviors design replicated across three participants. The results showed that video prompting was effective for training all targeted behaviors to criterion (i.e., 100% for three sessions). An interesting finding was
that all of the participants acquired their second cooking behavior in the same or fewer number of intervention sessions. An unspecified length of maintenance was reported. Also, parents of each child reported generalization to the home setting, though formal data collection did not occur.

Mechling and Gustafson (2009) compared video prompting and static picture prompting in their effectiveness to teach motor tasks (i.e., food preparation) to high schoolers with moderate intellectual disabilities. The researchers taught three females and three males skills such as grating cheese, peeling carrots, and cracking open eggs. Two sets of 10 food preparation behaviors were targeted. Behaviors were task analyzed for instruction. The participants received individual training in a school system owned apartment designed for community-based instruction. For static picture prompting they looked at laminated, 4 by 7 in photographs and for video prompting, they watched 12 to 25 s video demonstrations of task analyzed behaviors with an embedded voice-over instruction. Video prompting was delivered using a portable DVD player with a 7 in screen. An adapted alternating treatments design was used in order to compare the effectiveness of video and static and picture prompting. Further, prompting strategies were counterbalanced across both behaviors and participants to prevent task difficulty from confounding results and in addition, the two behavior sets were counterbalanced so that one group (i.e., three students) learned Set 1 from video prompting and Set 2 from picture prompting and vice versa for the second group. The results showed that both types of prompting were effective, though all six of the participants showed more significant gains from video prompting. Speculation by authors was that, when compared
Van Laarhoven, Kraus, Karpman, Nizzi, and Valentino (2010) conducted a study to compare the effectiveness of video prompting and in vivo picture prompting for teaching daily living skills to individuals with ASD. The researchers also sought to compare the cost-to-benefit efficiency between video and picture prompting interventions. One 13-year-old with moderate intellectual disability and one 14-year-old with mild intellectual disability were taught how to microwave pasta and fold laundry in their school’s faculty lounge. The video prompting intervention consisted of vignettes featuring each of 22 (pasta) or 23 (clothes) task analyzed steps, voice-over instructions corresponding to the modeled step, and a still photo at the beginning of each vignette that represented the most salient step feature. Vignettes were embedded into a PowerPoint presentation and each slide—each representing one vignette—started with the aforementioned still photo at a written description of the corresponding step. The picture prompting intervention included a booklet of laminated PowerPoint presentation slides each one representing a step in the target behavior chain. Slides contained at least one picture and included a written description of the corresponding step. During picture prompting, the participants were responsible for flipping picture book pages; for video prompting, they had to click the “Next” button on the laptop screen to advance the PowerPoint presentation. In order to evaluate treatment effectiveness, the researchers used a within-subject adapted alternating treatments design. The authors cited several dependent measures in the study that were (a) percentage of target task steps that were
both independent and correct, (b) percentage of error correction prompts required to complete the task chain, (c) percentage of prompts required to effectively use the computer or booklet, (d) number of sessions needed to reach acquisition criterion (i.e., 85% independent correct task steps), (e) percentage of independent correct target task steps in novel environments and with novel materials, and (f) cost-to-benefit efficiency score (i.e., percentage increase per minute of preparation). Overall, results showed that video prompting was somewhat more effective than picture prompting in regards to aforementioned dependent measures a, b, and c; video prompting was significantly more effective in regards to f; and there was very little difference in regards to d. The authors mentioned a noticeable difference between the two interventions during initial sessions and suggested video prompting may be a more robust intervention especially when a learner begins acquiring a new task. Though, they reminded the reader that vignettes included voice-over instructions that may have influenced correct performance during initial sessions.

Sigafoos et al. (2007) evaluated video prompting plus a fading procedure for teaching a daily living skill to individuals with developmental disabilities. Three men with ASD and intellectual disabilities (IQ range: 45–69) were taught dishwashing in their vocational training center kitchen. Specific skills included in the task were (a) washing, (b) drying, and (c) storing a plate, cup, and spoon. The researchers divided the task into 10 steps. POV video vignettes were created each displaying one or two task steps and lasting between 4 to 30 s. Vignettes also included a voice-over instruction corresponding to the modeled step(s). During the intervention, the participants received individual
training in which they viewed vignettes on a portable computer. A failed step was completed by the researcher and then video prompting procedure continued for the successive step. After the participants reached criterion, the researchers withdrew video prompting and dishwashing maintenance deteriorated. Therefore, the researchers implemented a second video prompting intervention phase and then followed it with a video chunking fading procedure. The procedure was designed to fade the video prompts while preserving dishwashing maintenance. Percentage of dishwashing steps completed correctly was the dependent measure in this study. In order to evaluate intervention effectiveness, the researchers used a multiple-baseline design across participants. The results showed that all of the participants quickly learned dishwashing from the video prompting alone intervention in both the first and second phases. However, dishwashing declined when video prompting was removed. Because the researchers decided that the participants became prompt dependent on the video vignettes, they immediately began implementing video chunking as a prompt fading procedure. The participants were able to maintain a high level (range: 80–100%) of performance even when only a single chunk of all 10 steps was shown. Two of the participants maintained 90 to 100% performance when a single chunk was removed, but the third participant’s performance drastically declined by 30 to 40%. The researchers re-implemented a single chunk at the three month follow up in order to promote dishwashing maintenance. Authors noted that this study does not show that video prompting leads to independent functioning; however, it did show that a single chunk video prompt may be sufficient for maintenance as opposed to several vignettes.
Norman, Collins, and Schuster (2001) investigated a video prompting and video modeling treatment package for teaching self-help skills to individuals with intellectual disabilities. The researchers taught cleaning sunglasses, putting on a wrist watch, and zipping a jacket to three elementary students aged 8 to 12 years. The participants were taught using a small group instructional format in their classroom. During intervention, the participants viewed target behaviors on a television placed at their table. Behaviors were first displayed from start to finish as video modeling and videos included a voice-over instruction for the whole skill. Next, task analyzed steps of whole target skills with corresponding step-by-step voice-over instructions were shown as video prompts. The tape was paused and 15 s was provided to repeat the video prompted step. All three of the participants simultaneously viewed the POV videos on a 13 in television and then took turns imitating. For accurate performances, the participants received both positive verbal and token reinforcement. The dependent measure was percentage of correct task analysis steps. A multiple probe across behaviors and replicated across participants design was used by the researchers in order to assess treatment package effectiveness. The results showed that all of the participants learned the self-help skills, maintained them, and generalized them to new instructors and materials. In addition, performance enhancements occurred quicker as the intervention proceeded, indicating the benefits of progressive familiarity with the package and procedures. This study was unique because the researchers successfully combined video modeling and video prompting for instruction and filmed all videos from a POV perspective.
Comparison studies. A number of researchers have investigated model type comparisons or video modeling type comparisons for educating individuals with disabilities. Cannella-Malone et al. (2006) compared the effectiveness of video prompting and video modeling for teaching daily living tasks to adults with developmental disabilities. Using a one-on-one instructional format, the researchers taught arranging one place setting at a dining room table and putting away one bag of groceries to the participants in their vocational center. The researchers counterbalanced intervention type across both tasks and participants. Video modeling consisted of showing the entire task sequence (i.e., behavior chain) from spectator perspective. Voice-over instructions were embedded into both videos to correspond with modeled task steps. For video prompting, behavior chains were task analyzed into 10 steps and a POV video vignette with an embedded voice-over instruction was created for each step. After viewing a vignette, the participant completed the displayed step. Both types were shown on a 18.5 by 24.5 cm portable computer. The researchers used an alternating treatments design in order to investigate the effectiveness of video prompting versus video modeling. Results showed that video prompting was far more effective than video modeling for teaching setting a table and putting away groceries to adults with developmental disabilities. Overall, the participants rapidly acquired targeted tasks after receiving video prompting. In contrast, video modeling was found to be generally ineffective. The authors suggested that watching brief vignettes, as opposed to one long video, benefited skill acquisition. Many skills were involved in a single task (e.g., setting the table), and video prompting allowed the participants to practice each skill or step directly after viewing it. Furthermore, the
authors proposed that video modeling was more demanding in terms of attention and retention, which are well known problem areas for individuals with developmental disabilities. The authors also pointed out that the video prompting intervention allowed for 10 practice opportunities (i.e., one for each step) per session whereas video modeling allowed for a single practice opportunity. Finally, the authors mentioned there may have been some benefit from watching videos from a POV versus spectator perspective.

Targeting play behaviors, Maione and Mirenda (2006) investigated three types of video modeling interventions that were (a) video modeling of adult models, (b) video prompting, and (c) video feedback for teaching pretend play social language to a 5-year-old with ASD. The researchers gathered parent input to identify target social language skills and ideal play materials. Based on parent input, the researchers created three video vignettes for each of three play activities. In the nine vignettes, two unfamiliar adult models exhibited pretend play skills based around Play Doh, Chevron cars, or a toy tree house, and they demonstrated social interactions consisting of short phrases. Vignettes lasted approximately 1 to 1.5 min and each vignette featured different social language types (e.g., comments, questions, responses). All of the study phases took place in the participant’s home. Dependent measures were (a) total number of verbalizations, (b) frequency of both scripted and unscripted verbalizations, and (c) frequency of initiations and responses. To evaluate intervention effectiveness, the researchers used a multiple baseline across three play activities design. For Play Doh, there were four phases (baseline, video modeling, video modeling plus video feedback, and follow-up). For Chevron cars, there were six phases (baseline, video modeling, video modeling plus video feedback, and follow-up).
video feedback, video modeling plus video feedback plus prompting, video modeling plus video feedback, and follow-up). For the toy tree house, there were three phases (baseline, video modeling, and follow-up). The results showed that adult video modeling was effective for enhancing social language in Play Doh and tree house activities. Moreover, adding video feedback to video modeling in Play Doh caused greater performance enhancements. Chevron cars necessitated all three video interventions were necessary for increased performance. A surprise finding was that the intervention produced more unscripted than scripted verbalizations, indicating high levels of response generalization. Also surprising was that the intervention produced more initiations than responses. The researchers concluded that (a) video modeling interventions are effective for teaching social language to children with ASD; (b) video interventions can be adapted based on the individual’s needs; and (c) videos that feature unfamiliar adults can be effective.

Also targeting play-related skills of seven children/adolescents aged 9 to 15 years with varying developmental disabilities (e.g., ASD), Nikopoulos and Keenan (2003) used 35-s video vignettes of a model interacting in toy play with the researcher in a contrived play setting. Two of the participants viewed a familiar adult, two of the participants viewed an unfamiliar adult, and three of the participants viewed a typical peer. After a single view of a video vignette, the participant was taken to the contrived play setting to imitate the modeled behaviors with the researcher featured in the video. No further instructions or prompts were given. If the participant played with the researcher, he/she was given a verbal or edible reinforcer at the end of that session. Dependent measures
were (a) latency to social initiation and (b) time spent in appropriate play. The researchers used a multiple-treatment design for six of the participants and an A-B design for one of the participants. The researchers discovered no major differences between the three model types. Four of the participants enhanced both their play behavior and social initiations as a result of their respective intervention (i.e., two viewing familiar adult, one viewing unfamiliar adult, one viewing typical peer). These four participants displayed some maintenance at a 1- and 2-month follow-up and also some generalization to novel toys, peers, and settings. The other three participants were not positively impacted by the intervention. For one of them, the researchers unsuccessfully added a video self-modeling component to provide target behavior feedback. The researchers noted that these participants were unfamiliar with the featured play items and two did not attend to the video due to misbehavior. Furthermore, they asserted that lack of imitation skills and video complexity are two areas that likely impacted their results. The researchers concluded their video modeling intervention was an effective and time-efficient instructional strategy for positively impacting play skills in children and adolescents with developmental disabilities.

Another study compared different model types. In their study, Sherer, Pierce, Paredes, Kisackv, Ingersoll, and Schreibman (2001) exposed five boys aged 4 to 11 years with ASD to both peer and self video modeling to teach conversation skills. The researchers targeted answering questions concerning the participant’s home and school life (e.g., How do you get to school?; What is your phone number?). Twenty total questions were created for each of the participants (eight for video self-modeling, eight
for other, and four for generalization). Both a peer and a self video modeling vignette was made for each of the participants. During vignettes, an adult asked a conversation question which was followed by a peer- or self-modeled answer. The researchers created the self vignettes by taping the participants responding to prompts designed to elicit targeted answers and then edited out the prompts. During intervention, the participant viewed either a peer or self vignette three times at home the night before testing; vignettes were alternated every other night. Dependent measures were correct answer percentages. The researchers used a multiple baseline across participants combined with alternating treatments design in order to test the effectiveness of the two video modeling interventions. For each of the participants, there were four phases (baseline, post-tape making, video intervention, and follow-up). When looking at whole group results, neither intervention was more effective. Individual results between the participants were variable. Two of the participants quickly reached criterion from both peer and self video modeling, maintained effects at a 2-month follow-up, and they exhibited generalization to new conversation partners and untrained settings. One of the participants also reached criterion from both interventions, but at a much slower rate from self. Finally, two of the participants failed to reach criterion from either instructional intervention. The researchers concluded that video modeling interventions are effective for teaching some children with ASD, and asserted that children who learn from video could successfully from either intervention. Further, they concluded that peer and self video modeling are equally effective, overall.
Self as model. When a participant watches oneself as the featured model in video vignettes, the intervention is termed video self-modeling. Researchers first accumulate footage using prompts to elicit target behaviors, and then they edit it to show only its relevant parts (Hosford, 1981). Therefore, the participant must be capable of performing at least component parts of the target behavior(s) (Buggey, 2007). Errors in performance are not displayed in this type of video modeling, which is different from video feedback.

In terms of model similarity, self-modeling is the ultimate choice. Scholars, such as Bandura (1997) and Dowrick (1999), assert that self-modeled target behaviors are clear blueprints for the observer to perceive and retain. Bandura wrote that self-modeling “provides clear information on how best to perform skills, and it strengthens beliefs in one’s capability” (p. 94). Self-modeling has been shown to increase self-efficacy in children because they are watching themselves succeed (Schunk & Hanson, 1989).

Dowrick (1999) completed a literature review of about 150 self-modeling studies in which most of the interventions used video application. According to his literature review, self-modeling interventions have been used for five main categories of behaviors (physical, academic, vocational, communication, and personal/social adjustment). Participants in these studies have ranged in age from toddler to elderly and they have had diverse developmental capabilities. From his review, Dowrick concluded that the self-modeling interventions that focus on images of future success have produced the most benefits. Furthermore, he identified seven factors related to self-modeling that enhance learning and self-efficacy that were (a) clarification of goals and outcomes, (b) demonstrating a positive self-image, (c) reminders of previous competence, (d) repeated
observation of competent role-play, (e) observation of one’s skills applied to a new setting, (f) anxiety-free behavior or successful outcomes despite anxiety, and (g) demonstrations of new skills composed of preexisting sub-skills.

More recently, Hitchcock, Dowrick, and Prater (2003) reviewed 18 video self-modeling studies and found that video self-modeling is an efficacious instructional intervention for improving behaviors and academic skills in students with disabilities and at risk students without disabilities. In addition, they found evidence of maintenance ranging from 2 days to 2 years in 15 studies (83%), and 10 studies (56%) showed clear signs of generalization. A total of 129 participants aged 3 to 17 years were included in this review with 58 identified as having at least one disability and 71 identified as at risk academically and/or socially. Regarding the intervention, it included video self-modeling plus one or more elements that were (a) video feedforward, (b) self-efficacy, (c) self-esteem, or (d) self-evaluation. Outcomes were (a) disruptive behaviors, (b) compliant classroom behaviors, (c) language behaviors, (d) quality of peer relationships, (e) adaptive behaviors, (f) mathematics skills, and/or (g) reading fluency. Some specific behaviors that were positively changed included increasing appropriate hand-raising (Hartley, Bray, & Kehle, 1998), classroom cooperation (Lonnecker, Brady, McPherson, & Hawkins, 1994), and quality of peer relationships (Walker & Clement, 1992), as well as improve many academic skills, such as devising accurate solutions to math problems (Schunk & Hanson, 1989). Hitchcock et al. noted that changes in target behaviors were usually immediate and dramatic.
Several researchers have used video self-modeling to improve social behaviors in children with disabilities. Buggey (2005) conducted a three-part video self-modeling study to positively change various social behaviors in children with ASD. One portion of his study focused on teaching appropriate social interactions to a 9-year-old with Asperger syndrome and an 11-year-old with autistic disorder by showing them an edited 3 min video that depicted them engaging in positive social interactions. Both of the participants increased their positive social interactions during school as a result of the intervention. A second part of Buggey’s study targeted decreasing tantrum behaviors of a 6-year-old with Asperger syndrome and an 8-year-old with autistic disorder. The video vignettes showed them engaging in scripted scenarios that would usually lead to the misbehavior. After watching themselves on the videos prior to the start of their classes, both of the participants reduced the rate and duration of their tantrum behaviors to a substantial degree. The third part of Buggey’s study aimed to reduce pushing behavior of a 5-year-old with pervasive developmental disorder, while increasing his language production. The participant watched a 2.5 min video of himself engaging in acceptable behavior that would replace the need for pushing behavior. An immediate elimination of his pushing behavior occurred as a result of the intervention. The participant also watched a video vignette of himself appropriately responding to questions from various individuals in order to increase his language production. As a result, he increased his language production more and more throughout the school year. Based on the results of these three studies, Buggey asserted that video self-modeling should be considered by interventionists seeking to positively change behaviors of children with ASD.
Buggey and colleagues completed a video self-modeling study that also targeted social behavior of children with disabilities. Buggey, Toombs, Gardener, and Cervetti (1999) taught appropriate play-related verbal responses to three children aged 7 to 12 years with ASD. The researchers collected video footage of the participants responding to question prompts while interacting in play situations within their respective home setting. For correct verbal responses, positive verbal reinforcement was intermittently provided. The videos incorporated narration that explained what would be shown prior to depicting the actual behaviors. After watching themselves on video, all three of the participants increased their appropriate play-related responding to almost twice the rate of baseline responding. One drawback of the results was that the participants showed minimal maintenance of treatment effects. Moreover, the authors wondered whether collecting the appropriate video footage by prompting the participants created a learning effect. The authors mentioned the possibility that simply participating in the creation of the videos may have enhanced the participants’ behaviors. Therefore, baseline data should have been collected after creating the videos rather than prior to making them. Still, the researchers concluded that video self-modeling is worthy of consideration for teaching social behaviors to children with ASD.

Other types of social behaviors that have been targeted using video self-modeling interventions are appropriate responding, appropriate securing of attention appropriately, and request initiations. Thiemann and Goldstein (2001) investigated the effects of using video self-modeling as feedback to improve the social interactions of five boys aged 7 to 12 years with mild to moderate ASD. The researchers created four 10-min
videos showing the participants appropriately interacting in four different social situations that were used as supplemental feedback to social stories, pictures, and written text cues. Overall, the participants improved their social interactions and with more consistency as a result of the intervention package. Three of the participants made improvements in four behaviors. Though, it was not possible for the researchers to determine whether video self-modeling alone caused the improvements, because it was delivered as part of a multi-intervention package. The participants may have learned from either the social stories and/or peer practice. Based on these results, researchers should test an intervention that is less complex so that the results can actually show effects of a particular technique.

Also targeting social interactions, Wert and Neisworth (2003) taught spontaneous requesting to four boys aged 3 to 6 years with ASD. Each of the participants viewed an individualized 5-min video that showed himself spontaneously requesting. In order to create the footage, the researchers prompted the participants to request items while playing. Then, the researchers edited out the prompts so that the videos were both individualized for each of the participants and showed only the relevant behavior. Each of the participants viewed the video in his home setting prior to arriving to school. This was an interesting aspect of the study, in that the intervention was implemented by cooperating caregivers in a home setting. As a result of the intervention, all of the participants increased their spontaneous requesting and maintained it for a period of 2 to 6 weeks post-intervention. The researchers noted that one of the participants needed more time for behavior acquisition, because he was not interested in watching the video. They
concluded there is a prerequisite need for motivation towards video viewing and discussed motivation as an area for future video modeling research.

