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INVESTIGATING THE UTILITY OF VIDEO MODELING INTERVENTIONS FOR GENERALIZATION OF SOCIAL SKILLS

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Utilizing Video Modeling for Generalization

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Social skill deficits are a core, defining feature of Autism Spectrum Disorder. As such, many of the available interventions for children and youth with autism are designed to target social skill development. Although many of these interventions purport to be an effective means of teaching social skills to children and youth with autism, many are lacking in empirical evidence and do not satisfy criteria for evidence-based practice. Encouragingly, video modeling interventions have been deemed an evidence-based practice for children and youth with autism. Research demonstrates that video modeling interventions can prove an effective means for the generalization of skills, a necessary component of any intervention that aims to make a meaningful and relevant difference in the client's life. As such, the present research will investigate whether a clinic-based video modeling intervention can generalize to home and school settings, using the approach of training sufficient exemplars across settings. To date, the utility of video modeling interventions for generalization of skills from clinic to both home and school settings has not been documented. As such, the current study serves to enhance the literature by outlining the efficacy of video modeling interventions for the development of skills across several settings.

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Chapter I

Introduction

Learning how to communicate effectively and participate successfully in social interactions are key developmental milestones for children and youth (Kaiser & Trent, 2007). Understanding how to socialize with peers can facilitate in developing healthy peer relationships and requisite emotional and intellectual skills, alongside developing an understanding of social norms and etiquette (Carter & Hughes, 2008; Kaiser & Trent, 2007). Deficits in social functioning are recognized as a core feature of Autism Spectrum Disorder (ASD), and have been extensively documented in the literature (Myles et al., 2005; White, Koeing, & Scahill, 2007). These social skills deficits can lead to negative outcomes in both the short and long term, which highlights the necessity of effective social skills interventions for children and youth with ASD (Bellini, 2006).

Individuals with ASD experience significantly higher levels of anxiety than the rest of the population (Bellini, 2006; Gillott, Furniss, & Walter, 2001), which can lead to avoidance of social interactions and create barriers to meaningful social relationships. There is also evidence to suggest that individuals with ASD will experience less acceptance from teachers and peers as they age (Deno, Maruyama, Espin, & Cohen, 1990), which may contribute to potential increasing levels of distress and psychological problems during the adolescent years. Additionally, deficits in social skills can have a negative impact on academic competence, which may in turn cause increased anxiety for children and youth with ASD (Welsh, 1997). These social difficulties can, in turn, lead to poor outcomes across social, educational, and vocational domains (Wittemeyer, Charmak, & Cusak, 2011). It is evident that individuals with autism stand

to make significant gains from participating in evidence-based interventions for social skills (Rogers, 1998).

Encouragingly, the development and implementation of social skills interventions has increased dramatically in recent years (Matson, Matson, & Rivet, 2007; Reichow & Volkmar, 2010). Social skills interventions play a central role in the autism intervention literature for several reasons; deficits in social communication and reciprocity are a core feature of autism, social impairments may be the most critical feature of autism, and successful acquisition of social skills may impact children's outcomes greatly (Lord & Risi, 1998; Stella, Mundy, & Tuchman, 1999). The variety of treatments available for social skills have increased steadily across the last 30 years (Matson et al., 2007), which serves to highlight the growing need to better define evidence-based practice for social skills interventions for children with autism.

While this proliferation of new social skills interventions is encouraging insofar as it demonstrates increasing awareness of the necessity and utility of intervention for individuals with ASD, a large number of treatments available for children with autism have not been established as being evidence-based (Smith, 1996). As such, families of children with ASD who do not have access to information about evidence-based treatments are vulnerable and very much at the mercy of professionals who offer interventions (Parsons & Charman, 2013; Rogers, 1998). Indeed, there have been several highly controversial treatments for autism over the years, many of which have been unvalidated and lacking in empirical support or efficacy (Gresham, Beebe-Frankenberger, & MacMillan, 1999; Simpson & Myles, 1998). As Rogers (1998) makes clear, psychologists and the professional community whom serve families and children with autism have several responsibilities with regard to this issue: being knowledgeable about the current literature regarding evidence-based practice for individuals with autism, teaching families how to

discriminate between treatments that do and do not have an evidence base, and endeavoring to make appropriate services available to all individuals with autism in one's community.

In response to this increased call for evidence-based practices for individuals with autism, researchers have developed criteria that interventions must meet in order to be deemed an evidence-based practice (Horner et al., 2005; Odom et al., 2003; Odom et al., 2005; Odom et al., 2010; Rogers, 2003). Encouragingly, several reviews of evidence based social skills interventions for individuals with autism have identified video modeling as an intervention that meets criteria for evidence-based practice (Bellini & Akullian, 2007; Odom et al., 2010; Reichow & Volkmar, 2010; Shukla-Mehta et al., 2010; Wang & Spillane, 2009). Researchers have demonstrated that video modeling is an effective intervention for teaching social and communication skills, functional living skills, and appropriate behavioral functioning (Bellini & Akullian, 2007). In addition, video modeling interventions have proven an effective means of facilitating the generalization of skills across settings, people, and stimuli (McConnell, 2000). This is especially promising, given that individuals with autism often experience difficulties with generalization, with many treatment effects not extending beyond the treatment setting (Lovaas, 1989; Weiss & Harris, 2001; DiSalvo & Oswald, 2002).

While adherence to the criteria of evidence-based practice is no doubt necessary, it is critical also to consider client characteristics when designing, implementing, and evaluating interventions. Specifically, researchers recommend that families be knowledgeable about available treatment options and take an informed role in making decisions about treatment (Fixsen, Naoom, Blase, Friedman, Wallace, 2005; Kazdin, 2008; Rogers, 2003). One established means by which to engage families throughout treatment is by assessing for social validity throughout the treatment process, with the aim of ensuring that treatment goals, implementation,

and outcomes are all meaningful and relevant for families (Gresham & Lamros, 1998). Unfortunately, there is a significant shortage of video modeling studies that include reports of social validity, despite its clear importance (Bellini & Akullian, 2007; Delano, 2007; Wang & Spillane, 2009).

Clearly, video modeling interventions provide promising results with regard to the generalization and maintenance of social skills. This is especially exciting in light of the fact that children with autism have typically struggled to generalize newly learned skills to other settings, people, or stimuli (Handleman, 1999). This poses a problem to families of children with autism and the professionals who work with children with autism, considering that many interventions are delivered in a 'pull-out' or clinic setting, which may be unrepresentative of the setting in which they will practice the targeted skill (Bellini et al., 2007; McGinty & Justice, 2006). Indeed, this shortcoming is well documented within the social skills training literature, leading researchers to call for future studies that are developed with the specific aim of generalizing social skills from treatment to community settings (Rao, Beidel, & Murray, 2008). As such, the current study aims to supplement a clinic based social skills intervention with a video modeling intervention at home and at school, in an effort to investigate the utility of video modeling interventions as a means to facilitate generalization and bridge the gap between the clinic and the natural contexts in which the skills are required.

Given the effectiveness of video modeling interventions, it is important to explore ways in which this potential can be maximized. As such, the present study aims to address a gap in the literature by exploring the effectiveness of video modeling interventions for the generalization of social skills learned in a clinic to school settings, while assessing for social validity throughout the treatment process. This study will involve implementing a clinic-based video modeling

intervention utilizing the technique of training sufficient exemplars, in order to facilitate skill acquisition from the clinic to school settings. While the generalizability of video modeling interventions has been documented, there are numerous ways in which the current literature can be expanded. As mentioned above, there has yet to be a study that assesses for generalization of social skills learned in a clinic setting to school settings. Specifically, this study will examine this question by applying the technique of training sufficient exemplars, using a changing conditions design. The exemplars within this study will be video-modeling interventions that demonstrate each participant's target behavior using a number of different peers, a number of different examples of the target behavior, and a number of different voiceovers explaining how to produce the target behavior. Additionally, there is a shortage of studies that assess for social validity throughout the treatment process, a key component of ensuring that treatment goals are socially meaningful, and the treatment outcomes are acceptable to families and school professionals.

The present study will address the current gap in the literature by assessing the generalizability of clinic-based video modeling interventions to a number of school settings, while also assessing for social validity throughout all stages of the treatment process. Findings have the potential to inform professionals who provide clinic-based services about what kind of dosage of video modeling interventions (i.e. how many exemplars of the target behavior) may be required in order for generalization to occur across school settings. It will also provide a framework for clinicians who wish to adhere to a best practice approach and assess for social validity throughout all stages of the intervention, thereby taking steps to secure the interest and motivation of families, caregivers, and school based professionals.

Chapter II

Literature Review

Skill Generalization in Individuals with Autism

Generalization has been defined by Stokes and Baer (1977) as the occurrence of treatment behavior under different, or non-treatment, conditions. As such, generalization can be understood to occur when the target skill or behavior is demonstrated in a different setting, with a different person, or with different stimuli than what were utilized during initial skill development and mastery. As is clear from the literature, video modeling interventions prove a promising intervention as a means of promoting skill generalization for individuals with autism. This is especially important given the well-documented challenges of skill generalization for individuals with autism (Baer, Wolf & Risley, 1968; Greenspan, 1992; Koegel & Rincover, 1977), and in consideration of the lack of actual or meaningful benefit to individuals whom receive treatment that does not facilitate generalization.

It is understood that difficulty with generalization is the result of a number of different issues experienced by individuals with autism; stimulus overselectivity (Lovaas, Koegel, Schreibman, 1979), stimulus control limitations (Baron, 1965), and difficulty learning in more than one environment (Lovaas & Smith, 1989). Specifically, stimulus overselectivity is defined as a tendency to attend to a limited number of cues within a given situation (Lovaas, Koegel, Schreibman, 1979). This proves detrimental to observational learning, and may also lead children with autism to attend to irrelevant cues during teaching tasks, thereby failing to attend to and learn the relevant information. Stimulus control limitations are understood as difficulties with pairing stimuli with consequences, and hence difficulties understanding and learning relationships between events within one’s environment (Baron, 1965; Luciano, 1986).

Interestingly, some have proposed that this problem of stimulus control limitations may contribute significantly to social skill deficits, as inconsistent reinforcement of social behaviors in natural contexts or environments may prevent children with autism from understanding the value of pro-social behaviors (Spradlin & Brady, 1999). Further, children with autism have demonstrated difficulty with learning in more than one environment, due to a lack of inherent interest in exploring one's environment (Lovaas & Smith, 1989). This leads to a reliance on learning in environments that have been specifically engineered to address this deficit, in contrast with typically developing children, whose natural interest will promote their learning across many environments (Lovaas, 1987). It is clear that the above issues, typically experienced by individuals with autism, may contribute to significant generalization challenges.

The social skills literature has identified challenges with generalizing social skills from clinic settings to more meaningful community settings (DiSalvo & Oswald, 2002; Krasny et al., 2003; Weiss & Harris, 2001). This lack of generalization effects within the social skills intervention literature has led researchers to call for social skill treatments that are designed and implemented with the aim of facilitating skill generalization outside of the treatment setting (Rao, Beidel, & Murray, 2008). Indeed, researchers emphasize that the goal of any social skills intervention program is for children to learn the necessary skills to interact appropriately with peers in natural contexts and environments, and as such, this aim should be paramount within any training program (DiSalvo & Oswald, 2002). Given the difficulty that individuals with autism experience with skill generalization, and the challenges that social skills training programs often encounter with generalizing skills from treatment to community settings, there is a clear need to develop programs that aim to address these challenges. As such, the current study

is designed with the aim of facilitating the generalization of social skills from the treatment setting (a clinic) to more meaningful community settings (various school settings).

Social Skill Development in Individuals with Autism Spectrum Disorder

Individuals with autism share the defining characteristic of difficulty with social communication and interaction, which many include deficits in social-emotional reciprocity, deficits in non-verbal communicative behaviors, and deficits in developing, understanding, and maintaining relationships (APA, 2014). These social impairments involve both speech and language conventions, and social interactions. Deficits in social pragmatics have been identified, such as the inability to take turns and understand the listener's perspective. Poor speech prosody, in the form of inappropriate inflection, and atypical intonation and pitch of one's voice, have also been identified as contributing to poor social functioning (Tager-Flusberg, 2003). Additionally, individuals with autism may display a tendency to exhaust conversational topics, to experience difficulty with interpreting and expressing emotional states, while also experiencing difficulty in understanding sarcasm and metaphor (White et al., 2007).

Given the heterogeneity of individuals with autism, these social skills deficits can manifest in a variety of ways (Carter, Davis, Klin, & Volkmar, 2005). Individuals with autism may display decreased interest in social interactions, as manifested by low levels of social orienting, joint attention, and paying attention to others' distress (Dawson, Toth, Abbott, Osterling, Munson, Estes, & Liaw, 2004). They may also display little interest in experience-sharing relationships, which involves the willingness and the skill to play reciprocally, appreciate others' points of view, and develop friendships (Gutstein & Whitney, 2002). Children and youth with autism typically display poorer quality in social interactions than do their typically developing peers. For example, Lord and Magill-Evans (1995) found that children with autism

spent less time engaging in social interactions, had lower-quality interactions, and spent greater time alone and not engaged in activities than typically developing peers. Further research demonstrates that children with autism produce fewer verbalizations, are recipients of fewer social initiations, and focus less on other children than their typically developing peers (McGee, Feldman, & Morrier, 1997). Children with autism also display greater difficulty with social communication than children with other developmental disabilities, showing greater levels of time spent in solitary play, a decreased likelihood of social initiations, and a decreased likelihood of responding to social initiations from peers (Sigman & Ruskin, 1999). Overall, it appears that children with autism experience greater social isolation due to their own avoidance and lack of initiation, and not as a result of others' behavior. Additionally, children with autism may engage in several behaviors that diminish their opportunities for social learning, such as self-injurious or self-stimulatory behavior (Lord, 1993).

