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The Effect of Video Self-Modeling on the Compliance Rates of High School Students with Developmental Disabilities

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THE EFFECTS OF VIDEO SELF-MODELING ON THE COMPLIANCE RATES OF HIGH SCHOOL STUDENTS WITH DEVELOPMENTAL DISABILITIES

by

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ABSTRACT

THE EFFECTS OF VIDEO SELF-MODELING ON THE COMPLIANCE RATES OF HIGH SCHOOL STUDENTS WITH DEVELOPMENTAL DISABILITIES

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People with developmental disabilities must develop the ability to maintain socially acceptable behavior in order to become contributing, accepted members of society at large. Research indicates that compliance, or following directions, is a *keystone behavior*, which, if learned, may significantly decrease the occurrence of behavior difficulties in students. Many studies of individuals with disabilities have shown a dramatic increase across a wide range of academic and social skills using video self-modeling (VSM), a technique in which students watch edited videos of themselves performing skills correctly or at high rates. Despite the importance of compliance for individuals with disabilities and the success of video self-modeling, little research has been done regarding the effect of VSM on compliance. In addition, VSM has been used mainly with elementary school-age students. This multiple baseline study examined the effect of video self-modeling on the rates of compliance in three high school-age students with developmental disabilities. Participants' compliancy rates increased after implementing video self-modeling. Mean latency to compliance also decreased for all participants. Study results indicate that video self-modeling may be an effective method for increasing compliance and decreasing compliance latency in high school students with developmental disabilities.

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INTRODUCTION

More and more, people with developmental disabilities are being recognized as viable and contributing members of society. Given specialized instruction to fit individual needs, students with developmental disabilities can acquire the skills necessary to live more fully and independently than many previously recognized. Without such instruction, however, many of these students will fail to develop the skills they need to enjoy a meaningful, purpose-filled life. A major area of concern is the ability of people with developmental disabilities to successfully integrate into social settings. Many individuals with disabilities exhibit antisocial behaviors which serve as barriers to integration and acceptance within mainstream society. For this reason, educational researchers have long attempted to find new and more effective methods for decreasing social-interfering behavior and teaching appropriate social skills to those with disabilities.

One such research-validated technique for teaching students with developmental disabilities is modeling. Over time, researchers have discovered that models that closely resemble the student in appearance (e.g., size, hair color, ethnicity), and who have equal or higher perceived social status in the student's eyes tend to be most effective in improving targeted skills/behavior (Lantz, 2005). For this reason, recent improvements in video technology have led researchers to attempt to teach students with developmental disabilities social and behavioral skills using the student himself or herself as model. Editing software allows researchers and educators to present to students video sequences in which the student performs target behaviors or skills at a level higher than previously attained. For example, a teacher might film a student performing each step to a target skill, such as starting a conversation with a familiar individual, providing prompts to the

student as necessary. The teacher would then use video software to edit out all prompts given and/or mistakes made, thus creating the appearance of a mistake-free performance by the student. The student would then watch the video of himself or herself seemingly performing the skill in an error-free manner, thus serving as his or her own model. This technique is known as video self-modeling (VSM).

The effectiveness of video self-modeling has been demonstrated across a wide variety of skills. After receiving VSM treatments, students have demonstrated substantial gains in traditional academic skills (Dowrick, 2006; Hitchcock, Prater, & Dowrick, 2003; Schunk & Hanson, 1989), communication (Neisworth & Wert, 2002; Bray & Kehle, 1998, 1996; Buggey, 1995), adaptive behavior (Buggey, 2005; Clare, Jenson, Kehle, & Bray, 2000; Walker & Clement, 1992), functional living skills (Lasater & Brady, 2005), and social skills (Parsons, 2006; Buggey, 2005). VSM has also been shown to effectively reduce inappropriate behavior (Buggey, 2005; Davis, 1979). Similar results have been attained with individuals across a wide range of ages, including preschool (Neisworth & Wert, 2002), elementary-aged (Hitchcock et al, 2003, Dowrick, 2006), and junior high-aged students (Lasater & Brady, 2005; Schunk & Hanson, 1989), as well as across several types of disabilities, including specific learning disabilities (Hitchcock, Prater, & Dowrick, 2004), autism (Buggey, 2005), language and cognitive delays (Neisworth & Wert, 2002; Hepting & Goldstein, 1996), attention-deficit/hyperactivity disorder (Walker & Clement,1992), behavioral disorders (Clare et al, 2000; Davis 1979), and students at risk for disabilities (Schunk & Hanson, 1989). In most of these studies, gains made by participants were significant, immediate, and maintained over time.

Two gaps in video self-modeling research include extending VSM to high school-age students and using compliance as the dependent variable. Although the effectiveness of VSM has been studied with junior-high-aged students, no studies were located in which VSM was used with high school-aged students, and only a single study in which compliance was the dependent variable (Davis, 1979). Given the need of high school-age students with disabilities to prepare for post-secondary societal integration, as well as the critical role of compliance in gaining social acceptance, this study addressed research gaps in both of these areas.

Statement of Purpose

The purpose of this research is to examine the effect of video self-modeling on the percentage of compliant behavior in high school students with developmental disabilities. To this end, the study will consider the change in mean percentage of compliant behavior as a result of the video self-modeling intervention, as well as any observed effect on the mean time elapsed (latency) between the end of teacher-given directions and the initiation of compliant behavior by the participants. By doing so, this study extends existing VSM literature to an older population than previously studied, as well as to the critical behavioral domain of compliance.

Research Questions

This study addressed the following research questions:

1. What is the effect of video self-modeling on the mean percentage of compliant behavior in high school students with developmental disabilities?

2. What is the effect of video self-modeling on the mean latency between the end of teacher-given directions and the initiation of student compliance?

REVIEW OF LITERATURE

Technological advances have set the stage for a dramatic acceleration in the education of students with developmental disabilities. The propulsion of America into the digital age has placed a host of resources within the grasp of special educators, even while the field remains in its relative infancy. As a result, schools and families can more readily implement the best, most research-validated methods for educating students with disabilities. Video self-modeling allows special educators to apply Bandura's widely-accepted social learning theory and principles of effective modeling at a level previously unattainable. The potential impact of VSM on the learning, behavior, and social integration of students with developmental disabilities can more easily be seen by examining the theoretical roots, the educational history, and the specific uses of VSM in conjunction with special education, including the maintenance and generalization of gains in target skills. The discussion will then turn to the importance of compliance, the target skill for this study, and the current dearth of information regarding the effects of VSM in this domain.

Theoretical Roots of Video Self-Modeling

Video self-modeling rests on three theoretical pillars: first, Albert Bandura's social learning theory, including the concept of self-efficacy; second, Vygotsky's zone of proximal development (ZPD); and third, Dowrick's concept of feed-forward modeling. Each theory is briefly examined below in relation to video self-modeling.

Bandura's social learning theory and self-efficacy. According to Albert Bandura's social learning theory, individuals learn behavior by observing the behavior of others and the consequences that follow. In his now-famous study on aggression,

Bandura (1979) claimed that people learn to be aggressive by observing others successfully use aggressive means to obtain a desired end. This theory has since been widely applied to all types of learning. Bandura (1997) later argued that self-efficacy, or a person's belief that he/she can successfully perform a task, influences the actual level of performance of that task. Recently, Dowrick (2006) has applied this argument in support of video self-modeling. Video self-modeling interventions attempt to increase students' self-efficacy by allowing them to observe their own successes.

Vygotsky's zone of proximal development. Vygotsky (1978) argued that children learn most efficiently within the *zone of proximal development,* which he defined as the area between what a child can do alone and the child's performance when assisted by an adult. Video self-modeling builds on this concept by allowing adults to assist students in performing skills more efficiently. In VSM, however, these prompts are then edited out so that the students appear to be modeling the skill by themselves. Ideally, according to Dowrick (2006), video self-modeling shows students performing within their own zones of proximal development by portraying high levels of fluency, together with examples of the student struggling but ultimately succeeding.

Dowrick's concept of feedforward modeling. Dowrick (2006) also describes the concept of feedforward learning, which he defines as "the subcategory of self-modeling in which the observed success is slightly above current capability" (p.195). In feedforward modeling, students learn to see themselves in a future, more competent state; that is, they learn from their future successes. Consider the following example from Dowrick (2006): "'Kalani' may see a videotape of herself reading a book of frustration level text; this video shows Kalani reading with good fluency and occasionally sounding

out a difficult word – something she could do with adult help (p.195).” Watching herself perform a difficult task at a high level acts to increase Kalani’s self-efficacy, or belief that she can succeed at the task. Her elevated sense of ability then manifests itself as an improvement in actual, measured performance. Thus, feedforward modeling promotes self-efficacy, which results in improved performance.

Video Self-Modeling in the Schools

In recent years, researchers have broadened the use of video self-modeling as an educational intervention. Previously used primarily in clinical settings, researchers have attained several encouraging results using video self-modeling as a school-based intervention targeting academic, behavioral, and functional skills. In a meta-analysis of school-based studies, Hitchcock, Dowrick, and Prater (2003) found 18 studies that fit strict criteria for school-based use of VSM prior to 2001, most of which were conducted between 1986 and 2000. Several school-based studies of VSM have been conducted since 2001 as well, most of which concerned students at risk for or diagnosed as having a disability (e.g., Buggey 2005; Lantz, 2005; Lasater & Brady, 2005; Neisworth & Wert, 2002; Sherer, 2001).

Specific Uses of Video Self-Modeling in Special Education

School-based VSM studies have included a diverse array of participants, as well as a variety of academic and behavioral concerns. Study participants have included general education students, students considered at risk for disabilities, students with mild-to-moderate disabilities, and students with a range of severe disabilities. Target skills in VSM research are as varied as the populations studied. Depending on the needs of individual participants, researchers have addressed such academic skills as reading

fluency and math achievement, as well as communication needs, adaptive behavior, functional life skills, and social skills. VSM research in each of these skill domains is examined below.

Video self-modeling and academic achievement. One focus of recent VSM research has been improving performance in traditional academic skills, especially reading and math. Hitchcock, Prater, and Dowrick (2004) report that VSM helped double reading fluency for some students with learning disabilities and that these same students met pre-established criteria for reading comprehension improvement. Hitchcock et al. (2003) found in their meta-analysis of video self-modeling studies that Dowrick and Power (1998) and Dowrick, Power, Ginsburg-Block, Kim-Rupnow, and Manz (2000) used VSM in the general education classroom to increase reading fluency in 20 six and seven year-old students who were classified as at-risk for learning disabilities. Schunk and Hanson (1989) improved percentage of correct responses in math for at-risk students ages 9-13. Additionally, Woltersdorf (1992) used VSM to raise math achievement in four boys with ADHD, ages 9-10.

Video self-modeling and communication needs. In addition to traditional academic skills, VSM researchers have targeted language production and fluency skills in students with communication difficulties. Bray and Kehle (1996, 1998) discovered that VSM was effective in reducing the frequency and severity of stuttering, as well as increasing the rate of fluent speech in elementary and secondary students in both general education and self-contained classrooms. Buggey (1995) used VSM to effectively increase the frequency and percentage of correct use of targeted language skills in three to five-year-olds with language delays in a self-contained preschool. Hepting and Goldstein (1996)

successfully improved the use of requesting language, plurals, and attributions in four to five-year-old preschool students with cognitive and language delays. Further, Pigott and Gonzales (1987) used VSM to successfully increase the frequency of verbal responses to a teacher in a student with selective mutism.

Video self-modeling and adaptive behavior. Video self-modeling applications in schools have extended beyond communicative and traditional academic skills to improving adaptive and managing maladaptive classroom behavior. Indeed, studies in this area are of special interest regarding students with disabilities, because behavioral difficulties are often the most glaring obstacles to social integration for these students, both during and beyond their school years. To this end, investigators have conducted a variety of experiments using VSM in an attempt to assist such students in these areas. For example, Clare, Jenson, Kehle, and Bray (2000) increased the mean percentage of on-task behavior in three boys with learning/behavioral disabilities, aged 9 to 11 years, in a self-contained setting to levels commensurate with that of their peers who had not been referred to special education. Buggey (2005) used VSM in a small private school to reduce tantrums and shoving behavior in elementary school-age students with autism. Also, Lonnecker, Brady, McPherson, and Hawkins (1994) found that two boys, ages seven and nine, with learning and behavior problems in a self-contained classroom increased their cooperative classroom behavior after the implementation of a VSM intervention. In addition, Walker and Clement (1992) observed an increase in on-task behavior, as well as an increase in positive peer ratings of peer relations for six boys with ADHD, ages six to seven, as a result of VSM.