Other types of functional behaviors have been the focus of video self-modeling interventions for children with disabilities. Hagiwara and Myles (1999) used a multimedia social story intervention with embedded video self-modeling to teach three boys aged 7 to 10 years with ASD hand washing behavior and to teach one boy with ASD on-task behavior. Little information was provided regarding the video vignettes, such as how they were created, edited, or input into the social story intervention; however, the article mentioned that the participants viewed the relevant social story on a computer screen. After watching the social story, the participants had the opportunity to engage in the target behavior. The researchers found no significant effects or generalizations as a result of the intervention. It should be noted that the participants exhibited a high level of skill proficiency during baseline. For instance, one of the participants engaged in on-task behavior with more than 80% accuracy during baseline. This study is one of a few published in the literature that has not shown positive effects as a result of a video modeling intervention. It is also unique because it embedded the video self-modeling intervention within computer technology. This study showed that video modeling can be embedded within other technologies.

Lasater and Brady (1995) had more success in their study. They taught fluency of self-care skills within the home to a 14-year-old with pervasive developmental disorder and a 15-year-old with ASD using an intervention package consisting of video self-
modeling, discrimination training, behavior rehearsal, and task debriefing. The researchers created four 15- to 30-s video vignettes for each of the participants to master four different self-help skills. Three of the videos showed the participant engaging in only the ideal behavior performance with the undesirable parts edited out. One of the videos was not edited and showed all behaviors exhibited during the taping. A researcher sat with the participants while they viewed the videos in order to help them discriminate the difference between desirable and undesirable self-care behaviors. Then, the researcher provided an opportunity for the participant to rehearse the behavior prior to testing his performance. As a result of assessing their own behavior in addition to watching the video vignettes as feedback, both of the participants increased their task fluency in the self-help skills and decreased other interfering behaviors. Moreover, they maintained the self-help skills post-intervention and generalized skill fluency to other untrained self-help behaviors. Results of this study suggest that using video self-modeling as a self-assessment tool is effective for not only increasing desired behaviors, but also for decreasing undesirable/interfering ones.

**Point-of-view.** Point-of-view (POV) video modeling consists of a participant viewing video demonstrations from the perspective of actually engaging in the behaviors. For example, if the video was designed to teach washing hands, the participant would see the perspective of looking down at a set of hands while turning on the faucet, pumping the soap, and so forth. The whole body would not be shown; behaviors are shown from a subjective perspective.
Play behaviors were targeted in a POV study for two girls aged 30 and 43 months with ASD (Hine & Wolery, 2006). The researchers used videos of adult hands engaging in symbolic toy play with gardening and cooking play sets. Toy play demonstrations were created using materials normally used during sensory bin activities. Intervention delivery took place in the participants’ preschool therapy room. For viewing, a laptop was placed on a bin at the child’s height in the sensory activity area. The researchers also conducted generalization testing during classroom activities and with novel sensory materials in the therapy room. Dependent measures were the number of different types of play actions repeated from the videos. There were six possible types for gardening and five for cooking. In order to assess POV effectiveness, the researchers used a multiple probe across two behaviors and across two participants design. For each play set for each of the participants, there were three phases (baseline, intervention, and maintenance.) In addition, the researchers took materials and setting generalization probes during baseline and maintenance phases. Results showed that one of the participants learned both play sets from the POV intervention. The other participant learned only the gardening set from POV alone, but the researchers successfully added instructional cuing and reinforcement to teach her the cooking set. Materials generalization also occurred for both of the participants, as well as generalization of gardening actions to other classroom activities. The researchers concluded that POV is a useful instructional intervention for teaching young children play actions, yet POV alone may not always suffice for producing positive outcomes. Supplemental strategies such as verbal prompting and reinforcement may increase the effectiveness of POV.
In addition to play behaviors, daily living skills for young children with ASD have also been targeted. Shipley-Benamou, Lutzker, and Taubman (2002) used POV to teach daily living tasks to three 5-year-olds with ASD. Tasks were individualized for each of the participants, but overall, they included (a) making orange juice, (b) preparing a letter to mail, (c) putting the letter in the mailbox, (d) pet care, (e) cleaning a fish bowl, and (f) table setting. Videos showed the subjective viewpoint of completing the targeted task and included the following standard narration: “When I say, ‘go,’ I want you to watch your friend (task). Ready, go.” To increase attending behavior, videos included an initial 5-s cartoon segment and the researchers provided positive verbal reinforcement. After viewing a video one time, the participants were asked to perform the same task. Upon successful task performance, the participants received reinforcement (i.e., candy or toy play). Dependent measures were percentage of correct task analysis steps. The researchers used a multiple probe across tasks and participants design in order to test the effectiveness of POV. For each daily living task for each of the participants, there were four phases (baseline, intervention, post-treatment/no video, and 1-month maintenance). Results showed that POV alone caused rapid and dramatic enhanced performance of respective daily living tasks for two of the participants. For the other, modifications and gestural prompting needed to be added to POV in order to increase attending to the video, which then increased task performance. Also, all of the participants demonstrated maintenance at both post-treatment and one month follow-up. Based on their POV results, the researchers concluded that video modeling is an effective, “relatively simple”, and cost/time efficient instructional intervention for teaching functional behaviors to
children with ASD. They asserted the required prerequisite skills for study participation that included (a) imitate a model, (b) attend for 5 min to a preferred task, and (c) follow one- and two-step instructions likely contributed to the results.

**Peer models.** Another type of video modeling that is evidence-based uses peers as models. Classmates, siblings, friends, and so forth are used in peer video modeling. Researchers have used this instructional intervention in order to teach physical activities and other functional behaviors to children and adolescents with and without disabilities. For instance, as previously discussed in the Dance Interventions section, McCullagh et al. (1990) enhanced typically developing children’s form on a five-part dance sequence using two peer modeling interventions that were delivered as video demonstrations.

Another peer video modeling study used the strategy of similar age models for children without disabilities. Weiss et al. (1998) investigated model type effects on the acquisition and retention of swimming behaviors, as well as the psychological responses of self-efficacy and anxiety in regards to swimming. Twenty-four children aged 5 to 7 years with fear of swimming, low swimming self-efficacy, and minimal swimming experience participated in the study. Three matched groups were created and then randomly assigned to one of three video conditions (no model that entailed viewing 7 min of cartoons unrelated to swimming; peer mastery model that entailed viewing a 7-min video consisting of six demonstrations of three swimming behaviors with two positive, mastery verbalizations per demonstration; or peer coping model that entailed viewing three 7-min videos that each portrayed a different coping attitude). The results showed that participants in both the peer mastery and peer coping video modeling groups
acquired swimming skills with more proficiency than the control group, and these changes remained stable during retention. Regarding self-efficacy, the peer coping group displayed the highest scores, the peer mastery group displayed the second highest, and the control group was the lowest. With regards to fear of swimming, both video modeling groups showed statistically significant reductions in their anxiety on the post-assessment, but these changes were not maintained. This study showed that peer mastery and peer coping video models can be used in combination with instructional sessions to enhance children’s motor behaviors and self-efficacy. The researchers concluded that it may be more beneficial for improving self-efficacy to watch peers cope as opposed to watching them exhibit only confidence.

Peer video modeling has also been used to teach physical activities to children with disabilities. Porretta et al. (1999) compared four types of instructional interventions in teaching an underhand throwing task to 32 participants aged 14 to 20 years with moderate intellectual disabilities. Two of the interventions used video modeling (i.e., video modeling alone and video modeling combined with imagery), and the other interventions were imagery only and verbal cuing only. The researchers provided three orientation sessions prior to skill practice to learn the preferred hand of the participants and to familiarize them to the video modeling procedures. In the video modeling alone orientation sessions two and three, the participants viewed a video vignette of a peer engaging in the target throwing task with the same preferred hand. One of the researchers verbally alerted the participants to relevant cues as they watched the video model. The participants watched the video vignette with one subsequent physical rehearsal practice.
for 10 times. In the video modeling plus imagery orientation sessions two and three, the participants watched the video vignette with researcher narration then were asked to think about the throw while the researcher provided verbal cues to prompt the imaging. The participants watched the video vignette followed by engaging in imagery and one subsequent physical rehearsal practice for 10 times. During skill practice, the participant viewed the video vignette once with researcher narration followed by another view of the video vignette with no narration and then engaged in one physical rehearsal trial. This sequence was carried out twice and then followed with two additional physical rehearsal trials. In the video modeling plus imagery skill practice sessions, the participant viewed the video vignette and engaged in imagery both with researcher narration/cueing respectively followed by viewing the video vignette and imaging without researcher assistance with one subsequent physical rehearsal trial. This sequence was carried out twice followed by two additional physical rehearsal trials. All four interventions were successful in improving the performance of the participants across 15 practice sessions, but no single type of instructional intervention was found to be superior to the other.

In addition to physical activity instruction, researchers of children and youth with disabilities have also effectively used peer video modeling for play-related instruction. Four studies focused on teaching play-related behaviors to children with disabilities (Dauphin et al., 2004; Nikopoulos and Keenan, 2004; Reagon, Higbee, & Endicott, 2006; Taylor, Levin, & Jasper, 1999). Dauphin et al. used a slightly older model aged 8 years to teach generative socio-dramatic play skills to a 3-year-old with ASD and attention deficit hyperactivity disorder. The researchers taught scripted play responses and activities using
matrix training procedures, video modeling embedded within computer activity
schedules, and corrective prompts. After watching an activity schedule with embedded
video modeling on a laptop computer, the participant was prompted to obtain the
appropriate play materials and imitate the featured play action. Specifically, the
participant engaged various figurines (e.g., boat and fisherman) in a total of nine play
activities. Play activities were designed to be generative, which “means that the
repertoires involved transcend those targeted for direct teaching and emerge in an
appropriate context” (Dauphin et al., p. 239). Therefore, the researchers first taught the
participant specific play responses within the targeted repertoire and tested his accuracy
on those prior to testing his ability to imitate untrained examples. As a result of the
intervention package, the participant improved his play skills in both trained and novel
activities. Moreover, the participant exhibited almost two new activities for each of the
nine targeted play activities as well as unscripted play responses. The researchers
concluded that activity schedules enhanced with video modeling are effective for
teaching socio-dramatic play and that matrix training promotes generalized outcomes.

A more recent peer video modeling study also targeted play skills for one young
boy with ASD. Reagon et al. (2006) used both a sibling and typical children as models to
teach pretend play skills to a 4-year-old with mild-moderate ASD. The researchers
showed videos of the participant’s brother aged 7 years or typical children in four play
scenarios (firefighter, cowboy, teacher, and doctor). Videos lasted between 20 to 70 s,
contained four to six scripted play statements, and displayed five to seven play actions.
The researchers delivered the videos in sets with teacher and doctor being delivered about
one month after firefighter and cowboy. Dependent measures were play actions and scripted play statements. In order to be scored as a correct behavior, the participant had to exhibit a corresponding play action within 5 s of the model’s behavior. In order to be scored a correct play statement, the participant had to repeat all scripted words verbalized by the model within 5 s of the model’s statement. Results showed varied effectiveness of the intervention depending on the play scenario. The participant acquired both play actions and scripted play statements for firefighter, but about 60% of actions and statements for teacher. Some maintenance and generalization also occurred in the participant’s home with the mother and another sibling as play partners. Unlike other video modeling studies, the researchers used only the videos with no added reinforcement or repeated rehearsal trials. The researchers noted the time efficiency of both video creation and the intervention (i.e., 5 min for video modeling and play for two scenarios), as well as the benefits of using siblings as models such as availability, parental support, and generalization.

Sibling models were also used by Taylor et al. (1999) in two home-based studies to teach play statements to two boys aged 6 and 9 years with ASD. On the video, an adult engaged in a play scenario with a sibling who modeled the targeted play statements. Dialogue on the video for the younger participant showed his sibling saying about ten scripted play statements. Dialogue on the video for the participant aged 9 years included both scripted and unscripted play statements. Both studies used a multiple baseline probe design across three play activities. The participants watched their individualized video vignette three times while receiving positive verbal reinforcement for attending to the
video. Afterwards, each of the participants had the opportunity to engage in the depicted play scenario with the same play item featured in the video. As a result of the video modeling intervention, the younger participant increased his scripted play statements during all three activities. The older participant increased both his scripted and unscripted play statements after the researchers used forward chaining of three tapes. These studies showed how video modeling can serve as a tool for teaching socially valid behaviors, because the intervention equipped the participants with the ability to converse in a relevant manner (i.e., play statements), with natural interaction partners (i.e., siblings), within a natural type of activity for young children (i.e., toy play), and within a natural environment (i.e., home). Kazdin (1982) described behaviors as socially valid when they are relevant to the demands of the environments in which the individual participates.

Also targeting play-related behaviors, Nikopoulos and Keenan (2004) taught social initiations and play skills to three boys aged 7 to 9 years with mild to moderate ASD by showing video of a typical peer initiating and interacting in play with a researcher. On the video, the peer model approached the researcher and initiated, “Let’s play.” To be scored as a successful social initiation during testing, the participants had to make the same or a similar vocal response, or substitute a gestural response that initiated play such as grabbing the hand of the researcher and leading him towards the toy. During the 35-s video vignettes, the model and researcher engaged in reciprocal play with one of four familiar toys (ball, trampoline, tambourine, or game). To be scored as successful reciprocal play during testing, the participants had interact in play with the researcher while appropriately using any of the toys. Dependent measures were latency to social
initiation and reciprocal play duration. As a result of the video modeling intervention, the participants enhanced their social initiations and increased joint play engagement. Improvements were maintained when tested at 1- and 3-months post-intervention. The researchers asserted that featuring the toys on video could have increased their reinforcing qualities which positively influenced study results.

Another skill area that has been the target of peer video modeling interventions by researchers of individuals with disabilities is social language. Lowy Apple, Billingsley, and Schwartz (2005) investigated peer video modeling to teach compliment giving and responding to children with ASD. In the first study, one 5-year-old with Asperger syndrome and one 5-year-old with autistic disorder watched three individualized videos displaying familiar peers modeling compliment giving and adults who provided explicit rules. The participants also viewed one individualized video displaying compliment initiations and explicit rules. All videos contained six examples and lasted about one min. Three days per week, the participants viewed one compliment giving video and the compliment initiation video during their free-play period. After watching the videos, the participants went to a 15-min free-play session where the researchers collected data. Results showed that, for both of the participants, video modeling alone (with embedded explicit rules) led to increased compliment giving, and some maintenance occurred during a post-intervention reinforcement phase and also when reinforcement was removed. For compliment initiation, the participants experienced success only when a verbal contract was made and an adult supervised the participant, tracked initiation, and provided reinforcement.
Due to needed supervision for compliment initiation in their previous study, Lowy Apple et al. (2005) completed a subsequent investigation adding a self-management strategy to the video modeling intervention from their previous study. The self-management strategy entailed using a wrist counter or checklist and included reinforcement for achieving two compliment initiations. A 4-year-old and a 5-year-old with ASD participated in the second study, along with a participant from study one who participated in only the self-management phases. For the two new participants, the researchers collected data during a video modeling intervention phase, a self-management teaching phase, and a self-management alone phase, whereas the participant from the previous study only was tested during the two self-management phases. Data of the two new participants replicated study one data in terms of video modeling alone (with embedded explicit rules) producing increases in compliment giving. Moreover, the researchers discovered that the addition of self-management teaching and strategy improved initiations. From their two studies, the researchers concluded that video modeling interventions with explicit instructions are indicated for teaching social language such as giving compliments and that self-management was an effective addition to video modeling. Lastly, self-management increased the participants’ independence and reduced the need for a supervising adult.

Peer video modeling has also been used by researchers to improve existing social language skills in children with ASD. Simpson, Langone, and Ayres (2004) exposed two girls and two boys aged 5 to 6 years with ASD to two typical peer models engaging in three target social behaviors that were (a) following teacher instructions, (b) greeting
others, and (c) sharing items. The video vignettes were presented to the participants within an interactive computer program. The program presented a picture card and a definition regarding one of the target social skills, which was followed by a video vignette containing both examples and non-examples of peers exhibiting the skill. Also included within the program were questions about the presented social skill and wait time for the participants to reply. After working through the computer program with embedded video modeling, the participants were tested on the target social skill while engaging in group activities with typical peers. The results revealed that the intervention was effective for increasing the target social behaviors of the participants. It must be noted that all of the participants were able to exhibit the social behaviors prior to the study, and therefore, the intervention was effective for increasing and not necessarily teaching the target skills.

Other types of functional skills have been the focus of peer video modeling studies. In two studies, Haring and colleagues successfully used video vignettes of a peer without disabilities engaging in a task analysis in order to teach purchasing skills to a total of eight individuals with ASD (Haring et al., 1995; Haring, Kennedy, Adams, & Pitts-Conway, 1987). Haring et al. (1987) used one-on-one training plus video modeling to teach independent purchasing skills to three youth aged 20 years with ASD and developmental delays. Two of the participants were trained to purchase food in the school cafeteria and the third participant was trained to purchase items in a convenience store. The intervention consisted of the researchers training each of the participants to a 90% criterion on a purchasing task analysis across 3 consecutive days in the community-based setting followed by video viewing. Video modeling entailed viewing four 1.5- to 3-min
vignettes of a familiar peer without disabilities engaging in the target purchasing sequence in the community-based, generalization settings. During video viewing, the researchers asked the participants relevant questions praised correct answers. Following video viewing, the participant received an additional one-on-one training trial. The dependent measure was the percentage of purchasing task analysis steps that were performed correctly by each of the participants. Also, the researchers further analyzed acquisition by operational and social steps of the task analysis. Results showed that all of the participants improved their purchasing skills as a result of the one-on-one training and video modeling. Moreover, social responding of all of the participants increased after receiving the video modeling treatment. The researchers highlighted elements of their study as promising for future research including (a) combined one-on-one training and video modeling, (b) stimulus variation in video vignettes, and (c) active responding during video viewing. In order to replicate and extend these findings, Haring and colleagues performed a subsequent study.

A difference in the Haring et al. (1995) study was that the video vignettes were 3 to 5 min long. The researchers still used one-on-one training in conjunction with video modeling of a peer without disabilities, and they also created a task analysis for the targeted purchasing behaviors. Three boys with ASD and two boys and one girl with severe intellectual disabilities aged 10 to 16 years participated in the study. Using a multiple probe across settings design, the researchers tested one-on-one training and combinations of video and one-on-one training to teach a 12-step purchasing task within community stores. One-on-one training occurred in one community store, and video
modeling was delivered in the home environments of four of the participants and in a university setting for two of the participants. Concurrent exposure to one-on-one training and video modeling as well as sequential delivery of these instructional interventions (in either order) were effective for facilitating purchasing skill acquisition and generalization to trained, untrained, and probed community stores. These results replicated and extended the Haring et al. (1987) results that also showed the effectiveness of one-on-one training combined with video modeling. In the current study, neither one-on-one training nor video modeling by itself led the participants to engage in generalized purchasing behaviors. The researchers concluded that one-on-one training as a supplement to systematic one-on-one training is supported as both an instructional strategy for new behaviors and for generalization.

**Adult models.** A number of studies have used adults as models in order to teach skill/behaviors to children with ASD through video modeling. For example, Alcantara (1994) incorporated video modeling into a community-based training program to teach purchasing skills to three children aged 8 to 9 years with ASD. The researcher created a narrated video of two adults purchasing grocery items in community stores. Narrations were included to focus the attention of the participants to relevant stimuli within the settings. The participants watched a video of a 32-step task analysis of purchasing behavior, and then they went directly into the store to purchase the items. In 28 out of 32 steps, video modeling alone was effective in increasing correct purchasing behavior. Live training consisting of least-to-most prompts was successfully added to the video modeling intervention in order to facilitate the other four steps. All of the participants not
only learned the target skills, but also they were able to generalize their purchasing behavior to other stores. Moreover, the participants became more time efficient in their shopping as a result of the intervention. Shopping for groceries is generally looked upon as a chore, but it is a necessary task. Therefore, the less time spent shopping, the better. This study showed how video modeling can be used to teach a necessary life skill and furthermore, how it can teach that skill to a practical degree. Also, the researchers showed how combining narration over the visual images within the video modeling helped to promote its success.