These social skills deficits seem to manifest in individuals with autism for a variety of reasons, such as the inability to attribute representational mental states (Baron-Cohen, 2000) and impairments in executive functioning (Fisher & Happe, 2005), which in turn impair children's ability to establish theory of mind. Dawson et al., (2004) suggest that social skills deficits may be caused by a general impairment in attentional functioning and selective attention, problems with sensory processing, and a lack of motivation to attend to social stimuli. Individuals with autism also frequently experience impairments in joint attention, which is defined as the simultaneous engagement of two or more individuals in mental focus on the same external thing (Murray, Creaghead, Manning-Courtney, Shear, Bean, & Prendeville, 2008). Imitation deficits have also been identified as a cause of social skills deficits for individuals with autism, which may result in deficits in the development of symbolic thinking and emotional sharing (Ham, Corley,

Rajendran, Carletta, & Swanson, 2007; Roger & Williams, 2006). This range of social skills deficits has been identified as sharing severe social reciprocity deficits at their core (White, Koeing, & Scahill, 2007).

Notably, social skill deficits are a major characteristic for individuals with autism regardless of cognitive ability or language skills (Carter et al., 2005; Howlin, 2005; Shea & Mesibov, 2005). Also, the impact of these social skills deficits does not diminish with age. Rather, children may experience greater psychological distress as they approach adolescence, which may be at least partly due to increasingly complex social demands and a growing awareness of their own social skills deficits (Carter et al., 2005). In terms of the types of distress, a growing body of research demonstrates that individuals with autism may be at risk of developing psychological disorders, such as affective disorders, anxiety-related disorders, and conduct disorders, secondary to their diagnosis of autism (Tantam, 2000). As mentioned above, this higher prevalence of affective and anxiety-related disorders in individuals with autism may be attributable to a growing awareness of the difference between themselves and others, and a history of negative or unpleasant social interactions with others, as well as to factors such as high trait anxiety, bullying and victimization, (Tantam, 2000).

Unfortunately, outcomes for individuals with autism are poor across social, educational, and vocational domains (Howlin, 2005). Although there is some variability across outcome studies, several trends are apparent. Many students with autism leave high school without having obtained an academic or vocational qualification, while college attendance rates are low for individuals with autism. Additionally, employment rates for adults with autism are estimated to be around 24%, with the majority of these jobs being menial positions. Even for high-functioning adults with autism, the majority will remain highly dependent on their parents, with only a

minority achieving totally independent living, and close friendships or romantic relationships being very rare (Howlin, 2005; Shea & Mesibov, 2005). Research also suggests that the prevalence rates of autism are increasing, with the Center for Disease Control reporting current prevalence rates of 1/68 children having autism (CDC, 2014), and other reports suggesting a slightly higher prevalence rate of 1/62 children having autism (Elsabbagh, Divan, Koh, Kim, Kauchali, Marcin et al., 2012). Given the vulnerability of this population, and the growing prevalence rates of ASD, there is a clear need to develop evidence-based interventions to meet the needs of individuals with ASD.

Social Skills Interventions for Individuals with Autism

Social skills may be defined from a behavioral framework as interpersonal responses that have specific operational definitions and that allow a child to adapt to their environment through their use of both verbal and non-verbal communication (Matson & Wilkins, 2007). Alternately, others provide a social validity conceptualization of social skills, wherein social skills are defined as socially significant behaviors that are displayed in particular situations and which will predict socially important outcomes for children and youth (Gresham, Sugai, & Horner, 2001). Specifically, socially important outcomes are those that are considered meaningful, adaptive, and functional by those receiving the treatment. There is a distinction between social skills and social competence, wherein social skills are behaviors that may be taught, learned, and performed, and social competence is a judgment regarding whether the behaviors have been performed successfully within and across contexts (Cook, Gresham, Kern, Barreras, Thornton, & Crews, 2008; Gresham et al., 2001). Social skills interventions target social skills with the goal of remediating deficits in both social skills and increasing social competence (Cook et al., 2008). Specifically, Gresham (1998) outlined four main goals of social skills interventions; promoting

skill acquisition, enhancing performance of the skill, removing competing problem behaviors, and facilitating generalization and maintenance.

Given the range of social skill deficits that individuals with autism may experience, researchers have attempted to identify whether or not children with autism can benefit from social skills interventions, including the identification of those particular skills that are most amenable to change. McConnell (2002) provided a review of the available literature on social skills interventions for young children with autism, with the goal of answering these questions. This review found that, under many conditions, children with autism do indeed benefit from social skills interventions. Kennedy and Shukla (1995) posit that a wide range of social interaction skills can be learned, children with autism can establish these skills across settings, and children can experience positive outcomes as a result of learning these skills. Additionally, research demonstrates that a wide variety of social skills are responsive to intervention; social initiations, responses, interaction bouts, play and problem solving skills, producing greetings and sustaining conversations, sharing, and asking for and providing help to others (Kamps, Leonard, Vernon, & Dugan, 1992; Krantz & McClannahan, 1998; Odom & Strain, 1986).

Variability in outcomes. With regard to the efficacy of specific social skills interventions, the literature is somewhat variable, with results ranging from ineffectual to highly effective, with the latter being seen almost exclusively in students with high incidence disabilities (Bellini, Peters, Benner, & Hopf, 2007; Gresham et al., 2001; Mathur, Kavale, Quinn, Forness, & Rutherford, 1998; Quinn, Kavale, Mathur, Rutherford, & Forness, 1999). Not only is the efficacy variable across different studies, it is also present across across reviews of this extant literature base. For example, authors have concluded that there is a discouraging record of efficacy for social skills interventions (Bellini et al., 2007, Gresham et al., 2001; Mathur et al.,

1998, Quinn et al., 1999), while others have determined that social skills interventions can prove efficacious for children with autism (Krasny, Williams, Provencal & Ozonoff, 2003; Matson et al., 2007; McConnell, 2002; Odom, Collett-Klingenberg, Rogers, & Hatton, 2010). This variability is due in part to inconsistency in the criteria that is used to determine efficacy and evidence-based practice (Odom et al., 2010; Reichow & Volkmar, 2010; Rogers, 2000; Wang & Spillane, 2009), a topic that will be discussed in greater detail later in the paper. In addition to efficacy criteria, several other factors have been identified as contributing to these inconsistent findings, such as the lack of a distinction between types of social skill deficits, treatment integrity issues, generalization issues, assessment issues, small sample sizes, and intervention dosage issues (Gresham et al., 2001; Krasny et al., 2003; Rogers, 2000).

More specifically, Gresham and colleagues (2001) posit that some of the variability across studies may be due to the failure to match social skills interventions to the specific type of social skills deficits, which may be either an acquisition deficit or a performance deficit. Indeed, many social skills interventions are delivered without an assessment of the type of social skill deficit that an individual has, which undermines both the utility and the efficacy of an intervention by failing to develop interventions based on an assessment of individual need (Forness & Kavale, 1999; Quinn et al., 1999). Further, the social validity of the intervention may be an integral component of treatment success (Quinn et al., 1999). This topic will be discussed in greater detail later in the paper.

It is important also to consider the frequency and intensity of the intervention dosage that is required in order for the intervention to be effective. Gresham et al. (2001) identify dosage of intervention as a major issue in the social skills literature. Although the researchers do not recommend a particular dosage, they posit that the typical dosage of thirty hours over 10 to 12

weeks is insufficient. Similarly, Bellini et al. (2007) identify low levels of intensity as a possible reason for the discouraging results identified in their meta-analysis, which found that school-based social skills interventions were, overall, minimally effective for children with autism. Further, many social skills intervention studies fail to report treatment integrity data, which would reflect the degree to which a treatment is implemented as intended (Gresham, 1998). Given the overwhelming absence of treatment integrity data in many social skills intervention studies (Delano, 2007; Wang & Spillane, 2009), it is impossible to determine whether an intervention is ineffective because it is simply a poor treatment approach, or if it is ineffective because it was implemented with low fidelity. There are also several assessment issues present in the social skills literature, such as a lack of outcome measures that are psychometrically sound and that can assess outcomes in natural interactions in natural contexts (Gresham et al., 2001; Rogers, 2000).

In considering other contextual factors, Gresham et al. (2001) recommend that interventions be provided in as natural a setting as possible, as decontextualized interventions may contribute to the poor maintenance and generalization effects found in many social skills intervention studies. Rogers (2000) expands this point and argues that interventions should be based upon normal social interactions and informed by peer behavior, rather than be based upon adult expectations of behavior. A final notable issue within the social skills intervention literature has been the lack of reporting on maintenance and generalization of social skills following an intervention, which again serves to undermine the social validity of a given intervention (Bellini et al., 2007; Gresham et al., 2001; Krasny et al., 2003).

Evidence-based practices for individuals with Autism

As outlined above, much of the research on social skills interventions is variable, hence the need to establish specific criteria by which interventions could be established as being evidence-based (Mesibov & Shea, 2011; Odom, Collett-Klingenberg, Rogers, & Hatoon, 2010; Reichow & Volkmar, 2010; Rogers, 1998; Rogers & Vismara, 2008; Simpson, 2005; Wang & Spillane, 2009). However, the literature regarding evidence-based practice and autism is itself subject to some variability, due to several methodological limitations. Most notably, researchers have been using different definitions of 'evidence-based', have reviewed different literature, and have grouped interventions according to different criteria (Mesibov & Shea, 2011). This, in turn, results in researchers finding different results with regard to interventions that meet criteria as evidence based practice (Mesibov & Shea, 2011). In addition, it is important to note that many of the interventions that have not been identified as having an evidence base may simply be lacking in scientific rigor and experimental methodology, rather than actually being inefficacious interventions (Rogers, 1998).

Criteria for evidence-based practice. It is clear that there is a growing need for consensus across researchers about what constitutes evidence-based practice for autism. Indeed, in order for stakeholders at local, state, and federal levels to determine if a practice is evidence based, there must be objective criteria to use in this determination (Odom & Strain, 2002). As outlined above, this task is not entirely simple. Several reviews of evidence-based practice for autism have been conducted recently which include a description of the criteria which is utilized in order to determine if a practice is evidence-based (McConnell, 2002; Odom et al., 2010; Reichow & Volkmar, 2010; Reichow, 2011; Wang & Spillane, 2009). In their review of evidence-based interventions for children and youth with autism, Odom et al., (2010) defined the

criteria as the following; clearly defined independent and dependent variables, clear functional relationship as demonstrated by manipulation of the independent variable, and sufficient experimental control with minimal threats to internal validity. Additionally, the intervention needed to have evidence from at least five single-case designs or two experimental or quasi-experimental group designs. Similarly, McConnell's review of evidence-based social skills interventions for children with autism included the following criteria; at least three measurements of the dependent variable across each treatment phase, adequate contrast between baseline and treatment phases, direct replication of effects across three or more behaviors, settings, or subjects, and adequate experimental control such that threats to internal validity are minimized.

A review of social skills interventions for children with autism by Reichow & Volkmar (2010) utilized several criteria; studies must outline interventions that target at least one social skill, adequate experimental control must be demonstrated, and studies must demonstrate strong methodological rigor. Finally, Wang and Spillane (2009) conducted a meta-analysis to examine evidence-based social skills interventions for children with autism. There were several criteria that studies had to meet in order to be included in this meta-analysis, including demonstration of experimental control through multiple baseline, reversal, or alternating treatments designs. The researchers calculated percentage of non-overlapping data points (PND) as their metric of analysis, as it is the recommended evaluative criterion for use with large numbers of single-subject designs. Notably, this meta-analysis employed a stronger evaluation criterion than several other reviews of social skills interventions, many of which tend to be more descriptive in nature and lack a quantitative evaluation of treatment effectiveness (McConnell, 2002).

Further, Reichow (2011) proposes a specific evaluative method for determining whether or not an intervention meets criteria for evidence-based practice, which includes a rubric for identifying the rigor of published studies. This rubric includes both primary and secondary quality indicators, wherein primary quality indicators are essential for demonstrating the validity of a study, and secondary quality indicators are important but not necessary for demonstrating validity. Reichow identifies primary quality indicators for single-subject research designs across several domains; clear descriptions of participant characteristics, independent variable, dependent variable, baseline condition, visual analysis, and experimental control (Reichow, 2011). Single-subject research defines a practice as evidence-based when the following conditions are met; the intervention and the context in which it is being used are clearly defined, implementation fidelity is monitored, data shows a functional relationship between changes in the independent and dependent variable, and the effects are replicable across studies, researchers, and participants (Horner et al., 2005).