In addition to increasing fluency of adaptive classroom behavior, VSM has also shown to be effective in helping students with disabilities to decrease maladaptive or anti-social behavior that could potentially damage their ability to successfully integrate into society. Possell, Kehle, Mcloughlin, and Bray (1999) reported a substantial reduction in inappropriate behaviors for each of four boys, ages five to eight, with serious emotional disturbances. Participants were drawn from both general education and self-contained classrooms. Woltersdorf (1992) reported successfully decreased fidgeting, distractibility, and unsolicited vocalizations in four boys with ADHD, ages nine and ten, in a general education setting. Buggey (2005) reported that students with autism showed sharp decreases in tantrums and significant gains in pro-social behavior after viewing themselves engaging in appropriate behavior via videotape. Kehle, Clark, Jenson, and Wampold (1986) used VSM to reduce disruptive behavior (e.g. touching others, making noise, out-of-seat behavior) in four boys with behavioral disorders, ages 10-13, in a self-contained classroom.

Video self-modeling and functional skills. Other researchers have indicated that VSM can be effective to increase fluency of functional and life skills of students with disabilities. Lasater and Brady (2005) used VSM and feedback in a home-based setting to help one adolescent boy with pervasive developmental disorder and Williams' Syndrome, and one adolescent boy with autism, improve performance of daily living skills such as shaving, making a sandwich, packing a lunch, sorting and loading laundry, hanging up clothes, and making one's bed.

Video self-modeling and social skills. A final area in which VSM researchers have successfully improved the skills of students with disabilities is the social skills domain. Buggey's private-school study (2005) also produced increases in social initiations in elementary-age students with autism. Parsons (2006) improved such social skills as appropriately requesting assistance, recognizing names of peers, managing anger, and reducing socially inappropriate behavior such as nose-picking and yelling at others in secondary students with autism.

Maintenance and Generalization Effects of Video Self-Modeling

One promising trend in video self-modeling studies is the tendency of VSM to result in maintenance of target skills/behavior over time. Using follow-up assessments, Hitchcock et al. (2004) found that students with learning disabilities maintained gains in reading fluency six months following intervention. Studies by both Buggey (2005) and Lasater and Brady (2005) also reported high levels of maintenance. Other researchers have found that parents were able to maintain gains in proper instruction of their children with disabilities at a fairly high level as a result of VSM (Reamer, Brady, & Hawkins, 1998).

High rates of generalization to skills/settings other than those targeted seem to be another boon of VSM instruction commonly reported in studies. Encouragingly, in their meta-analysis of 18 studies of VSM in school-based settings, Hitchcock et al. (2003) found that 10 of the 13 studies that included data on generalization reported strong evidence of generalization of treatment effects. The results of Lasater and Brady's (2005) study of the effects of VSM on functional skills fluency showed that gains in targeted functional skills generalized to two other skills not targeted for intervention, though at a

lower level than for the target skills. Reamer et al. (1998) found that improvements in instruction of children with disabilities generalized from one parent to the other and across multiple home settings. In a study by Hitchcock et al. (2004), generalization of reading fluency extended to both classroom and home settings.

Compliance: A Keystone Behavior

Behavior management has long been the subject of considerable focus in educational research. Researchers have identified certain behaviors as keystone behaviors, meaning a behavior which, when learned, exerts a large effect on the overall behavioral performance of an individual. Among these behaviors is *compliance,* defined herein as correctly following teacher instructions. According to Kauffman, Mostert, Trent, and Pullen (2006), when students are taught to exhibit the behavior of compliance with high fluency, other disruptive or maladaptive classroom behavior may significantly decrease.

Latency to compliance. Latency to compliance, or the length of time a student takes to follow instructions, has also been addressed in academic settings. Wehby and Hollahan (2000) found that using high-probability requests decreased the latency to compliance in one 13-year-old elementary school girl with learning disabilities. Ardoin, Martens, and Wolfe (1999) combined high-probability instructional sequences with fading to decrease compliance latency during transitions in two of three second-grade students. Effects of this intervention maintained at two- and three-week follow up sessions. Additionally, Maag and Anderson (2006) used sound-field amplification to decrease latency to compliance for teacher task demands in six elementary school students with emotional and behavioral disorders in a general education classroom.

Compliance in video self-modeling research. Given the growing body of promising VSM research, together with the potential effect of compliance on overall behavioral improvement, curiously little research has been done to connect the two. While some VSM studies have investigated the effect of related behaviors, such as remaining on-task and cooperative classroom behavior, only one study using VSM has been conducted in a school setting that defined the target behavior as following directions. Davis (1979) studied only one participant, an 11-year-old boy with a behavior disorder in a self-contained classroom. This study used VSM in an attempt to decrease the student's fighting behavior and increase his compliance to teacher commands. No VSM studies have addressed compliance latency. Thus, despite the recent surge in video self-modeling research, little is known about the effect of VSM on rates of compliance or latency to compliance in students with disabilities.

Statement of the Problem

The successful inclusion of students with developmental disabilities in mainstream society depends on their acquisition and fluency in social, functional, and behavioral skills. In particular, high levels of antisocial behavior can create strong barriers for these individuals to acceptance and integration with society at large. Professional research has identified video self-modeling as a potentially powerful, theoretically sound strategy for improving behavioral skills in students with disabilities. Video self-modeling seems not only to affect significant gains in performance, but these gains appear to maintain over time and generalize to other settings and skills.

As individuals with developmental disabilities approach the end of public school services and transition towards societal integration, addressing behavioral deficits

becomes increasingly urgent. In recent years, researchers have discovered that compliance, or following directions, may serve as a keystone behavior, which, when acquired leads to sharp decreases in maladaptive social behavior. Given the impressive results of video self-modeling reported observed in other domains, the potential effects of VSM on compliance must be examined. Additionally, few if any VSM studies have included high school-age students and only a handful of studies have included students of middle school age. For these students in particular, improvements in compliance could significantly improve the chance of meaningful community living.

Importance of this Study

The purpose of this research is to examine the effect of video self-modeling on the percentage of compliant behavior in high school students with developmental disabilities. It will also consider the effect of video self-modeling on latency to compliance for the target population. By doing so, this study extends existing VSM literature to the area of compliance. This study is also intended to extend existing VSM literature to an older population than has typically been examined.

In addition to expanding the base of video self-modeling literature, the study assumes greater significance in light of the challenges faced by high school students with developmental disabilities. These individuals face not only the challenges typical to adolescence, but also the prospect of exiting the public school system and entering public life within a short period of time. Because compliant behavior is essential for successful integration in post-school society, students approaching the end of public schooling require special attention in this area. This study applies a potentially powerful behavioral intervention to the essential skill of compliance, among the population of students who

require intervention in this area most urgently. In doing so, this study extends VSM literature to an important new behavioral domain and a largely neglected population.

METHOD

Following is a description of the participants, setting, instruments, research design, procedures, data collection systems, and the dependent and independent variables of this study, as well as a description of observer training and reliability, treatment fidelity, and social validity incident to the study.

Participants

All participants in this study were individuals with developmental disabilities. Participants were selected from the self-contained high school classroom in which the principal investigator was employed as the classroom teacher. Participants were selected based on perceived need for improvement in compliance. A detailed description of individual participants follows.

Participant one. Participant 1 was Sara, a 17-year-old Caucasian female with developmental disabilities. During the study, she was enrolled in the 11th grade. According to the Woodcock-Johnson Tests of Cognitive Abilities and Achievement, Third Edition, Sara had an overall IQ of 51, which falls in the very low range, and she performed in core academic areas at levels typical of a 7 to 11-year-old child. Sara's verbal IQ was 66, with a cognitive efficiency score of 51. Her academic IQ scores ranged from 27-70. Sara performed in core academic areas at levels typical of 7 to 11 year-old children. Sara's strengths included making friends easily and performing functional life skills. Sara could count money and make purchases with relative ease. She had mastered many independent living skills through modeling, guided practice, and other instructional techniques, though she required periodic verbal prompting for some of these skills.

Sara's greatest struggles involved handling and expressing frustration, as well as high levels of anxiety. Sara often overreacted to seemingly minor infractions against her by her peers, whether real or perceived. For instance, a simple tap on the shoulder by a peer sometimes caused Sara to begin yelling loudly at the peer. A less innocent infringement on her comfort, such as pulling hair or name-calling, often provoked a more serious response. Within 1-2 seconds, Sara's behavior could escalate into violence, which included yelling about things unrelated to the incident, kicking, hitting, swearing, throwing objects, pushing over chairs/desks, or damaging property. Sara frequently exhibited similar behavior when she sensed that she has broken a rule and would receive a consequence. In such instances, compliance was a major challenge for Sara.

Sara's teachers attempted to improve her compliance by directly teaching skills for managing and appropriately expressing her emotions. They took this approach because Sara displayed her highest levels of non-compliance only after she (a) lost control of her emotions or (b) sensed she was in trouble and would be given a consequence. Sara previously received weekly counseling for anger management from the school psychologist for a few months. Her teachers also implemented a behavior plan that included social skills instruction, lessons on how to remain calm, and removal to a time-out room when her behavior reached the point of endangering other students or school personnel. Despite short-lived improvements in Sara's behavior, these interventions ultimately proved ineffective in producing any long-term improvements in Sara's compliance. The most effective method Sara's teachers found to encourage compliance was to start a timer once Sara refused to comply, and stop it only once she did comply. Sara was then required to make up the amount of time shown on the timer

during her lunch period. Though this method improved Sara's compliance, it was nearly always accompanied by a major behavioral outburst when used, thus endangering school staff as well as students.

Sara lives in a two-parent household and has several siblings. Her family falls into the middle-to-low-class socio-economic group. Sara's parents report extremely frequent arguments between Sara and themselves, as well as between Sara and her sisters.

Participant two. Participant 2, Bill, was a 16-year-old Caucasian male with autism and Tourette's Disorder. According to the Woodcock-Johnson Tests of Cognitive Abilities and Achievement, Third Edition, Bill's IQ fell in the low average range (85), with an average (97) verbal IQ, a low (78) cognitive efficiency score, and an average (91) thinking ability score. As an 11th grader, Bill's academic performance ranged from that typical of a 7 year-old (concept formation) to a post-high school level (reading, reading comprehension). Bill had fair-to-good fine motor skills (aside from handwriting), but exhibited severe gross motor deficits, which made it difficult for him to participate in general physical education activities. Bill had several involuntary tics, including production of animal-like sounds (such as whimpering), tongue-wagging, picking at scabs or acne on his body, clearing his throat and/or snorting, and poking/touching nearby classmates. Bill's strengths included the ability to describe objects/events in great detail and a thorough knowledge of and talent for horticulture. Bill also had an interest in and knack for photography. He attended several general education classes, during which he often presented challenges for his teachers by making rude or socially inappropriate comments, leaving class when disinterested, arguing with teachers or peers, and wandering the halls and losing track of time. Bill enjoyed being part of the school, and

was aware that his intellectual abilities were much higher than those of most students in the self-contained classroom.

One of Bill's greatest challenges was compliance. Typically, Bill's non-compliant behavior resulted from directions to end a preferred activity, or to perform a task which Bill considered unpleasant, boring, or beneath his abilities. In addition, Bill often violated rules which mandated the use of kind language in the classroom, as well as procedures for properly gaining recognition. Bill also violated the personal space of others and engaged in undesirable or inappropriate touching behavior. When given directions which he found disagreeable, Bill attempted to reason with the teacher to the point of yelling, in an attempt to escape performing the requested task.

Bill's teachers attempted several interventions to improve his compliance, including positive reinforcement, token economies, and group contingencies. As with Sara, the use of a timer was most effective in encouraging compliance with a specific request. While this method often resulted in Bill's compliance at a given moment, it seemed to have little effect on his willingness to comply with future requests.

Bill lives in a two-parent, middle-class household and has two brothers and one sister living at home. Bill is the second-oldest child. His mother has a medical condition that keeps her at home nearly all of the time, and his father works for a local pharmaceutical company. Bill's father and mother each have a college education, and both are involved in his education.