D’Ateno et al. (2003) taught solitary play skills to a 3-year-old with ASD using video modeling of an adult. Videos displayed an adult model engaging in solitary play sequences with a toy, while speaking in scripted statements to the toy. After watching a video containing a play sequence (i.e., baking, shopping, or a tea party), there was a delay of at least one hour, and then, the participant was asked to play with the same toy featured within the video and in the same way as the model. Although novel play-related responses did not result from the intervention, the participant did increase her play responses in both the scripted verbal and motor areas for the various solitary play sequences. The researchers noted that lack of generalization to new verbal and motor play-related responses was due to providing only one video example. They purported that showing several vignettes containing various examples, rather than just multiple play sequences, would promote generalization to other play-related behaviors. Such a claim brings awareness to the need for video modeling researchers to study the number of video
examples demonstrating a single skill/behavior required for acquisition and also, whether or not the number differs for various populations.

Another study used video modeling of an adult to teach play skills to children with ASD (MacDonald, Clark, Garrigan, & Vangala, 2005). The researchers aimed to teach pretend play sequences to two boys aged 4 and 7 years with ASD. On the videos, adult models demonstrated scripted pretend play situations with toy figurines. Videos included about 16 verbalizations and 14 coordinated play actions that were designed to teach the participants how to engage in appropriate play behavior. In total, three videos were created to present a play scenario related to either a town, ship, or house. The participants watched a video two times and then were immediately taken to the appropriate play materials for testing. The researchers employed a multiple probe design within participant and across play sets in order to test for control of the video modeling intervention to produce increases in the target play skill behaviors. The participants did increase their pretend play skills by engaging in some verbalizations and actions that were depicted within the video vignettes. However, they did not generalize their learning to unscripted play behavior. It is interesting to note that in this study, the researchers did not provide any prompting or reinforcement to the participants during any part of the study. Other studies have reinforced participants for attending behavior or for exhibiting the target behavior. This draws attention to the question of whether video modeling is more effective for children with ASD who are interested in watching video and/or already have attending behavior in their skill set. Also, one wonders if the interest towards the
A number of studies have investigated whether video modeling incorporating adults as models is effective for teaching social/communication skills to children with ASD. Charlop-Christy and Daneshvar (2003) used a multiple baseline design across participants and within participant across tasks to test the effects of a video modeling intervention to teach perspective taking to three children aged 6 to 9 years with ASD. Videos showed an adult engaging in the target perspective taking behaviors. The researchers found the video modeling intervention to be a “fast and effective tool for teaching perspective taking tasks to children with ASD, resulting in both stimulus and response generalization” (Charlop-Christy & Daneshvar, p. 12). The participants generalized perspective-taking skills to novel stimuli and continued to demonstrate perspective-taking skills for 15 months post-intervention. The researchers asserted a main reason for the increased attention to modeling is that it works quickly. Educators of students with disabilities often require teaching tools that lead to fast skill acquisition. Time is valuable when there are a plethora of objectives for each student to achieve according to his or her Individual Education Program. If video modeling continues to show efficiency in its effectiveness, it is possible that this tool will become standard in every special education classroom.

LeBlanc, Coates, Daneshvar, Charlop-Christy, Morris, and Lancaster (2003) taught perspective taking to three boys aged 7 to 13 years with ASD using a video
modeling intervention. The video focused on relevant visual cues of an adult demonstrating the task. It also included the adult model explaining the strategy for perspective taking. After watching the model display a perspective taking behavior, the researcher would stop the video to ask the participant a question regarding the exhibited behavior. The researchers added positive reinforcement to the intervention by giving verbal praise and food or stickers for correct responses during the test sessions. Not only was the intervention effective when paired with reinforcement for correct responses, but also, two out of three of the participants generalized the skills. This particular study had several interesting aspects. First, the videos were created to pinpoint the specific visual cue(s) that the researchers wanted the participants to focus on. Such video technique may promote the effectiveness of video modeling by helping the watcher to discriminate what is important in the video. Second, the adult model on the video also explained the strategy for perspective taking in addition to modeling the behavior. Providing both verbal and visual cues of target skills/behavior may also promote the success of video modeling, especially for children with ASD who have keen receptive language capabilities. Third, the researchers paired the video modeling with reinforcement so it cannot be concluded that video modeling alone was responsible for the success of this particular intervention. Still, two of the three participants were able to apply their newly learned perspective taking behavior to untrained tasks.

Charlop-Christy, Le, and Freeman (2000) compared video modeling to live modeling in order to teach social and functional skills to one girl and four boys aged 7 to 11 years with ASD. Target skills included language and play behaviors, communication
skills, daily living skills, and combinations of the aforementioned skills. The participants watched the video vignettes or the live models engage in the target behavior and then were asked to repeat what they saw the model do. Familiar adult models demonstrated target behaviors at an exaggerated slow pace on the video vignettes, while familiar adult models demonstrated target behaviors live at an unreported pace for the in-vivo modeling. The paper did not clearly state whether the live models performed at an exaggerated slow pace; it only mentioned that the two types of modeling were identical. Results of this study were mixed with a few of the participants demonstrating dramatic increases in responding, and the others only showing marginal behavior improvements. The researchers found that the video modeling increased participant responding faster than live modeling. Moreover, video modeling led to generalization of target behaviors while live modeling did not. The researchers also produced evidence that video modeling is more cost and time efficient than live modeling. Such a finding is pertinent for research put into practice because educators are often stressed for both time and money when it comes to delivering services. A key aspect of the video used for this study is that it was created to depict the target behaviors at an exaggerated slow pace. Future research in the area of video modeling should look at whether pace of the presented visual images impacts the success of the intervention.

In an earlier study, Charlop and Milstein (1989) investigated video modeling incorporating two familiar adults to teach conversational speech to three boys aged 6 to 7 years with ASD. Adult models engaged in scripted question and answer conversations. The participants individually watched videos of the adults conversing about concrete
objects and abstract ideas. Then, the researchers asked them to exhibit the same conversational behaviors. All of the participants increased their conversation responding, maintained the conversation behaviors for 15 months post-intervention, and generalized their responding to new settings and conversation partners. The researchers claimed that the acquisition of conversation behavior was enhanced by the echolalia and strong rote memories of the participants. This claim brings attention to the need for researchers to produce solid evidence of how speech and memory capabilities affect the success of video modeling interventions.

**Summary.** The studies revealed that a widely used (Bellini & Akullian, 2007; Delano, 2007) and evidence-based (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005) instructional intervention for individuals with ASD is video modeling. Researchers have shown that video modeling interventions are efficacious for teaching children and adolescents a variety of behaviors such as motor skills (e.g., Porretta et al., 1999), social-communication skills (e.g., Taylor et al., 1999), and functional skills (e.g., Haring et al., 1995) and further, for producing maintenance and generalization outcomes. Different delivery and model types (e.g., self, peers, adults) have been successfully used in video modeling interventions. Researchers have delivered these interventions in unique ways, such as video prompting, video feedback, and video priming. Video prompting is a strategy that uses video clips as antecedent prompts to elicit target behaviors that are broken up and filmed as task analyzed steps. Moreover, video prompting has effectively been used to teach individuals with ASD. Though, to my knowledge, no studies have investigated using video prompting to teach dance behaviors to this population. A gap in
the current literature is whether individuals with ASD can observationally learn physical activity behaviors from video prompting. Researchers, overall, have demonstrated that video modeling strategies, including video prompting, are efficacious instructional interventions for teaching various behaviors to individuals, especially those with ASD.

Social Learning Theory

Social learning theory asserts that people can learn behaviors through observing models and imitating them (Bandura, 1977, 1986). Individuals observe the types of rewards or punishers that others receive as a result of exhibiting behaviors and learn vicariously whether or not to reproduce a particular behavior. Also referred to as observational learning theory or modeling theory, social learning theory is an information-processing paradigm that stems from psychology (Bandura, 1977, 1986). An assumption of social learning theory is reciprocal determinism, which posits that behaviors are caused by external factors in the environment but also external factors in the environment cause behaviors. Furthermore, humans determine whether or not to display a behavior based on their cognitive interpretation of the expected outcome. At the same time, outcomes that have already occurred influence the behavior of the observer.

Observational learning. A major construct of social learning theory is observational learning, which is the cognitive and behavioral process that takes place during modeling (Bandura, 1986). Observational learning is composed of four concepts (attention, retention, motivation, and reproduction). With respect to observational learning, the concept of attention is that an observer picks up relevant cues of a behavior by attending to a model. Corbett and Abdullah (2005) write, “The attentional process
refers to the initial act of vicarious acquisition that occurs when an individual is attending
to and accurately perceiving a model or event” (p. 2). While the eyes are sensing the
stimuli/cues, the brain is simultaneously coding these sensory stimuli into compatible
form.

A second concept of observational learning is retention, a process in which the
observer stores the incoming sensory stimuli by memory locking them (Bandura, 1986).
The observer has now transferred the stimuli from the model into symbols that are
organized in the same way that the observed behavior is perceived. During this cognitive
process, the observer has also started to engage in mental rehearsal that involves mentally
reviewing the symbols (images) that represent the observed behavior.

Motivation is the third concept of observational learning (Bandura, 1986). The
observer must have a reason (i.e., reinforcement) to imitate the behavior. Reinforcement
plays the main role in the motivational operation (Corbett & Abdullah, 2005). An
observer is more likely to imitate a behavior when its demonstration will result in a
reward (Cooper, Heron, & Heward, 2007). The concept of motivation aligns with the
pleasure that individuals with ASD generally experience from watching visual
productions such as television and videos (Charlop-Christy & Daneshvar, 2003). Further,
Reid and O’Connor (2003) assert that individuals with ASD prefer visual media such as
demonstrations and pictures.

The fourth concept of observational learning is production in which the
representative symbols that were stored are now used to exhibit a behavior (Bandura,
1986). At this stage of observational learning, the observer is imitating (reproducing)
what s/he viewed. The imitated behavior may look different from the original behavior, but it is important to point out that the new behavior is based on the observer’s perception of the modeled behavior.

**Reinforcement.** Reinforcement is a main construct of social learning theory. Research has demonstrated the learning-related benefits of providing positive reinforcement to children with ASD (Lovaas, 1987). More recently, studies have combined reinforcement strategies with video modeling in order to train behaviors of children with ASD (Buggey et al., 1999; LeBlanc et al., 2003; Taylor et al., 1999). Furthermore, Cooper et al. (2007) strongly support the use of reinforcement strategies to teach socially significant skills and behaviors to children with developmental disabilities such as ASD.

**Strengths.** Social learning theory can be used to ground video modeling research to teach motor skills to adolescents with ASD for a number of reasons. Social learning theory asserts that people learn most of their behaviors through observation (Bandura, 1977), and video modeling facilitates observational learning. Video modeling supplies a model to observe and moreover, the video is permanent so that the same model and demonstration can be viewed repeatedly as needed, which aids retention. Corbett and Abdullah (2005) write, “All video modeling interventions include presenting the individual with repeated exposures of the event that help to establish and maintain the behavior in memory” (p. 4). Next, social learning theory assumes reciprocal determinism. During video modeling interventions, external and internal factors reciprocate to cause the observer to reproduce the modeled behaviors. For instance, the video of target
behaviors acts as an external factor, and adolescents with ASD generally find watching video intrinsically reinforcing (i.e., internal factor) (Charlop-Christy & Daneshvar, 2003; Nally, Houston, & Ralph, 2000). Also motivating for children with ASD is the association of watching TV/videos with leisure time activities which improves receptivity and enthusiasm towards learning (Corbett & Abdullah, 2005). Several researchers assert that the visual mode of video modeling is naturally motivating to children with ASD (Charlop-Christy et al., 2000; D’Ateno et al., 2003; Wert & Neisworth, 2003).

The attention process of observational learning suggests using video modeling for this population. Video also limits the area of visual focus (Corbett & Abdullah, 2005) that aligns with the restricted attentional focus that individuals with ASD are known to have (Garretson, Fein, & Waterhouse, 1990). Video works against the stimulus over-selectivity that is characteristic of individuals with ASD (Lovaas, Koegel, & Schreibman, 1979) by helping them to select and attend to the relevant stimuli/cues (Charlop-Christy et al., 2000; Dowrick & Jesdale, 1991). Furthermore, presenting the modeled behaviors through video reduces the social demands that are often aversive and/or difficult for individuals with ASD (Prior & Ozonoff, 1998) thereby helping observers to attend.

Other strengths of using social learning theory/observational learning to ground video modeling studies for teaching motor skills to adolescents with ASD relate to the production phase. It is known that these individuals do not show consistent deficits in physical abilities (American Psychiatric Association, 2000). Video modeling interventions almost always include behavioral rehearsal following watching the video(s), which allows for repeated opportunities for production to learn the behaviors. Also, the
cognitive processing that occurs during observational learning to produce a behavior causes some change in the environment (e.g., the ball rolls forward some distance after being kicked, a noise is created upon striking) and this change in the environment is reinforcing the cognitive processing of the performer. Reinforcement maintains or increases the likelihood of behavior (Cooper et al., 2007; Loovis, 2005). Therefore, the outcomes/products of performing motor skills in video modeling intervention studies (e.g., verbal reinforcement from researcher) can provide the motivation that is needed for observational learning to be effective.

**Summary.** The literature revealed that social learning theory has been used to support video modeling research (e.g., Bellini & Akullian, 2007; Delano, 2007). According to Albert Bandura, observation is a key element for learning to occur, and observational learning is the central construct of social learning theory (Bandura, 1977, 1986). In order for observational learning to be effective, four processes must occur that are (a) attention, (b) retention, (c) motivation, and (d) reproduction. These processes are critical to the effectiveness of both modeling and behavior acquisition, maintenance, and generalization. Social learning theory provides a theoretical framework for investigating the effectiveness of video modeling strategies, such as video prompting, for teaching physical activity behaviors, such as dance, to children and adolescents with ASD. There are many strengths to using social learning theory to underpin video prompting research. For example, in video interventions, the vignettes are both permanent and consistent, regardless of the number of views.
Chapter three describes the methods used in this study. The chapter begins by identifying the participants, the setting, and the dependent variable. Next, descriptions of the equipment and materials, data collection, and inter-observer agreement are provided. The seventh section is a discussion of the pilot study. The subsequent sections describe the experimental design, the procedures, and procedural integrity. Data analysis and social validity are the final two sections.

Participants

Seven adolescents (six males and one female) with a high functioning ASD aged 12 to 16 years (average 13.6 years) served as participants for this study. The participants were in grades 6 to 9 and received educational services at various schools or educational centers in a large Midwestern city or surrounding areas. The participants were recruited from a summer camp hosted by a private educational center that specifically serves the needs of children with ASD. The camp was divided into two sections consisting of
children who were socially higher and socially lower functioning. Participants of this study were campers in the higher functioning section.

All of the recruited participants were purposefully selected and met qualifying criteria that included (a) diagnosed with a high functioning type of ASD, (b) possessed the physical ability (e.g., full use of all limbs, able to view video vignettes) to participate in the dance, (c) understood basic verbal instructions, (d) could attend for at least a 20 s duration, (e) could imitate behaviors, and (f) expressed a desire to learn a new dance. A checklist was created in order to assess the aforementioned qualifications. The “Participant Qualifications Checklist” can be found in Appendix A. Though not a qualification to participate in the study, it is of notable mention that all of the participants were vocal communicators (e.g., verbally responded to questions). Moreover, all of the participants selected themselves into the sample. That is, they had the choice whether or not to participate in the study, and they could choose to stop participating at any time. In order to maintain confidentiality, pseudonyms are used in place of the real names of participants.

Participant 1. Dane was a 12-year-old with Asperger syndrome, combined attention deficit hyperactivity disorder, obsessive compulsive disorder, and a specific learning disability. During the previous school year, he received educational services in a self-contained intervention room (mixed grade level 6 and 7, high-functioning ASD) at a private educational center for children with ASD.

Participant 2. Marcy was a 15-year-old with Asperger syndrome, attention deficit hyperactivity disorder, central auditory processing disorder, and sensory integration
deficit. During the previous school year, she received educational services in a self-contained intervention room and regular classrooms at a public school.

**Participant 3.** Jimi was a 16-year-old with high-functioning autistic disorder and mild intellectual disabilities. During the previous school year, he received educational services in inclusive classrooms at a private charter school for students with ASD and students without disabilities.

**Participant 4.** Devin was a 14-year-old with Asperger syndrome, attention deficit hyperactivity disorder, and bipolar disorder. During the previous school year, he received educational services in a self-contained intervention room (mixed grade level 7 and 8, high-functioning ASD) at a private educational center for children with ASD.

**Participant 5.** Paul was a 13-year-old with Asperger syndrome, attention deficit hyperactivity disorder, and speech language impairment. During the previous school year, he received educational services in a self-contained intervention room and regular classrooms at a public school.

**Participant 6.** Wesley was a 12-year-old with high-functioning autistic disorder. During the previous school year, he received educational services in a self-contained intervention room (mixed grade level 7 and 8, high-functioning ASD) at a private educational center for children with ASD.

**Participant 7.** Bob was a 13-year-old with Asperger syndrome, attention deficit hyperactivity disorder, obsessive compulsive disorder, and specific learning disability. During the previous school year, he received educational services in a self-contained
intervention room (mixed grade level 5 to 7, high-functioning ASD) at a private educational center for children with ASD.

The researcher gained approval from the institutional review board (IRB) and permission from parents prior to initiating the study. Copies of both the IRB approval and the parental consent document can be found in Appendix B. Moreover, the researcher gained approval from the center’s Chief Executive Officer prior to initiating the study.

**Setting**

The study was completed at an educational center for children with ASD, during summer camp. All orientation and study sessions were conducted in a large training room in the basement of one of the center’s buildings. Because there were no other rooms in the basement besides a maintenance room, the environment allowed for seclusion. The room was approximately 20 ft wide and 50 ft long. All chairs were stacked and pushed to the walls in order to create ample space for learning the line dance. The room was carpeted and well lit.

Only one of the participants and the researcher were present within the setting during baseline, intervention, maintenance, and generalization phase one. During generalization phase two, all of the participants in attendance at camp that day (i.e., three) and the researcher were present in the setting.

**Dependent Measure**

The intervention focused on teaching the participants a hip-hop line dance, the Cupid Shuffle. The dance is a set pattern of sequenced steps consisting of non-locomotor and locomotor movements (i.e., slide, heel kick, step, turn) that align with particular
musical accompaniment of a specific beat. Movements were operationalized for this study and the “Operationalized Cupid Shuffle Movements” document can be found in Appendix C.

As stated in the official Cupid Shuffle instructional video, the original dance is composed of four parts that are (a) step to the right x 4 counts, (b) step to the left x 4 counts, (c) kick x 4 counts, and (d) walk it by yourself x 8 counts. For the current study, the researcher broke the dance into a 21-step task analysis. Steps were (a) slide right, (b) slide right, (c) slide right, (d) slide right, (e) slide left, (f) slide left, (g) slide left, (h) slide left, (i) heel kick, (j) heel kick, (k) heel kick, (l) heel kick, (m) step, (n) step, (o) step, (p) step, (q) step, (r) step, (s) step, (t) step, and (u) finish 90 degrees counterclockwise.

**Equipment and Materials**

The Cupid Shuffle dance was taped using a Nixon Coolpix digital camera that was stabilized using an Ambico tripod standing approximately 42 in high. All movements were filmed from a spectator perspective. In order that modeled movements aligned with the Cupid Shuffle musical beats, the model (i.e., researcher) performed the dance to the song (official version) that was being played on a MacBook Pro® laptop computer using the iTunes® application program.

For editing purposes, the digital camera footage was imported onto a MacBook Pro laptop computer using a USB/av cord and the iPhoto® application program. Footage was then imported into Final Cut Express®. Using Final Cut Express, the researcher edited the dance into ten video vignettes that were (a) four right slides, (b) four left slides, (c) four right slides and four left slides (chunk 1), (d) four heel kicks, (e) four right slides
and four left slides and four heel kicks (chunk 2), (f) eight steps while moving 90 degrees counterclockwise, (g) four right slides and four left slides and four heel kicks and eight steps while moving 90 degrees counterclockwise (i.e., one sequence and chunk 3), (h) two sequences (chunk 4), (i) three sequences (chunk 5), and (j) four sequences (chunk 6).

Each vignette demonstrated between four and 84 Cupid Shuffle steps and lasted from 6 to 57 s with a mean length of approximately 19 s. At the start of each vignette, there was 1 s of “slug,” which is black space. After the movements were performed in a vignette, there was 1 s of freeze frame that showed the model frozen at the end of that step and then 1 s of slug.