With regard to participant characteristics, it is recommended that information about age and gender should be included, alongside an operationalization of the subject's diagnosis and the instrument used for diagnosis. Reichow (2011) proposes that both independent and dependent variables are defined operationally and with enough detail and precision that the study could be replicated. Secondary quality indicators for demonstrating the validity of the study include inter-observer agreement, fidelity, generalization or maintenance data, and measurements of social validity. Specifically, inter-observer agreement and treatment fidelity should have reliability $\geq .80$, as measured across conditions, raters or implementers, and participants. Data should be collected to assess both maintenance and generalization, while social validity can be

demonstrated by the use of interventions that are time and cost-effective, and that include dependent variables that are deemed socially important.

In summary, an overall list of criteria that studies must meet in order to be deemed evidence based includes the following: clear descriptions of participant characteristics, clear identification of the independent and dependent variables, a clear functional relationship with direct replication of effects across settings, sufficient experimental control with minimal threats to internal validity, and clear reports of implementation fidelity, inter-observer agreement, generalization, maintenance, and social validity. The current study will align with these guidelines with the goal of contributing to the current literature on evidence based practices and autism. These details will be further outlined and discussed in the methodology chapter.

Video Modeling: An Evidence-Based Practice for Individuals with Autism

As video modeling will be a main component of the current study, it will be addressed in more detail at this point. Several reviews of social skills interventions for individuals with autism have identified video modeling as an intervention that meets criteria for evidence-based practice (Bellini & Akullian, 2007; Odom et al., 2010; Reichow & Volkmar, 2010; Shukla-Mehta et al., 2010; Wang & Spillane, 2009). Video modeling interventions involve representing desired behaviors on video, wherein the individual receiving the intervention will watch the video demonstration and then imitate the desired behavior (Bellini & Akullian, 2007). The purpose of video modeling interventions is to develop an individual's ability to remember, imitate, and generalize target behaviors (Hitchcock, Dowrick, & Prater, 2003; McCoy & Hermansen, 2007). Critically, these reviews have drawn upon strict criteria in their analysis of the video modeling intervention literature in order to determine whether or not video-modeling interventions can be considered evidence-based practice. This is in contrast with other, earlier reviews of the social

skills intervention literature, which were often subject to such methodological limitations as failing to include quantitative evaluations of treatment effectiveness, relying on the conclusions that are drawn by the authors of individual studies, failing to compare treatment effectiveness across different strategies, and not considering the criteria of evidence-based practice (Wang & Spillane, 2009). As such, the fact that video modeling interventions satisfy strict criteria for evidence-based practice across reviews is extremely promising.

A meta-analysis conducted by Wang & Spillane (2009) included the following criteria to determine if an intervention could be considered an evidence-based practice; participants and clinicians who provide the intervention are described in sufficient detail, several outcome measures are used to assess effectiveness, and the intervention is delivered with fidelity. The reviewers also used the criteria proposed by Horner et al., (2005), outlined earlier, in order to evaluate single subject studies. Finally, the reviewers required that an intervention must be represented in at least five single-subject studies with acceptable experimental rigor that were published in peer-review journals (Wang & Spillane, 2009). Using these criteria, the reviewers found that video modeling is a highly effective evidence-based practice, as demonstrated by a mean percentage of non-overlapping data (PND) score of 84.25%. The PND metric is calculated by measuring the number of intervention points that do not overlap with baseline points, and serves as the single-subject design equivalent of an effect size, wherein a PND of 91 and 100 denotes a highly effective intervention, a PND of 71 and 91 is considered moderately effective, a PND between 51 and 70 is mildly effective, and a PND of 50 or below is ineffective (Scruggs & Mastropeiri, 1998).

Similarly, other reviews of evidence-based practices for children with autism have used these same criteria (Bellini & Akullian, 2007; Odom et al., 2010). Interestingly, measures of

social validity were included as a quality indicator by Bellini and Akullian (2007), in light of the impact of social validity on treatment fidelity. This review calculated mean PND scores for intervention, maintenance, and generalization effects, finding a mean PND of 80% for intervention effects, a mean PND of 83% for maintenance effects, and a mean PND of 74% for generalization effects. Maintenance effects are measured by calculating PND between baseline and maintenance phases, while generalization effects are measured for all studies that measured the effectiveness of interventions across settings, people, or skills. Overall, the review found moderate effects for video modeling, indicating that it is an effective intervention for a range of skills: social-communication skills, functional skills, and behavioral functioning (Bellini & Akullian, 2007).

Additionally, other reviews (Reichow & Volkmar, 2010; Shukla-Mehta et al., 2010) have utilized a framework of best evidence synthesis, alongside requiring studies to have acceptable methodological rigor according to the Evaluative Method for Determining Evidence-Based Practices in Autism, outlined earlier (Reichow et al., 2008; Reichow, 2011). The best evidence synthesis framework includes the following criteria: the participants must be clearly identified as having autism, studies must evaluate interventions that target at least one social skill, studies must evaluate at least one social outcome, interventions must be evaluated using appropriate experimental rigor, and studies must be published in peer-review journals. Given the strict criteria that have been used by several reviewers, it has been clearly demonstrated that video modeling is an effective evidence-based practice for teaching social skills to individuals with autism.

Theoretical underpinnings of video modeling. Video modeling is founded upon Bandura's social learning theory, which proposed that humans primarily learn behavior by

watching and imitating the behavior of others, who serve as models for our own behavior (Bandura, 1977). This observational learning comprises four key components: attention, retention, production, and motivation (Bandura, 1986). These tenets of social learning theory may be instrumental in explaining the beneficial effects of video modeling interventions for children with autism (Corbett & Abdullah, 2005).

It is understood that attention and motivation are both critical for observational learning to take place, as a child cannot successfully observe and imitate a behavior if they fail to pay attention, or if they are unmotivated to attend to the behavior as it is being modeled (Bandura, 1986). Likewise, individuals must retain the information that has been modeled, alongside having opportunities to practice the newly acquired behavior (Bandura, 1986). It has been demonstrated that children with autism frequently display difficulties in sustained attention, characterized by an inability to maintain focus and attention for long periods of time (Casey, Gordon, Mannheim, & Rumsey, 1993; Charlop-Christy & Danshevar, 2002), which would seem detrimental to such an approach. However, some researchers suggest that individuals with autism may actually experience improved attention, as video modeling aids in focusing attention on stimuli that is relevant (Charlop-Christy, Le, & Freeman 2000; Charlop-Christy & Danshevar, 2002).

Retention, another core feature of social learning theory, is supported in video modeling interventions through repeated exposure to the desired behavior. Through such exposure, models can display desired behavior across one or more situations, thereby allowing the child to observe the desired behavior multiple times, and possibly across multiple settings (McCoy & Hermansen, 2007). In successful instances, this retention will then lead to production of the behavior, which again is a core feature of social learning theory. Video modeling interventions typically involve a

practice component, wherein children receiving the intervention will be involved in supervised practice of the desired behavior (Apple et al., 2005; Charlop-Christy et al., 2000; Charlop-Christy & Danshevar, 2002, Wert & Neisworth, 2003). Social learning theory also posits that motivation is a necessary condition in order for social learning to occur (Bandura, 1986). Several researchers argue that video modeling interventions are unique insofar as they are naturally motivating and reinforcing for children with autism, due to the visual medium (Charlop-Christy et al., 2000; Charlop-Christy & Danshevar, 2002, Wert & Neisworth, 2003). Individuals with autism may display a preference for information that is displayed visually, alongside displaying relative strengths in processing visual information (Corbett & Abdullah, 2005; Mirenda & Erikson, 2000).

Individuals with autism also display certain atypical responses to social situations, such as avoidance of face-to-face attention or other socially relevant cues and information (Charlop-Christy et al., 2000). Many of these features can be addressed through the use of video modeling interventions, which involve visually cued information that individuals can attend to selectively, thus allowing individuals the opportunity to model and imitate desired social behaviors (Corbett & Abdullah, 2005; McCoy & Hermansen, 2007). Imitation has been described as a relatively complex social skill, insofar as it requires an ability to identify specific social skills that ought to be modeled (Atherton, 2005). In order to successfully imitate, individuals must have an appropriate framework by which to attend to and understand the relevance and utility of particular social skills. Video modeling may be a means to provide this framework, by providing selective social information through favored visual means, thereby targeting the deficit in imitation skills that is experienced by many individuals with autism (Ingersoll, 2008; McCoy & Hermansen, 2007).

In addition, video modeling may be appealing to practitioners due to the relatively low level of time and resources that are required for implementation (Charlop-Christy et al., 2000; McCoy & Hermansen, 2007). Specifically, video modeling can be implemented with lower cost and with less time spent training than with live modeling, and can also be reused (Charlop-Christy et al., 2000; Graetz, Mastropieri, & Scruggs, 2006). Other researchers have found that video modeling can produce positive effects in less time than other interventions, alongside producing promising generalization effects (Charlop-Christy et al., 2000; Nikopoulous & Keenan, 2003; Wert & Neisworth, 2003). It is encouraging to note these clear practical benefits to video modeling interventions, alongside the robust evidence-base supporting their use.

Effectiveness of video modeling. Video modeling interventions have been successful in teaching a wide range of skills to individuals with autism: social and communication skills, functional living skills, and appropriate behavioral functioning (Bellini & Akullian, 2007; Delano, 2007; McCoy & Hermansen, 2007; Odom et al., 2010; Reichow & Volkmar, 2010; Shukla-Mehta et al., 2010; Wang & Spillane, 2009). With respect to social skills, video modeling interventions have been effective in teaching a wide array of such skills: giving and receiving compliments (Apple et al., 2005), sharing (Simpson, Langone, & Ayres, 2004), securing attention, initiating comments and requests (Thiemann & Goldstein, 2001), verbal and motor play behaviors (D'Ateno, Mangiapanello, & Taylor, 2003), pretend play (MacDonald, Clark, Garrigan, & Vangala, 2005), and unscripted play statements (Taylor, Levin, & Jasper, 1999). Encouragingly, a number of these studies also demonstrated strong maintenance and generalization effects, a topic which will be discussed in greater detail later in the paper.

Conversation skills. Appropriate conversation skills, such as initiating and maintaining a conversation, are an essential feature of general social skills. Several studies have demonstrated

that video modeling is an effective intervention for teaching a variety of verbal communication and conversation skills to children with autism (Buggey, Tombs, Gardener, & Cervettie, 2005; Buggey, 2005; Charlop & Milstein, 1989; Nikopoulos & Keenan, 2003; Nikopoulos & Keenan, 2004; Sherer et al., 2001; Thiemann & Goldstein, 2001; Wert & Neisworth, 2003).

A study by Charlop & Milstein (1989) showed that a video-modeling intervention was successful in teaching appropriate responding and maintenance of conversations. Encouragingly, in addition to showing successful skill acquisition immediately following the intervention, this study also demonstrated generalization of skills across conversation topics and successful maintenance of skills for up to 15 months after the intervention (Charlop & Milstein, 1989). Other studies also demonstrate that video modeling interventions can result successful generalization and maintenance of conversation skills (Buggey, 2005; Nikopoulos & Keenan, 2004). A study by Buggey (2005) examined the effect of a video modeling intervention to teach language production and social initiation to elementary school age boys with autism, and found that participants not only demonstrated a significant increase in their rates of social initiations following the intervention, but also generalized their initiation skills to several settings across school. Nikopoulos & Keenan (2004) found that a video modeling intervention for three school age children resulted in significant increase in rates of social initiation for all of the children. Additionally, these social initiation skills were maintained at a 3-month follow-up. Video modeling interventions have also proven successful in teaching school-age children how to respond appropriately to questions from parents (Buggey et al., 1999), and in teaching preschool-age children to make spontaneous requests of parents and teachers which were maintained for a 6-week period (Wert & Neisworth, 2003).

Play behavior. Video modeling has been demonstrated as effective for teaching play behaviors to young children with autism. A study by D'Ateno and colleagues (2003) showed that a three-year old girl with a diagnosis of autism learned play behaviors following a video modeling intervention. Specifically, play behaviors included both verbal and motor play behaviors which were scripted or modeled, although the outcome did not include the development of novel play behaviors which had not been scripted or modeled (D'Ateno, Mangiapanello, & Taylor, 2003). Building upon this work, MacDonald and colleagues (2005) taught two boys with autism, aged four and seven, to engage in verbal and motor pretend play for extended sequences. However, as with earlier research, the participants in this study did not produce novel or unscripted sequences of pretend play. Encouragingly, a study by Taylor et al. (1999) with two preschool aged boys with autism found that both participants learned to make scripted play comments with their siblings, with one of the participants also developing an increase in unscripted play comments.

Perspective taking. Perspective taking, which involves comprehending the inner states of others in order to explain or predict their actions and intentions, is a well-documented social skill deficit for children with autism (Baron-Cohen, 2000). Encouragingly, video modeling appears to be an effective intervention for teaching perspective taking skills to children with autism (Charlop-Christy & Daneshvar, 2003; LeBlanc, Coates, Daneshvar, Charlop-Christy, Morris, & Lancaster, 2003). A study by LeBlanc and colleagues (2003) found that video modeling delivered in combination with reinforcement (verbal praise) was successful in teaching perspective taking skills to three boys ranging in age from 7 to 13 years, with two of the participants demonstrating generalization across stimuli. Charlop-Christy & Daneshvar (2003) implemented a video modeling intervention to teach perspective-taking skills to three school-age

boys with autism, wherein all three participants reached skill acquisition and also demonstrated skill maintenance at a 15-month follow-up. In addition, the authors found that perspective-taking skills generalized across stimuli and responses, which the authors suggest may have been due to multiple exemplar training.