Participant three. Participant 3, Jim, was a 16-year-old Caucasian male with autism. During the study, Jim was in his first (sophomore) year at the high school. According to the Weschler Intelligence Scale for Children – Third Edition (WISC III),

Jim had an IQ of 69, which fell in the low range, as well as a verbal IQ of 60 (low) and a performance IQ of 82 (low average). Bill performed academically on a 7 to 12-year-old level across a range of core subjects, with his highest scores in reading. His strengths included imaginative storytelling, memorization of high-interest facts, and computer skills (such as typing and navigating the internet). Jim's greatest challenges were in the areas of compliance and social skills. Jim often made comments that were embarrassing to his peers, and he frequently refused to follow his teacher's directions. Furthermore, Jim struggled with directions that involved transitioning to a new activity, repeating a task more than once, performing a new task or a task with a perceived high level of difficulty, or engaging in an activity with a peer whom Jim found aversive. Jim typically responded to such requests by yelling at the person giving the request and running to the back of the room, or by threatening to leave the room. When Jim did follow directions, he would often say "no" before engaging in the requested behavior.

Jim's teachers used several strategies to address his compliance rates, including positive reinforcement and group contingencies. While these methods were somewhat effective, they seemed to work only until Jim received his first negative consequence, after which all attempts to positively reinforce desired behavior were met with limited or no success. Use of a timer was by far the most effective method of encouraging compliance with a given request; however, as with Bill, this method seemed to have little effect on Jim's compliance with future requests.

Jim's family falls into the middle-to-low-class socio-economic group. Jim has five siblings, two of whom attended the same high school as Jim at the time of the study. One, a brother, is two years older than Jim and has been identified as having a specific

learning disability. The other is Jim's twin sister, who has not been diagnosed with a disability. Jim's mother reported that, given the opportunity, Jim exhibits overdependence on his twin sister, often refusing to work with others. Jim's relationship to his brother is a source of anxiety for Jim, who described his brother as "annoying" and "mean."

Setting

The study took place in a public high school self-contained life skills classroom for students with developmental disabilities. Classroom staff included the classroom teacher, a 27-year-old Caucasian male, who is licensed to teach students with severe disabilities, and one classroom paraprofessional, a 21-year-old Caucasian female. Both staff members were nearly always present in the room. All 11 students in the class received diagnoses of developmental disabilities, meaning that they exhibited developmentally significant deficits in cognitive, academic, social, functional, behavioral, or other skill domains. In most cases, the students scored below or near 70 on standardized IQ tests, and had limitations in adaptive behavior skills. Students whose IQ scores were higher exhibited severe deficits in other areas. Despite cognitive and other limitations, the students in this class were, in large part, considered *high-functioning* in view of their communicative and physical capabilities. Students in this classroom exhibited a wide range of strengths and needs in areas of behavior management, social functioning, self-care, academic achievement, community knowledge, and independent living skills. All, however, qualified for specialized, self-contained instruction as their primary educational placement. All students participated in general education classes to some degree.

The school in which the study took place is located in a suburban area of Utah, with largely middle-class families, though significant numbers of families of both upper- and lower-class status reside in the area. The school itself has a student body of 1430 students, of which 85% are Caucasian, 11% are Hispanic, 2% are Asian, and the remaining 2% are American Indian, Pacific-Islander, or African-American.

The self-contained classroom has 11 students, of which eight are Caucasian and three are Hispanic. An adjacent self-contained classroom contains 11 students, of whom six are Caucasian, two are African-American, one is Hispanic, one is a Pacific Islander, and one is half-Japanese and half-Caucasian. The participants in the study have frequent interactions with the students in the adjacent classroom, all of whom have developmental disabilities and who generally function on a lower level than the students in the classroom in which the study took place. In addition, students without disabilities may register for the class for one period every other day to serve as peer tutors to students with disabilities. These peer tutors are largely Caucasian and Hispanic, and some of them qualify for special education resource services because of learning disabilities.

Instruments

Three instruments were used in this study. The first instrument was the Frequency and Latency of Response Form. This instrument was used to calculate mean percentages of compliant behavior and mean compliance latency figures for each participant during all phases of the study. The second instrument, entitled Teacher and Peer Behavior Rating Scale, assessed the social validity of the intervention from the point of view of general education peers and teachers of the participants. The third instrument, or Participant Social Validity Questionnaire, assessed the social validity of the survey from

the perspective of each individual participant. Each of these instruments is described below.

Instrument one. Using the Frequency and Latency of Response Form, researchers recorded specific directions given by the classroom teacher to each participant. For each direction, researchers recorded *Y* or *N* in the top row of the table to indicate whether the participant followed the direction. This measurement was referred to as *compliance.* In the bottom row of the table, the researchers recorded the amount of time that elapsed between the end of each direction given by the teacher and the beginning of each compliant response. This measurement was referred to as *latency to compliance.* Latency to compliance was measured only for compliant (*Y*) responses. Refer to Appendix A for a copy of this instrument.

Instrument two. The Teacher and Peer Behavior Rating Scale was used to measure the social validity of the VSM intervention from the perspective of general education students and teachers. This was done by contrasting two pre-intervention clips of each participant's non-compliance with two intervention-phase clips of each participant's compliance, and asking each respondent to rate the acceptability of the behavior shown in each clip. Two selected general education students and teachers independently watched both examples (2) and non-examples (2) of compliance obtained on videotape for each participant, and rated each example on a scale of acceptability. Respondents were not informed of the pre- or post-intervention disparity between clips. Each respondent indicated their acceptability of each segment on a scale of 1 to 3. A rating of 1 indicated *unacceptable* behavior, a rating of 2 indicated *somewhat acceptable* behavior, and a rating of 3 indicated *fully acceptable* behavior. Researchers handpicked

respondents who were familiar with the participants in order to preserve confidentiality. For a copy of this instrument, refer to Appendix A.

Instrument three. The Participant Social Validity Questionnaire consisted of three questions, administered verbally to participants by the classroom teacher. The purpose of this instrument was to measure the social validity of the VSM intervention from the perspective of the participants. The questions were given in the following order:

1. Did you enjoy making videos in class? Why or why not?
2. Did you enjoy watching videos of yourself? Why or why not?
3. Do you think watching videos of yourself helped you learn to follow directions better?

The classroom teacher typed each student's answers to these questions as they were given. For a copy of the questionnaire, refer to Appendix A.

Research Design

In order to provide ample evidence of experimental control, researchers implemented a multiple baseline design across all participants. Because VSM literature often reports high rates of maintenance, or because VSM appears to result in permanent changes in behavior, the traditional ABA format research design was deemed inappropriate for the study. If the study resulted in gains similar to other VSM studies, participants would not be likely to regress during the reversal phase, providing little evidence of experimental control. If, however, the intervention was implemented successively with three students, as in a multiple baseline design, a change in behavior at the respective point of intervention for each participant would provide sufficient evidence of experimental control.

Procedures

Experimental procedures used in this study are described below. Individual procedures are described consecutively under the headings *dependent variables, independent variable, confidentiality of data, treatment fidelity, observer training and reliability,* and *social validity.*

Dependent variables. The dependent variables in this study were mean percentage of *compliant behavior* and mean compliance latency. Compliant behavior is defined herein as a student response to a verbal direction from the teacher that includes the initiation of the requested behavior, together with the absence of any complaint, verbal or otherwise, regarding the requested behavior. Students were taught to follow directions using a three-step model that had been taught previously in the class. This model included (a) looking at the teacher, (b) saying "OK," or using another word or gesture indicating agreement, and (c) initiating the requested behavior.

In giving directions, the teacher used a technique called *precision commands,* or *precision directions,* a concept originally described in Bill Jenson's *Tough Kid Toolbox.* This technique consists of a pattern in which the teacher addresses the student by name, gives a direction, and says "please," and waits to see whether the student will comply. In this study, the teacher allowed 15 seconds of wait time, in order to allow the students sufficient time to process the request, as well as any internal emotional response to the request. If the student complied within 15 seconds, the trial was counted as correct, and the teacher positively reinforced the student's compliance using previously established classroom procedures. No additional reinforcement was added during the study. If the student did not begin to comply within 15 seconds, or if the student refused to comply by

saying “No,” or gave any other verbal form of refusal, the trial was scored as incorrect. A new trial then began. The teacher repeated the directions, this time addressing the student by name and saying “you need to” followed by the direction. The teacher did not repeat the word “please.” The teacher then waited to see whether the student would comply. If the student began to comply within 15 seconds, the trial was counted as correct, and the teacher positively reinforced the student’s behavior using previously established classroom procedures. If the student did not begin to comply within 15 seconds, or refused to comply by saying “No,” or by giving any other verbal form of refusal, the trial was counted as incorrect. The teacher then addressed the student by name, and stated “That’s not following directions.” The teacher then issued a consequence to the student, according to classroom procedures already in use. Because the teacher did not repeat the directions again, this step was not counted as a trial, regardless of whether the student complied. Thus, the use of precision commands provided students with an opportunity to follow directions on either the first or the second trial. Due to time constraints, however, researchers did not attempt to disaggregate data concerning first- and second-trial compliance. Graphs of overall compliance depict each repetition of a direction as a new trial, and reflect the grouping together of all trials when determining percentage of compliant behavior.

Some directions given over the course of the study occurred in situations where looking at the teacher or saying “OK” would not have constituted a natural response. For instance, the teacher may have given a student a direction to stop playing a computer game and return to his or her seat. Because the student was not facing the teacher when the direction was given, he or she may simply have logged out of the computer session

and returned to his or her seat, without looking at the teacher. For this reason, the student response was still counted as correct even if the student failed to look at the teacher or to indicate agreement by saying “OK” or a similar word, as long as he or she began to exhibit the requested behavior within 15 seconds. Occasionally, the classroom teacher became distracted and failed to repeat directions after 15 seconds. Data for these trials were excluded from analysis and are not reflected in the results of the study.

Rates of compliance were measured as a percentage correct score, and were calculated by counting the number of directions complied with, then dividing by the total number of directions issued during the session. Correct trials were those in which both observers agreed that the student successfully complied with directions. The score included only responses to directions given directly to the student. Group directions were not included in the study. The classroom teacher gave at least 10 directions to the student within each session, and was prompted to give directions by a vibrating timing device, called a MotivAider, every five minutes. All directions were for behaviors that the teacher has previously observed the student perform successfully, and trials included behaviors of low, moderate, and high difficulty for the student. Unclear directions, or directions the student did not have adequate opportunity to comply with, were not counted as directions given. In rare instances where students misunderstood the direction, but an attempt to comply was evident, the trial was counted as correct.

The second variable, *compliance latency*, is defined herein as time elapsed between the end of the teacher’s verbal directions and the initiation of a compliant response by the student. Compliance latency was measured using latency recording. Observers recorded compliance latency for correct trials only. Each observer completed

the table entitled Frequency and Latency of Response Form, shown in Appendix A, in order to record both percentage of compliance and compliance latency for each participant.

Using the data from the table, researchers created two graphs for each participant ---- one for percentage of compliant behavior, and one for compliance latency. On each student's compliance percentage graph, each data point represented the mean percentage of compliance observed by each independent observer on the average. On each student's latency graph, each data point represented the mean time elapsed to compliance for all correct trials in a given session. This score was calculated by adding the latency measure for each correct trial, and dividing by the total number of correct trials in the session.

Observers measured compliance latency using a stopwatch. For each trial, observers started a stopwatch once the teacher finished giving instructions, and stopped the watch once the student began a compliant response. Each observer recorded the amount of time elapsed between the end of directions and the beginning of compliance using the table in Appendix A. If a student did not comply with a request, observers stopped the watch and made no latency recording in the table.

Independent variable. The independent variable for this study was the video self-modeling intervention. All video recordings of participants were obtained with parental consent. Both Sara and Bill (Participants 1 and 2, respectively) participated in 10 different video-taped role-play activities, wherein he or she followed directions from the classroom teacher. Because of time constraints, Jim (Participant 3) participated in only five role plays. For all participants, tapes were edited to create vignettes in which the student followed five directions in succession. Each vignette totaled approximately 30

seconds to 1 minute in length. Each of the vignettes began with on-screen text directions, such as, “Bill knows how to follow directions. He looks at the teacher, says ‘OK,’ and does what the teacher asks right away. Let’s watch.” Each tape had some degree of on-screen reinforcement interspersed between individual role-plays. These included such phrases as, “Bill followed directions because he looked at the teacher, said ‘OK,’ and did what the teacher asked.” The amount of reinforcement interspersed in each video varied according to the classroom teacher’s knowledge of participant characteristics (e.g., attention span, frustration threshold, level of instruction needed).