The original music that was heard in the background of the digital footage was removed (i.e., unlinked and deleted) using Final Cut Express. No music was included in the vignettes, but voice-over instructions were added in order to provide verbal cues that aligned with specific movements. The voice-over instructions were (a) “Do four small right slides,” (b) “Do four small left slides,” (c) “Do four heel kicks,” (d) “Do eight steps while turning a quarter turn left.” In order to create and add the voice-over instructions, they were captured using the Garage Band® application program on the same MacBook Pro laptop computer, exported as mp3 files onto the desktop, imported into Final Cut Express, and then linked with the appropriate movement in respective vignettes.

The set of video vignettes were shown to the participants on the same MacBook Pro laptop computer using QuickTime Player® video vignettes that were embedded into a PowerPoint presentation. Furthermore, during baseline and generalization blocks, the Cupid Shuffle song was played using iTunes on the same laptop.
A Canon ZR65MC video camera was used to record all study sessions. Additionally, a Canon wide-converter (WD-30.5) was screwed onto the lens of the video camera in order to widen the shooting area. Recorded footage was played on a 27 in television by connecting audio-video cables from the video camera for data coding purposes.

**Data Collection**

The researcher collected data at the research setting. Depending on the camp’s schedule and participant access, study data were collected 1 to 5 days per week across a total of about four weeks. Data collection sessions lasted no more than 20 min. The researcher kept track in real time of which steps of the Cupid Shuffle task analysis were or were not met during attempted dance performance, and moreover, all sessions were videotaped. Data collectors reviewed video footage to record whether or not each of the participants on a block-by-block basis exhibited each step correctly. See Appendix D to view a copy of the “Cupid Shuffle Data Collection Sheet.”

The specific data recording procedure was event recording, because the dance steps had a recognizable and observable beginning and end (Cooper et al., 2007). That is, the steps were discrete behaviors. Observers identified correct steps with no video watching as “I+,” correct steps with video watching as “V,” correct steps after error correction as “X,” and incorrect steps as “0.” To be scored as “I+” or “V” or “X,” the step had to be initiated within 5 s of the performance prompt (e.g., “Go”). Furthermore, “X” designations were followed by a number between 1 and 4 depending on the level of error correction. For example, a participant who self-corrected after receiving the initial verbal
feedback that his or her performance was incorrect received a “X1” if a video was previously viewed.

**Inter-observer Agreement**

Inter-observer agreement (IOA) was calculated for at least 30% of the blocks in all phases for each of the participants (Cooper et al., 2007). Trial-by-trial IOA was utilized in order to calculate agreement between two independent observers by measuring their agreements between the occurrences and non-occurrences of steps of the Cupid Shuffle task analysis. The total number of agreements was divided by the total number of agreements plus disagreements and that number was multiplied by 100 in order to reach trial-by-trial IOA percentage.

The IOA observer was trained using a systematic approach. During the first part of observer training, the observer became familiar with the data collection sheet, 21-step task analysis, and operationalized dance movements. Then, the observer explained her understanding of each document, asked questions, and received needed clarification. The observer practiced giving narrative descriptions of each movement and the dance until complete accuracy was achieved. She then practiced coding by watching video footage of the Cupid Shuffle being performed. The researcher and the observer compared IOA results and discussed any discrepancies. Clarification was provided as needed. Furthermore, the observer was already familiar with IOA procedures, because she had previously served as the pilot study observer.
Pilot Study

In order to elucidate procedures and to determine whether the selected protocol could generate usable data, the researcher conducted a pilot study. From conducting the pilot study, it was found that participants with high functioning ASD could learn a line dance from video prompting. Furthermore, based on what was learned from the pilot study, the researcher discovered there were some modifications that would strengthen the main study. A discussion of those modifications follows.

**Orientation.** During the pilot study orientation sessions, the researcher showed participants five total practice vignettes, each one depicting a motor skill. Participants viewed a vignette two times followed by a single practice trial. From the pilot orientation, the researcher gathered that a single view would have been sufficient to visually prompt correct performance. Also, the researcher gathered that three practice movements would suffice, as opposed to five, because pilot study participants quickly grasped the protocol. Furthermore, at least one participant experienced counting issues during performance. Therefore, for the main study, the researcher used the same step-counts in the orientation vignettes that were featured in the intervention vignettes (i.e., 4, 8).

**Baseline.** While engaging in pilot study baseline blocks, participants actually said “I don’t know the Cupid Shuffle” or something similar when the researcher prompted Cupid Shuffle dance performance. Some participants became frustrated, because they realized they did not know the dance, yet the researcher kept requesting that they perform it. Because the researcher had to collect multiple baseline data points, some participants complained a lot. After prompting a participant to just try, the researcher provided what
seemed like a long time (i.e., approximately 60 s) for them to try an unknown dance. Therefore in the main study, students who did not start dancing and/or communicated they did not know the dance were given 30 s.

Another issue in the pilot study was that one participant actually embraced the opportunity to show off his dance moves during baseline blocks, but they were way off the mark. At times, he engaged in rigorous headbanging that resulted in slight dizziness and shortness of breath or potentially dangerous karate-kick-type movements. Admittedly, the researcher was concerned about injuries. Therefore, in the main study, a participant who embraced the opportunity to dance but it was obviously not a line dance, the researcher provided 30 s. Further, the researcher intervened when a participant began engaging in potentially dangerous types of behavior and concluded that block.

Treatment.

Views. During the pilot study intervention phase, a participant viewed each vignette two times prior to practice. From what the researcher witnessed with all three participants, they were able to grasp the vignette content from just a single view. The implication of this finding is that for the main study, the researcher provided a single vignette viewing opportunity prior to practice.

Error correction. Regarding error correction, the pilot study incorporated a 3-level least-to-most prompting system in order to facilitate participant learning. Level 1 was a repeat vignette view followed by practice. Level 2 was live modeling by the researcher followed by practice. Level 3 was physical prompting. Few level 2 or 3 prompts were needed. The researcher discovered that moving the legs and feet of
participants proved to be quite difficult for both parties and it did not necessarily show participants how to dance correctly.

In addition, there were many occasions when a participant would self-correct simply after the researcher stated his performance was incorrect. A participant could verbalize exactly which steps were incorrect and did not need to receive formal error correction in order to correct his mistake(s). Therefore, for the main study, error correction level 1 was self-correction. Level 2 was a repeat vignette view followed by practice. Level 3 was live modeling followed by practice. Level 4 was added, which entailed specific verbal feedback plus practice.

**Dependent measure.**

**Slides.** Upon reflection on the pilot study, the researcher added the word “small” to the voice-over instructions that accompanied the right and left slides vignettes. It was important to say, “Do four *small* right slides,” because participants tended to perform either long slides or slides of various lengths. In watching the Cupid Shuffle music video, the slides are clearly small, which is typical of a line dance that is meant to be performed in small areas (e.g., dance floors) concentrated with a lot of people.

**Twists.** With the intention of making the dance easier to learn, the researcher made a modification to the original version of the Cupid Shuffle dance for the pilot study. The researcher replaced the fourth part of the dance that is “walk it by yourself” (i.e., eight walk-in-place steps while turning 90 degrees left) with seven twists and a one-quarter left turn. She discovered that the modification made the dance more difficult for participants. All of the participants struggled with completing the twists. Two of the
participants were jumping in order to get a noticeable hips, legs, and feet rotation. At times, the movement looked like a skiing movement. The implication of this finding was that for the main study, the researcher taught the original version of the Cupid Shuffle in its entirety, including the “walk-it-by-yourself” steps.

**Cues.** During the pilot study, the researcher began cueing participants to dance by saying, “Begin dancing the Cupid Shuffle.” She reduced it to a simpler, “Begin dancing,” but even that cue was too long. A simple “Go” was enough to prompt all participants to begin dancing. “Go” made it easier for participants to begin dancing immediately, which ultimately helped them to execute the steps both in alignment with the beat of the Cupid Shuffle music and matched with song words.

In conclusion, the pilot study was very helpful. The researcher was able to make appropriate adjustments to the aforementioned constituents prior to beginning her dissertation (main) study. Adjustments helped to facilitate participant success while maximizing both treatment effectiveness and study efficiency.

**Experimental Design**

This study combined a multiple probe across participants design (Horner & Baer, 1978) with a changing criterion design (Hartmann & Hall, 1976). The multiple probe design allowed the researcher to demonstrate a functional relationship between the introduction of video prompting and increases in the number of Cupid Shuffle steps performed correctly. The changing criterion design allowed the researcher to demonstrate the effects of a graduated intervention on dance behavior. Further, it facilitated development of one complete sequence at a time so that participants eventually
performed four complete sequences in a row. That is, four complete sequences resulted in a 360 degree rotation of the Cupid Shuffle dance.

**Multiple probe.** The multiple probe design was appropriate for several reasons. First, a multiple probe design fits well with a task sequence dependent variable. Cooper et al. (2007) write, “The multiple probe design is particularly appropriate for evaluating the effects of instruction on skill sequences in which it is highly unlikely that the subject can improve performance on later steps in the sequence without acquiring prior steps” (p. 211). Once participants acquired the Cupid Shuffle, it was unlikely that their performance would be reversed, or unlearned. Moreover, it was neither desirable nor practical to reverse acquisition. Furthermore, the multiple probe design included the operation and logic (i.e., prediction, verification, and replication) of the multiple baseline design, yet eliminated extended baseline measurements that were impractical, unnecessary, and potentially reactive.

An advantage of using a multiple probe design was that participant performance served as verification for prediction that baseline data would not change without implementing the video prompting intervention. Another advantage was that the researcher did not have to withdraw video prompting to demonstrate that it was effective because replication of the effects of video prompting occurred when subsequent participants exhibited the dance once they were exposed to the video prompting intervention.

Once steady state responding was achieved, the intervention was implemented with participant 1, while participants 2, 3, 4, 5, 6, and 7 continued in baseline in order to
verify the prediction that dance behavior would remain the same without the intervention. After verification of the baseline prediction of participant 1 and after participant 1 began to show progress (i.e., 3 consecutive 21 out of 21 scores for sequence one delivered as parts or chunks), participant 2 entered into intervention while participants 3, 4, 5, 6, and 7 continued in baseline in order to verify the prediction that the second participant’s performance would not change without the intervention. This cycle continued until all seven participants entered intervention.

**Changing criteria.** Changing criteria were used in order to promote Cupid Shuffle acquisition. There were four main criteria. Criteria one, two, three, and four were the successful performance of one, two, three, or four sequences, respectively, of the Cupid Shuffle on three consecutive blocks. Prior to working towards criterion one, a participant had to successfully perform all four parts of sequence one (i.e., four right slides, four left slides, four heel kicks, eight steps while turning 90 degrees to the left) as individual parts—some possibly chunked—on three consecutive blocks.

**Experimental control.** Experimental control was demonstrated when participants exhibited positive changes in dance behavior only following implementation of the intervention (Cooper et al., 2007). Achieving steady state responding during baseline prior to implementing the intervention helped to ensure that increases in dance performance were caused by the intervention. In order to demonstrate that no extraneous variables interfered with participants learning the dance, extraneous variables were controlled. They consisted of the (a) trainer, (b) peer presence, (c) discrepancies in the video vignettes, (d) setting changes, and (e) access to other reinforcement besides the
reinforcement included in the intervention. Moreover, the researcher served as the trainer in the study.

**Procedures**

The researcher completed an individual orientation session with each participant prior to initiating baseline. The study included five phases (baseline, intervention, maintenance, generalization phase one, and generalization phase two). In addition, generalization probes were completed throughout all intervention sessions.

**Orientation session.** Prior to the baseline phase, each participant had an orientation session. The purpose of this session was to acclimate the participant to the researcher, research setting, and intervention protocol. At the start of this session, the researcher gave a verbal overview of the study and setting. Then, the researcher followed the same protocol used during intervention. The researcher provided one viewing opportunity of a movement and then cued a participant to repeat what s/he saw in the video. There were three orientation vignettes including (a) jump out and in four times (i.e., leg movements of jumping jack), (b) do eight arm circles, and (c) reach up and touch your toes. Each vignette included a corresponding voice-over instruction. If the participant correctly performed the movement, the researcher offered praise (e.g., “Good job,” high-five). If the participant performed the movement incorrectly, the researcher implemented the error correction procedures that were used during intervention.

**Baseline.** Baseline was established by determining whether or not the participants were able to perform the Cupid Shuffle in its entirety (Cooper et al., 2007). During baseline, the researcher asked the participant to complete as much of the Cupid Shuffle
dance as possible. Then, the researcher turned on the Cupid Shuffle song and verbally prompted the participant to begin performing the Cupid Shuffle by saying, “Go.” If a participant verbalized that s/he did not know the dance or just stood still, the researcher asked the participant to just try. Participants were given up to 30 s to demonstrate knowledge of the Cupid Shuffle. After dancing, the researcher offered non-specific verbal praise (e.g., “Thank you for dancing”) regardless of the accuracy of the steps completed.

All participants engaged in three initial baseline blocks. After three consecutive blocks of zero correct steps performed, the researcher implemented the intervention with participant 1 only. Participants 2 to 7 remained in baseline. The researcher used baseline probes in order to ensure there were no positive changes in dance performance from the previous baseline point. Baseline probes were completed prior to the subsequent participant entering into intervention. A baseline probe was completed for each participant who had yet to enter into intervention, unless s/he was absent.

**Intervention.** Intervention sessions consisted of five blocks. There were four intervention blocks followed by a fifth generalization probe block. However, if in a participant’s final intervention block s/he achieved acquisition criterion on the first three blocks, the generalization probe was completed on the fourth block. Up to criterion one in the video prompting phase, a block consisted of 21 steps of the Cupid Shuffle task analysis. During criteria two, three, and four, a block consisted of 42, 63, and 84 steps, respectively.

All intervention sessions occurred in the research setting and lasted no more than 20 min. The intervention consisted of video prompting, practice, and error correction, if
needed. Participants received Cupid Shuffle dance training in a one-on-one instructional format. The researcher showed one vignette at a time on a MacBook Pro laptop computer. If the participant was not already in viewing position, the researcher would tell the participant to stand in front of the laptop computer. After a vignette concluded, the participant moved to the appropriate dance starting position. The researcher provided a start cue by saying, “Go.” Then, the participant attempted what was seen on the video. After a participant finished dancing, the researcher provided verbal feedback regardless of the accuracy of the steps completed (e.g., “That was correct” or “That was not completely correct”). Correctly performed attempts resulted in positive reinforcement such as a high five and/or saying, “Great job!” At times, the researcher stressed the importance of having high motivation and concentration.

**Error correction.** A 4-level least-to-most prompting system was implemented in order to correct errors. Level 1 was self-correction that consisted of identifying incorrectly performed steps and practicing them again. Level 2 was a repeat vignette view of the missed steps followed by practice of those steps. Level 3 was live modeling by the researcher of the missed steps followed by practice of those steps. Level 4 was specific verbal feedback followed by practice.

**Chunking.** At the start of the intervention, sequence one was broken into four parts that were (a) four right slides, (b) four left slides, (c) four heel kicks, and (d) eight steps while turning 90 degrees to left. Parts that were correctly performed on three consecutive blocks were chunked together. For example, if a participant correctly performed four right slides and four left slides on three consecutive blocks, the
participant then viewed and rehearsed those two parts as a single chunk. When a participant correctly performed all four parts on three consecutive blocks, all four parts were chunked together. Subsequent chunks were two sequences, three sequences, and four sequences (i.e., one full 360 degree rotation and the whole dance). If the participant correctly performed all four sequences for three consecutive blocks, s/he achieved acquisition (i.e., criterion four).

**Maintenance.** All maintenance sessions occurred in the research setting. Maintenance entailed assessing the participant to see whether s/he maintained Cupid Shuffle acquisition criterion without first watching videos. Maintenance sessions occurred up to eight days after acquisition.

**Generalization probes.** In order to test whether participants could generalize the Cupid Shuffle to its song, the researcher included generalization probes throughout all intervention sessions. Generalization probes used the same protocol during the baseline phase and provided the opportunity to perform all 84 steps. They occurred every fifth block. If a participant achieved acquisition criterion on the first three blocks within the final intervention session, the generalization probe was assessed on the fourth block.

**Generalization phase one and two.** There were two post-intervention generalization phases. Generalization phase one occurred in the intervention setting and required that the participant dance the Cupid Shuffle to its corresponding song with the researcher for three consecutive blocks. Generalization phase two also occurred in the intervention setting and entailed all participants who were in attendance at camp on the last day dancing the Cupid Shuffle together to its corresponding song. Similar to both
baseline and maintenance, there were no vignette views in the generalization sessions. The researcher did ask participants to dance as much of the Cupid Shuffle as they knew how and also a verbal prompt was given to cue dancing. After dancing, the researcher offered verbal praise (e.g., “Thank you for dancing”) regardless of the accuracy of the steps completed.

**Procedural Integrity**

In order to assess the degree to which all sessions were executed according to their respective protocol, an independent observer completed procedural fidelity checklists that outlined protocol steps. The observer independently coded the accuracy of each protocol step. Procedural fidelity checklists were simultaneously coded with IOA. Procedural fidelity was calculated by dividing the total number of steps completed accurately by the total number of accurate plus inaccurate steps and multiplying by 100. After viewing the results, the researcher self-corrected if the procedures were not implemented correctly 100% of the time. Procedural fidelity was assessed for at least 30% of all sessions in each phase for each participant. The procedural integrity checklists can be found in Appendix E.

**Data Analysis**

Data were presented descriptively in the form of both graphs and tables. Graphic data were plotted and analyzed using visual analysis. Visual analysis involved assessing the variability, level, and trend within and between all phases of the study. Furthermore, the researcher used visual analysis within phases to determine how many total data points existed within each phase. After systematically examining data within phases, the
researcher used visual analysis between different phases and among similar conditions. These comparisons led the researcher to make conclusions regarding the effectiveness of the video prompting intervention based on the results (i.e., graphed data) of the study.

**Social Validity**

A social validity questionnaire and a consumer satisfaction questionnaire were created in order to assess the appropriateness of study goals, procedures, and outcomes. The “Cupid Shuffle Parent Questionnaire” used a rank item analysis so that respondents could rate their opinions. Ratings included (a) 5 = strongly agree, (b) 4 = agree, (c) 3 = neither agree nor disagree, (d) 2 = disagree, and (e) 1= strongly disagree. Participants’ parents provided questionnaire responses once the study had ended. The questionnaire was distributed to parents through postal mail/email. Moreover, the researcher interviewed each participant individually after all phases of the study had concluded. The “Cupid Shuffle Participant Interview” used the choice of yes or no so that respondents could rate their opinions. Both the questionnaire and interview questions can be found in Appendix F.
Chapter 4

Results

Results of the study are presented in this chapter. The chapter consists of twelve main sections. First, reliability (i.e., inter-observer agreement) results are presented. Next, there is a section addressing procedural integrity results. Sections three through nine provide individual participant data regarding performance of the Cupid Shuffle line dance during all study phases. The tenth section is a summary of data for all participants. The eleventh section presents social validity results. The chapter concludes with a summary.

Inter-observer Agreement

IOA percentage for performance of a structured line dance in all phases was calculated for all participants. Block-by-block IOA data were taken for at least 30% of blocks in all phases for each participant. IOA for baseline phase accuracy was 100% across all seven participants. The mean IOA for video prompting phase accuracy was 99.8% across seven participants (range: 99.4–100%). IOA for maintenance phase accuracy was 100% across five participants. The mean IOA for generalization probes accuracy was 99.1% across seven participants (range: 97.6–100%). The mean IOA for
generalization phase one accuracy was 99.9% across four participants (range: 99.6–100%). The mean IOA for generalization phase two accuracy was 99.6% across three participants (range: 98.8–100%).

**Procedural Integrity**

Procedural integrity for this study was established with the use of three types of procedural integrity checklists. The first checklist was for the orientation sessions. A second checklist was for the treatment phase (i.e., treatment integrity). The third checklist was for the non-treatment blocks of the study that were (a) baseline, (b) maintenance, (c) generalization probes, (d) generalization phase one, and (e) generalization phase two. See Appendix E to view the checklists. A summary of scores for all orientation sessions and study blocks can be seen in Table 4.1.