Other social domains. Alongside the clear effectiveness of video modeling for teaching conversation, play, and perspective-taking skills, researchers have demonstrated successful applications of the intervention in other social domains also. For example, a study with two 5-year old boys with autism found that both children successfully acquired compliment-giving skills, both in response to receiving a compliment and in initiating compliment-giving, following a combined intervention of video-modeling and self-management (Apple, Billingsley, & Schwartz, 2005). Interestingly, the authors found that participants were unsuccessful in learning how to initiate compliment-giving following a stand-alone video modeling intervention, and required the combined intervention of video-modeling and self-management in order to learn this skill. A study by Simpson and colleagues (2004) combined a video modeling intervention with a computer-based instructional package in order to teach a variety of social skills to four school-age children with autism, including compliance with teacher requests, sharing with peers, and greeting others. The study found that all participants demonstrated gains in their target behavior following the combined intervention. Notably, some studies demonstrate optimal outcomes when video modeling is paired with other intervention components, a topic which is discussed below in greater detail.

Video modeling across settings and participants. Video modeling interventions have demonstrated positive outcomes across a variety of settings; preschool (D'Ateno, Mangiapanello, & Taylor, 2003; MacDonald, Clark, Garrigan, & Vangala, 2005), general education settings in

public and private elementary schools (Apple, Billingsley, & Scwartz, 2005; Buggey, 2005; Simpson, Langone, & Ayres, 2004; Thiemann & Goldstein, 2001), after-school programs (Charlop & Milstein, 1989; Charlop-Christy, Le, & Freeman, 2000), participants' homes (Taylor et al., 1999), clinics (Nikopoulos & Keenan, 2003; Nikopoulos & Keenan, 2004; Sherer, Pierce, Paredes, Kisacky, Ingersoll, & Schreibmen, 2001). Additionally, video modeling has demonstrated positive outcomes for children and youth ranging in age from preschool to high school (Bellini & Akullian, 2007; Wang & Spillane, 2009). However, the literature is less clear with respect to the characteristics of children and youth for whom video modeling is an effective intervention. Several studies fail to report standardized assessment data on the cognitive and language profile of participants, making it difficult to ascertain requisite skill and ability levels in these domains in order for video modeling to be effective (McKoy & Hermansen, 2007). In order to address this current shortcoming in the literature, researchers call for future studies which provide information about the attentional, cognitive, and language skills of participants (McKoy & Hermansen, 2007; Shukla-Mehta, Miller, & Callahan, 2010).

Video model: self, peer, or other. Researchers have also examined whether the type of model impacts the effectiveness of video modeling interventions, according to five types of models: adults, peers, or self as models, point-of-view models, and mixed models (McKoy & Hermansen, 2007). Adult models involve an adult who is familiar to the participant modeling the desired behavior, whereas peer models are often the same age and gender as the participant, and may be either known or unknown to the participant. Video self-modeling involves the participant observing themselves modeling the desired behavior, whereas point-of-view models demonstrate the image that a participant would see if they were engaging in the desired behavior. Finally, mixed model approaches may include a combination of any of the above models. Encouragingly,

research demonstrates that interventions prove successful regardless of the type of model that is used in the video. However, there is some disagreement regarding whether one type of modeling may be more effective than others. Some research suggests that peer modeling may be more effective than adult modeling, and that self-modeling may in turn be more effective than peer modeling (Buggey, 1999; McCurdy & Shapiro, 1998; McKoy & Hermansen, 2007), while other research suggests that peer and self-models are of equal effectiveness (Sherer et al., 2001).

Another important factor that may impact the outcome of video modeling interventions is its combination, or lack thereof, with other intervention techniques. Typically, video modeling is paired with other intervention components, which may include reinforcement contingencies and instructional prompts (Charlop & Milstein, 1989; Charlop-Christy & Daneshvar, 2003; LeBlanc, Coates, Daneshvar, Charlop-Christy, Morris, & Lancaster, 2003), instruction and practice of self-management strategies (Apple et al., 2005), a review of video content after watching the video (Charlop-Christy & Daneshvar, 2003; Taylor et al, 1999), additional computer instruction (Simpson, Langone, & Ayres, 2004), or supplemental visual cues and video feedback (Thiemann & Goldstein, 2001). There are also documented instances of video modeling being used effectively as a standalone intervention to teach play and social behaviors (D'Ateno et al., 2003; MacDonald et al., 2007; Reagon et al., 2006). Although there is a relative paucity of studies that compare video modeling interventions to other intervention strategies, the results are nonetheless encouraging. Charlop-Christy et al (2000) found that video peer modeling was more time and cost efficient than in-vivo modeling, where the participants watched a live model perform the target behavior.

Generalization of video-modeling interventions

Many of the above studies report promising findings regarding generalization of skills

following implementation of video-modeling interventions. Video modeling interventions have produced generalization across stimuli (Charlop-Christy & Daneshvar, 2003; Hine & Wolery, 2006; LeBlanc et al., 2003), across settings (Apple et al., 2005; Nikopolous & Keenan, 2003; Schreibman, Whalen, & Stahmer, 2000; Wert & Neisworth, 2003), across people (Nikopolous & Keenan, 2003; Sherer et al., 1999), and across skills (Paterson & Arco, 2007; Taylor et al., 1999). Specifically, generalization refers to the display of target behaviors across non-trained conditions (Stokes & Baer, 1977). Generalization has two primary aspects: the degree to which a target behavior is generalized across settings, people, or stimuli, and the degree to which the target behavior is maintained over time (Cooper, Heron, & Heward, 1987).

The clear documentation of generalization of skills following video modeling interventions is encouraging, especially when considering that skill generalization is often challenging for children with autism (Rao, Beidel, & Murray, 2008). Notably, generalization across settings is not limited in the literature to a particular skill repertoire or age range. Wert & Neisworth (2003) demonstrated that four preschoolers generalized spontaneous requesting behaviors from home to school, even though generalization across settings was not specifically programmed into the video. A study by Apple and colleagues (2005) found that three elementary school age participants generalized the initiation of compliment giving behaviors across school settings, from the classroom to playground. Another video modeling intervention study demonstrated that preschool age children learned to reduce disruptive behaviors during difficult transitions in specific community settings, and that these skills generalized to several community settings (Schreibman et al., 2000).

Research shows that video modeling interventions can also produce successful generalization of skills across stimuli. Two studies have demonstrated generalization of

perspective taking skills across stimuli for children ranging in age from seven to thirteen (Charlop-Christy & Daneshvar, 2003; LeBlanc et al., 2003). However, one of these studies found that only two of three participants demonstrated generalization (LeBlanc et al., 2003). Several studies have demonstrated successful generalization of play behaviors across play stimuli, for both preschool and elementary school age children (Hine & Wolery, 2006; Nikopolous & Keenan, 2003; Nikopolous & Keenan, 2004). Further, video modeling interventions have demonstrated successful generalization of play skills. A study by Taylor and colleagues (1999) with two elementary school age boys found that one of the children generalized his newly learned skill of making appropriate play comments, wherein he began producing unscripted and spontaneous verbal play comments. In addition, Paterson and Arco (2007) reported similar findings to those of Taylor and colleagues. Their study found that one of four elementary school age subjects generalized both verbal and motor play behavior, developing unscripted and spontaneous play behavior.

Additionally, video modeling interventions have demonstrated evidence of successful generalization across people. For example, Sherer et al. (1999) delivered a video modeling intervention to five children ranging from three to eleven years of age. All of the subjects learned to answer questions appropriately during conversations, with one of the subjects generalizing this skill to a peer. Finally, in some instances, video modeling interventions have demonstrated successful generalization across settings, stimuli, and people for a range of skills: conversation skills, communication skills, functional skills, and play engagement (Charlop & Milstein, 1989; Charlop-Christy et al., 2000; Nikopolous & Keenan, 2003).

Variability in Outcomes

While the potential benefits of video modeling interventions are no doubt encouraging, it is important to also note that there has been some variability in outcomes. For example, in some studies not all participants met criteria for skill acquisition following the intervention, despite all participants receiving an identical intervention (Nikopoulos & Keenan, 2003; Sherer et al., 2001), which some have hypothesized may be due to within subjects factors like motivation and attentional differences (Plavnick, MacFarland, & Ferreri 2015). Interestingly, it has been suggested that motivation to produce the target behavior may increase in instances where the target behavior is followed by a naturally occurring reinforcer, highlighting the interaction between the video modeling intervention and environmental factors that the child experiences following the video modeling intervention (Plavnick, MacFarland, & Ferreri, 2015). Given the various factors that may impact the effectiveness of video modeling interventions, researchers have developed several guidelines for the implementation of video modeling interventions.

Guidelines for Implementation

In order to maximize the potential effectiveness of interventions, researchers must consider the factors that may impact the utility of the intervention, several of which have been outlined in the literature. Notably, McKoy & Hermansen (2007) and Shukla-Mehta et al. (2010) highlight the necessity of ensuring that a child or adolescent has the attentional capacity to attend closely to a video for at least one minute. In the event that a child may have difficulty with attending, it is recommended that researchers provide the child with explicit instruction in attending, wherein the child is reinforced for reaching a criterion for attending (Plavnick, 2012). In addition, researchers must consider other characteristics of learners, such as cognitive capacity and language skills, as these characteristics may play a role in the potential success of a video

modeling intervention (McKoy & Hermansen, 2007; Shukla-Mehta et al. 2010). Other general guidelines for effective implementation of video modeling interventions include keeping video clips less than 3 minutes in duration, and providing two or more viewings of video clips (Shukla-Mehta et al. 2010). Other researchers suggest that videos be shown three times (Charlop-Christy & Daneshvar, 2003), that skills be demonstrated slowly and with more emphasis than in a typical social scenario, i.e. social skills are overacted (Charlop & Milsten, 1989), and that inclusion of a narrative or voiceover can increase learner comprehension (Sigafoos, O'Reilly, & de la Cruz, 2007). These guidelines will be adhered to in the current study.

Social Validity

As was outlined earlier, families of children with autism may be particularly vulnerable to the lure of interventions that, although available, may lack an adequate evidence base (Simpson, 2007). Researchers highlight the importance of collaborating with clients in order to make the best treatment decisions, in an effort to ensure that families are informed about available evidence based interventions for autism, and are involved in making decisions about their child's treatment options, (Fixsten, Naoom, Blase, Friedman, Wallace, 2005; Kazdin, 2008; Rogers, 2003). Naturally, these treatment decisions ought to be based on the best available clinical evidence. One means by which professionals may establish a collaborative relationship with the families whom they serve is to aim to assess for social validity throughout the treatment process (Gresham & Lamros, 1998). It has also been suggested that assessing the social validity of treatment outcomes and the treatment plan is an essential quality-indicator for single-subject design researcher (Horner et al., 2005).

Social validity, in broad terms, involves two primary concepts. Firstly, an intervention must be acceptable and feasible for implementation in the setting it is intended for. Secondly, an

intervention must address treatment goals that are socially important, by targeting meaningful problems producing meaningful change (Foster & Mash, 1999; Schwartz & Baer, 1991). It has been defined as the social significance of treatment goals, the social significance of the treatment plan and strategies, and the social importance and relevance of the treatment outcomes (Gresham, 1986; Gresham & Lambros, 1998). All three of these main components (treatment goals, treatment plan/strategy, and treatment outcomes) ought to be rated along two dimensions: importance and acceptability (Foster & Mash, 1999; Schwartz & Baer, 1991; Strain & Barton, 2012; Wolf, 1978). According to this approach, social validity is very much conceptualized as a process rather than an outcome, and can best be achieved by collaboration amongst researchers or clinicians, parents, caregivers, and school professionals. Proponents of this approach are also quick to point out that assessment of social validity serves to supplement other markers of treatment efficacy, rather than to serve as a substitute measure (Foster & Mash, 1999).

However, despite the importance of assessing and ensuring social validity throughout the treatment process, there is a surprising lack of such reports within the video modeling intervention literature. In a meta-analysis of video modeling interventions for individuals with autism, Delano (2007) found that only 5 of 19 studies reported measures of social validity. Wang & Spillane's (2009) meta-analysis of social skills interventions for children with autism found that only 16 of 38 studies included reports of social validity. The authors go so far as to claim that the majority of social skills research has focused on developing social skills and treatment outcomes that are not predictors of the most essential social outcomes, meaning that the social validity of treatment goals and outcomes is often not afforded enough consideration (Wang & Spillane, 2009).

Finally, a meta-analysis by Bellini and colleagues (2007) found that only 12 of 55 studies reported social validity assessments. For those studies that did include reports of social validity, there was significant variability in methodology. Apple et al. (2005) had parents complete pre-test and post-test questionnaires that focused on rating their children's current social skills and their current skill level with the treatment outcome compared to same age peers. Others have preferred to have parents watch video recordings of their children's demonstration of the dependent measure from baseline and intervention sessions, and note the rate of improvement (Charlop & Milstein, 1989; Nikopolous & Keenan, 2003). Other means of assessing social validity have included choosing target behaviors based on a child's performance at school (Charlop-Christy et al., 2000), or getting information about the child's functioning from parents and teachers prior to the intervention and collecting anecdotal data about parents' evaluation of the treatment outcomes (Buggey, 2005; Buggey et al., 1999; Shipley-Benamou et al., 2002).