To produce the videos, the teacher explained to the students that they, as a class, would be making videos to show people how to follow directions, and to help us become better at doing it ourselves. Each participant engaged in role-play activities in order to obtain the raw footage from which the self-modeling videos were created. Sara and Bill engaged in ten different role plays in which he or she followed a total of ten different directions according to the three-step model described above. While the participants occasionally omitted step one or step two of the model, step three (does what the teacher asked right away) was always present in the video, and was usually accompanied by one or both of the previous steps. The directions ranged in difficulty from low to high, and included directions of all difficulty levels. All role plays showed students following directions that the classroom teacher had previously observed them perform successfully. Following production and editing of the videos, researchers began collecting baseline data for all participants. Researchers gathered baseline data for two weeks. Once a clear level and trend was evident in performance data for Participant 1, researchers

implemented the intervention with this participant, while continuing to take baseline data for Participants 2 and 3.

During their respective intervention phases, both Sara and Bill watched two different videos, with five vignettes each. Jim watched the same video each day during the intervention phase. Jim's video also included five vignettes. The students received instructions to watch a video each morning just before data collection began. Because the school was on a rotating day schedule (A/B), researchers adjusted the intervention schedule to fit the each participant's class schedule. Sara watched her video before first period on A days, and before second period on B days. Both Bill and Jim watched their videos prior to second period every day. Videos were shown only in the self-contained classroom, with participants sitting at a computer screen that was hidden from the view of other students, and wearing headphones in order to maintain privacy and minimize distraction. Sara and Bill alternated videos each day, so that they watched each video twice by the end of the intervention phase. For Sara, the intervention lasted four days. After four days, the intervention was withdrawn from Sara and she moved to the maintenance phase. At this stage, Bill began the intervention phase, which lasted for four days. However, Bill was absent for two days between the first and second intervention days. After four days of intervention, Bill moved to the maintenance phase, and Jim began the intervention phase. Jim's intervention phase lasted only three days, due to scheduling conflicts near the end of the school year. Jim did not have an opportunity to participate in the maintenance phase.

Confidentiality of data. Researchers used mini-DV tapes for all recordings of classroom sessions. Video role-plays for each student were also created using these tapes,

after which the tapes were edited and stored to a password-secured classroom computer. Researchers maintained confidentiality of data by storing all video tapes in a locked cabinet. In addition, no one other than the participants and researchers were allowed to view the video self-modeling role plays. Only the lead researcher and the independent observer had access to the tapes and self-modeling videos. All observation data was kept in binders, which were kept in the possession of the researchers.

Treatment fidelity. In order to ensure treatment fidelity, all participants received individualized instruction regarding the watching of videos from the same classroom teacher. Students were not allowed to watch the videos at any time other than the time established by the classroom teacher, nor did any persons other than the classroom teacher administer any instructions or grant the students access to the videos. Sara and Bill watched video #1 beginning the first day of the intervention phase and video #2 beginning the second day, and rotated each day thereafter. In nearly all instances, the implementation of the video intervention took place at the appointed time of day, except in the case of one or two scheduling conflicts when it took place 30-45 minutes later than indicated above. In all cases, collection of data immediately followed implementation of the intervention.

Observer training and reliability. One classroom paraprofessional served as an independent observer for this study. The classroom teacher, who was the lead researcher, also served as an observer. Observers used video recordings of classroom activities, rather than live sessions, in order to collect data. Class activities were taped for one 50-minute session for Bill and Jim daily during baseline and intervention phases. Sessions for Sara alternated between 30 and 50 minutes, due to her class schedule. When all three

participants were in the classroom simultaneously, one 50-minute taped session served as data for all students. When not all students were present, multiple sessions were taped. Researchers developed a schedule to ensure that all sessions for the same participant occurred as close to the same time of day as possible. In order to control for the presence of the camera, the teacher began taping classroom sessions two days prior to beginning baseline data collection. The two-week baseline period also allowed time for adjustment to the presence of the camera. In addition, the teacher conducted multiple activities using the video camera throughout the year. Prior to beginning the experiment, observers received training on recording measures and practiced implementing the measures using videotapes of pre-experimental classroom sessions. Observers recorded data for percentage of compliance and compliance latency simultaneously. Observers watched the tapes separately from one another.

Interobserver agreement for percentage of compliance was determined by counting the number of responses agreed upon by the observers, then dividing that figure by the total number of responses given by the student. Agreement for latency data was calculated by finding the number of compliant responses in which the observers agreed on the time elapsed prior to compliance, then dividing it by the total number of compliant responses for the session. Observers were considered to be in agreement regarding latency if they recorded times within three seconds of each other. In all cases of agreement, the mean of the two observers' responses became the official latency figure. Observers attempted to reach 80% agreement for all measurements for three consecutive sessions prior to beginning data collection, but due to time constraints, observers did not reach that goal prior to beginning baseline. Over the course of the study, however, mean

interobserver agreement was 80% for percentage of compliant behavior and 89% for compliance latency. When observer reliability dipped below 80%, researchers reviewed training and data collection procedures, including clarifying questions and confusing points. Since the lead researcher also served as an observer, all data comparison sessions presented opportunities for clarification and recalibration of procedures.

Social validity. The sheer number of studies that attempt to improve compliance in students seems to indicate the high value society places on self-mastery in this area. In light of this fact, and because compliance is an essential skill for people with severe disabilities to succeed in society – at school, work, and in other community and social settings – the objectives of this study are socially valid. The procedure of videotaping students, with parental consent, is not uncommon in behavioral analysis and data recording, nor is it uncommon for general education classes in high schools to use role-plays or student-acted videos as learning applications. Thus the methods employed in this study, both by professional standards and social comparison, are also socially valid. Finally, social validity of study outcomes were measured from the viewpoint of selected general education students and teachers, as well as the participants themselves.

In order to assess the social validity of the study in terms of outcomes, general education teachers and peers of the participants completed the Teacher and Peer Behavior Rating Scale, shown in Appendix A. All respondents watched examples and non-examples of participant compliance obtained on videotape, and rated each example on a scale of acceptability. All participants' parents gave permission for the administration of this instrument. Because of the sensitivity of information regarding the behaviors of students with developmental disabilities, researchers hand-picked two general education

teachers and two students without disabilities who were already familiar with the participants. Each of these groups consisted of one male and one female. To ensure confidentiality, all respondents signed a confidentiality agreement prior to viewing the video clips. While hand-picking respondents did not allow for a random sampling of school community members, it better preserved the privacy of the participants while still providing a degree of feedback regarding the school community's appraisal of study outcomes.

The video consisted of four short clips of each participant. In two of the clips, the participant was shown following a direction given by the classroom teacher. In the other two clips, the participant was shown refusing or failing to comply with a direction given by the classroom teacher. All clips of compliant responses were obtained from data collected during the intervention phase for each particular student. All clips of noncompliant responses were obtained during baseline data collection.

The video first presented compliant responses for all students, in random order, followed by noncompliant responses for all students, also in random order. For each segment, respondents rated acceptability of the student's behavior using a scale of 1 to 3. A rating of 1 indicated *unacceptable* behavior, a rating of 2 indicated *somewhat acceptable* behavior, and a rating of 3 indicated *fully acceptable* behavior. Teachers were directed to rate the behavior according to normal expectations for a general education classroom. Student respondents were given no such directions.

In order to assess the participants' attitudes toward video self-modeling, all three participants completed the Participant Social Validity Questionnaire, shown in Appendix A, at the conclusion of the study. The three questions listed were presented verbally by

the classroom teacher, and answered verbally by the participants. The questions were given as follows:

1. “Did you enjoy making videos in class? Why or why not?”
2. “Did you enjoy watching videos of yourself? Why or why not?”
3. “Do you think watching videos of yourself helped you learn to follow directions better?”

The classroom teacher typed participants’ answers as they were given. Soliciting the responses of both participants and members of the school community to which they belong provided some insight into the practical social significance of the study.

Data Analysis

Researchers gathered and reported data on each of the two dependent variables: mean percentage of compliant behavior and mean compliance latency. For each participant, researchers analyzed the mean percentage of compliant behavior during baseline phase and compared it to an identical measurement during the intervention phase. Researchers also analyzed the mean latency to compliance during baseline phase and compared it with the mean latency to compliance during intervention. These same measurements were taken during maintenance phase for Sara and Bill.

In addition to reporting the mean percentage of compliance and the mean latency, researchers compiled charts showing the daily performance of each participant across all phases of the study. These charts allowed for an analysis of any changes not only in the mean level of performance, but also of differences in the trend of the data between phases. Trend lines represent the mean daily increase or decrease based on data for the each phase as a whole. Figures depicting these data are reported in the results section.

RESULTS

This study addressed the effect of video self-modeling on the percentage of compliant behavior in high school students with developmental disabilities. It also measured the effect of the intervention on the compliance latency of each participant. For two of the participants, the study also measured how well any observed gains in behavior maintained following the withdrawal of the intervention. This section first reports the effect of video self-modeling on the participants' percentage of compliant behavior, followed by the effect on compliance latency for each participant. In each of these sections, results are reported by participant and data for each participant is reported chronologically by phase (baseline, intervention, maintenance). Results of social validity measures are then reported.

Effects of Video Self-Modeling on Percentage of Compliant Behavior

The data gathered for all participants' percentage of compliant behavior across phases may be found in Figures 1-3. The description that follows reports the performance of each participant for each phase, including mean performance, high and low performance, and trends evident in the data. Individual session data points for each participant are listed in Table 5 in Appendix B.

Participant one. During baseline phase, Sara complied with 54% of teacher directions. The baseline phase lasted for 11 school days, with no data being collected on day 10 because of a field trip. Thus, the baseline phase consisted of ten videotaped sessions. The highest level of compliance recorded during baseline for Sara was 78% (session 3). Sara's lowest level of compliance was 20% (session 6). Throughout the phase, Sara's compliance was erratic; she exhibited large gains or losses between single

sessions. The data for Sara showed a counter-therapeutic trend for six sessions, followed by a therapeutic trend for three sessions, a slight drop-off prior to intervention (See Table 1 and Figure 1).

Table 1

Mean Percentage and Range of Compliant Behavior for Participants

Participant	Baseline	Intervention	Maintenance
Kristine	m=54 h=78 l=20	m=85 h=100 l=71	m=46 h=77 l=0
Bill	m=70 h=100 l=43	m=90 h=100 l=78	m=85 h=100 l=67
Jim	m=68 h=100 l=40	m=89 h=100 l=81	----- ----- -----

m = mean percentage for phase

h = high percentage for phase

l = low percentage for phase

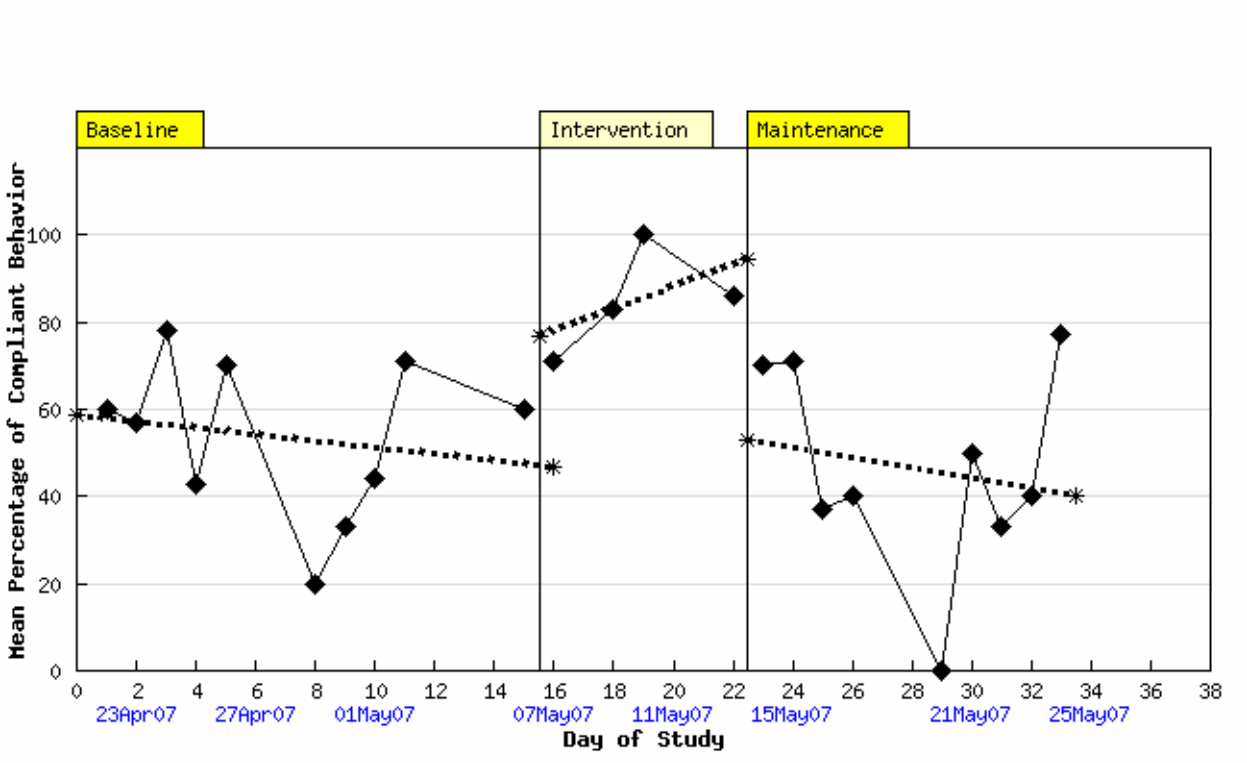

Figure 1. Sara's mean compliance.