**Dane**

Figure 4.1 shows Dane’s performance during baseline, intervention, generalization probes, and maintenance blocks. Dane participated in 31 intervention blocks, which equated to eight intervention sessions. Regarding the video prompting blocks, eight were teaching sequence one in parts; five were criterion one; six were criterion two; eight were criterion three; and four were criterion four. Moreover, he participated in three baseline blocks, four maintenance blocks and eight generalization probe blocks. Dane was unable to participate in generalization phases one and two due to unexpected absences. This section presents Dane’s data in each phase. Data are then summarized.
Table 4.1

Summary of Procedural Integrity Scores

<table>
<thead>
<tr>
<th></th>
<th>P</th>
<th>O</th>
<th>BL</th>
<th>VP</th>
<th>M</th>
<th>GP</th>
<th>G1</th>
<th>G2</th>
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<td></td>
</tr>
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<td>100</td>
<td>100</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Note. Score is the percent of steps completed accurately. Scores are listed by session or phase and by participant. P = participant, 1 = Dane, 2 = Marcy, 3 = Jimi, 4 = Devin, 5 = Paul, 6 = Wesley, 7 = Bob, O = orientation, BL = baseline, VP = video prompting, M = maintenance, GP = generalization probes, G1 = generalization phase one, G2 = generalization phase two.

Dane's mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Dane averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, his mean percentage increased to 21.4% steps completed correctly. During video prompting of sequence one taught in parts, Dane averaged 19.5/21 (range: 12–21) steps correctly performed. For criterion one during video prompting, he averaged 18/21 (range: 6–21) steps correctly performed per block. In criterion two, his mean percentage increased to 44.2% steps completed correctly. For
Figure 4.1. Dane’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and maintenance blocks. BL = baseline.
criterion two during video prompting, he averaged 37.2/42 (range: 13–42) steps correctly performed per block. In criterion three, his mean percentage increased to 66.2% steps completed correctly. For criterion three during video prompting, he averaged 55.6/63 (range: 8–63) steps correctly performed per block. In the fourth and final intervention criterion, his mean percentage increased to 99.7% steps completed correctly. Further, his mean percentage increased to 100% steps completed correctly on his 29th, 30th, and 31st intervention blocks. For criterion four during video prompting, he averaged 83.8/84 (range: 83–84) steps correctly performed. Dane was provided with error correction on missed steps during his Cupid Shuffle intervention dance performance. Table 4.2 shows what type (i.e., Level) was provided relative to the number of his missed task analysis steps in each criterion during his intervention phase.

Dane exhibited 1-week maintenance at a mean percentage of 99.1% steps completed correctly across four blocks. During maintenance, he averaged 83.3/84 (range: 81–84) steps correctly performed per block. Specifically, his scores were 81/84, 84/84, 84/84, and 84/84 during maintenance. Regarding generalization, across eight generalization probes he scored a mean percentage of 56% steps completed correctly. During generalization probes, he averaged 47/84 (range: 18–81) steps correctly performed per block. His highest generalization probe score was on his eighth and final generalization probe block; he performed 81/84 (96.4%) correct steps.
Table 4.2

*Dane’s Error Correction*

<table>
<thead>
<tr>
<th>Error Correction</th>
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<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
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<td>Criterion 2</td>
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</tr>
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<td>Criterion 4</td>
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<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>109</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>116</td>
</tr>
</tbody>
</table>

*Note.* The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

In summary, Dane was able to acquire a structured line dance utilizing video prompting and positive reinforcement in eight intervention sessions that included a total of 31 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis. Moreover, Dane was able to maintain a structured line dance at 1-week post-intervention at a mean percentage of 99.1% ($n = 83.3$) steps performed accurately across four maintenance blocks consisting of the whole dance. Further, Dane demonstrated some generalization of the newly learned line dance to its corresponding song. Across eight
generalization probe blocks of 84 steps each, he correctly completed 56% of overall steps. On his eighth and final generalization probe block that directly followed his 31st intervention block, he correctly completed 96.4% \((n = 81)\) of the steps when dancing to the Cupid Shuffle song.

**Marcy**

Figure 4.2 shows Marcy’s performance during baseline, intervention, generalization probes, and maintenance blocks. Marcy participated in 23 intervention blocks, which equated to six intervention sessions. Regarding the video prompting blocks, three were teaching sequence one in parts; eight were criterion one; four were criterion two; four were criterion three; and four were criterion four. Moreover, she participated in four baseline blocks, three maintenance blocks, six generalization probe blocks, and three generalization phase one blocks. Marcy was unable to participate in generalization phase two due to an unexpected absence. This section presents Marcy’s data in each phase. Data are then summarized.

Marcy’s mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Marcy averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, her mean percentage increased to 24.6% steps completed correctly. During video prompting of sequence one taught in parts, Marcy averaged 21/21 steps correctly performed. For criterion one during video prompting, she averaged 20.6/21 (range: 19–21) steps correctly performed per block. In criterion two, her mean percentage increased to 50% steps completed correctly. For criterion two during video prompting, she averaged 42/42 steps correctly performed per block. In criterion
Figure 4.2. Marcy’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and maintenance blocks. BL = baseline.
three, her mean percentage increased to 75% steps completed correctly. For criterion three during video prompting, she averaged 63/63 steps correctly performed per block. In the fourth and final intervention criterion, her mean percentage increased to 100% steps completed correctly. For criterion four during video prompting, she averaged 84/84 steps correctly performed. Marcy was provided with error correction on missed steps during her Cupid Shuffle intervention dance performance. Table 4.3 shows what type (i.e., Level) was provided relative to the number of her missed task analysis steps in each criterion during her intervention phase.

Marcy exhibited 1-week maintenance at a mean percentage of 100% steps completed correctly across three blocks. During maintenance, she averaged 84/84 steps correctly performed per block. Regarding generalization, across six generalization probes she scored a mean percentage of 61.9% steps completed correctly. During generalization probes, she averaged 52/84 (range: 21–84) steps correctly performed per block. Her highest generalization probe score was on her sixth and final generalization probe block; she scored 84/84 (100%) steps completed correctly. Moreover, across three generalization phase one blocks she scored a mean percentage of 100% steps completed correctly. During generalization phase one, she averaged 84/84 steps correctly performed per block. Marcy’s generalization phase one performance is depicted in Table 4.11 that is in the “Summary of Participants” section.

In summary, Marcy was able to acquire a structured line dance utilizing video prompting and positive reinforcement in six intervention sessions that included a total of 23 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis.
Table 4.3

Marcy’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
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<th>Level 3</th>
<th>Level 4</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Criterion 1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Criterion 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criterion 3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criterion 4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. The number of her missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

Moreover, Marcy was able to maintain a structured line dance at 1-week post-intervention at a mean percentage of 100% steps performed accurately across three maintenance blocks consisting of the whole dance. Further, Marcy demonstrated some generalization of the newly learned line dance to its corresponding song. Across six generalization probe blocks of 84 steps each, she correctly completed 61.9% of overall steps. On her sixth and final generalization probe block that directly followed her 23rd intervention block, she correctly completed 100% \( (n = 84) \) of the steps when dancing to
the Cupid Shuffle song. Furthermore, Marcy was able to generalize the Cupid Shuffle
dance to a new situation by dancing alongside the researcher to its corresponding song.
Across three generalization phase one blocks, she correctly completed 100% of the dance
steps.

Jimi

Figure 4.3 shows Jimi’s performance during baseline, intervention, generalization
probes, and maintenance blocks. Jimi participated in 23 intervention blocks, which
equated to six intervention sessions. Regarding the video prompting blocks, four were
teaching sequence one in parts; three were criterion one; four were criterion two; four
were criterion three; and eight were criterion four. Moreover, he participated in five
baseline blocks, three maintenance blocks, six generalization probe blocks, three
generalization phase one blocks, and three generalization phase two blocks. This section
presents Jimi’s data in each phase. Data are then summarized.

Jimi’s mean percentage during baseline was 0% for Cupid Shuffle steps
performed correct. Jimi averaged 0/84 Cupid Shuffle steps correctly performed per block
during baseline. In criterion one, his mean percentage increased to 25% steps completed
correctly. During video prompting of sequence one taught in parts, Jimi averaged 20.3/21
(range: 18–21) steps correctly performed. For criterion one during video prompting, he
averaged 21/21 steps correctly performed per block. In criterion two, his mean percentage
increased to 50% steps completed correctly. For criterion two during video prompting, he
averaged 42/42 steps correctly performed per block. In criterion three, his mean
Figure 4.3. Jimi’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and maintenance blocks. BL = baseline.
percentage increased to 75% steps completed correctly. For criterion three during video prompting, he averaged 63/63 steps correctly performed per block. In the fourth and final intervention criterion, his mean percentage increased to 99.7% steps completed correctly. Further, his mean percentage increased to 100% steps completed correctly on his 21st, 22nd, and 23rd intervention blocks. For criterion four during video prompting, he averaged 83.8/84 (range: 82–84) steps correctly performed. Jimi was provided with error correction on missed steps during his Cupid Shuffle intervention dance performance.

Table 4.4 shows what type (i.e., Level) was provided relative to the number of his missed task analysis steps in each criterion during his intervention phase.

Jimi exhibited 8-day maintenance at a mean percentage of 100% steps completed correctly across three blocks. During maintenance, he averaged 84/84 steps correctly performed per block. Across six generalization probes he scored a mean percentage of 60.1% steps completed correctly. During generalization probes, he averaged 50.5/84 (range: 16–84) steps correctly performed per block. His highest generalization probe scores were on his fifth and sixth generalization probe blocks; he scored 84/84 (100%) steps completed correctly. Moreover, across three generalization phase one blocks he scored a mean percentage of 100% steps completed correctly. Furthermore, across three generalization phase two blocks he scored a mean percentage of 100% steps completed correctly. During both generalization phases one and two, he averaged 84/84 steps correctly performed per block. Jimi’s generalization phase one and generalization phase two performance is depicted in Table 4.11 that is in the “Summary of Participants” section.
### Jimi’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion 1</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Criterion 2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criterion 3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criterion 4</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
</tbody>
</table>

*Note.* The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

In summary, Jimi was able to acquire a structured line dance utilizing video prompting and positive reinforcement in six intervention sessions that included a total of 23 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis. Moreover, Jimi was able to maintain a structured line dance at 8-day post-intervention at a mean percentage of 100% steps performed accurately across three maintenance blocks consisting of the whole dance. Further, Jimi demonstrated some generalization of the newly learned line dance to its corresponding song. Across six generalization probe
blocks of 84 steps each, he correctly completed 60.1% of overall steps. On his fifth and sixth generalization probe blocks that directly followed his 20th and 23rd intervention blocks, respectively, he correctly completed 100% \((n = 84)\) of the steps when dancing to the Cupid Shuffle song. Furthermore, Jimi was able to generalize the Cupid Shuffle dance to new situations by both dancing alongside the researcher to the Cupid Shuffle song and by dancing alongside two of his peers to the Cupid Shuffle song. Across three generalization phase one and three generalization phase two blocks, he correctly completed 100% of the dance steps.

**Devin**

Figure 4.4 shows Devin’s performance during baseline, intervention, generalization probes, and maintenance blocks. Devin participated in 51 intervention blocks, which equated to 13 intervention sessions. Regarding the video prompting blocks, seven were teaching sequence one in parts; six were criterion one; 16 were criterion two; 12 were criterion three; and 10 were criterion four. Moreover, he participated in six baseline blocks, three maintenance blocks, 13 generalization probe blocks, three generalization phase one blocks, and three generalization phase two blocks. This section presents Devin’s data in each phase. Data are then summarized.

Devin’s mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Devin averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, his mean percentage increased to 24.6% steps completed correctly. During video prompting of sequence one taught in parts, Devin averaged 19.7/21 (range: 13–21) steps correctly performed. For criterion one during
Figure 4.4. Devin’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and maintenance blocks. BL = baseline.
video prompting, he averaged 20.7/21 (range: 19–21) steps correctly performed per
block. In criterion two, his mean percentage increased to 47.4% steps completed
correctly. For criterion two during video prompting, he averaged 39.8/42 (range: 19–42)
steps correctly performed per block. In criterion three, his mean percentage increased to
72.7% steps completed correctly. For criterion three during video prompting, he averaged
61.1/63 (range: 52–63) steps correctly performed per block. In the fourth and final
intervention criterion, his mean percentage increased to 99.4% steps completed correctly.
Further, his mean percentage increased to 100% steps completed correctly on his 49th,
50th, and 51st (criterion four) blocks. For criterion four during video prompting, he
averaged 83.5/84 (range: 82–84) steps correctly performed. Devin was provided with
error correction on missed steps during his Cupid Shuffle intervention dance
performance. Table 4.5 shows what type (i.e., Level) was provided relative to the number
of his missed task analysis steps in each criterion during his intervention phase.

Devin exhibited 1-week maintenance at a mean percentage of 100% steps
completed correctly across three blocks. During maintenance, he averaged 84/84 steps
correctly performed per block. Regarding generalization, across 13 generalization probes
he scored a mean percentage of 59.6% steps completed correctly. During generalization
probes, he averaged 50.1/84 (range: 18–82) steps correctly performed per block. His
highest generalization probe scores were on his 11th, 12th, and 13th generalization probe
blocks; he scored 82/84 (97.6%) steps completed correctly. Moreover, across three
generalization phase one blocks he scored a mean percentage of 97.6% steps completed
correctly. During generalization phase one, he averaged 82/84 (range: 80–83) steps
correctly performed per block. Specifically, he scored 80/84, 83/84, and 83/84 during generalization phase one. Furthermore, across three generalization phase two blocks he scored a mean percentage of 96.8% steps completed correctly. During generalization phase two, he averaged 81.3/84 (range: 80–82) steps correctly performed per block. Specifically, he scored 82/84, 80/84, and 82/84 during generalization phase two. Devin’s generalization phase one and generalization phase two performance is depicted in Table 4.11 that is in the “Summary of Participants” section.

In summary, Devin was able to acquire a structured line dance utilizing video prompting and positive reinforcement in 13 intervention sessions that included a total of 51 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis. Moreover, Devin was able to maintain a structured line dance at 1-week post-intervention at a mean percentage of 100% steps performed accurately across three maintenance blocks consisting of the whole dance. Further, Devin demonstrated some generalization of the newly learned line dance to its corresponding song. Across 13 generalization probe blocks of 84 steps each, he correctly completed 59.6% of overall steps. On his 11th, 12th, and 13th generalization probe blocks that directly followed his 44th, 48th, and 51st intervention blocks, respectively, he correctly completed 97.6% ($n = 82$) of the steps when dancing to the Cupid Shuffle song. Furthermore, Devin exhibited a high level of generalization of the Cupid Shuffle dance to new situations when dancing alongside the researcher to the Cupid Shuffle song and by dancing alongside two of his peers to the Cupid Shuffle song. Across three generalization phase one blocks, he correctly completed
Table 4.5

Devin’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion 1</td>
<td>3</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Criterion 2</td>
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<td>0</td>
<td>35</td>
</tr>
<tr>
<td>Criterion 3</td>
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<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Criterion 4</td>
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<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>63</td>
<td>7</td>
<td>0</td>
<td>4</td>
<td>74</td>
</tr>
</tbody>
</table>

Note. The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

97.6% of the dance steps; across three generalization phase two blocks, he correctly completed 96.8% of the dance steps.

Paul

Figure 4.5 shows Paul’s performance during baseline, intervention, generalization probes, and retention probe blocks. Paul participated in 40 intervention blocks, which equated to 10 intervention sessions. Regarding the video prompting blocks, 11 were teaching sequence one in parts; four were criterion one; 16 were criterion two; four were
Figure 4.5. Paul’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and retention probe blocks. BL = baseline.
criterion three; and five were criterion four. Moreover, he participated in seven baseline blocks and 10 generalization probe blocks. Finally, he participated in two retention probe blocks that were given upon his return from two substantial absences that were 6 and 5 days in length. This section presents Paul’s data in each phase. Data are then summarized.

Paul’s mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Paul averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, his mean percentage increased to 24.7% steps completed correctly. During video prompting of sequence one taught in parts, Paul averaged 19.3/21 (range: 5–21) steps correctly performed. For criterion one during video prompting, he averaged 20.8/21 (range: 20–21) steps correctly performed per block. In criterion two, his mean percentage increased to 48.5% steps completed correctly. For criterion two during video prompting, he averaged 40.8/42 (range: 37–42) steps correctly performed per block. In criterion three, his mean percentage increased to 75% steps completed correctly. For criterion three during video prompting, he averaged 63/63 steps correctly performed per block. In the fourth and final intervention criterion, his mean percentage increased to 98.5% steps completed correctly, but it must be noted that he did not reach acquisition criterion. For criterion four during video prompting, he averaged 82.6/84 (range: 82–84) steps correctly performed. Paul was provided with error correction on missed steps during his Cupid Shuffle intervention dance performance. Table 4.6 shows what type (i.e., Level) was provided relative to the number of his missed task analysis steps in each criterion during his intervention phase.
Table 4.6

Paul’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
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<th>Level 3</th>
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<th>Total</th>
</tr>
</thead>
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<td>20</td>
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<tr>
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<td>0</td>
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<tr>
<td>Criterion 4</td>
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<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>47</td>
</tr>
</tbody>
</table>

Note. The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

Regarding generalization, across ten generalization probes Paul scored a mean percentage of 51.5% steps completed correctly. During generalization probes, he averaged 43.3/84 (range: 18–83) steps correctly performed per block. His highest generalization probe score was on his tenth generalization probe block; he scored 83/84 (98.8%) steps completed correctly. In regards to both retention probes, Paul demonstrated perfect retention of his pre-absence criterion.
In summary, Paul did not acquire the Cupid Shuffle line dance. Important to mention is that he participated in only three intervention sessions on two consecutive days prior to his first substantial absence that was 6 days. Upon return, he completed a single retention probe block and then participated in two intervention sessions on one day prior to his next substantial absence of 5 days. On his 6-day retention probe he was able to demonstrate his pre-absence criterion one performance with 100% accuracy without watching the video. On his 5-day retention probe he was able to demonstrate his pre-absence criterion two performance with 100% accuracy without watching the video. Because he did not achieve acquisition, Paul did not participate in the maintenance, generalization one, or generalization two phases of the study. He did participate in ten generalization probe blocks of 84 steps each in which he correctly completed 51.5% of overall steps. On his 10th generalization probe block that directly followed his 40th intervention block, he correctly completed 98.8% \( (n = 83) \) of the steps when dancing to the Cupid Shuffle song.

**Wesley**

Figure 4.6 shows Wesley’s performance during baseline, intervention, generalization probes, and maintenance blocks. Wesley participated in 19 intervention blocks, which equated to five intervention sessions. Regarding the video prompting blocks, four were teaching sequence one in parts; three were criterion one; four were criterion two; four were criterion three; and four were criterion four. Moreover,
Figure 4.6. Wesley’s Cupid Shuffle dance performance during baseline, intervention, generalization probe, and maintenance blocks. BL = baseline.
he participated in nine baseline blocks, three maintenance blocks, five generalization probe blocks, three generalization phase one blocks, and three generalization phase two blocks. This section presents Wesley’s data in each phase. Data are then summarized.

Wesley’s mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Participant 6 averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, his mean percentage increased to 25% steps completed correctly. During video prompting of sequence one taught in parts, Wesley averaged 18.3/21 (range: 10–21) steps correctly performed. For criterion one during video prompting, he averaged 21/21 steps correctly performed per block. In criterion two, his mean percentage increased to 49.7% steps completed correctly. For criterion two during video prompting, he averaged 41.8/42 (range: 41–42) steps correctly performed per block. In criterion three, his mean percentage increased to 75% steps completed correctly. For criterion three during video prompting, he averaged 63/63 steps correctly performed per block. In the fourth and final intervention criterion, his mean percentage increased to 100% steps completed correctly. For criterion four during video prompting, he averaged 84/84 steps correctly performed. Wesley was provided with error correction on missed steps during his Cupid Shuffle intervention dance performance. Table 4.7 shows what type (i.e., Level) was provided relative to the number of his missed task analysis steps in each criterion during his intervention phase.