Despite clear recommendations that evidence based practices must be integrated into a framework wherein treatments are developed, delivered, and evaluated in collaboration with families, current research demonstrates a troubling shortage of such efforts (Fixsten et al., 2008; McConnell, 2002; Rogers, 2003). As such, the current study will integrate social validity assessment both before and after treatment, while also drawing upon recommendations for future research in video modeling interventions.

Clinical Significance

Clinical significance can be defined in a number of different ways; participants experience an observable, measurable improvement in functioning as a result of the intervention, participants experience a meaningful or positive change in their lives as a result of the intervention (Alberto & Troutman, 2012), participants experience reduced symptoms such that

they are no longer clinically significant following the intervention (Anderson & Lambert, 2001), or participants return to a normal range of functioning following the intervention (Jacobsen, Roberts, Berns, & McGlinchey, 1999). Given that the aim of this intervention is not to reduce symptoms of autism, and that participants do not display typical social functioning prior to the intervention, these criteria for determining clinical significance are not applicable in this study. To that end, clinical significance will be defined as a meaningful or positive difference in the lives of the participants. Naturally, this evaluation can sometimes be subjective, and so there are several rules that can be applied in order to determine whether the intervention has made a meaningful or positive difference in the lives of the participants.

As a starting point, the dependent variables, will be chosen based on their social significance, as determined by semi-structured interviews with parents and teachers. This step, potentially overlooked in many studies, assures the potential of meaningful change at least. Data will be analyzed in order to assess whether an observable improvement in functioning has taken place following the intervention. Further, the social validity of the outcomes of the intervention will be assessed by interview with parents and teachers. Specifically, this interview will assess how and if teachers and parents believe that the intervention has had a positive impact on the social functioning of the participants at school and at home, and if they noticed other improvements in their child's functioning as a result of the intervention. Finally, behavioral data will be collected not only on each participant's target social behavior, but also on several other pro-social behaviors. This will be done in order to assess possible collateral effects of the intervention, such as increases in general pro-social behaviors, as an additional means of determining whether the intervention has made a meaningful or positive difference in the lives of the participants.

Future Research Recommendations

While the video modeling literature to date is quite encouraging, there are of course several recommendations for future research. For example, McConnell (2002) recommends that future research focus on how to design intervention targets and procedures for use in both home and community settings. Specifically, McConnell recommends an investigation of assessing and potentially developing different social skills targets across settings, while also developing intervention strategies that are ecologically valid across settings. Other researchers have recommended that future studies continue to develop experimental control through multiple baseline or alternating treatment designs, whilst also concentrating on documenting the fidelity of intervention implementation (Bellini & Akullian, 2007; McConnell, 2002; Shukla-Mehta et al., 2010).

In addition, it has been recommended that researchers develop a clear profile of participants, based on cognitive ability, language skills, and behavioral functioning (Shukla-Mehta et al., 2010). Others still have called for a more precise evaluation of conditions under which video modeling interventions are effective, with more detailed accounts of treatment dosage being required (Bellini et al., 2007). Finally, Wang and Spillane (2009) recommend that future studies examine the generalization of social skills across multiple settings. The above recommendations inform the current study, insofar as it will aim to work collaboratively with parents and teachers to develop goals that are socially valid and meaningful across contexts, while also developing an intervention strategy that has ecological validity across settings. These steps will be taken in an effort to create a video modeling intervention plan that will lead each participant to successfully acquire and generalize meaningful social skills across school settings.

Rationale

As is clear from the literature, video modeling is an effective intervention for teaching a variety of social and functional skills for many children with autism. Further, video modeling can prove an effective means of facilitating the generalization of newly learned skills across settings, people, and stimuli. While the generalization literature is promising, there is a lack of literature regarding the generalization of skills learned in a clinic setting to school settings. In addition, much of the video modeling literature lacks appropriate assessment of social validity, particularly with respect to teacher assessments of social validity. This leaves a dearth of knowledge regarding the social validity of video modeling interventions in school settings for children with autism. However, given the effectiveness of such interventions, it would be extremely helpful to learn more about how video modeling interventions can aid in generalization of skills to school settings, while also assessing parent and teacher assessments of the social validity of this treatment.

Research Questions and Hypotheses

Research Question 1: Does showing multiple examples of a targeted social skill via a clinic-based video modeling intervention ~~that demonstrates a targeted social skill for children with autism, by showing just two examples of the targeted social skill,~~ facilitate skill acquisition across one or more school settings (e.g. classroom, recess, cafeteria)?

Hypothesis 1: Showing multiple examples of a targeted social skill via a~~A~~ clinic-based video modeling intervention ~~that demonstrates a targeted social skill for children with autism by showing just two examples of the targeted skill~~ will facilitate skill acquisition in one or more school settings, as demonstrated by comparing data collected during baseline to data collected during the first intervention phase.

~~Research Question 2: Does a clinic-based video modeling intervention that demonstrates a targeted social skill for children with autism, by showing four examples of the targeted social skill, facilitate skill acquisition in more than one school setting (e.g. classroom, recess, cafeteria)?~~

~~Hypothesis 2: A clinic-based video modeling intervention that demonstrates a targeted social skill for children with autism, by showing four examples of the targeted skill, will facilitate skill acquisition in more than one school setting, as demonstrated by comparing data collected during baseline and first intervention phase to data collected during the second intervention phase.~~

~~Research Question 3: If generalized results are not observed across school settings, will implementation of a video modeling intervention that demonstrates the target social skill, by showing six examples of the target skill, facilitate skill acquisition in additional school settings?~~

~~Hypothesis 3: Implementation of a clinic-based video modeling intervention that provides six examples of the target will facilitate skill acquisition in additional school settings, as demonstrated by comparing data collected during baseline, first, and second intervention phases to data collected during the third intervention phase.~~

Research Question 2~~4~~: If the clinic-based VM intervention facilitates generalization to school settings, will there be evidence of maintenance of treatment effects in those settings at a two and three week follow-up?

Hypothesis 2~~4~~: A video modeling intervention for social skills demonstrates maintenance of treatment effects in school settings during a two and three week follow-up, as demonstrated by comparing data collected during intervention phases to data collected during the maintenance phase.

Research Question 3~~5~~: Do parents and teachers approve of video modeling intervention as an acceptable and feasible intervention for targeting social skill development?

Hypothesis 3~~5~~: Parents and teachers will approve of video modeling interventions as an acceptable and feasible intervention for developing social skills, as measured by social validity interviews both before and after the implementation of the intervention.

Chapter III

Methodology

The purpose of this study was to investigate the effectiveness of using a video modeling intervention to facilitate in the generalization of social skills from a clinic setting to several school settings. The study also aimed to replicate past findings regarding video modeling's superiority over other clinic based social skills interventions that do not use video modeling.

Specifically, the study examined the impact of a clinic-based video modeling intervention on subject's target skills in school settings; school cafeteria, recess, and in the classroom.

Further, the study used the technique of training multiple exemplars to facilitate generalization. This technique is a specific method of programming generalization that involves extending the intervention to multiple settings, people, or stimuli, until generalization effects are observed (Horner & Baer, 1998; Stokes & Baer, 1997). The study will utilize a changing conditions design, wherein the changing conditions signify the introduction of multiple exemplars. This design is being utilized in order to allow for utilizing multiple exemplars as a means of programming generalization.

Requirements for Participation

This study included three participants, all of whom were elementary or middle school students in Missoula County Public Schools. All of the participants had a diagnosis of Autism Spectrum Disorder from an inter-disciplinary evaluation team. In addition, all participants received school-based special education services under the category of autism. Finally, all participants should have average or above average cognitive functioning and language skills. Initially, the primary researcher planned to complete cognitive and language assessments for all participants. However, as all of the participants had completed comprehensive evaluations within the 12-month period prior to the beginning of the study, which included cognitive and language assessment data, it was deemed unnecessary to complete further assessment at the time of the study. Permission was obtained to complete a record review of the evaluation reports for each student, in order to include here information about their cognitive functioning and language ability. Given the age range of the participants, all three had not been assessed using the same battery. Specifically, the youngest participant had completed the *Wechsler Preschool and*

Primary Scale of Intelligence, Fourth Edition (WPPSI-IV), while the older two participants had completed the *Wechsler Intelligence Scale for Children, Fourth Edition* (WISC-IV). However, these assessments can be considered equivalent, given a correlation of .74 for the Full Scale IQ score on both tests (WISC-V, Weschler, 2014). Thus, both tests provide comparable information regarding the cognitive functioning of each participant. Similarly, all three students completed different standardized language assessments. A licensed speech language pathologist at the University of Montana was consulted in order to ascertain whether the tests assessed similar skill areas and abilities, and whether the results from these tests could be considered equivalent. This speech pathologist deemed that the tests for Tom and Eric were equivalent, and that the results from each test could provide comparable profiles for each participant. The specific tests and scores are provided in the profiles, below. However, Jack's test assessed language pragmatics rather than expressive and receptive language, as did Tom and Eric's language assessments. As Jack's language assessment was conducted one month prior to the beginning of the study, his parents declined further language assessments as part of the study.

Participant A: Tom

Tom was a five-year-old Caucasian male, and was a kindergarten student in a mainstream general education setting. Tom was diagnosed with Autism Spectrum Disorder at four years of age by a multidisciplinary team, and also received a diagnosis of Sensory Processing Disorder at this time. In addition to the current intervention, Tom was also receiving a variety of other services throughout the course of the study. Specifically, Tom attended occupational therapy twice per week, behavioral therapy once per week, physical therapy once per week, and Developmental Individual-difference Relationship-based Floor-time (DIR Floor-time) therapy once per week. Tom had an Individualized Education Program and was receiving Special

Education services under the category of Autism. Specifically, Tom received Speech/Language services for 60 minutes per week at school.

Several indicators of overall functioning and ability are included here with the aim of providing a comprehensive profile of Tom. His mother and teacher both completed the Social Skills Improvement System (SSIS), a standardized measure of social skills. On the parent report, Tom's Social Skills fell in the 'well below average' range, while his Problem Behaviors fell in the 'above average' range. On the teacher report, Tom's Social Skills fell in the 'below average' range, while his Problem Behaviors fell in the 'above average' range. Tom's language skills were assessed in Spring 2015 using the *Preschool Language Scales, Fifth Edition*. Tom's overall language skills fall within the average to low average range, with a standard score of 89. Tom's results showed a significant difference between Auditory Comprehension and Expressive Communication. Although Expressive Communication was in the average range, his Auditory Comprehension fell in the Very Low range. Tom's cognitive functioning was assessed using the *WPPSI-IV*. This assessment showed that Tom had a Full Scale IQ score of 103, which falls in the 'average' range.

Participant B: Eric

Eric was an eight-year-old male Caucasian male, and was a third grade student in a mainstream general education setting. Eric received a diagnosis of Autism Spectrum Disorder at age five from a licensed psychologist, and had no other diagnoses. He had an Individualized Education Program and was receiving Special Education services under the category of Autism. Specifically, his services consisted of Speech/Language in a special education setting for 30

minutes per week, Written Expression services in the general education setting for 150 minutes per week, and Self-Help/Independence services in the general education setting for 75 minutes per week. Eric had received behavioral therapy for two years, from the age of five to seven. Eric had also attended a weekly group social skills intervention throughout the Fall of 2015, and a week-long intensive group social skills intervention during the Summer of 2015. At the time of the study, the only other support that he was receiving was through his Special Education services at school.

As above, several indicators of functioning and ability are outlined here with the aim of providing a comprehensive profile of Eric. His mother and teachers all completed the SSIS. Eric attended a bilingual school and spent his days split between a Spanish and English classroom, with a total of 50% each day in each classroom. Given this, both his English and his Spanish teacher completed the SSIS. On the parent report, Eric's Social Skills fell in the 'below average' range, while his Problem Behaviors fell in the 'above average' range. Eric's Spanish teacher rated him in the 'average' range for his Social Skills, and in the 'above average' range for his Problem Behaviors. Eric's English teacher rated him in the 'below average' range for Social Skills, and in the 'above average' range for his Problem Behaviors.

Eric's cognitive and language skills were assessed in Spring 2015 as part of a Special Education re-evaluation. Eric's cognitive skills were assessed using the WISC-IV. Eric's Full-Scale IQ score was 111, which falls in the average/high-average range. Eric's language skills were assessed using the *Clinical Evaluation of Language Fundamentals, Fourth Edition* (CELF-4), which provides a core language score, and expressive language score, and a receptive language score. Eric's language skills were in the average to high average range, with a core

language standard score of 112, an expressive language standard score of 114, and a receptive language standard score of 106.

Participant C: Jack

Jack was a ten-year-old Caucasian male, and was a sixth grade student in a mainstream general education setting. Jack received a diagnosis of autism at age 10, from a school-based multidisciplinary team. He had an Individualized Education Program and began receiving Special Education services under the category of Autism in Spring 2016, at the time of the study. Specifically, his Special Education services included individual counseling to work on emotion regulation, and behavior supports across classes. Jack had a prior diagnosis of Attention Deficit Hyperactivity Disorder and Mood Disorder Not Otherwise Specified, and received Special Education services under the category of Other Health Impairment prior to his diagnosis of Autism in Spring 2016. Jack also attended art therapy once per week throughout the course of the current study, but did not receive any additional services for autism.