In the intervention phase, Sara's mean percentage of compliance rose to 85%. The highest recorded compliance for Sara during intervention was 100% (session 15). The lowest level of compliance recorded was 71% during the first intervention session (session 12). Intervention data showed a clearly therapeutic trend for the first three sessions, followed by a slight drop-off during the final session.

Due to unforeseeable circumstances, researchers were unable to administer the intervention the day following the first intervention session and did not collect data. Intervention resumed the following day and continued for three days. Thus, a total of four sessions were held over a period of five school days.

Sara's gains in percentage of compliant behavior did not maintain over time. Her mean percentage of compliance fell to 46%, below baseline level. During this phase,

Sara's highest level of compliance was 77%, during the final maintenance session. Her lowest level of compliance was 0%, during the fifth maintenance session (21). Maintenance data reflected a counter-therapeutic trend until a sharp increase during the final session.

Participant two. Bill's baseline performance was higher than Sara's. Bill complied with 70% of teacher directions during this phase. Sixteen sessions of baseline data were conducted for Bill. His highest recorded level of compliance was 100% (session 7), and his lowest level of compliance was 43% (session 14). As with Sara, no data were collected during session 10. Data for Bill alternated between therapeutic and counter-therapeutic trends, but showed a mostly counter-therapeutic trend leading up to the intervention phase (See Table 1 and Figure 2).

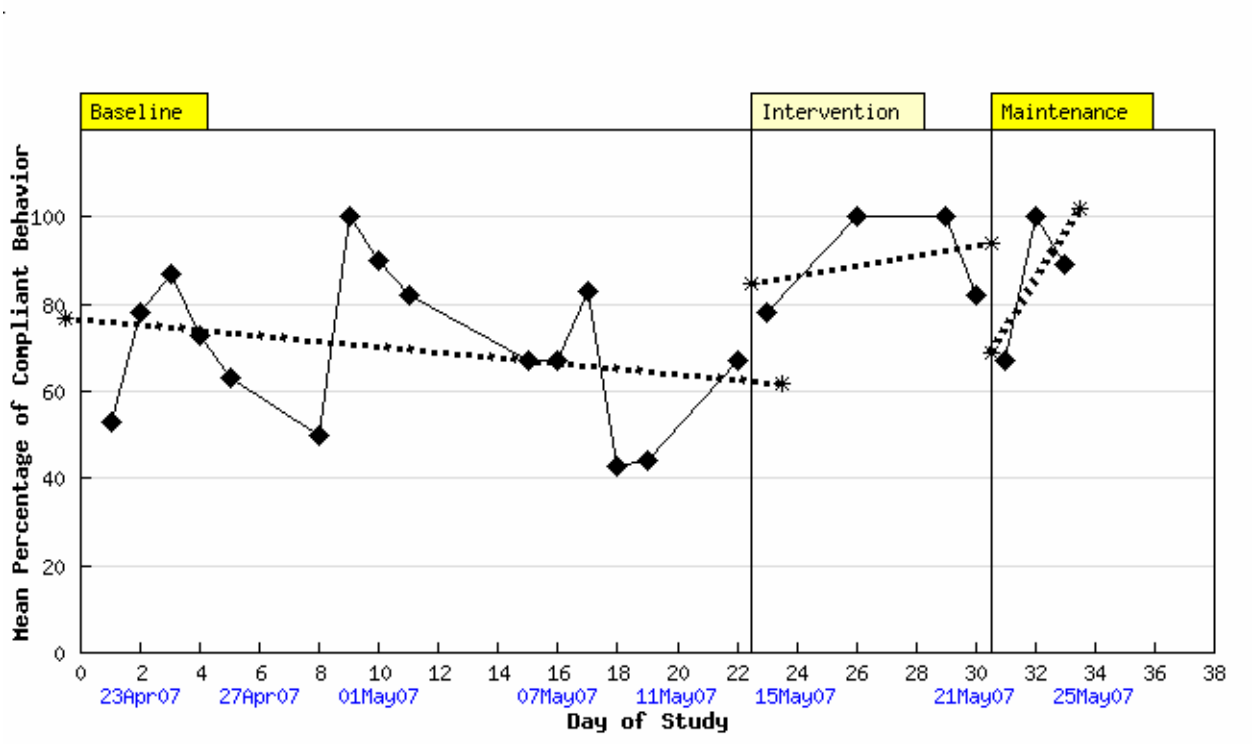

Figure 2. Bill's mean compliance.

Like Sara, Bill's mean percentage of compliance increased during intervention. As a mean, Bill followed 90% of teacher directions during this phase. The phase consisted of four sessions in all, with Bill being absent for two days between the first and second sessions. Bill's highest percentage of compliance for the phase was 100% (sessions 20 and 21), and his low percentage was 78% (session 19). The trend in the data for Bill was therapeutic, until the drop-off between the final two sessions of the phase.

Bill's gains in compliance seemed to maintain, though at a slightly lower level than during intervention. Maintenance data placed Bill's mean percentage of compliance at 85%. This phase consisted of only three days for Bill, with a high percentage of 100% (session 24), and a low percentage of 67% (session 23). The trend in Bill's data was unclear, though performance maintained near intervention levels. Additionally, Bill's mean compliance for intervention and maintenance phases combined was 88%, an 18% increase over baseline performance.

Participant three. Jim's baseline performance was slightly lower than Bill's. During this phase, Jim's mean rate of compliance was 68%. Jim's greatest level of compliance was 100% (sessions 3, 11, and 12). His lowest level of performance came during sessions 4, 5, and 6, when Jim complied with only 40% of teacher directions. Data for Jim alternated between counter-therapeutic and therapeutic trends. The two sessions prior to intervention reflected a therapeutic change (See Table 1 and Figure 3).

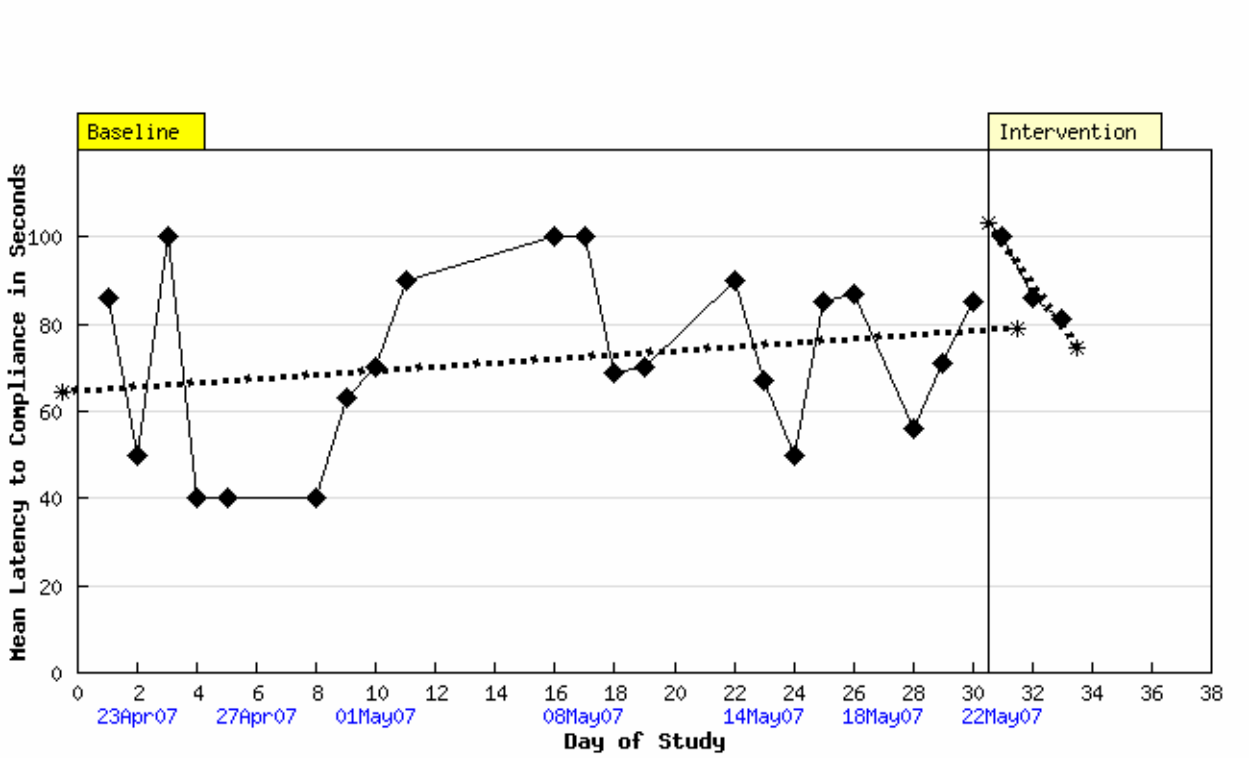

Figure 3. Jim's mean compliance.

During intervention, Jim's mean rate of compliance was 89%. Jim's highest percentage of compliance came on the first day of intervention (session 23) and reached 100%. His lowest rate of compliance, 81%, came on the final day of intervention (session 25). Because of time constraints, Jim's intervention phase lasted only three days. For this reason, trends in data for Jim were unclear.

Jim's intervention phase took place on the final three structured days of class before summer vacation. Jim was thus unable to participate in the maintenance phase.

Effects of Video Self-Modeling on Latency to Compliance

The mean latency to compliance for each participant are charted on Figures 4-6. The description that follows reports the performance of each participant in each phase, including mean latency, high and low performance by phase, and trends in latency data.

Individual session latency scores for all participants are summarized in Table 6 in Appendix B.

Participant one. Sara's mean compliance latency for baseline phase was 3.1 seconds. Her highest single-session latency during baseline was 6.0 seconds (session 1), and her lowest single-session latency was 1.5 seconds (session 7). The trend line for the phase showed a slight daily decline in latency (See Table 2 and Figure 4).