Wesley exhibited 1-week maintenance at a mean percentage of 100% steps completed correctly across three blocks. During maintenance, he averaged 84/84 steps correctly performed per block. Regarding generalization, across five generalization
probes he scored a mean percentage of 68.1% steps completed correctly. During generalization probes, he averaged 57.2/84 (range: 18–83) steps correctly performed per block. His highest generalization probe score was on his fourth generalization probe block; he scored 83/84 (98.8%) steps completed correctly. Moreover, across three generalization phase one blocks he scored a mean percentage of 88.9% steps completed correctly. During generalization phase one, he averaged 74.7/84 (range: 68–81) steps correctly performed per block. Specifically, he scored 68/84, 75/84, and 81/84 during generalization phase one. Furthermore, across three generalization phase two blocks he scored a mean percentage of 96.8% steps completed correctly. During generalization phase two, he averaged 81.3/84 (range: 81–82) steps correctly performed per block. Specifically, he scored 81/84, 82/84, and 81/84 during generalization phase two. Wesley’s generalization phase one and generalization phase two performance is depicted in Table 4.11 that is in the “Summary of Participants” section.

In summary, Wesley was able to acquire a structured line dance utilizing video prompting and positive reinforcement in five intervention sessions that included a total of 19 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis. Moreover, Wesley was able to maintain a structured line dance at 1-week post-intervention at a mean percentage of 100% steps performed accurately across three maintenance blocks consisting of the whole dance. Further, Wesley demonstrated some generalization of the newly learned line dance to its corresponding song. Across five generalization probe blocks of 84 steps each, he correctly completed 68.1% of overall
Table 4.7

Wesley’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion 1</td>
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<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Criterion 2</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Criterion 3</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Criterion 4</td>
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<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>7</td>
<td>12</td>
</tr>
</tbody>
</table>

*Note.* The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

steps. On his fourth generalization probe block that directly followed his 16th intervention block, he correctly completed 98.8% ($n = 83$) of the steps when dancing to the Cupid Shuffle song. Furthermore, Wesley exhibited a high level of generalization of the Cupid Shuffle dance to new situations when dancing alongside the researcher to the Cupid Shuffle song and by dancing alongside two of his peers to the Cupid Shuffle song. Across three generalization phase one blocks, he correctly completed 88.9% of the dance
steps; across three generalization phase two blocks, he correctly completed 96.8% of the dance steps.

Bob

Figure 4.7 shows Bob’s performance during baseline, intervention, and generalization probes blocks. Bob participated in 36 intervention blocks, which equated to nine intervention sessions. Regarding the video prompting blocks, eight were teaching sequence one in parts; seven were criterion one; eight were criterion two; 10 were criterion three; and three were criterion four. Moreover, he participated in eight baseline blocks and nine generalization probe blocks. Bob was unable to participate in maintenance and generalization phases one and two due to unexpected absences. This section presents Bob’s data in each phase. Data are then summarized.

Bob’s mean percentage during baseline was 0% for Cupid Shuffle steps performed correct. Bob averaged 0/84 Cupid Shuffle steps correctly performed per block during baseline. In criterion one, his mean percentage increased to 24.1% steps completed correctly. During video prompting of sequence one taught in parts, Bob averaged 20/21 (range: 17–21) steps correctly performed. For criterion one during video prompting, he averaged 20.3/21 (range: 17–21) steps correctly performed per block. In criterion two, his mean percentage increased to 49.6% steps completed correctly. For criterion two during video prompting, he averaged 41.6/42 (range: 40–42) steps correctly performed per block. In criterion three, his mean percentage increased to 72.9% steps completed correctly. For criterion three during video prompting, he averaged 61.2/63 (range: 55–63) steps correctly performed per block. In the fourth and final intervention
Figure 4.7. Bob’s Cupid Shuffle dance performance during baseline, intervention, and generalization probe blocks. BL = baseline.
criterion, his mean percentage increased to 100% steps completed correctly. For criterion four during video prompting, he averaged 84/84 steps correctly performed. Bob was provided with error correction on missed steps during his Cupid Shuffle intervention dance performance. Table 4.8 shows what type (i.e., Level) was provided relative to the number of his missed task analysis steps in each criterion during his intervention phase.

Regarding generalization, across nine generalization probes Bob scored a mean percentage of 43.7% steps completed correctly. During generalization probes, he averaged 36.7/84 (range: 17–68) steps correctly performed per block. His highest generalization probe score was on his ninth generalization probe block; he scored 68/84 (81%) steps completed correctly.

In summary, Bob was able to acquire a structured line dance utilizing video prompting and positive reinforcement in nine intervention sessions that included a total of 36 intervention blocks consisting of 21 to 84 steps of the Cupid Shuffle task analysis. Due to unexpected absences, Bob was not able to participate in his maintenance, generalization one, or generalization two phases of the study. He did participate in nine generalization probe blocks of 84 steps each in which he correctly completed 43.7% of overall steps. On his ninth generalization probe block that directly followed his 36th intervention block, he correctly completed 81% (n = 68) of the steps when dancing to the Cupid Shuffle song.

Summary of Participants

Six of seven participants (i.e., participants 1 to 4, 6, and 7) acquired the Cupid Shuffle structured line dance as a result of the video prompting intervention. Table 4.9
Table 4.8

Bob’s Error Correction

<table>
<thead>
<tr>
<th>Error Correction</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criterion 1</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Criterion 2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Criterion 3</td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Criterion 4</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>30</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>34</td>
</tr>
</tbody>
</table>

*Note.* The number of his missed Cupid Shuffle steps during each intervention criterion is provided. Level represents the type of error correction. Level 1 = self correction; Level 2 = repeat vignette view of the missed steps followed by practice of those steps; Level 3 = live modeling by the researcher of the missed steps followed by practice of those steps; Level 4 = specific verbal feedback followed by practice of missed steps; Criterion 1 = successful performance of Cupid Shuffle sequence one on three consecutive blocks; Criterion 2 = successful performance of Cupid Shuffle sequences one and two on three consecutive blocks; Criterion 3 = successful performance of Cupid Shuffle sequences one, two, and three on three consecutive blocks; Criterion 4 = successful performance of Cupid Shuffle sequences one, two, three, and four (i.e., one whole rotation) on three consecutive blocks.

shows the number of intervention blocks and sessions engaged in by each participant in order to achieve acquisition. Participants required an average of 31 video prompting blocks and 8 intervention sessions to learn the dance. Moreover, five participants demonstrated maintenance of the Cupid Shuffle structured line dance after being taught by the video prompting intervention. Participants 2, 4, and 5 exhibited perfect maintenance across three blocks when tested at 1 week following intervention completion. Participant 3 also exhibited perfect maintenance across three blocks when
Table 4.9

Summary of Number of Blocks Across All Criteria and Number of Intervention Sessions

<table>
<thead>
<tr>
<th>P</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>Total</th>
<th>Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dane</td>
<td>13</td>
<td>6</td>
<td>8</td>
<td>4</td>
<td>31</td>
<td>8</td>
</tr>
<tr>
<td>Marcy</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>Jimi</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>8</td>
<td>23</td>
<td>6</td>
</tr>
<tr>
<td>Devin</td>
<td>13</td>
<td>16</td>
<td>12</td>
<td>10</td>
<td>51</td>
<td>13</td>
</tr>
<tr>
<td>Wesley</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>Bob</td>
<td>15</td>
<td>8</td>
<td>10</td>
<td>3</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>M</td>
<td>11</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>31</td>
<td>8</td>
</tr>
</tbody>
</table>

Note. Number of blocks and sessions needed to reach acquisition by each participant. P = participant, C1 = criterion one, C2 = criterion two, C3 = criterion three, C4 = criterion four, Total = total number of intervention blocks, Sessions = total number of intervention sessions, M = mean number of blocks/sessions across participants 1 to 4, 6, and 7.

tested at 8 days following intervention completion. Participant 1 exhibited a mean performance of 99.1% (n = 83.3) accurately completed steps across four blocks, and his final three blocks were performed perfectly.

Regarding generalization, three types were planned for completion by study participants. However, due to absences, not all participants completed all types. All participants did engage in generalization probes that were embedded as the final block in their respective intervention sessions. Table 4.10 depicts the number of generalization probe blocks completed by each participant and his or her respective score for each block. Generalization probe scores ranged from 16 to 84 correct steps. Blanks indicate
Table 4.10

Summary of Generalization Probe Scores

<table>
<thead>
<tr>
<th>P</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dane</td>
<td>21</td>
<td>18</td>
<td>20</td>
<td>37</td>
<td>40</td>
<td>80</td>
<td>79</td>
<td>81</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Marcy</td>
<td>21</td>
<td>21</td>
<td>41</td>
<td>62</td>
<td>83</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52</td>
</tr>
<tr>
<td>Jimi</td>
<td>16</td>
<td>20</td>
<td>21</td>
<td>78</td>
<td>84</td>
<td>84</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>51</td>
</tr>
<tr>
<td>Devin</td>
<td>18</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>41</td>
<td>42</td>
<td>41</td>
<td>62</td>
<td>60</td>
<td>61</td>
<td>82</td>
<td>82</td>
<td>82</td>
<td>50</td>
</tr>
<tr>
<td>Paul</td>
<td>18</td>
<td>21</td>
<td>21</td>
<td>42</td>
<td>41</td>
<td>41</td>
<td>42</td>
<td>42</td>
<td>82</td>
<td>83</td>
<td></td>
<td></td>
<td></td>
<td>43</td>
</tr>
<tr>
<td>Wesley</td>
<td>18</td>
<td>41</td>
<td>62</td>
<td>83</td>
<td>82</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>57</td>
</tr>
<tr>
<td>Bob</td>
<td>17</td>
<td>20</td>
<td>17</td>
<td>32</td>
<td>38</td>
<td>24</td>
<td>55</td>
<td>59</td>
<td>68</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37</td>
</tr>
</tbody>
</table>

Note. Each score reflects a correct number of Cupid Shuffle steps completed correctly to the Cupid Shuffle song out of a total possible number of 84 steps. P = participant, M = mean.

that a participant had already achieved acquisition and therefore was no longer engaging in intervention sessions, which included the generalization probe blocks.

Table 4.11 shows Cupid Shuffle dance performance of all study participants during generalization phase one and generalization phase two. Blanks indicate that some participants were unable to participate in generalization phase one and/or two due to unexpected absences. For the participants who participated in generalization phase one and/or two, the table depicts the percentage of Cupid Shuffle steps correctly performed during each of three blocks in each phase. The percentage is followed by the number of steps correctly performed in parentheses. These scores show that participants
Table 4.11

Summary of Generalization Phase One and Generalization Phase Two Performances

<table>
<thead>
<tr>
<th></th>
<th>Generalization Phase One Blocks</th>
<th>Generalization Phase Two Blocks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Dane</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marcy</td>
<td>100% (84)</td>
<td>100% (84)</td>
</tr>
<tr>
<td>Jimi</td>
<td>100% (84)</td>
<td>100% (84)</td>
</tr>
<tr>
<td>Devin</td>
<td>95% (80)</td>
<td>99% (83)</td>
</tr>
<tr>
<td>Paul</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wesley</td>
<td>81% (68)</td>
<td>89% (75)</td>
</tr>
<tr>
<td>Bob</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Dance performance is reported as percentage and number of Cupid Shuffle steps completed correctly out of a total possible number of 84 steps by each participant during generalization phase one and generalization phase two. P = participant.

were able to generalize the dance to other situations. During generalization phase one, a participant danced alongside the researcher to the Cupid Shuffle song. During generalization phase two, all participants in attendance danced alongside each other to the Cupid Shuffle song.

Social Validity

Social validity was obtained through two sources. These were parents of participants and the participants themselves. Parents responded to a written questionnaire while participants responded verbally through a personal interview using specific questions. See Appendix F to view questions for both sources.

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**Parent questionnaire.** Social validity was obtained through the use of a questionnaire distributed to a parent of each participant. The questionnaire consisted of eight questions, seven of which were rank items. Rankings were (a) 5 = strongly agree, (b) 4 = agree, (c) 3 = neither agree nor disagree, (d) 2 = disagree, and (e) 1 = strongly disagree. The final question was open-ended and provided an opportunity for the parent to offer comments or feedback. The questionnaire was completed by five of seven parents (71.4%). Two parents did not return the questionnaire.

All respondents strongly agreed with the statement that it is important to teach functional skills to individuals with ASD. Three respondents strongly agreed and two respondents agreed that dancing is an appropriate functional skill for individuals with ASD. One respondent strongly agreed, two respondents agreed, and two respondents neither agreed nor disagreed with the statement that my son/daughter may be able to socialize more often if s/he dances. Two respondents strongly agreed and three respondents agreed that the Cupid Shuffle is an appropriate dance to enhance socialization. One respondent strongly agreed, two respondents agreed, and two respondents neither agreed nor disagreed with the statement that my son/daughter is likely to perform the Cupid Shuffle in the future. One parent strongly agreed and four parents agreed with the statement that my son/daughter should learn other types of dances in order to enhance socialization. All five parents strongly agreed that video modeling strategies are appropriate for teaching individuals with ASD. Three of the four respondents offered comments and/or suggestions that were (a) “I think that teaching these kids dancing could bring them out of their shell more. It could help with their self-
esteem as well;” (b) “Another daughter of mine, who is not on the spectrum, already knew how to do the Cupid Shuffle and performed it with Marcy. That was an example of socialization being enhanced by the learning of the dance. However, other than that, I started off wondering if any social enhancement could really be gained from learning such a dance. Considering it more closely, I’d imagine that the main enhancement might be during the learning of the dance and among kids in the group. Actually, it could also be used by the child as a demonstration when extended family visits. Furthermore, I suppose learning a new dance increases the child’s self confidence … an impression of self that could be carried over to the child’s later interactions with others, making him/her braver. So, I believe that overall, I agree;” and (c) “Thanks for teaching Wesley to dance! I have been away for 2 weeks recovering from surgery and am still on bed rest. I asked Wesley about the dance he learned at school and he did the entire dance for me with no music. It required his counting to 4 on his fingers, but he did all four directions and was happy to show me.”

**Participant interview.** Social validity was obtained through a personal interview and consisted of seven specific questions, six of which required a yes/no response. The final question was open-ended. A yes or no questionnaire was used in order to assess consumer satisfaction. Each participant was individually interviewed by the researcher who asked the participant each question and then recorded his or her answer and comments for each question. All seven participants were interviewed. Table 4.12 depicts the responses from each participant for each of consumer satisfaction interview questions.
Table 4.12

Summary of Responses to Consumer Satisfaction Questions

<table>
<thead>
<tr>
<th>Consumer Satisfaction Questions</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the Cupid Shuffle easy to learn?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Did you have fun learning the Cupid Shuffle dance?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Did you enjoy dancing to music?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Would you do the Cupid Shuffle at a school dance/wedding?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Did you like learning from the video?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Would you like to learn other skills from video?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Is there anything else you would like to tell me about participating in the study?</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

*Note.* 1 = Dane, 2 = Marcy, 3 = Jimi, 4 = Devin, 5 = Paul, 6 = Wesley, 7 = Bob, Y = Yes, N = No.

Six respondents replied yes to the question was the Cupid Shuffle was easy to learn, while one respondent said no. All seven respondents replied yes to the question did you have fun learning the Cupid Shuffle dance. Six respondents replied yes to the question did you enjoy dancing to music, while one respondent replied no. Six respondents replied yes to the question would you do the Cupid Shuffle at a school dance or wedding, while one respondent replied no. All seven respondents replied yes to the
question did you like learning from the video. All seven respondents replied yes to the question would you like to learn other skills from video. Five respondents replied no to the question is there anything else you would like to tell me about participating in the study. The two respondents who replied yes said: (a) “The movement made me feel good to my body”; and (b) “It was awesome! It was awesome because it was a good learning experience and it was just fun. It just felt fun.”

Chapter Summary

Acceptable inter-observer agreement was obtained for the Cupid Shuffle line dance steps and was calculated across all study participants on a block-by-block basis. Procedural integrity was calculated using mean percentages and was found to be acceptable.

Six out of seven participants acquired the entire Cupid Shuffle dance as a result of the video prompting intervention, as shown by his or her individual successful performance of all 84 steps of the task analysis on three consecutive blocks. Moreover, three participants demonstrated 100% maintenance at 1-week post-intervention and one participant demonstrated 100% maintenance at 8-days post-intervention. Further, one participant demonstrated 99.1% maintenance at 1-week post-intervention. With respect to generalizing the newly acquired dance to its corresponding song, overall generalization probe percentages were (a) 56% by Dane, (b) 62% by Marcy, (c) 61% by Jimi, (d) 60% by Devin, (e) 51% by Paul, (f) 68% by Wesley, and (g) 44% by Bob. In terms of generalizing the newly learned dance to a new situation by dancing alongside the researcher to music, overall generalization phase one percentages were (a) 100% by
Marcy, (b) 100% by Jimi, (c) 98% by Devin, and (d) 89% by Wesley. When generalizing the newly learned dance to the new situation of dancing alongside peers to music, overall generalization phase two percentages were (a) 100% by Jimi, (b) 97% by Devin, and (c) 97% by Wesley.

Concerning social validity, all five parents supported that (a) it is important to teach functional skills to individuals with ASD; (b) dancing is an appropriate functional skill for individuals with ASD; (c) the Cupid Shuffle is an appropriate dance to enhance socialization; (d) my son/daughter should learn other types of dances in order to enhance socialization; and (e) video modeling strategies are appropriate for teaching individuals with ASD. Further, three out of five parents supported that (a) my son/daughter may be able to socialize more often if s/he dances; and (b) my son/daughter is likely to perform the Cupid Shuffle in the future. Relative to consumer satisfaction, all seven participants had fun learning the Cupid Shuffle dance, liked learning from the video, and would like to learn other skills from video. Moreover, six participants thought the Cupid Shuffle was easy to learn, enjoyed dancing to music, and would do the Cupid Shuffle at a school dance or wedding.
Chapter 5

Discussion

This chapter provides a discussion of the results of using video prompting on the acquisition, maintenance, and generalization of a structured line dance by adolescents with ASD. The line dance targeted in this study was the Cupid Shuffle. The discussion focuses on each of the three research questions, social validity, perceived limitations of the study, implications for practice, and suggestions for future research. Finally, a summary of the study is presented.

Research Questions

Data generated from this study are used to discuss each of the three research questions. The research questions were (a) to what extent can adolescents with ASD acquire a structured line dance utilizing video prompting; (b) to what extent can adolescents with ASD maintain the structured line dance following video prompting, and (c) to what extent can adolescents with ASD generalize the structured line dance following video prompting?
**Acquisition.** This study evaluated the effectiveness of a video prompting intervention on Cupid Shuffle acquisition by adolescents with high-functioning ASD. Positive reinforcement (e.g., high five and/or saying, “Great job!”) was included as part of the intervention to reward participants for successful performance of the modeled steps. Prior to initiating video prompting, all seven participants exhibited stable responding at 0/84 steps of the Cupid Shuffle task analysis.

**Dance performance enhancements.** After the video prompting intervention was implemented for each participant, all scores increased. The results indicated that video prompting combined with positive reinforcement effectively taught the Cupid Shuffle to six adolescents with high-functioning ASD who successfully performed the entire Cupid Shuffle dance without errors on three successive blocks. Further, it is fair to assume that the seventh child in the study would have acquired the dance if he had not missed a substantial number of camp days, because he showed a consistent upward dance performance trend that concluded with the following criterion four scores: (a) 83/84, (b) 82/84, (c) 84/84, (d) 82/84, and (e) 82/84. Clearly, the intervention resulted in positive changes in dance performance, which is a phenomenon that has not been demonstrated in previous video prompting research.

These results confirm previous video prompting intervention research that has taught individuals with developmental disabilities various skills, such as accessing the Internet and downloading pictures (Zisimopoulos et al., 2011), as well as photograph capturing, importing, and printing (Edrisinha et al., 2011). Since video prompting is a variation of video modeling, this study offers some verification of previous research that
has empirically validated video modeling as an efficacious intervention for teaching children and adolescents with ASD (Bellini & Akullian, 2007). Moreover, Porretta et. al (1999) showed that video modeling was effective for teaching movement behaviors to children with developmental disabilities, and McCullagh and colleagues (1990, 1998) discovered that video modeling enhanced dance and swim skills of typically developing children.