As with Eric and Tom, several indicators of functioning and ability are outlined here with the aim of providing a comprehensive profile of Jack. His mother and homeroom teacher both completed the SSIS. Jack's mother rated him as being in the 'below average' range for Social Skills, and the 'above average' range for Problem Behaviors. His teacher noted more severe impairments in functioning on the SSIS, rating him in the 'well below average' range for Social Skills, and the 'well above average' range for Problem Behaviors. Jack's IQ fell in the 'very superior' range, as measured by the *WISC-IV*, with a standard score of 138. Jack's language skills were assessed using the *Adolescent Test of Problem Solving-Second Edition* (TOPS2), which measures both language pragmatics and problem solving. The TOPS-2 consists of five subtests: Making Inferences, Determining Solutions; Problem Solving; Interpreting Perspectives;

and Transferring Insights. Jack's scores were in the above average range on all of these subtests.

Setting

The video-modeling intervention took place in a therapy room at the Clinical Psychology Center at the University of Montana and data was collected across several school settings: classroom, cafeteria, and recess. During the intervention phase of the study, each participant visited the Clinical Psychology Center once per week to receive the intervention. The primary researcher delivered the video-modeling intervention.

Materials

Intervention videos were recorded in the 'One Button Studio,' a video recording studio in the Mansfield Library at the University of Montana. These raw recordings were then edited using iMovie software, in order to add voiceovers and freeze frames as appropriate. These videos were created using peer models, all of whom were typically developing children attending elementary or middle school in Missoula. The parent of each peer model completed a consent form regarding the use of his/her child in the videos (Appendix E). The peer models also completed an assent form (Appendix F). These forms were stored in a locked cabinet in a research lab at the University of Montana. The models ranged from five to twelve years of age.

A series of individual videos were created for each participant, as each subject had target behaviors that were unique to them. The target behaviors were developed by conducting semi-structured interviews with parents and teachers, and also by having parents and teachers complete a standardized social skills rating scale. Based on the information gathered during these interviews and from the rating scales, target behaviors were identified and video modeling scripts were developed. Six videos were created for each subject, using three different groups of peer models, which served as the multiple exemplars of the target social skill. Specifically, each of the

three groups of peer models were represented in two separate videos, such that each participant watched six different videos throughout the course of treatment. For each participant, their six videos demonstrated their target behavior in a variety of ways, through the use of six different scripts and scenarios for each participant. The video modeling scripts for all three participants are included in Appendix M.

By providing multiple videos that each model the target behavior in six different scenarios and with three groups of peer models, participants are provided with more examples of their target behavior, which aims to increase the likelihood that they will produce the target behavior (Shukla-Mehta, Miller, & Callahan, 2010). Further, each video included a voiceover, with specific instructions or prompts for how to practice the social skill. For example, Tom's target behavior was responding to peers when they ask questions. The voiceover in his videos was presented during a freeze frame shot immediately after one model asks a question of another model, and stated "when my friend looks at me and asks me a question, I know that they would like me to answer their question. It's important that I answer their question, so they know that I want to talk to them." As it has been recommended by researchers (Shukla-Mehta et al., 2010) that videos should be no longer than three minutes in length, each of the videos fell within this time range (the shortest being 75 seconds, the longest being 160 seconds). The videos were implemented sequentially so that, by the end, each participant was able to view modeling from three different sets of peer actors, but each session made use of no more than six total viewings. Specifically, in Phase 1, they watched 2 videos three times (total 6 viewings) in phase two they added 2 more videos to the existing two (total six viewings, random combination of the four videos), and in phase three they added the final two videos (six total videos, each viewed once).

Procedures

Upon approval from the Institutional Review Board (IRB) for the Protection of Human Subjects in Research, recruitment efforts began in November 2015. The primary investigator contacted agencies in Missoula that provide services for children with autism in order to let them know about the study, and also contacted school psychologists in Missoula and surrounding areas. Following approval from the clinic or agency directors, the primary investigator contacted agency clinicians or therapists who work directly with families of children with autism, informing them of the study. The primary investigator requested that clinicians inform eligible families about the study. In the case of contacting school psychologists, the primary researcher simply requested that these school psychologists contact any families they work with who they believed would be interested in the study, in order to let them know about the study. Following this, interested parents or caregivers contacted the primary researcher to indicate their interest in participating in the study. At this time, the primary researcher contacted the principals of the schools that each potential participant was attending. School principals were contacted prior to proceeding with parents, in order to gain permission from principals for key components of the study to take place at their school i.e. meeting with teachers to develop target behaviors, collecting data in the school throughout Spring 2016. Following permission from school principals, the primary researcher then met with parents and teachers.

Informed Consent and Assent

During the initial meeting with parents, the primary researcher outlined the purpose of the study and provided relevant details e.g. duration of treatment, weekly time commitment from families, and information about data collection in the school setting. Following this outline and description of the study, parents then agreed to participate and completed an informed consent form (Appendix A). In addition to the informed consent from parents, each of the participants

was provided with a minor informed assent form at the beginning of the first treatment session, which they read and discussed with the primary researcher prior to granting their assent (Appendix B). For Tom, who did not have the requisite reading fluency and comprehension to knowingly read and sign the minor assent form, a verbal assent form was used (Appendix C).

Following consent from parents or caregivers, the subjects' teachers were informed about the study. Teachers were contacted via email to arrange a meeting with the primary researcher, the purpose of which was manifold: to explain the goals of the study, complete a semi-structured clinical interview in order to develop social skill goals for the participant, request that the teacher complete a standardized social skills measure to aid in developing social skill goals, and to establish times during the school day when data was collected. During this meeting, teachers also completed an informed consent form (Appendix D). These forms were also stored in a locked cabinet in a research lab at the University of Montana.

Demographic Information

Following the completion of informed consent, parents were provided with a demographic questionnaire to complete. Items included age, gender, ethnicity, age at which autism was diagnosed, services that were being received for autism, medical conditions, any other diagnoses, the age at which other diagnoses were made, and any services being received for other diagnoses (Appendix H). These forms were also stored in a locked cabinet in a research lab at the University of Montana.

Standardized Measure of Social Skills

Parents and teachers completed a standardized measure of social skills prior to the start of the intervention, in order to further inform treatment goals and define social behaviors that were targeted for the intervention. Specifically, teachers and parents completed the Social Skills

Improvement System - Rating Scale (SSIS) (Gresham & Elliott, 2008). The SSIS used to assess abilities and deficits in social and behavioral functioning. It is a multi-rater series of rating scales, which includes three domains: Social Skills, and Problem Behaviors, and Academic Competence. The Social Skills domain includes the following subscales: communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. The Problem Behavior domain includes several subscales: bullying, hyperactivity/inattention, internalizing, externalizing, and autism spectrum. The Academic Competence domain measures student performance in reading, math, motivation, parental support, and general cognitive functioning. Items are rated in terms of both the frequency of the social skill and problem behavior (never, seldom, often, and almost always), along with rating how important each social skill is for their child/student's development and success in school (not important, important, and critical). The SSIS was normed on a nationwide sample of 4,700 children that is representative of the United States Census population. The reliability of the SSIS is demonstrated by Cronbach's alpha scores in the mid to upper .90s for every scale within the Social Skills and Problem Behavior domains, and by Cronbach's Alpha in the upper .90s for the Academic Competence domain. The SSIS also demonstrates content, construct, concurrent, and predictive validity (Gresham & Elliott, 2008). However, as the SSIS does not show sufficient sensitivity to measure response to intervention, it was not administered following the intervention as an outcome measure. As such, it was used only for the purpose of informing treatment goals and selecting a target behavior for each participant. Again, these forms were stored in a locked cabinet in a research lab at the University of Montana.

Implementation of video modeling intervention

Researchers have established several guidelines for use when implementing video modeling interventions. Specifically, it is recommended that videos be no longer than three minutes in length, and that the child views the video three times during each intervention setting (Shukla-Mehta et al., 2010; Charlop-Christy & Daneshvar, 2003). These guidelines were adhered to in the current study. As each Intervention Phase included two videos that had been created with a specific group of peer models, participants watched both videos three times in each intervention session.

The video modeling intervention was delivered in the clinic by the primary researcher. Each intervention session began by presenting a visual schedule to the participant, which provided a visual outline of the session schedule and a 'ticket goal' for the session. Tickets were used as reinforcers and presented to each participant throughout the session when they demonstrated expected behaviors e.g. sitting quietly and watching the videos, participating in role play after the videos, transitioning smoothly between session breaks and watching videos. At the end of each session, participants would earn a small prize for meeting their ticket goal. Sample prizes included art materials, jigsaw puzzles, PlayDoh, or small toys. Each intervention session had the same structure and schedule: begin by setting a ticket goal, transition to 5 minutes of play with a preferred activity, then transition to watching videos and discussing or practicing the material presented in the videos. This sequence repeated throughout each session, such that each participant had three periods of play with a preferred activity and three periods of watching videos and practicing. The preferred activity for each child was determined based on parent report of the child's preferred activities during the intake interview. Each intervention session lasted approximately 40 – 50 minutes.

Each of the video-models showed three peers demonstrating each subject's target behavior. The videos used in each of the three intervention phases showed a different group of peers demonstrating the target social skill, along with including slightly different demonstrations of the social skills, and slightly different voiceovers, as appropriate. These changes to the videos used in each intervention phase serve as the multiple exemplars that were utilized in order to facilitate the generalization of social skills. Upon the introduction of each new video-model, the previous video-model continued to be shown to the subjects. Further, the specific video-models were implemented in different orders for each participant, in order to guard against order effects. That is, Subject A received the video models in the following order: VM-Group1, VM-Group2, VM-Group3, Subject B received the video models in the following order: VM-Group3, VM-Group2, VM-Group1, while Subject C received the video models in the following order: VM-Group2, VM-Group1, VM-Group3.

Research Team

The research team consisted of the primary researcher and six research assistants, who were recruited during the Fall 2015 semester. One of the research assistants was an advanced graduate student in Clinical Psychology, while the remaining five research assistants were undergraduate students majoring in Psychology. All research assistants completed a Human Subjects Protection Course, as required by the Institutional Review Board at the University of Montana. All research assistants also completed a Department of Justice criminal background check for Missoula County Public Schools, in order to be registered visitors within the schools during Spring 2016.

The primary researcher provided training for research assistants throughout November and December 2015. This training consisted of weekly meetings covering a range of topics: an

overview of social skills deficits and problem behavior in children with autism spectrum disorder, an overview of evidence based practices and video modeling, confidentiality in research, behavioral observation, and event recording. During the training on behavioral observation and event recording, the research assistants watched training videos of children in a classroom demonstrating a variety of social skills, and took event-recording data for each of these social skills. Research assistants then calculated both the total number of times that the target behavior occurred, along with calculating the rates of the target behavior. Each research assistant then compared both total tallies of behavior and rates of behavior with the rest of the team, in order to assess inter-rater reliability. Each member of the team was deemed proficient when they reached an inter-rater reliability rate of 85% or above across three or more videos.

The research team then completed a series of behavioral observations at a preschool on the University of Montana campus. Permission for these observations was obtained from the preschool director prior to the research team visiting the school. The structure of these school based observations and trainings were similar to the video training, wherein research assistants gathered event recording data on target social behaviors that the students were displaying. Again, each research assistant then calculated both the total number of times that the target behavior occurred, and the rate of the behavior. The team then calculated rates of inter-observer agreement with one another, and were deemed proficient when they established an inter-reliability rate of 85% or above across three or more observation sessions in the preschool.

Of the six research assistants, three were assigned as primary observers to each of the participants in the study, while the remaining three were assigned as secondary observers. The primary observers were then assigned an observation schedule for their participant such that they observed the participant across three school settings (classroom, recess, cafeteria) each week, for

a total of 180 minutes each week. The secondary observers were then assigned their observation schedule such that they overlapped with the primary observers for 60 minutes each week. The schedule was structured in this way in order for inter-observer reliability to be calculated for 30% of all observations.

Dependent Measures

As outlined above, dependent measures (i.e. each participant's social skill goal) were developed following semi-structured clinical interviews with parents and teachers, in order to determine goals that were relevant both at home and at school. The goals were also informed by parent and teacher response to the SSIS. The dependent measure for each participant target was a specific social skill (e.g. taking turns in conversation, taking turns during play, asking to join play with peers, or initiating conversation). Each goal met the criteria of being observable, measurable, and repeatable, and could also be demonstrated across the classroom, recess, and cafeteria settings.

Tom's goal was to respond with appropriate verbal interactions when peers initiated or engaged in conversation with him (e.g. saying hello in response to a greeting from a peer, answering a question that a peer asks, or responding with an on-topic comment during a conversation). The goal covered a somewhat wide range of related social behaviors, and was designed in this broad manner in order to provide maximal opportunities for observation during the relatively limited time periods that the observers were present in the school setting.

Eric's goal was to stop engaging in inappropriate physical behaviors with his peers. Based on the interviews with his mother and teachers, several problematic physical behaviors were identified for the participant: poking his friends when lining up to transition between classes, sniffing his peer's hair while at recess, and pretending to be a robot and making

'chopping' actions with his arms when his peers are playing other games. Both Eric's teachers and mother identified this as the primary social skill that they would like him to develop, as it currently posed the biggest barrier to him having pro-social interactions with his peers. Again, his goal was relatively broad insofar as that it included any of the above physical problem behaviors. As with Tom, this breadth was included within the goal as it allowed for greater opportunities to observe the target behavior during the relatively small amount of time that the observer was in the school each week.