Table 2

Mean Percentage and Range of Compliance Latency for Participants

Participant	Baseline	Intervention	Maintenance
Sara	m=3.1 h=6.0 l=1.5	m=2.5 h=3.3 l=1.5	m=2.9 h=4.5 l=1.8
Bill	m=2.7 h=4.1 l=1.4	m=2.0 h=2.9 l=1.6	m=2.3 h=2.9 l=1.8
Jim	m=2.1 h=4.7 l=1.0	m=1.5 h=1.7 l=1.3	----- ----- -----

m = mean percentage for phase

h = high percentage for phase

l = low percentage for phase

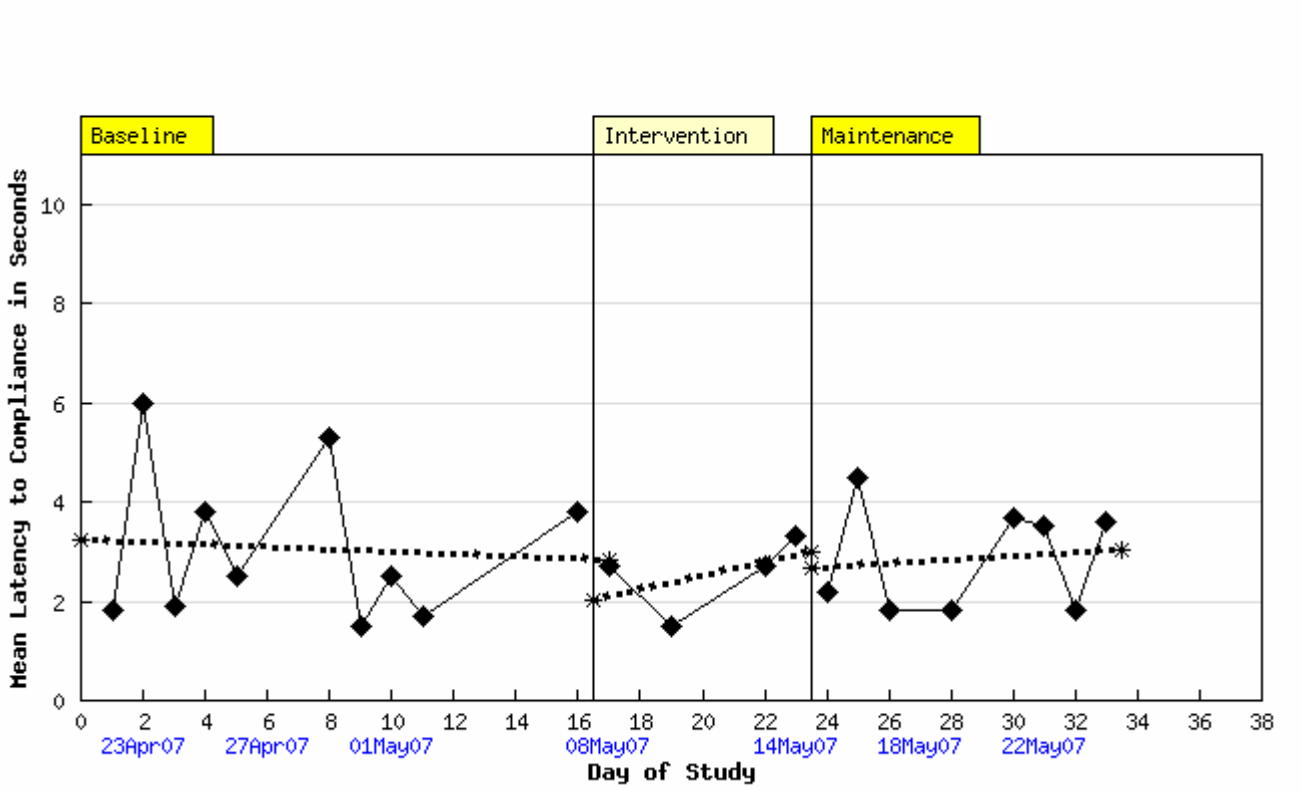

Figure 4. Sara's mean latency to compliance.

During intervention, Sara's mean compliance latency fell to 2.5 seconds. This figure represented a decrease in mean latency of 0.6 seconds from baseline to intervention. In this phase, Sara's highest single latency score was 3.3 (session 14), and her lowest mean latency score was 1.5 (session 12). The trend line revealed a slight daily increase in mean latency, though the level of data remained fairly stable.

Sara showed minimal levels of maintenance for reductions in latency. The average compliance latency for Sara during maintenance was 2.9 seconds. Thus, Sara maintained reductions in latency at 0.2 seconds below baseline levels, and 0.4 seconds above intervention levels. Her highest latency score for the phase was 4.5 seconds (session 19), a full 1.5 seconds lower than her highest latency score during baseline.

Sara's lowest latency score, 1.8 seconds, occurred during sessions 17 and 22. The trend line for maintenance showed a slight daily increase in latency. Intervention and maintenance data for Sara revealed less fluctuation (a smaller range of data points) in Sara's latency to compliance than during the baseline phase.

Participant two. During baseline, Bill's mean latency to compliance was 2.7 seconds. His high latency score was 4.1 seconds (sessions 4, 5, and 6), while his lowest mean latency was 1.4 seconds (sessions 7 and 11). The trend line showed a slight overall decrease in daily compliance latency (See Table 2 and Figure 5).

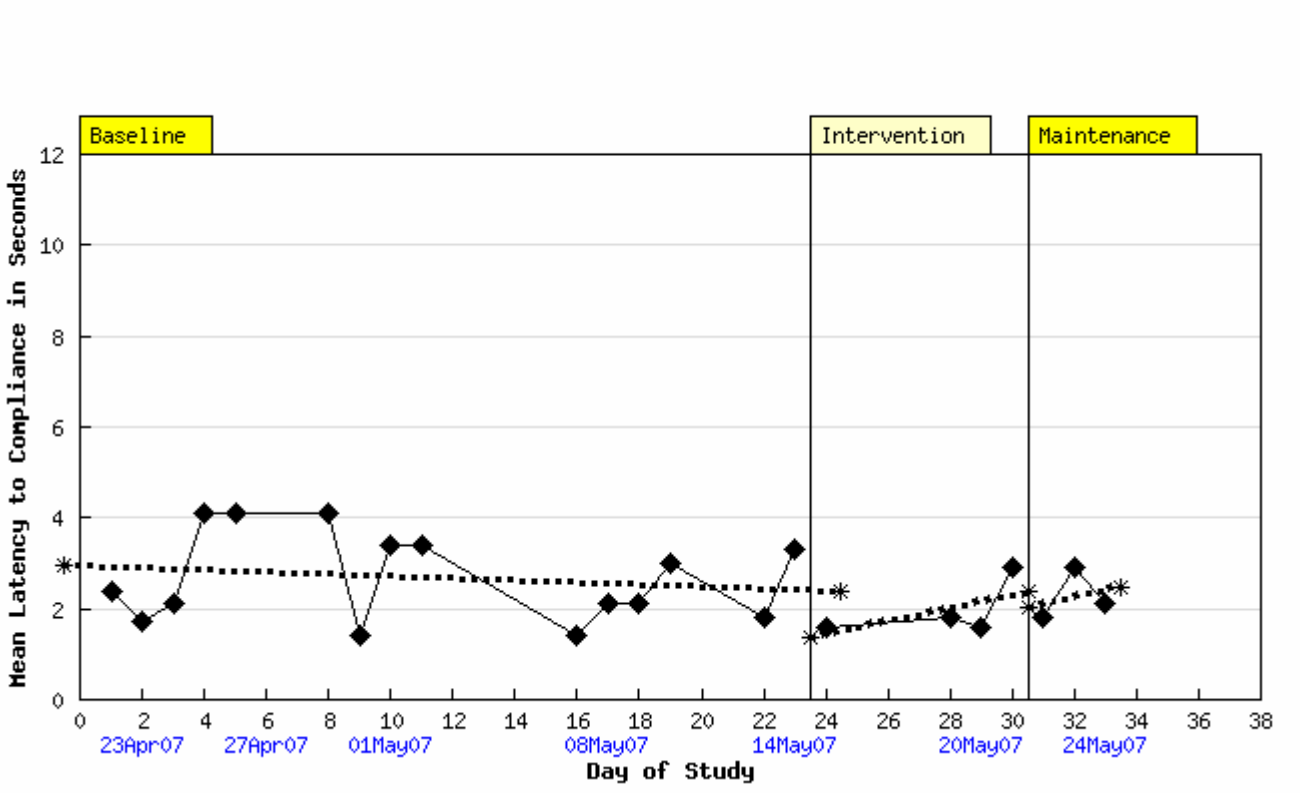

Figure 5. Bill's mean latency to compliance.

During intervention, Bill's mean latency fell to 2.0 seconds, a difference of 0.7 seconds. For the phase, Bill's highest mean latency was 2.9 seconds (session 22) and his

lowest mean latency was 1.6 seconds (session 17). The trend line showed a slight daily increase in latency.

Bill's reductions in latency maintained slightly above intervention levels. For the maintenance phase, Bill's mean latency rose to 2.3 seconds, with a high score of 2.9 seconds (session 24), and a low score of 1.8 seconds (session 23). The trend line for the phase was similar to the trend line during intervention, showing a slight daily increase in latency to compliance. Bill's mean latency for baseline and maintenance phases combined was 2.1 seconds, a reduction of 0.6 seconds from baseline performance levels. As with Sara, Bill's compliance latency seemed to stabilize during intervention and maintenance phases.

Participant three. Jim had the lowest overall latency of any participant in both baseline and intervention phases. Jim did not participate in maintenance phase. During baseline, Jim's mean compliance latency was 2.1 seconds. His highest mean compliance latency was 4.7 seconds (session 22). His lowest mean latency was 1 second (session 1). The trend line showed a slight daily increase in latency over the course of the phase (See Table 2 and Figure 6).

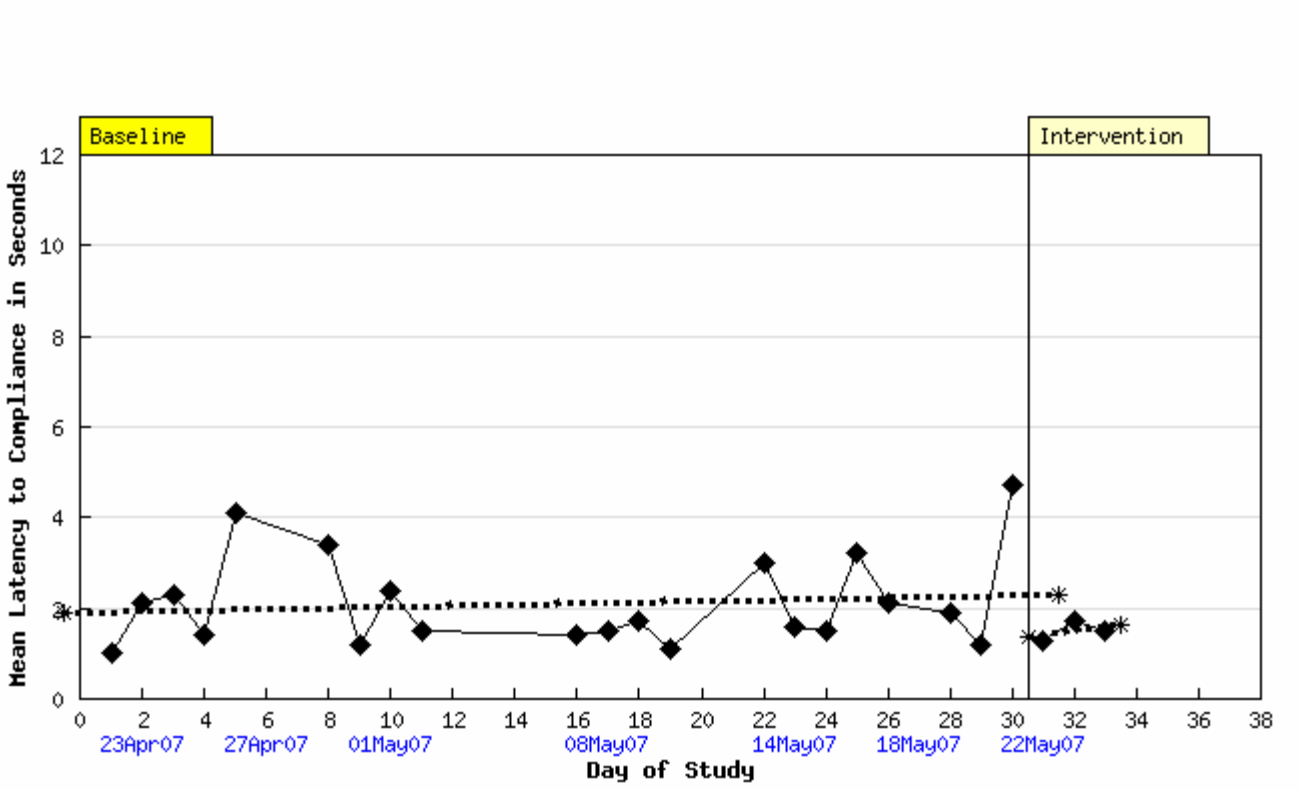

Figure 6. Jim's mean latency to compliance.

During the intervention phase, Jim's compliance latency fell to 1.5 seconds. The highest compliance latency recorded for the phase was 1.7 seconds (session 24). The lowest recorded latency for the phase was 1.3 seconds (session 23). The trend line for the phase showed a very slight daily increase in latency. Jim's latency to compliance appeared to be more stable during intervention, though a comparison with baseline data reveals a similar period of stabilization midway through the baseline phase.

Results of Social Validity Measures

Researchers measured social validity using two separate instruments. The first instrument measured the social validity of study outcomes by administering the survey in Appendix B to two general education teachers and two non-disabled student peers of the

participants. The second instrument measured the attitude of each participant toward the video self-modeling intervention by posing verbally to each participant the three questions listed on the survey found in Appendix C and recording their answers as they were given. This section first examines the results of the survey given to the general education teachers and students. The section concludes by examining the answers given by participants to the survey in Appendix C.