**Data spikes.** Anecdotally, participants, overall, seemed highly motivated to reproduce dance steps as they consistently displayed full attention during intervention sessions and required few or no reminders to remain on task. There were a limited number of instances in which participants got off task. That is, during the video prompting intervention, two participants exhibited downwardly spiked performance. On his 9th video prompting block, Dane scored a 6/21, after achieving three consecutive 21/21 scores on his prior three blocks that were performed in the previous instructional session. On his 16th video prompting block, he scored a 13/42, after achieving two consecutive 42/42 scores on his prior two blocks in the same instructional session. Finally, on his 22nd video prompting block, he scored a 8/63, after achieving a 62/63 on the prior block in the same instructional session and a 63/63 score in the final block of the previous instructional session. Anecdotally, the researcher witnessed Dane becoming very frustrated with himself whenever he missed a step. On his three data spikes, Dane stopped performing the dance after he realized he missed a step. Though the researcher prompted him to continue dancing, he refused and became visibly upset and was crying. It was obvious to the researcher that Dane took his dance instruction very seriously,
despite the fact that the setting was one of leisure and recreation, as opposed to one of professional schooling. Anecdotally, Dane was an individual who consistently expressed desire to perform all steps exactly correct on every opportunity.

A second participant, Devin, also exhibited a sharp decline in his performance on his 16th video prompting block. He scored a 19/42 after scoring 42/42 on the two prior blocks in the same instructional session. In Devin’s case, he lost track of the steps. The researcher prompted him to keep going; instead, he stopped in a frustrated state and spoke negative vocalizations (e.g., “I can’t do this”). Throughout the study, Devin spoke negative beliefs about his ability to learn the dance. The researcher noted that he seemed to lack confidence in himself, which may have negatively impacted his motivation to continue dancing after making a mistake. Moreover, in addition to having ASD, Devin also was bipolar, which may have played a part in his sharp performance decline.

**Maintenance.** The maintenance phase of the study consisted of demonstrating acquisition after a period of time had passed since being exposed to the video prompting intervention. The results showed that retention of the Cupid Shuffle was perfect for four out of five participants who completed maintenance blocks at 7 or 8 days post-intervention. The fifth participant maintained with 99.1% accuracy across four blocks, of which the final three were performed perfectly. The positive maintenance findings of this study are in alignment with other video prompting studies that have shown that adolescents with developmental disabilities maintain skills learned from video prompting for at least a week (e.g., Cihak et al., 2006). In fact, Zisimopoulos et al. (2011) found that three adolescents aged 12 to 13 years with developmental disabilities maintained Internet
accessing and picture downloading at 18 weeks after receiving video prompts of the targeted skills that were broken into a 29-step task analysis.

**Generalization.** During the generalization probes that were embedded into intervention sessions, participants generalized their Cupid Shuffle performance to music. Out of a combined total of 57 generalization probes, an overall average score of 47 out of 84 steps (56%) was achieved. Two participants achieved an 84 out of 84 score; the highest score for each of two participants was 83; one participant’s highest score was 82; one participant’s highest score was 81; and one participant’s highest score was 68. When compared to intervention data, the generalization data illustrate a noticeable decline in Cupid Shuffle dance performance.

The researcher speculates the main reason for this decrease was due to the fast tempo of the Cupid Shuffle song, because it was noticed that most participants had difficulty with maintaining the beat. Trying to produce each step in rhythm to the music confused some participants; they performed too many steps, too few steps, and/or lost track of the dance sequence order. Because the first sequence of the song cited corresponding step movements (i.e., “To the right, to the right, to the right, to the right. To the left, to the left, to the left, to the left. Now kick, now kick, now kick, now kick. Now walk it by yourself, now walk it by yourself.”), this actually helped them to keep tempo. The researcher watched how participants tried to perform their learned step movements in tempo with the cited words. Subsequently in the next two sequences, there were no cited words but only the music. Most participants seemed to lose the beat and slowed down their steps dramatically. When the song cited corresponding words again
during the fourth sequence, it seemed to confuse some participants as they tried to manipulate their pace or steps to get back in line with the words; but, this proved to be a difficult task. Previous video modeling researchers (D’Ateno et al., 2003; MacDonald et al., 2005; Taylor et al., 1999) found that participants failed to generalize learned scripted play behaviors to unscripted play behaviors. In the current study, the music may have created an “unscripted” effect because although the dance steps and order remained the same, the tempo of the song changed the timing demands of the behaviors. Showing video vignettes that displayed the model dancing the Cupid Shuffle to its corresponding song may have promoted more significant generalization.

Generalization phases one and two provided participants with the opportunity to dance alongside others to the Cupid Shuffle song. Others were included in the dancing situation to increase socialization. Both generalization phases were simulations of social situations in which multiple people perform a line dance to its corresponding song in unison. Some social contexts where this occurs are school dances, weddings, nightclubs, and fitness classes held at gyms. During generalization phase one, Participants 2 and 3 perfectly generalized the Cupid Shuffle to music while dancing alongside the researcher for three blocks. Further, Participant 4 averaged 98% and Participant 6 averaged 89% correctly generalized dance steps across three blocks. Regarding generalization phase two, Participant 3 again generalized the Cupid Shuffle to music across three blocks, but this time he was dancing alongside two peers. Further, both Participants 4 and 6 averaged 97% correctly generalized steps when dancing to music with peers. It must be noted that participants were already familiar with both the generalization environment and with one
another, factors which could have positively impacted generalization performance. Therefore, these findings indicate that individuals with ASD may be able to generalize motor skills to different situations when limited changes are made.

Unfortunately, due to time and environmental constraints, stimulus generalization across novel environments was not formally assessed. However, there was some anecdotal evidence of stimulus generalization provided by a parent on her social validity questionnaire when she mentioned that the participant performed the dance with her sister, which occurred in a non-training environment. Additional video modeling studies examining stimulus generalization to untrained environments are clearly needed to show that newly learned dance behaviors can be generalized to real-life settings. The successful generalization by most participants in this study further confirms previous research that has shown behaviors learned from video prompting generalize to novel individuals (Norman et al., 2001) and settings (Mechling et al., 2003).

Social Validity

The parent questionnaire and participant interview administered in this study indicate the amount of acceptability of procedures and goals, and the social importance of the study effects from the perspectives of the consumers (Wolf, 1978). According to Cooper et al. (2007), the parents were indirect consumers and the participants were the direct consumers. Both social validity assessments showed high levels of consumer satisfaction.

Parent questionnaire. All participating parents strongly agreed with both of the following: (a) it is important to teach functional skills to individuals with ASD; and (b)
video modeling strategies are appropriate for teaching individuals with ASD. Clearly, parents support using video modeling strategies for functional skills training of their children with ASD. Overall, participating parents agreed (i.e., rated “strongly agree” or “agree”) with the following: (a) dancing is an appropriate functional skill for individuals with ASD; (b) the Cupid Shuffle is an appropriate dance to enhance socialization; and (c) my son/daughter should learn other types of dances in order to enhance socialization. These results show strong parental support of both teaching dances such as the Cupid Shuffle as well as the desire for increased socialization for adolescents with ASD.

Though still overall positive, the results for the following statements were not as strong: (a) my son/daughter may be able to socialize more often if s/he dances; and (b) my son/daughter is likely to perform the Cupid Shuffle in the future. For each of those statements, one parent strongly agreed, two parents agreed, and two parents neither agreed nor disagreed. It may be that some parents were not sure whether or not dancing is a social activity and/or whether or not s/he would actually perform the dance in the future. This is understandable as some people feel intimidated by dancing in public. However, dancing is a very social behavior in that people are nonverbally communicating feelings and thoughts through movement and further, dancing is often done with or around other people. Moreover, parents may not visualize the opportunities available for dancing if they are not use to participating in dancing themselves or if they are not use to taking their children to places where dancing is common.

Simply educating parents about the types of opportunities that exist within the child’s naturalistic settings (e.g., school dances or community recreation programs) as
well as providing necessary supports for participation in those settings may have a positive impact on their knowledge in these areas. Further, it was evident from two parents’ comments that they recognized the potential for dance to increase self-esteem/confidence. Being a confident mover would surely benefit a child with ASD who is often hindered by his or her communicative-social challenges yet is physically capable of participating in inclusive settings.

**Participant interviews.** Regarding the participant interviews, all participants had fun learning the Cupid Shuffle. Anecdotally, participants wanted to go with the researcher when she came to pick them up from camp activities. Moreover, participants often asked whether or not it was his or her time to go when they saw the researcher passing through camp hallways and rooms. During data collection, the researcher observed that participants were engaged, compliant, and relaxed. Further, some made comments about how much they liked learning the dance. These observations substantiate participants’ responses that they had fun learning the dance. Though, it is possible that the participants also had fun learning the dance because they were excited to work with the researcher and to receive her personal attention.

Furthermore, all participants both liked learning from the video and would like to learn other skills from video, which is supporting evidence for other researchers who have asserted that video modeling interventions are inherently motivating for individuals with ASD because television/video viewing are preferred activities that are associated with recreation and leisure (e.g., Charlop-Christy et al., 2000; D’Ateno et al., 2003). Six participants thought the Cupid Shuffle was easy to learn; enjoyed dancing to music; and
would perform the Cupid Shuffle at a school dance or wedding. Based on these findings in conjunction with the fact that all participants reported having fun learning the dance, evidence is provided for using dancing as a fun functional physical activity for individuals with ASD. In fact, dance is becoming increasingly popular and widespread for use as a therapeutic activity for individuals with ASD (see http://autismmovementtherapy.com/site/).

Finally, two participants provided positive comments that were (a) “The movement made me feel good to my body,” and (b) “It was awesome! It was awesome because it was a good learning experience and it was just fun. It just felt fun.” These comments fit with the motivational piece of social learning theory in that a person needs to be intrinsically and/or extrinsically motivated in order to reproduce the modeled behavior. With these particular participants the intrinsic motivators of feeling good while moving and having fun seem to positively impact their participation and learning.

Limitations of the Study

Despite the positive findings and acceptable procedural integrity of the study, there were some notable limitations. First, the results cannot be generalized to all individuals with ASD because only participants with high-functioning forms of the disability were included. Second, participants were aged 12 to 16 so results do not reflect learning for individuals with ASD who are outside that age range. However, it is reasonable to assume that older high-functioning individuals may be successful in learning the dance. Though, it should be noted that there is literature supporting the use of visually based strategies with individuals with ASD of all ages (Simpson, Myles, & Ganz,
Third, the results of this study cannot be generalized to other dances. A single line dance, the Cupid Shuffle, was used for this study. There are a large number of line dances (e.g., Macarena) and other types of dances (e.g., Ballet) available for individuals to perform. Fourth, though parents, teachers, and other caregivers were explicitly told not to engage the participants in any type of dance activities during the course of the intervention, the inability to control for dancing outside of the instructional setting could have impacted results. Because the study took place at a summer camp, there was no way to control for dance performance outside of that environment. Fifth, the video prompting vignettes included voice-overs that could have influenced acquisition. However, anecdotal notes show that participants were highly attentive to the vignettes in that overall they stayed focused on the laptop screen during viewing and intently viewed vignettes from beginning to end. Further, their dance performances clearly matched what the model showed. For example, many participants performed dance steps at the same pace as the model during intervention. Lastly, it is possible that the researcher positively influenced the results. Similar to other video prompting studies (e.g., Graves et al., 2005; Sigafoos et al., 2005), the participants were trained in a one-on-one instructional format. That is, the researcher was solely responsible for intervention delivery. Moreover, she picked up and dropped off each participant for all sessions. Therefore, all participants received personalized attention prior to, during, and after the session. In fact, six out of seven participants were boys aged 12 to 16, and the researcher was a young-looking woman with a friendly demeanor. Perhaps the participants were performing the dance for the researcher, as opposed to other reasons (e.g., enjoyment).
Implications for Practice

*Video prompting.* This study showed that all seven participants improved their dance performance as a result of video prompting. This study further confirms the use of video prompting as an instructional strategy for individuals with developmental disabilities (e.g., Malone et al., 2006). Specifically, video prompting was shown to be an appropriate and efficacious intervention for teaching the Cupid Shuffle to adolescents with high-functioning ASD.

There were many benefits to delivering instruction through video prompting. First, video prompting capitalized on the visual processing strength of individuals with ASD (Happe, 1994; Lincoln, Courchesne, Kilman, Elmasian, & Allen, 1988). The participants obviously visually processed and retained the modeled dance steps, because they correctly reproduced them after viewing the vignettes. Second, the vignettes held the attention of participants, as demonstrated by their consistent eye gaze towards the laptop screen during viewing. Third, the video model was controllable and predictable, two qualities that allowed for multiple views of the same demonstration. Fourth, all unnecessary and/or distracting extraneous features of the environment were edited out of vignettes. Fifth, administering instruction through a video technology reduced participants’ reliance on verbal and nonverbal social cues. Lastly, participants acquired the dance from video prompts in a reasonable amount of time, which is a consistent concern for educators who are time strapped. In fact, six participants acquired the Cupid Shuffle in five to 13 video prompting sessions, each one lasting no more than 20 min. As the results showed, educators can use video prompting to teach physical activities to
individuals with ASD. Furthermore, physical educators, who often have students with ASD included in their classrooms, can utilize video prompting as an intervention, when indicated (e.g., the aide of the student with ASD delivers video modeling of targeted skills, if further instruction beyond what the teacher has planned is required).

Regarding the data spikes that occurred during Dane and Devin’s video prompting sessions, the researcher was not surprised in their performance declines, because she had over a decade of experience educating individuals with ASD and was aware of potential concomitant behavioral difficulties. Further, The U.S. Department of Education (2010) asserts that autism adversely affects the individual’s educational performance. It is imperative for educators of individuals with ASD to be prepared for dealing with behavioral difficulties during instruction. In the current study, after Dane became frustrated with himself and was crying, the researcher calmed him by explaining that it was acceptable to not achieve perfection on every opportunity. She also communicated that the important thing was to keep trying his best. Then, she refocused him by providing a reminder of how much progress he had made since the start of the study. Actually, the researcher was surprised that more participants did not exhibit behavioral difficulties during the study, and she was impressed with their overall compliance, attentiveness, motivation, and progress. It is imperative, though, for educators of individuals with ASD to be prepared for handling behavioral difficulties. The researcher found that acting with patience and understanding toward Dane facilitated refocusing and moving forward.
In addition to the positive acquisition findings of this study, it was also shown that
dance performance was maintained for at least one week after video prompting was
stopped. There are several plausible explanations for these positive maintenance results.
First, the repetitive nature of the video modeling vignettes and repeatedly practicing the
same movements may have enhanced long-term memory storage, which is key for motor
learning (Lee, Swinnen, & Serrien, 1994; Schmidt & Wrisberg, 2008). Second, dancing
may not have been viewed by the participants as boring or meaningless, because they all
continued participating. Third, if participation had not been voluntary, it is possible that
participants may have felt constrained, a factor that could have negatively impacted
retention. Fourth, the participants may have been motivated to continue dancing the
Cupid Shuffle for various reasons, whether it was to please the researcher (i.e.,
compliance-based behavior) or the hope of future performance at a school prom.
Maintenance of acquired behaviors is critical for the progressive building of a dynamic
behavioral repertoire that can hopefully be utilized in future situations and settings, and
ideally in those that are inclusive in nature (Ward & Barrett, 2002).

**Modeling.** This study showed that modeling delivered through video prompting
was an appropriate and efficacious intervention for teaching adolescents with high-
functioning ASD to perform a structured line dance. Therefore, this study supports
modeling as an (a) instructional intervention in physical education contexts (Siedentop &
Tannehill, 2000), (b) instructional intervention for individuals with developmental
disabilities (Porretta et al., 1999), and (c) antecedent prompting strategy for target
behaviors in special education contexts (Sigafoos et al., 2005). Further, this study is
unique in that it provides evidence for using prompting strategies in conjunction with modeling.

Because all participants improved their dance performance as a result of an intervention that incorporates modeling, Bandura’s social learning theory (1986) is further supported. Bandura’s social learning theory (1986) asserts that behaviors are learned by observing the modeled behaviors of others. The first subprocess of social learning theory is attending to and perceiving the modeled behavior. Videos of a dancing model held the attention of participants in this study. For example, the intervention directed participants to focus on selected meaningful cues, such as the direction in which the model’s legs were moving and how they moved (e.g., heel kick). In the vignettes, relevant body parts were highlighted using a highlighting circle created through the use of the Final Cut Express® application program, which aided greater attention to the task. The second subprocess of social learning theory is retaining the behavior through coding observed stimuli into meaningful blueprints and storing them. The participants retained what they watched as documented by their enhanced performance. Anecdotally, some participants stated that they were re-playing the videos in their head while they danced. The third subprocess of social learning theory was accounted for when the participants were motivated to learn. The administered consumer satisfaction survey showed that participants experienced fun while dancing; enjoyed the music; and found the videos to be an interesting way to learn. Finally, the video prompting strategy provided the opportunity for the fourth component of social learning theory that is production, as it was an antecedent prompting strategy (Sigafoos et al., 2005) that was followed by
practice of the modeled steps. Furthermore, ample practice was provided, because each participant had several opportunities during intervention sessions to rehearse the viewed parts of the dance. The successful acquisition of the targeted locomotor and non-locomotor skills (i.e., dance) by six out of seven study participants substantiates claims that individuals with ASD are capable of engaging in observational learning in order to acquire new behaviors.

**Social validity.** The participants, overall, responded very positively to the consumer satisfaction questions. In addition to their interview responses, anecdotal evidence provides further insight into the participants’ perceptions of the study. Marcy verbalized several times that her sister already knew how to do the Cupid Shuffle, and she was looking forward to dancing it with her. Interestingly enough, Marcy’s mother provided the following comment on the parent questionnaire: “Another daughter of mine, who is not on the spectrum, already knew how to do the Cupid Shuffle and performed it with Marcy. That was an example of socialization being enhanced by the learning of the dance.” The parent told the researcher that this performance occurred at a relative’s house, after the study was completely finished.

Jimi mentioned several times, throughout the study, that he was very happy and excited to learn the Cupid Shuffle. Apparently, his peers were dancing it at his prior year’s school prom, and he had really wanted to join them, but he did not know the dance. Even though the next year’s prom was many months away, anecdotally, the researcher witnessed Jimi being very attentive throughout all instructional sessions (e.g., watched the full length of all videos without taking his eyes off the screen). Moreover,
she noticed he carefully followed all instructions. On a related note, Jimi reached acquisition criterion (i.e., learned the whole dance) in just six video prompting sessions. He correctly performed 100% of the dance steps on 21/23 video prompting blocks. Jimi and another participant, Wesley, only made errors during two video prompting blocks. Besides his first block in which he scored 10/21 and his eighth block in which he scored 41/42, Wesley correctly performed 100% of the dance steps on 17 blocks. Ironically, Wesley was the only participant to respond “no” to the social validity question, “Was the Cupid Shuffle easy to learn,” yet he learned the dance in the fewest amount of video prompting blocks (i.e., 19).

Another aspect of the study that, anecdotally, was an interesting finding was the researcher noticed during generalization phase two that participants were competent dancers when dancing alongside others, but they tended to remain in their own space. Interaction among participants was limited to comments about not going into each other’s dancing space. From a social validity perspective, it would be highly valuable for participants to be able to not only dance alongside one another, but also to interact/socialize while dancing.

The current study took place in a leisurely physical education setting, as opposed to a professional dance school. Therefore, the participants were learning the dance so that they could have a skill to perform in inclusive real-life settings, such as school dances, weddings, and/or clubs. Other types of more rigorous dance training, such as organized ballet, may or may not be appropriate for individuals with ASD. This is an area for future researchers to investigate. That is, researchers can investigate if there are benefits for
individuals with ASD engaging in non-leisure dance training that is completed in specialized settings and geared toward a high level of skill mastery. It is possible that some individuals with ASD may flourish in an extremely structured, organized, and specialized setting specifically designed to develop a particular dance skill set, such as ballet, because all aspects of the setting are routine.