Jack's teacher identified his lack of flexibility and consequent outbursts in class as the biggest impediment to his social inclusion and learning. His teachers described how Jack experienced difficulty with being flexible when working in groups and when he did not get his way. For example, if he did not agree with other's ideas for a group project, he would typically yell, leave the group, or throw classroom materials at his peers. His goal was developed with the aim of reducing these behaviors: when he disagrees with peers or teachers and does not get what he wants in class, the student will use a calming strategy to keep himself from escalating. For example, instead of a verbal outburst, physical outburst, or leaving class without permission, he will remain calm by using one or more calming strategies e.g. taking deep breaths, counting to 10, or asking for a break. Given that these calming strategies were not directly observable across school settings, Jack's target behavior was escalations, as an increase in the use of calming strategies would lead to a decrease in escalations.

Design

This study utilized a changing conditions design, wherein baseline data collection was planned for the same two week time period for each participant, with each participant then beginning Phase One of the intervention during the same week. The changing conditions

component of the design refers to the changes between intervention phases, wherein there were several sequential intervention phases and each phase consisted of new video models for each participant. This allowed for the technology of training multiple exemplars, as each new condition within the design added new exemplars of the social skill being demonstrated, specifically with a variety of peer models. The changing conditions design was utilized instead of a multiple baseline across participants design because it allowed for the study to take place within the spring semester of the Missoula County Public School calendar. Although a multiple baseline across subjects design would have offered greater experimental rigor and fewer threats to internal (and, therefore, external) validity, there was no way to assure that it would have been feasible within the time frame of the school calendar, and so it was not utilized in this study. A drawback to this, which will be discussed further in the limitations section, is that baseline phases were limited by time and thus baseline stability and/or direction, if problematic, could not be "waited out" by extension of the baseline phase.

Data Collection

Baseline data was collected for each subject across each of the three school settings: classroom, cafeteria, and recess. The baseline data collection period spanned two school weeks for each participant, which allowed for six data points in each setting for each participant. Baseline data collection began at the same time point for each of the subjects, and continued for two weeks prior to the introduction of Intervention Phase One. However, as Tom was ill and absent from school during the second proposed week of baseline data collection, his baseline data collection was extended to a third week. This allowed for the requisite six data points across settings to be collected for his baseline.

During baseline, data was collected on each participant's target behavior using the event recording technique, which consisted of counting the number of times that the target behavior was displayed during the data collection period. These tallies were then converted to rates of behavior per hour, as the duration of observations varied across settings. In addition, data was collected on three additional pro-social behaviors, also using event recording. These additional pro-social behaviors were the same for each participant: following teacher directions the first time, initiating conversation with peers spontaneously, and joining peers in play spontaneously. Data was collected on these additional pro-social behaviors in order to observe whether participants experienced a wide ranging improvement in social functioning as a result of the video modeling intervention. These behaviors were chosen as teachers and parents identified them as skills that each participant would benefit from developing, but which at the outset of the study they struggled to demonstrate consistently.

In order to collect maintenance data, observations were conducted in each of the school settings on two occasions: the first observation was two weeks after the end of the video-modeling intervention, while the second observation was three weeks after the end of the video-modeling intervention. However, only one week of maintenance data was collected for Jack, as he did not attend school during the second week of maintenance data collection. During these observations, data was collected in the exact manner as is outlined above. The data collection form is included in Appendix L. Although it would have been preferable to collect additional maintenance data at four and six weeks after the end of the intervention, this was not possible as the school year had already ended.

As mentioned above, data was collected on pro-social behaviors in addition to the target behavior for each participant, as a means of assessing any collateral effects of the intervention.

Further, the classroom teacher of each participant completed a daily behavior rating scale that was specific to each participant's target behavior (Appendix M). Each of these scales was individualized to the participants, and required teachers to rate the student's skill performance that day on a scale of 1-10, with 1 being lowest skill performance and 10 being highest skill performance. These daily behavior rating scales provided a further measure of the clinical significance of the intervention, from the perspective of each participant's teacher.

Data analysis

Data was analyzed using the percentage of non-overlapping data (PND) rubric proposed by Scruggs and Mastropieri (1998), which allows for assessment of the practical significance of change between baseline and intervention phases. This rubric provides a type of effect size estimate for single-subjects designs, and was computed by calculating the number of intervention points that do not overlap with baseline points. This rubric proposes that a PND over 90 is very effective, a PND between 70 and 90 is effective, a PND between 50 and 70 is questionable, and a PND below 49 constitutes ineffective treatment (Scruggs & Mastropieri, 1998).

Further, the level, trend, and variability of the data were analyzed using visual analysis (Wolery & Harris, 1982). Specifically, the level refers to whether the amount of the dependent variable has changed between the baseline phase and treatment phase. This was assessed by visual analysis, and was also assessed by drawing a line at the mean score for each phase separately. Specifically, the mean of the baseline and treatment scores was calculated, with a horizontal line drawn across the mean scores in both the baseline and treatment phases. The data was also analyzed by assessing changes in trend, or direction in the pattern of data points, across both the baseline and treatment phases. The trend was represented using the quarter-intersect method and a split middle line of progress. Within the quarter intersect method, ~~wherein~~ the

number of data points are divided in half (represented by a vertical line through the middle data points), and a marker is made at the mid-performance point on both the left and right sides of the vertical line. A final line is inserted to connect the intersections on both halves of the graph, using the split middle line of progress, so that an equal number of data points fall above and below the line. Finally, the variability of the data was analyzed, in order to assess how much divergence there was between the scores within each phase. It is recommended that, in classroom or school settings, baseline data points should not vary more than 50% from the mean, and so this calculation was completed for baseline phases across all participants (Alberto & Troutman, 2009). Although more controlled research settings call for a stricter criterion of 20% variability around the mean, the current criterion of 50% variability around the mean was more appropriate, give the less controlled nature of the setting (Alberto & Troutman, 2009). While this criterion was used to assess variability during baseline, the variability for treatment phases was assessed by calculating the range of data points during treatment. It is suggested that an intervention can be deemed effective if three conditions are present: there is minimal or no variability within each of the baseline and treatment phases; there are clear changes in level and/or trend following the implementation of the intervention; and that these changes between conditions are replicated throughout the experiment (Wolery & Harris, 1982). These first two conditions can be assessed using the methods of analysis outlined above.

Chapter IV

Results

The study examined whether a clinic-based social skills video modeling intervention was sufficient for children with autism to generalize their target social skill to a number of school

settings. In this chapter, the data are analyzed for baseline and intervention phases for each participant. The results for all participants are discussed and graphically represented in Figures 1 through 9. The results for each participant are presented separately. The format of the chapter is as follows: the inter-observer agreement data and procedural fidelity data are presented first, followed by the target behavior presented across settings, with data in each setting analyzed using the Percentage of Non-Overlapping Data (PND) rubric, alongside being analyzed for changes in level, trend, and variability. The additional pro-social behaviors will then be presented, and are also analyzed for changes in level, trend, and variability, and using the PND rubric. Rates of behavior per hour will be presented here, as the duration of observations varied across each of the three settings. Additionally, data was collected in the schools on multiple days, and so duration of observation sessions also varied for each setting across days. As such, rates of behavior are presented for both the target behaviors for each participant, and the additional pro-social behavior for each participant. The teacher Daily Behavior Rating Scales are also presented, and are also analyzed for changes in level, trend, and variability, using the same analysis as outlined above. For all participants, maintenance data is analyzed by examining changes in level, as the maintenance time frame was not long enough to analyze changes in trend across the maintenance phase. The primary data is displayed graphically in the results section below, while more detailed graphs depicting the analysis methods of level and trend are included in Appendices N through O. Following this outline of each individual participant, an overall summary for all participants is also provided. An additional research question pertained to the social validity of the intervention for both parents and teachers, which is also outlined below.

Inter-observer agreement

In order to ensure inter-observer agreement throughout data collection, 30% of the data collection sessions were assessed for inter-observer agreement. This was assessed by calculating a Cohen's kappa statistic (Cohen, 1960), which offers a quantitative measure of the level of agreement between observers (Viera & Garrett, 2005). The kappa statistic is calculated by examining the difference between how much agreement is really present, compared to how much agreement could be present due simply to chance. Further, the kappa statistic provides a measure of how far the observed agreement is from the expected agreement, and provides this measure on a standardized scale of +1 to -1. On this scale, +1 reflects perfect agreement, 0 reflects the level of agreement that we would expect to find by chance alone, and -1 reflect agreement that are less than chance, or potential disagreement. The kappa statistic will be interpreted along the following scale: 0.01 to .20 constitutes slight agreement, 0.21 to 0.40 is fair agreement, 0.41 to .60 is moderate agreement, and 0.61 to 0.80 is substantial agreement (Viera & Garrett, 2005). The kappa statistic is calculated by subtracting the observed agreement from the expected agreement (by chance alone), and dividing this number by 1 – the expected agreement. The observed agreement is the frequency with which the two observers agree, whereas the expected agreement is calculated by first creating a 2x2 table of the number of times that observers agree and disagree e.g. table below (reproduced from Viera & Garrett, 2005).

	Observer One:	Yes	No	Total
Observer Two:	Yes	a	b	m1
	No	c	d	m0

	Total	n1	n0	n

Within this table, a and d signify the number of agreements, whereas b and c represent the number of disagreements. In the absence of any disagreements, both the b and c values will be zero, in which case the observed agreement will be 100%. The expected agreement is calculated as follows: [(n1/n) * (m1/n) + [(n0/n) * (m0/n)].

The inter-observer agreement for Tom averaged 89% across 13 weeks of data collection (i.e. two weeks of baseline, nine weeks of intervention, and two weeks of maintenance). The kappa statistic for Tom was .78, which constitutes substantial agreement. The inter-observer agreement for Eric averaged at 88% across 13 weeks of data collection. The kappa statistic for Eric was .76, which constitutes substantial agreement. The inter-observer agreement for Jack averaged at 100% across 13 weeks of data collection. The kappa statistic for Jack was 1.00, which represents perfect agreement. This higher rate of inter-observer agreement for Jack may be attributable to the more overt nature of his target behavior i.e. escalations, and that this behavior can be observed more easily from a distance (e.g. during recess or cafeteria observations) than could Eric and Tom's target behaviors.

Procedural Fidelity

Procedural fidelity, or procedural integrity, is the degree to which an intervention is implemented as intended (Cooper, Heron, & Heward, 2007). In order to ensure procedural fidelity, the primary researcher completed a procedural fidelity form following each session (Appendix K). The form used in the current study was adapted from a treatment integrity checklist used in previous video modeling research (Whittington-Barnish, 2012). This form listed several steps that must be taken in order for the intervention to be implemented correctly.

These steps included watching the videos in a quiet space without interruptions, providing reinforcement to the participant for sitting and watching the videos, engaging in some discussion or practice following each viewing, and watching both videos three times during each intervention session. Each item was completed by recording 'yes' for correct implementation or 'no' for incorrect implementation. The total percentage of correct intervention implementation for all participants was calculated by dividing the total sum of 'yes' responses by the total sum of 'yes' and 'no' responses. This was calculated for each implementation of the intervention, while an overall procedural fidelity score for all implementations of the intervention was also calculated. Notably, as this form focused solely on assessment of treatment fidelity, it did not fully capture issues with in session behavioral compliance, which interfered with treatment fidelity in Tom's case. This will be discussed in greater detail in the Discussion Chapter.

For Tom, the average percentage of correct intervention implementation was 70%. This rate was variable across sessions. He watched four videos in the first session (66% correct implementation), five videos in the second session (80% correct implementation), one video in the third session (16% correct implementation), four videos in sessions four and five (66% correct implementation), six videos in sessions six and seven (100% correct implementation), and four videos in sessions eight and nine (66% correct implementation). The overall rate of correct implementation for Tom is significantly lower than the other participants due to him having several tantrums throughout sessions one through five. These tantrums occurred when it was time to transition between free play and watching the videos. Following the first session, the researcher began providing more tickets (reinforcers) for appropriate behaviors during transitions, which led to a slight improvement in the second session, wherein he increased from viewing four videos in the first session to viewing five videos in the second session. However,

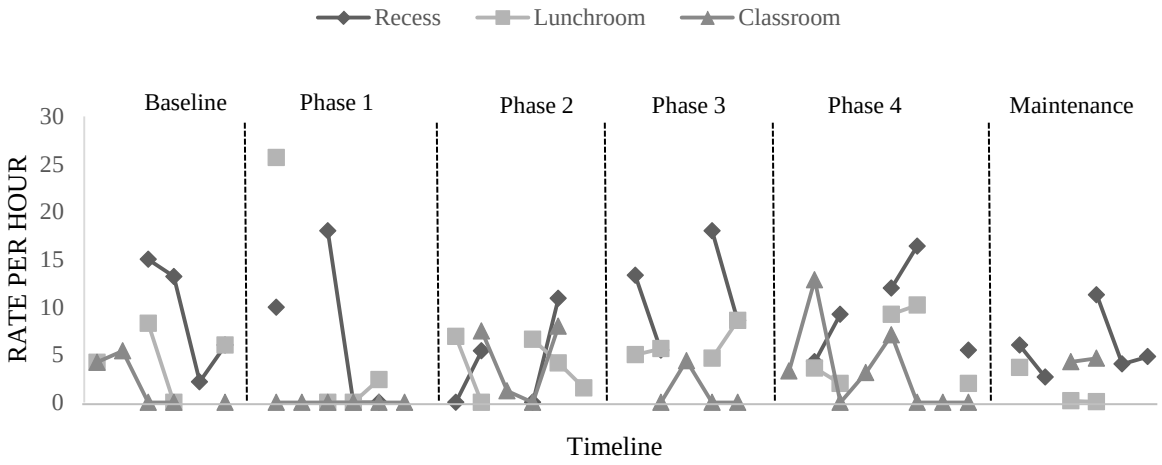
the tantrums were so severe during the third session that the participant watched only one video. Following this, it was decided that the participant's mother would be present during all following sessions, as this reduced his tantrums significantly. Additionally, the participant's favorite toy from home, a train set, was presented between viewings as a reward for watching the videos. Although the participant's mother did not participate in the treatment sessions, her presence seemed to help to keep the participant calm throughout. This was consistent with his other therapies in the community, wherein his mother was present throughout all sessions.