Social validity of study outcomes. General education teachers and peers rated a total of twelve video clips of student behavior, according to procedures described previously. Respondents' ratings are summarized in Table 3.

Table 3

Social Acceptability of Behavior as Rated by Teachers and Peers of Participants

Clip Type	Unacceptable	Somewhat Acceptable	Fully Acceptable
Compliant	G = 0 P = 0 T = 0	G = 4 P = 3 T = 7	G = 8 P = 9 T = 17
Non-compliant	G = 10 P = 7 T = 17	G = 0 P = 5 T = 5	G = 2 P = 0 T = 0

G = number of times rated by general education teachers

P = number of times rated by peers without disabilities

T = total ratings of teachers and peers combined

Of the six total clips of compliant behavior, all were rated either *somewhat acceptable* or *fully acceptable* by all respondents. Of the six total clips of non-compliant behavior, all were rated as *unacceptable* or *somewhat acceptable* by both student respondents and one teacher respondent. The other teacher respondent, however, rated two clips of non-compliant behavior as being *fully acceptable.* This teacher rated all other clips of non-compliant behavior as being *unacceptable.*

Overall, clips of compliant behavior received eight *fully acceptable* ratings from teachers and four *somewhat acceptable* ratings from teachers. The same clips received nine *fully acceptable* ratings from peers of students with disabilities and three ratings of *somewhat acceptable* from the same group. Teachers gave clips of non-compliant behavior ten *unacceptable* ratings and two *fully acceptable* ratings. Students without disabilities gave the clips of non-compliant behavior seven ratings of *unacceptable* and five ratings of *somewhat acceptable.*

Participant attitudes toward video self-modeling. Each of the three participants verbally responded to three questions about the video self-modeling intervention at the conclusion of the study. Participant answers are briefly summarized in Table 4 below.

Table 4

Participant Enjoyment of Intervention and Perception of Effectiveness

Student	Enjoyed Role-Plays	Enjoyed Watching	Felt Videos Effective
Sara	Yes	Yes	Yes
Bill	Yes	Yes	Yes
Jim	No	No	Don't Know

The first question asked students whether or not they liked making the videos in the class. Sara reported that she liked making the videos "'cause it was fun." Bill reported enjoying the activity "because it was my chance to prove that I could actually do something right. And it gave me a chance to goof off in the cut outs/deleted scenes." Jim, in contrast, said he did not enjoy making the videos. When pressed for a reason, Jim said simply, "I don't want to talk about it."

The second question on the survey asked whether or not participants enjoyed watching themselves on video. Sara responded to this question by saying she did enjoy it, but when asked for a reason said, "I don't know why." Bill reported that he enjoyed watching himself on video "just 'cause I didn't realize I was that tall and skinny." Finally, Jim said he did not enjoy watching the video. When asked why he did not enjoy watching the video, Jim shouted, "I just don't, that's why!"

The third question required the participants' opinions on whether or not watching the videos helped them to improve their ability to follow directions. Both Sara and Bill thought the videos did help them to follow directions better. Jim responded irritably, "I don't know!" Participants were not asked to speculate on the reasons for any perceived improvement.

DISCUSSION

This study examined the effects of video self-modeling on compliance in high school students with developmental disabilities. Specifically, the study measured the effect of the VSM intervention on mean percentage of compliant behavior and mean latency to compliance for three students. Results for each of these variables are discussed below.

Summary of Results

Research questions. The first research question posed by this study was, "What is the effect of video self-modeling on the mean percentage of compliant behavior in high school students with developmental disabilities. The video self-modeling intervention appeared to improve the mean percentage of compliance for each participant in the study. Participant 1, Sara, experienced a gain of 31%. Bill's mean percentage of compliance rose by 19% during intervention phase. Jim, whose initial mean compliance was highest, showed a 16% percent increase during the intervention. These results seem to indicate that, at least in some cases, VSM may be an effective tool for increasing mean compliant behavior of high school students with disabilities. These findings are significant because of the dearth of information regarding the effect of VSM on compliance or with high school-age participants. Thus video self-modeling may be effective with adolescents with developmental disabilities, not just with younger children.

Previous VSM studies (Hitchcock et al., 2004; Buggey, 2005; Lasater & Brady, 2005) have indicated high levels of maintenance upon withdrawal of the intervention. The results of this study regarding maintenance of improved skills are mixed. Sara failed to maintain her significant gains in mean compliance during the maintenance phase. Thus

the results for Sara reflect those found in a typical ABA withdrawal design, rather than the intended multiple baseline design. Bill, however, continued to perform only slightly below intervention levels.

One possible reason for the disparity in maintenance data is the difference in personal characteristics between Participants 1 and 2. A majority of VSM studies that have included students with developmental disabilities have focused on individuals with autism. The results for Participant 2, whose primary disability is autism, experienced gains and maintenance levels similar to those reported in previous studies. Participant 1, however, has been classified as having intellectual disabilities, rather than autism, and also experiences very high levels of anxiety on a frequent basis. Such differences between participants may result in substantially different responses to any intervention, including video self-modeling.

Another hypothesis is that individuals with high levels of anxiety require longer intervention periods before they are able to maintain gains in performance in the absence of the VSM intervention. This hypothesis is supported by Dowrick's (2006) argument that video self-modeling creates a feeling of competency within the observer by portraying him or her in a future state of success. This confidence, according to Dowrick, allows the observer to succeed where he or she has been unable to do so before. In the case of Sara, high levels of anxiety may lead to difficulty maintaining confidence, and thus to difficulty maintaining gains in performance without extended periods of intervention. This hypothesis remains to be tested.

A third possible factor affecting maintenance data was the short duration of the both the intervention and maintenance phases itself. Due to time constraints and other

confounding variables (illness, etc.), intervention phases were limited to four days for Sara and Bill, and three days for Jim. The maintenance phase for Bill was limited to only three days. It is possible that longer intervention and maintenance phases would have resulted in more consistent or more revealing maintenance data.

The second research question in this study was, “What is the effect of video self-modeling on the mean latency between the end of teacher-given directions and the initiation of student compliance?” Latency to compliance was targeted for intervention through step C of the three-step model described previously. Video self-modeling interventions included on-screen steps to following directions, the third of which was to “do what the teacher asked right away.” Though emphasis was given to the actual act of carrying out teacher instructions, the necessity of following directions quickly was clearly communicated.

Results for compliance latency were similar to those for percentage of compliant behavior. All participants exhibited gains in performance during the intervention phase of the baseline. Sara reduced her mean latency to compliance by 1.2 seconds. Bill reduced his mean latency by 0.6 seconds. Lastly, Jim reduced his mean latency score by 1.2 seconds. While the practical social significance of these reductions is debatable, these results seem to indicate a relationship between *increased* mean percentage of compliance and *decreased* latency to compliance. Thus while video self-modeling may help to reduce the mean latency to compliance in high school students with developmental disabilities, these reductions may simply be a function of the increase in mean percentage of compliant behavior.

Results regarding the maintenance of performance gains were inconclusive. During maintenance phase, Sara's mean compliance latency appeared to increase by 2.7 seconds over intervention levels, and by 1.5 seconds over baseline levels. However, by excluding data for session 19, which was a clear aberration from Sara's typical latency scores for the phase, Sara's mean latency during maintenance returns to near-intervention levels. Thus, aside from one session, Sara's reductions in latency appeared to maintain over time.

As with mean compliance, Bill maintained performance gains for latency. During maintenance phase, Bill's mean compliance latency diminished by an additional 1.3 seconds, more than twice his initial gain, for a total reduction of 1.9 seconds. Jim did not participate in maintenance phase. The discrepancy between Bill and Sara's maintenance data may be a function of one or more of the factors discussed above. Sara's failure to maintain reductions in latency likely corresponds with her failure to maintain performance gains for mean percentage of compliant behavior. Possible explanations may include one or more of the factors discussed previously.

Social validity of study outcomes. Based on the administration of Instrument 2 to general education teachers and peers, study outcomes appear to be socially valid. Pre-intervention non-compliant behavior was largely rated as *unacceptable* by teachers and peers of the students with disabilities, while post-intervention examples of compliant behavior were rated largely as *somewhat acceptable* or *fully acceptable.* Because all participants showed significant gains in compliance during intervention, it appears that, in some instances, video self-modeling may help increase the likelihood of socially acceptable compliant behavior in high school students with developmental disabilities.

The vast majority of responses (n=17) to video clips showing non-compliant, pre-intervention behavior indicated that such behavior was unacceptable. The remaining responses were split between *somewhat acceptable* (5 responses) and *fully acceptable* (2 responses). All responses of *somewhat acceptable* were given by student respondents. Student respondents thus exhibited a greater degree of tolerance for non-compliant behavior, likely because some degree of non-compliance is common among high school students. Inexplicably, one teacher rated two examples of non-compliance as *fully acceptable.* Conversations with this respondent, as well as her typically low tolerance for any form of misbehavior, led researchers to conclude that the respondent either felt these particular instances of non-compliance were humorous and not particularly harmful, or that the ratings indicated an accidental reversal of the scale in the respondent's mind.

Respondents' ratings of post-intervention, compliant responses indicated a high degree of social validity for study outcomes. In total, video clips of compliant behavior received 17 *fully acceptable* ratings and 7 *somewhat acceptable* ratings. No respondents rated any examples of compliant behavior as *unacceptable.* This finding is significant because the ability to comply with directions in a socially acceptable way could help erode some barriers to social integration for students with developmental disabilities. In addition, according to Kauffman et al (2006), the acquisition of compliant behaviors may serve as a keystone for reducing other socially unacceptable behaviors.

Measurements of participant attitudes toward VSM seem to strengthen the case for social validity. Of the three participants, two responded that they enjoyed both making and watching the videos. One participant, Jim, reported not enjoying either making or watching the videos. Yet only once did Jim object to watching the video

during intervention and then on the grounds that he had already watched it before. Thus while Jim did not enjoy watching the video, he was willing to watch it and the gains in performance seem to outweigh the annoyance he seemed to feel at watching the video again.

Perhaps more importantly than the level of enjoyment experienced by participants, two of three participants actually felt that watching themselves on video helped them to become better at following directions. The third participant, Jim, did not know whether the intervention helped him. This finding lends support to Dowrick's (2006) theory that video self-modeling allows students to see themselves in a future, more competent state and that this instills an increased level of confidence in the student, which in turn leads to improved performance.

Overall effectiveness of the intervention. Findings of the study indicate that video self-modeling may be an effective means of increasing the mean percentage of compliant behavior, as well as reducing the mean latency to compliance in high school students with developmental disabilities. While gains in performance may persist during maintenance phase for some students, some students may not maintain improvements in performance over time. This disparity may be a function of the differing characteristics of students with different disabilities. Finally, VSM may be seen as an effective and enjoyable intervention by participants, and seems to increase the social acceptability of participant responses to directions from the viewpoint of general education teachers and students without disabilities.

Limitations of this Research

Several limiting factors should be considered when interpreting the results of the study. Due to the time limitations in conjunction with the end of the school year, intervention and maintenance phases were shortened considerably. Thus, the results may not accurately reflect what would have occurred given longer periods of time for intervention and maintenance. Thus while the results of this study warrant further research in this area, they should not be generalized to the broader population. Also, because the school year was coming to a close, some sessions for all participants had to be adjusted in order to accommodate variations in the normal school schedule (i.e., assemblies, field trips, and shortened or rearranged class periods). Given the mixed nature of results for the maintenance phase of the study, extra caution should be used when interpreting these results.

In addition to scheduling, the setting of the study serves as a limiting factor. Though the authentic conditions under which data was obtained (i.e. naturally occurring responses to in the context of regular classroom activities) constitutes a strength of the study, the self-contained nature of the classroom prevent the results of the study from being generalized to less restrictive settings. Readers should also exercise caution when generalizing the results in any manner.

Beyond scheduling and setting, several limitations were associated with the reliability of data collection procedures. While videotaping classes allowed observers to rewind tapes and check for accuracy, difficulties arose when teachers or students wandered off-screen during a session or spoke too softly to be understood. In some instances, other students in the class spoke too loudly for the teacher or participant's

response to be heard. Other complications included non-participating students accidentally blocking view of the target student/students, as well as students consciously adjusting the camera angle unobserved, in order to produce a humorous effect. Each of these factors should be considered when interpreting data.