**Dance.** Dances that are structured, such as line dances, have several advantages for their learning by individuals with ASD. First, they have a consistent number and type of steps that are repeated. Specific dance steps (i.e., movements) taught in this study were (a) slide, (b) heel kick, (c) step, and (d) turn. Movements were challenging enough to keep participants interested in learning the dance, but not overly-challenging to the point of intimidation. Second, the steps are danced in a pattern that is also repeated. It is well known that repeated practice is indicated for teaching individuals with ASD (Ayres & Langone, 2005). Third, structured dances can be simplified into task analyses. Fourth, they can be taught using strategies such as chunking that was effectively used in the vignettes to forward chain Cupid Shuffle steps and sequences. Fifth, contemporary line dances like the Cupid Shuffle are accompanied by “cool” music that maintains interest. Also in regards to the music, being able to execute steps in alignment with its matching beat can give learners a feeling of accomplishment and mastery (Boswell, 2005). All participants were able to demonstrate at least some generalization of the newly learned dance to its corresponding song. In fact, a few participants fully generalized their behavior to dancing with the Cupid Shuffle song, and two participants both generalized it and stayed in rhythm to the beat.
Dance can also be used in the transition plans of individuals with developmental disabilities, in the areas of recreation and leisure (Kleinert, Miracle, & Sheppard-Jones, 2007). Recreation and leisure is often a neglected area when educators are planning for transition services of an adolescent or young adult with disabilities; yet, researchers have asserted that recreation and leisure activities play an important role in the lives of students with disabilities (Rynders & Schleien, 1993). Involvement in leisure, recreation, and other extracurricular activities can facilitate friendship development and community integration, which will be imperative for individuals with disabilities who are transitioning into the adult world (Heward, 2006). Dance is an appropriate fit for transition plans, because it is a functional skill (Scheuermann & Webber, 2002) that can allow the individual to function independently in certain societal settings (e.g., Zumba® fitness class). There are many real-world opportunities for dance engagement (e.g., social events), and many of these are venues where same-age young adults are in attendance.

**Suggestions for Future Research**

1. Conducting similar studies comparing model types, such as peer, adult, and point-of-view, as well as familiar versus unfamiliar models, can provide important information relative to modeling.

2. Additional studies can examine the impact of video prompting on the acquisition of other gross motor skills by children and adolescents with ASD.

3. Additional studies can identify and empirically document the specific benefits of a dance unit for adolescents with ASD.
4. The effects of dances of various difficulties on individuals with ASD can be investigated.

5. The effects of utilizing video prompting for teaching dance skills to a group of adolescents with ASD can be investigated.

6. Finding ways to maximize participant integration into naturalistic settings following learning of the dance is still an area in need of further research.

7. Additional studies are needed to assess both long-term maintenance and generalization across people (e.g., siblings, unfamiliar peers), environments (e.g., school, playground), and stimuli of the currently studied dance behaviors in addition to other gross motor skills.

8. Future studies could compare video prompting with and without voice-overs.

**Summary**

Despite the limitations of the current study, the findings make several unique contributions to the literature on video prompting, modeling, and teaching dance to individuals with ASD. First, this study documents the effects of video prompting on structured line dance learning by adolescents with high-functioning ASD. Second, participants both acquired the Cupid Shuffle and were able to generalize their behavior to its corresponding song with some level of success. Moreover, most participants showed that they maintained line dance steps even a week or more after intervention had ceased. Third, though the results indicated positive changes for both generalization to music while dancing with a familiar adult and to music with familiar peers, the latter increased a little more suggesting that adolescents are positively influenced by social situations in
which their peers are members. Fourth, results suggest that videotape treatments and specifically, edited video vignettes may be effective for teaching individuals with ASD physical activity behaviors. Fifth, this study provides an example of how technology can be utilized in physical education contexts to increase learning. Finally, this study demonstrated that adolescents with ASD enjoyed learning the dance. This is positive for educators, parents, and others who are continually seeking appropriate leisure and recreational physical activities for individuals with ASD.
List of References


Office of Special Education and Rehabilitative Services, Department of Education.
(OSER/S), 34 CFR 300 (2002).


Appendix A

Participant Qualifications Checklist
PARTICIPANT QUALIFICATIONS CHECKLIST

Directions: Use this checklist as a guide for determining whether a potential participant meets the qualifications that are required for participation in the study, “The Effects of a Video Prompting Intervention on the Acquisition, Maintenance, and Generalization of a Line Dance by Children with Autism Spectrum Disorders.”

Child’s Name: ________________________________

Code Name: ________________________________

1. Does the child have an autism spectrum disorder? Check the appropriate box:
   ☐ Yes, s/he has ________________________________.
   ☐ No

2. Does the child have the physical ability (e.g., full use of all limbs, is able to view video vignettes) to participate in the dance? Check the appropriate boxes:
   ☐ Raises arms straight in the air then bends over to reach for toes
   ☐ Does 3 forward arm circles followed by 3 backward arm circles
   ☐ Walks 10 paces without losing balance
   ☐ Moves head: to left 90°, back to center, up to ceiling, down at floor, to right 90°
   ☐ Yes (meets at least 75% of above criteria)
   ☐ No

3. Does the child understand basic verbal directions? Check the appropriate boxes:
   ☐ “Move your hand.”
   ☐ “Pick up the pencil.”
   ☐ “Touch your nose.”
   ☐ “Close the door.”
   ☐ Yes (meets at least 75% of above criteria)
   ☐ No
4. Does the child have the ability to attend for at least a 20 second duration? *Check the appropriate boxes:*

Researcher shows a video of a person hip-hop dancing on the laptop computer. During a 20 second clip, the child …

- ☐ Remains standing on or within a 18 in. radius of viewing position
- ☐ Maintains eye contact with the screen except for looking away up to 2 times x 2 sec each
- ☐ Yes (meets 100% of above criteria)
- ☐ No

5. Does the participant have the capability to imitate behaviors? *Check the appropriate boxes:*

- ☐ Tap head
- ☐ Clap hands
- ☐ Swing arms
- ☐ Jump up and down
- ☐ Yes (meets at least 75% of above criteria)
- ☐ No, none of the above

6. Does the participant express desire to participate in dance? *Check the appropriate box:*

Researcher says to the child, “Are you interested in learning a new dance?”

- ☐ Yes - child says yes or nods yes
- ☐ No - child says no or shakes head no
Appendix B

IRB Approval and Parental Consent Document
June 14, 2011

Protocol Number: 2011B0105
Protocol Title: THE EFFECTS OF A VIDEO MODELING INTERVENTION ON ACQUISITION, MAINTENANCE, AND GENERALIZATION OF A LINE DANCE BY CHILDREN WITH AUTISM SPECTRUM DISORDERS, David Porretta, Maria Gies, PAES.

Request to amend the protocol dated 05/31/11—Add Haughland Learning Center as research site, revise consent form, add new informational letter to parents, add social validity questionnaire, revise data collection sheet, change group performance component to not include typically developing children

Type of Review: Amendment—Expedited
Approval Date: June 14, 2011
IRB Staff Contact: Jacob R. Stoddard
Phone: 614-292-0526
Email: stoddard.13@osu.edu

Dear Dr. Porretta,

The Behavioral and Social Sciences IRB APPROVED the above referenced research.

Note that if applicable, informed consent (and HIPAA research authorization) must be obtained from subjects or their legally authorized representatives and documented prior to research involvement. The IRB-approved consent form and process must be used. Changes in the research (e.g., recruitment procedures, advertisements, enrollment numbers, etc.) or informed consent process must be approved by the IRB before they are implemented (except where necessary to eliminate apparent immediate hazards to subjects).

It is the responsibility of all investigators and research staff to promptly report to the IRB any serious, unexpected and related adverse events and potential unanticipated problems involving risks to subjects or others.

This approval is issued under The Ohio State University’s OHRP Federalwide Assurance #00006378.

All forms and procedures can be found on the ORRP website – www.orrp.osu.edu. Please feel free to contact the IRB staff contact listed above with any questions or concerns.

Shari R. Speer, PhD, Chair
Behavioral and Social Sciences Institutional Review Board
The Ohio State University Consent to Participate in Research

**Study Title:** The Effects of a Video Modeling Intervention on the Acquisition, Maintenance, and Generalization of a Line Dance by Children with Autism Spectrum Disorders

**Researcher:** Maria Gies (Investigator) under the advisement of Dr. David Porretta

**Sponsor:** The Ohio State University

This is a consent form for research participation. It contains important information about this study and what to expect if you decide to participate.

Your participation is voluntary.

Please consider the information carefully. Feel free to ask questions before making your decision whether or not to participate. If you decide to participate, you will be asked to sign this form and will receive a copy of the form.

**Purpose:** The purpose of this study is to investigate video modeling instructional strategies for teaching new physical activity movements and skills in efficient, effective, and appropriate manners, as well as increasing the socialization potential of children with autism spectrum disorders (ASD). More specifically, the purpose of this study is to examine the effectiveness of video modeling and video prompting as instructional interventions on the acquisition, maintenance, and generalization of a structured line dance by children with ASD. Also, parents and participants will be asked to fill out questionnaires after the final study session. The purpose of the questionnaires is to find out whether the video modeling strategies and dance activities are socially valid (said another way, important and appropriate) for children with ASD.

**Procedures/ Tasks:** During the teaching sessions, your child will watch video clips of a line dance being completed and subsequently be given the opportunity to complete the dance on his or her own. In the procedures of video modeling and video prompting, your child will watch steps or sequences (many steps joined together) of the dance being completed, and then have the opportunity to complete those steps before watching the next steps of the dance. In video modeling and video prompting, the steps and sequences will be demonstrated from a spectator perspective so that the model’s entire body can be seen on the video. We will be examining these video modeling instructional strategies to see if they are efficient, effective, and appropriate for teaching your child with ASD. After the final study session concludes, I will be requesting you to complete a social validity questionnaire regarding the research study. I will also be having a short meeting with your child to further assess the social validity of my study by having him or her respond to a 7-question consumer satisfaction questionnaire in order to gauge his/her opinion about participation in the study.
Duration: If you choose to allow your child to participate in the study, the estimated time commitment will occur over the course of Haugland Learning Center’s summer camp dates, which are from June 16-July 15 (4 weeks). I, Maria Gies, will come to the summer camp on 3 to 5 days per week and work with your child for 1 to 2 sessions on each of those days. Each session will last approximately 5 to 30 minutes. Here are time requirement estimates for each phase of the study:
(a) 1 to 6 baseline sessions, each one lasting approximately 5 minutes, for a total (estimated) time commitment of up to 30 minutes spread across the course of about 1 week.
(b) A total of about 6 teaching sessions, each one lasting approximately 30 minutes, for a total (estimated) time commitment of 3 hours spread across the course of about 2 weeks.
(c) 2 maintenance sessions, each one lasting approximately 5 minutes for a total (estimated) time commitment of up to 10 minutes spread across the course of 1-5 days.
(d) 2 generalization sessions, each one lasting approximately 5-10 minutes for a total (estimated) time commitment of up to 20 minutes spread across the course of 1-5 days.
In total, the study will only require a total of approximately 4 hours spread across the course of 4 weeks.

All sessions will occur at Haugland Learning Center. The purpose of the baseline sessions is to test whether or not your child already knows the line dance. The purpose of the teaching sessions is to teach your child the line dance. The purpose of the maintenance sessions is to test whether or not your child remembers the line dance after s/he learns it. The purpose of the generalization sessions is to test whether your child will perform the newly learned dance in a setting with peers. For the 2 generalization sessions, all study participants will have the opportunity to perform the newly learned dance with myself, the line dance teacher, and also with each other in a group line dance activity.

Regarding filling out the social validity questionnaire, it should take an estimated 5 to 10 minutes to complete it. Regarding the consumer satisfaction meeting with your child, it should take no more than 5 minutes.

You may leave the study at any time. If you decide to stop participating in the study, there will be no penalty to you, and you will not lose any benefits to which you are otherwise entitled. Your decision will not affect your future relationship with The Ohio State University.

Risks and Benefits: The participants will be learning a line dance, which poses minimal-to-no risk. Risks will be minimized by providing ample activity space in order to perform the dance. Anticipated benefits include learning a popular line dance that will potentially increase both physical and psychological outcomes for participants. Moreover, the study will provide participants who have ASD with a dance to perform at various social events thereby potentially increasing socialization. The implications of the study may have a positive impact on the knowledge base regarding: (a) the use of modeling strategies to teach children with ASD, and specifically in physical activity settings; (b) movement behaviors that allow children with ASD to participate alongside peers without disabilities; (c) enhancing the
socialization experiences of children with ASD; and (d) support the use of video prompting to teach movement behaviors to children with ASD. Educators may potentially benefit from these studies if results show that video modeling strategies are effective for teaching children with ASD, and specifically in a physical activity setting. All participating children will benefit from exercising in a fun way to music. Parents and other family members and friends may potentially benefit from these studies due to the potential socialization enhancement of children with ASD. Educational researchers may potentially benefit from this research study if video modeling and video prompting are shown to be effective for teaching functional behaviors to children with ASD.

Confidentiality: Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law. Also, your records may be reviewed by the following groups (as applicable to the research):

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Ohio State University Institutional Review Board or Office of Responsible Research Practices;
- The sponsor, if any, or agency (including the Food and Drug Administration for FDA-regulated research) supporting the study.

To protect the privacy interests of participants, the following provisions will be made: (a) Participants will be identified by a pseudonym on all documents pertaining to the study (except informed consent/permission document), and (b) Social validity questionnaires will be completed anonymously.

To ensure the confidentiality of the study data, the following provisions will be made: (a) Electronic documents will be contained on the personal computer of the study investigator, specifically in file folders that are password protected; (b) Only the investigator will know the password to access these files; (c) Hard copy documents will be contained in locked areas (e.g., desk cabinet) of the investigator’s office or home; and (d) Videotapes for data collection purposes will also be contained in locked areas of the investigator’s office or home.

Incentives: After each study session, a participant will receive a small toy/item such as a key chain or pencil. At the conclusion of the study, participants will receive a music CD of line dance songs.

Participant Rights: You may refuse to participate in this study without penalty or loss of benefits to which you are otherwise entitled. If you are a student or employee at Ohio State, your decision will not affect your grades or employment status.
If you choose to participate in the study, you may discontinue participation at any time without penalty or loss of benefits. By signing this form, you do not give up any personal legal rights you may have as a participant in this study.

An Institutional Review Board responsible for human subjects research at The Ohio State University reviewed this research project and found it to be acceptable, according to applicable state and federal regulations and University policies designed to protect the rights and welfare of participants in research.

Contacts and Questions: I, Maria Gies, will be leading this research study under the advisement of Dr. David Porretta who is serving as the principal investigator for this study. Currently, I am a Ph.D. Candidate in Physical Education with Emphasis in Adapted Physical Education at The Ohio State University. I have over 10 years of combined teaching/service experience in adapted physical education, physical education, and special education. For questions, concerns, or complaints about the study you may contact Maria Gies at either (614) 353-8710 or gies.14@buckeyemail.osu.edu, or Dr. David Porretta at either (614) 292-0849 or porretta.1@osu.edu.

For questions about your rights as a participant in this study or to discuss other study-related concerns or complaints with someone who is not part of the research team, you may contact Ms. Sandra Meadows in the Office of Responsible Research Practices at 1-800-678-6251.

If you are injured as a result of participating in this study or for questions about a study-related injury, you may contact Maria Gies at either (614) 353-8710 or gies.14@buckeyemail.osu.edu, or Dr. David Porretta at either (614) 292-0849 or porretta.1@osu.edu.
CONSENT
Behavioral/Social Science

IRB Protocol Number: 2011B0105
IRB Approval date: April 18, 2011
Version: 2

Signing the consent form: I have read (or someone has read to me) this form and I am aware that I am being asked to participate in a research study. I have had the opportunity to ask questions and have had them answered to my satisfaction. I voluntarily agree to both allow my child to participate in this study and to participate in this study, myself. I am not giving up any legal rights by signing this form. I will be given a copy of this form.

Printed Name of child participant: ___________________________________________

Printed Name of person authorized to consent for child participant: ___________________________________________

Signature of person authorized to consent for child participant: ___________________________________________

Relationship to the child participant: ___________________________________________

Date and time: ________________________ AM/PM

Printed Name of person consenting for questionnaire completion: ___________________________________________

Signature of person consenting for questionnaire completion: ___________________________________________

Relationship to person consenting for questionnaire completion: ___________________________________________

Date and time: ________________________ AM/PM

Printed Name of person consenting for questionnaire completion: ___________________________________________

Signature of person consenting for questionnaire completion: ___________________________________________

Relationship to person consenting for questionnaire completion: ___________________________________________

Date and time: ________________________ AM/PM

Investigator/Research Staff: I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

Printed name of person obtaining consent: ___________________________________________

Signature of person obtaining consent: ___________________________________________

Date and time: ________________________ AM/PM

Form date: 12/15/05
Appendix C

Operationalized Cupid Shuffle Movements
OPERATIONALIZED CUPID SHUFFLE MOVEMENTS

**Right Slide** - travel sideways in a right direction by separating right foot from left foot by at least 4 inches and subsequently moving left foot back to close together with the right foot.

**Left Slide** - travel sideways in a left direction by separating left foot from right foot by at least 4 inches and subsequently moving right foot back to close together with the left foot.

**Heel Kick** - extend foot forward and then upward so that when foot comes downward the heel makes contact with the floor while the opposite leg and foot remain stationary.

**Step** - The single complete movement of raising one foot and putting it down in another spot, as in marching to a fixed rhythm or pace.
Appendix D

Cupid Shuffle Data Collection Sheet
CUPID SHUFFLE DATA COLLECTION SHEET

Task Analysis Steps Key: **Rt** = Right slide /  **Lf** = Left slide /  **Hk** = Heel kick /  **St** = Step /  **90** = Finishes 90 degrees counterclockwise

Coding Key:  **I**+ = Independent no video /  **V** = Correct with video /  **0** = Not correct /  **X1** = Self correction /  **X2** = Add’tl view /  **X3** = Live modeling /  **X4** = Verbal feedback

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Appendix E

Procedural Integrity Checklists
## ORIENTATION CHECKLIST

Participant: ___________________________  Date: ____/____/2011

### Directions:
Place a “✓” in the box if the trainer completes the procedure.

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**Highlight** skipped EC procedure(s).
Leave blank if not applicable.

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### NON-INTERVENTION PHASES PROCEDURAL INTEGRITY CHECKLIST

**Participant:** ______________________  
**Date:** ____/____/2011

**Directions:** Place a “✓” in the box if the trainer completes the procedure.

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<td>Asks participant to complete as much of the Cupid Shuffle dance as possible</td>
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### INTERVENTION CHECKLIST

**Participant:** __________________________  **Date:** ___/___/2011

**Directions:** Place a “✓” in the box if the trainer completes the procedure.

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**Date:** ____/____/2011

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**Date:** ____/____/2011
Appendix F

Social Validity Questions
CUPID SHUFFLE PARENT QUESTIONNAIRE

Directions: For the following statements, circle a number between 1-5. Use this key to rate your answers:

5  =  Strongly Agree
4  =  Agree
3  =  Neither Agree nor Disagree
2  =  Disagree
1  =  Strongly Disagree

1. It is important to teach functional skills to individuals with autism spectrum disorders.

   1  2  3  4  5

2. Dancing is an appropriate functional skill for individuals with autism spectrum disorders.

   1  2  3  4  5

3. My son/daughter may be able to socialize more often if s/he dances.

   1  2  3  4  5

4. The Cupid Shuffle is an appropriate dance to enhance socialization.

   1  2  3  4  5

5. My son/daughter is likely to perform the Cupid Shuffle in the future.

   1  2  3  4  5

6. My son/daughter should learn other types of dances in order to enhance socialization.

   1  2  3  4  5

7. Video modeling strategies are appropriate for teaching individuals with autism spectrum disorders.

   1  2  3  4  5

8. Comments and/or Suggestions: (Continue writing on back, if needed.)
CUPID SHUFFLE PARTICIPANT INTERVIEW

Directions: Ask the participant the following questions and then circle whether s/he responded yes or no. For question 7 write down any further participant comments.

1. Was the Cupid Shuffle easy to learn?
   Yes  No

2. Did you have fun learning the Cupid Shuffle dance?
   Yes  No

3. Did you enjoy dancing to music?
   Yes  No

4. Would you do the Cupid Shuffle at a school dance (or wedding)?
   Yes  No

5. Did you like learning from the videos?
   Yes  No

6. Would you like to learn other skills besides dance from videos?
   Yes  No

7. Is there anything else you would like to tell me about participating in the study?
   Yes  No

______________________________________________________________________________
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