Population demographics also included several potentially confounding variables. Participants in the study were hand-picked based on their perceived need for improved compliance and were all taken from the same classroom. The participants were not randomly selected. In addition, Participant 1 had unusually high levels of anxiety because her family was getting ready to move. While her anxiety levels tend to be high, this time of her life was particularly difficult for her. Participant 2 became sick on the first day of intervention and was absent for the two days following. Though he returned feeling better and intervention resumed, the absence or the residual effects of illness may serve as confounding variables. In addition, Participant 3 had been sternly disciplined by another teacher just prior to intervention on the first day of his intervention phase. He announced that he was no longer his "old self," and that he couldn't risk getting into trouble anymore. Though it was observed by his teacher that his "old self" returned by the following period, this episode may have been a confounding variable during the first intervention session.

Finally, some limitations were associated with the limited number of data points obtained for each participant. The use of a multiple baseline design, combined with a limited number of days before the end of the school year, resulted in considerably shortened intervention and maintenance phases. The extension of these phases to include several additional sessions was needed in order to clarify the true effect of the video self-

modeling intervention. For this reason, the results of this study should not be generalized to individuals other than the three study participants.

Implications for Future Research

Much of the emphasis for this study has been on the importance of compliance as a keystone behavior, which may lead to significant decreases in other social-interfering behaviors. This study represents a first step toward using video self-modeling as a tool for reducing socially unacceptable behavior by increasing compliance. However, this study measured the effects of VSM on compliance alone. Future research should examine whether targeting compliance through video self-modeling leads to reductions in other specific social-interfering behaviors.

Generalization across settings, individuals, and skills has been a matter of significant discussion in VSM literature. While this study attempted to program for generalization across multiple directions by including a variety of directions in the video intervention, researchers did not measure generalization effects of the intervention. Future research should examine generalization effects of VSM on compliance across multiple types of directions, multiple settings, and multiple instructors. Because maintenance of intervention effects has been a strong selling point for proponents of VSM, future researchers should also examine whether maintenance is stronger for students with some disabilities or conditions than for students with other disabilities or conditions. In particular, researchers should examine the effects of VSM on students with intellectual disabilities who do not have elevated levels of anxiety. Researchers should also consider whether longer intervention phases increase maintenance for students with high levels of anxiety.

Implications for Practitioners

Results of the study contain important implications for educators and other practitioners, especially those involved with the transition of students with developmental disabilities to post-school life. For these practitioners, data now exists to support the use of VSM to teach compliance, one of the most vital prevocational/transition skills for students with developmental disabilities. In addition, this study provides some evidence that VSM may be effective with students with developmental disabilities other than autism. Though gains were not maintained in the only participant without autism, initial gains provide some evidence of the effectiveness of VSM as an ongoing intervention. VSM may also provide practitioners with a means of improving compliance that is enjoyable to many of their students, thus potentially reducing the friction and/or power struggles that frequently occur between teachers and students over compliance issues.

Conclusion

Results of this study indcate that video self-modeling may be an effective means of improving the mean percentage of compliant behavior in high school students with disabilities. Three of three participants experienced educationally signficant gains in mean compliance during intervention; that is, the increase in compliance experienced by each participant significantly, in the teacher's judgment, increased their participation in learning activities. Such increases in compliance, if generalized, could also positively effect functioning in mainstream society. Results further indicate that VSM may help reduce the time between the end of a teacher's directions and the initiation of compliance by students in this population. All three participants experienced reductions in compliance latency during intervention phases. In addition to increasing classroom

learning time, such improvements could positively effect performance in community settings, such as vocational training or experience. These findings are also significant because compliance may serve as a keystone behavior that leads to a reduction in other socially inappropriate behaviors. Decreasing such behaviors and increasing compliance are essential for students with developmental disabilities in order to successfully transition to mainstream society following school.

In addition to these findings, the study yielded mixed information regarding the maintenance of gains in compliance made through VSM intervention. While one of two students who participated in maintenance appeared to retain gains in performance, the other student, at best, maintained gains in only one of two areas. The significance of these findings lies in the disparate conditions of the participants. Participant 2, whose gains maintained, is a student with autism. Other VSM research that included students with developmental disabilties has focused on students with autism. In the majority of these studies, gains made using VSM were maintained by these students. Participant 1, whose gains may have maintained for latency but did not maintain for mean compliance, is a student with intellectual disabilities and high levels of anxiety. While she experienced the greatest overall gain percentage of compliant behavior during intervention, she did not appear to maintain this improvement afterward. These results, combined with the results of other studies, suggest that VSM may not produce equally powerful maintenance effects across all types of developmental disabilities.

Results of the social validity measures for the study found that behavioral outcomes for the study represented socially acceptable performance, according to both teachers and peers of the participants. In light of the need to include students with

developmental disabilities in mainstream classes at the high school, these findings are particularly encouraging. In addition, two out of three participants reported enjoying the intervention and the same two participants reported feeling that the intervention helped them to improve their ability to follow directions.

Persons with developmental disabilities must become fully accepted, contributing members of society. To do so, students must master certain skills that will allow them to successfully transition from secondary schooling to post-school community life. Compliance is among the most basic and essential of skills necessary to succeed in mainstream society, whether at work, play, or while accessing community services. Students who are closest to entering mainstream society need the greatest degree of attention in this area. Video self-modeling, a promising intervention for students with developmental disabilities, has yet to be applied to compliance among this age group and has rarely been applied to compliance or to this population. This study thus extends the existing VSM literature to include a new skill and a new population. Results of the study suggest that video self-modeling may be effectively applied to both.

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APPENDIX A

Frequency and Latency of Response Form

Frequency count of requests and compliances per 50-minute session

Request #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Compliance (Y/N)															
Latency to Compliance															

Y = Complied
N = Did not comply
For latency data, observers will record time (in seconds) elapsed from end of teacher instructions to beginning of compliance for each correct trial.

Teacher and Peer Behavior Rating Scale

Information regarding the behavior of students with disabilities is confidential. You must agree not to disclose the content of the video or the names of the individuals in the video to anyone, including family, friends, teachers, peers, or others. If you do not agree, you may not complete the survey. If you agree to maintain confidentiality is this regard, please sign below.

I agree not to disclose or discuss with anyone the content of these video clips or the names of the individuals in the video

---

Signature

Directions: You will now watch several short clips of students following or not following directions. Please rate each clip according to the following criteria:

1 – Unacceptable behavior
2 – Somewhat acceptable behavior
3 – Fully acceptable behavior

Clip 1	Clip 5	Clip 9
1 2 3	1 2 3	1 2 3
Clip 2	Clip 6	Clip 10
1 2 3	1 2 3	1 2 3
Clip 3	Clip 7	Clip 11
1 2 3	1 2 3	1 2 3
Clip 4	Clip 8	Clip 12
1 2 3	1 2 3	1 2 3

Participant Social Validity Questionnaire

Please answer these three questions about the videos we made in class. You can choose to write your answers or say them out loud.

1. Did you enjoy making videos in class? Why or why not?

2. Did you enjoy watching videos of yourself? Why or why not?

3. Do you think watching videos of yourself helped you learn to follow directions better?

APPENDIX B

Table 5

Percentage of Compliance for Individual Sessions by Participant

Session	Sara	Bill	Jim
1	60*	53*	86*
2	57	78	50
3	78	87	100
4	43	73	40
5	70	63	40
6	20	50	40
7	33	100	63
8	44	90	70
9	71	82	90
10	---	---	---
11	60	67	100
12	71**	67	100
13	---	83	69
14	83	43	70
15	100	44	90
16	86	67	67
17	70***	78**	50
18	71	---	85

Table 5 (continued)

Percentage of Compliance for Individual Sessions by Participant

Session	Sara	Bill	Jim
19	37	---	87
20	40	100	56
21	0	100	71
22	50	82	85
23	33	67***	100**
24	40	100	86
25	77	89	81

* = first day of baseline phase

** = first day of intervention phase

*** = first day of maintenance phase

Table 6

Compliance Latency for Individual Sessions by Participant

Session	Sara	Bill	Jim
1	1.8*	2.4*	1.0*
2	6.0	1.7	2.1
3	1.9	2.1	2.3
4	3.8	4.1	1.4
5	2.5	4.1	4.1
6	5.3	4.1	3.4
7	1.5	1.4	1.2
8	2.5	3.4	2.4
9	1.7	3.4	1.5
10	---	---	---
11	3.8	1.4	1.4
12	2.7**	2.1	1.5
13	---	2.1	1.7
14	1.5	3.0	1.1
15	2.7	1.8	3.0
16	3.3	3.3	1.6
17	2.2***	1.6**	1.5
18	4.5	---	3.2
19	1.8	---	2.1

Table 6 (continued)

Compliance Latency for Individual Sessions by Participant

Session	Sara	Bill	Jim
20	1.8	1.8	1.9
21	N/A	1.6	1.2
22	3.7	2.9	4.7
23	3.5	3.3***	1.3**
24	1.8	2.9	1.7
25	3.6	2.1	1.5

* = first day of baseline phase

** = first day of intervention phase

*** = first day of maintenance phase

APPENDIX C

Consent for my Child to Participate as a Research Subject

Dear Parents,

This is a consent form for your **child** to participate in a research study being conducted by Jake Figueira, **a graduate student at BYU, and** the Life Skills teacher at Timpanogos High School. **Dr. Mary Ann Prater, a professor at BYU, is Mr. Figueira's advisor for the study. Mr. Figueira will be conducting the study under Dr. Prater's supervision.** The study is attempting to determine the effect of a technique called *video self-modeling* on the ability of students to follow directions quickly and correctly. Video self-modeling is technique that allows students to watch videotapes of themselves correctly performing a skill, and seeing whether it helps them improve their everyday performance of that skill. In this case, the students will watch tapes of themselves following a variety of directions clearly. The students were chosen for the study because they often struggle to follow directions quickly and correctly in the classroom.

If your **child** participates in this study, he/she will role-play following several different directions. These role plays will be taped and edited to form videos where students are only seen following directions correctly. The students will then watch the videos of themselves once each day for at least one week, and possibly up to two weeks. The teacher and classroom assistants will videotape part of the class each day, and will watch these tapes to determine what percentage of the time your **child** follows directions. The classroom staff will record your **child's** performance for a total of 4-6 weeks (April-May 2007). The entire study will take place in the Life Skills classroom, and your **child** will not be required to go to any other location in order to complete the study. Your **child's** school schedule will not be altered.

The risks involved in this study are minimal. It is, however, possible that your **child** may feel some emotional discomfort (nervousness, etc.) while filming role plays or watching himself/herself on video.

Your child may benefit from their participation in this study. The researcher believes that the students will improve their ability to follow directions quickly and correctly as a result of the video self-modeling intervention. This study may also provide beneficial information to other educators and students about the effectiveness of video self-modeling that can then be applied in other settings.

All information relating to your **child** and his/her performance will be kept strictly confidential, and will not be reported in a way that will allow your **child** to be identified by others.

As a part of this study, the researcher would like to determine whether the video self-modeling technique makes a socially noticeable/acceptable difference to **your child's** peers and teachers. For this reason, we would like to show 4 short video clips of your **child's** behavior to two of their peers who already know them, as well as to two of their general education teachers (teachers other than Mr. Figueira). Each peer or teacher will see two clips of the student following directions, and two clips of them not following directions. All of these clips will be of naturally occurring behaviors (not role plays).

Each of these persons will then rate the behavior shown in each clip on a scale of 1 to 3 as to social acceptability. These persons will view and rate the clips only if you grant your permission for them to do so. Your **child** may still participate in all other portions of the study without allowing these clips to be viewed by his/her peers and teachers. Please check the appropriate box below, indicating whether you grant permission for the researcher to use these clips as described above.

Participation in this research study is voluntary. **Your child has** the right to withdraw at anytime or refuse to participate entirely.

If you have any questions about the research study, please contact Jake Figueira by phone at (801) 223-3120, or by email at figuj786@alpine.k12.ut.us. **You may also contact Dr. Mary Ann Prater by phone at (801) 422-3857, or by email at Prater@byu.edu.**

If you have any questions about the rights of your **child** as a research subject, please contact Dr. Renea Beckstrand, IRB Chair, by phone at 422-3873, or by email at renea_beckstrand@byu.edu.

I have read, understood, and received a copy of the above consent and agree of my own free will that my **child** may participate in this study.

Signature:_____ Date:_____

I agree that 4 short video clips of my **child** may be shown to 2 of his/her peers who already know him, and 2 of his/her teachers other than Mr. Figueira. (Please check one box).

☐ Yes ☐No