For Eric, the total percentage of correct intervention implementation across sessions was 100%. That is, for each of the nine intervention sessions, the participant viewed all six videos without interruption. For Jack, the total percentage of correct intervention implementation across sessions was 92%. For eight of the nine intervention session, the percentage of correct intervention implementation was 100%. For the fifth intervention session, the participant was late and so there was time for only two video viewings, and so the correct intervention implementation was 33% for this session. There is a notable difference in the rates of correct intervention implementation for Tom compared with both Participants Eric and Jack, due to the level of Tom's problem behavior. This is discussed in greater detail in the limitations section.

Tom

Tom's target behavior was to respond with appropriate verbal interactions when peers initiate or engage in conversation with him. Tom's target behavior was analyzed at recess, in the classroom, and in the cafeteria. As mentioned above, the level, trend, and variability of the data was analyzed, alongside an analysis using the Percentage of Non-Overlapping Data rubric. Graphs for Tom depicting the analysis methods of level and trend are presented in Appendix N.

Graph 1: Tom's Target Behavior



Recess

Analyzing the level of the subject's target behavior provides a determination of whether the amount of the dependent variable changed between baseline and treatment phases, by analyzing changes in the level of the mean score between baseline and treatment phases. The level of the subject's target behavior at recess changed from a mean rate of five times per hour during baseline, seven times per hour during phase one, four times per hour during phase 2, 11 times per hour during phase three, nine times per hour during phase four, and a mean rate of six times per hour during maintenance. The trend is analyzed in order to assess changes in the direction in the pattern of data points, which is calculated here using the quarter-intersect method. Tom's recess trend analysis shows an increase in the target behavior in the recess setting. Tom showed variable rates of his target behavior across settings during the baseline phase. Specifically, his rates of behavior at recess ranged from two to 15 times per hour during baseline, which is in excess of the recommended 50% of variability around the mean (Alberto & Troutman, 2009). This variability is problematic, given that a stable baseline is considered necessary for treatment effects to be identified and interpreted. This is discussed in greater detail

in Chapter Five. During treatment, this ranged from zero to 18 times per hour, while it ranged from two to eleven during maintenance. The PND is 18%, which constitutes ineffective treatment. As mentioned above, Tom's graphs depicting each of these analyses are included in Appendix N.

Classroom

The level of Tom's target behavior in the classroom changed from an average rate of twice per hour during baseline, zero times during phase one, four times during phases two and three, three times during phase four, and returning to four times per hour during maintenance. Tom's classroom trend analysis shows no change in the target behavior throughout the treatment phase. Tom also showed variable rates of the target behavior during baseline in the classroom, in excess of recommended variability around the mean. During treatment, the variability ranged from zero to 13 times per hour. There was no variability in the target behavior during maintenance, as it remained stable at four times per hour. The PND between baseline and treatment in the classroom setting is 22%, which constitutes ineffective treatment.

Lunchroom

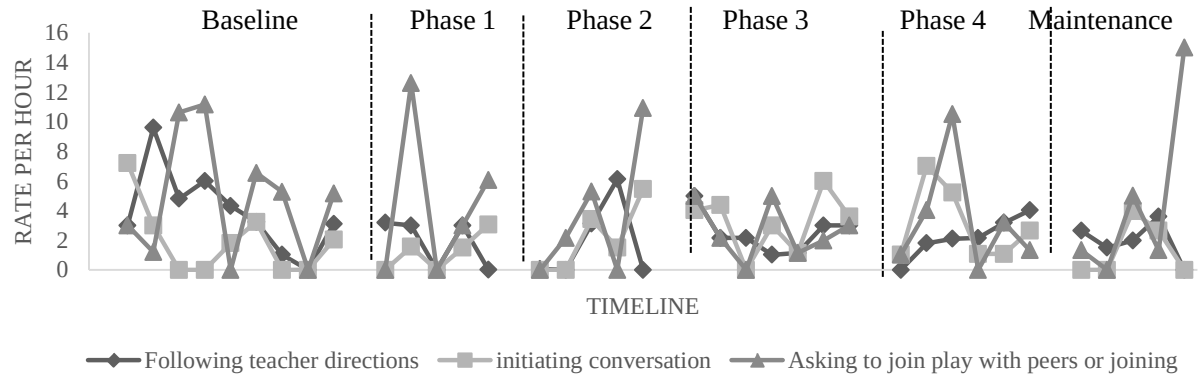
The level of Tom's target behavior in the cafeteria changed from an average rate of six times per hour during baseline, seven times per hour during phases one and two, six times per hour during phases three and four, and then to an average rate of twice per hour during maintenance. The trend analysis shows a minimal increase in Tom's target behavior in the cafeteria setting throughout the treatment phase, with low stable rates during the maintenance phase. Tom also demonstrated variable rates of the target behavior in the cafeteria during baseline, ranging from four to eight times per hour, in excess of the recommended 50% of variability around the mean. During treatment, this ranged from zero to 27 times per hour. There

was no variability during maintenance, as the target behavior occurred at a consistent rate of once per hour during this phase. The PND between baseline and treatment in the cafeteria setting is 22%, which constitutes ineffective treatment.

Tom's Prosocial Behavior

Data was collected on additional pro-social behaviors for each participant, as a means of assessing any improvements in their social functioning in addition to their individual target behaviors. For each participant, data was collected for their rate of following teacher directions the first time, for initiating conversation with peers, or for asking or joining peers in play spontaneously. As with the target behavior, the pro-social behavior data was analyzed according to level, trend, variability, and with the PND rubric.

Graph 2: Tom's Prosocial Behavior



Following teacher directions

The level of Tom's ability to follow teacher directions the first time, without prompts, changed from an average rate of five times per hour during baseline to four times per hour during

treatment, to an average of three times per hour during maintenance. The trend analysis shows a decrease in Tom's rate of following teacher directions during the treatment phase. Tom also showed variable rates of following teacher directions during baseline, ranging from zero to 10 times per hour, which is in excess of the recommended 50% of variability around the mean. During treatment, this ranged from zero to six times per hour, while it ranged from two to five during maintenance. The PND is 0%, which constitutes ineffective treatment.

Initiating Conversation

The level of Tom's ability to initiate conversation changed across treatment phases, with an average rate of twice per hour during baseline, once per hour during phase one, twice per hour during phase two, three times per hour during phase three, four times per hour during phase four, with a return to twice per hour during maintenance. The trend analysis shows a very slight increase in Tom's rate of initiating conversation during the treatment phase. Tom also showed variable rates of initiating conversation during both baseline and treatment, ranging from zero to seven times per hour during in both baseline and treatment phases, and ranging from zero to three during maintenance. Again, this constitutes an unstable baseline, as there is more than 50% of variability around the mean. The PND is 0%, which constitutes ineffective treatment.

Asking or spontaneously joining peers during play

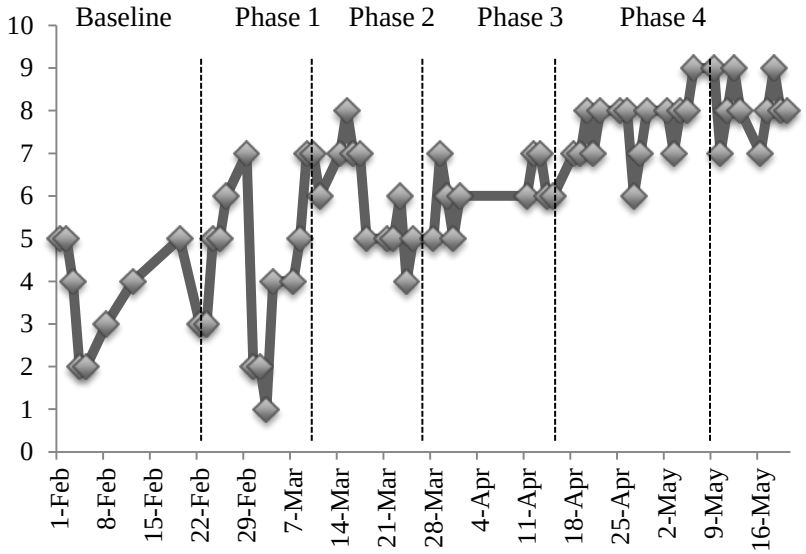
The level of Tom's ability to ask to join or spontaneously join peers during play changed from an average rate of five times per hour during baseline, 4.5 times per hour during phase one, four times per hour during phase two, twice per hour during phase three, 3.6 times per hour during phase four, and four times per hour during maintenance. The trend analysis shows no increase in this behavior across the treatment phase. Tom also showed variable rates of joining or asking to join peers in play during baseline, which ranges from zero to 11 times per hour and

represents greater than 50% variability around the mean. During treatment, variability ranged from zero to 13 times per hour, while it ranged from zero to 15 times per hour during maintenance. The PND is 7%, which constitutes ineffective treatment.

Tom's Teacher Daily Behavior Rating

The level of the teacher Daily Behavior Rating (DBR) for Tom changed from an average rating of four during baseline, to an average rating of six during treatment and nine during maintenance. The trend analysis shows a significant increase in ratings across treatment phases. Teacher daily ratings ranged from two to five during baseline and from one to nine during treatment phases. During maintenance, this ranged from seven to nine. The PND is 75%, which constitutes effective treatment.

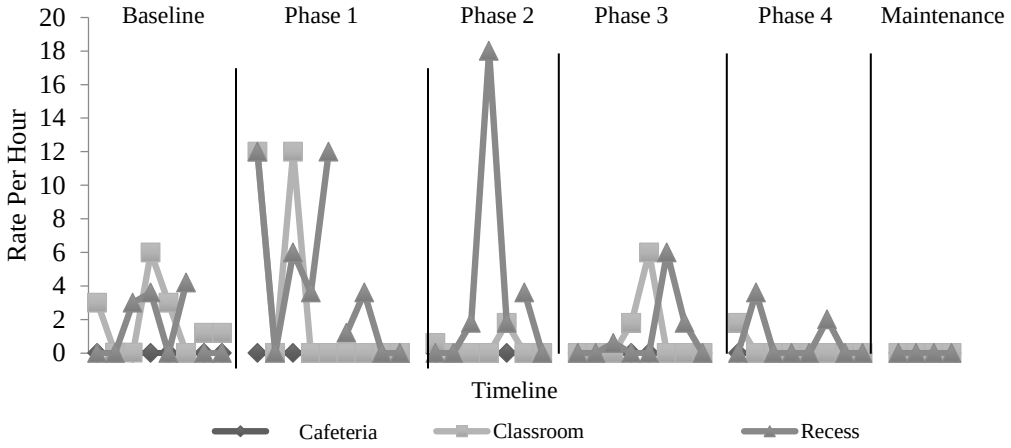
Graph 3: Tom's Teacher Daily Behavior Rating



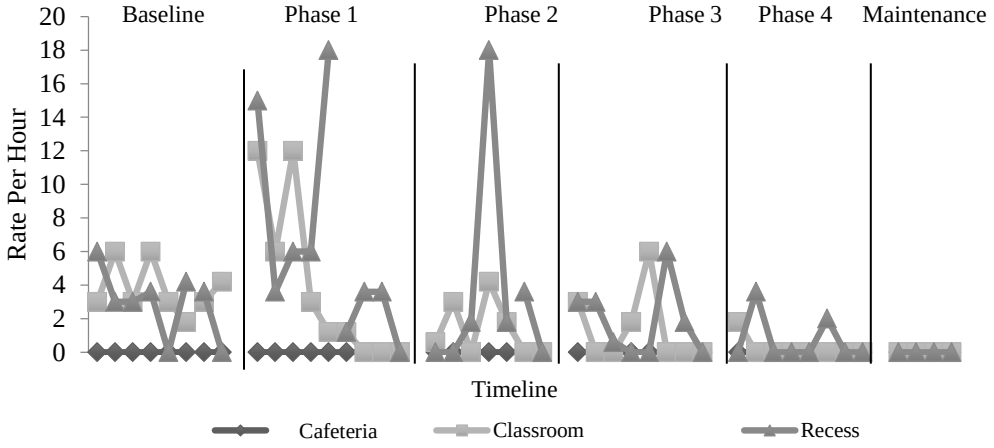
Eric

Eric's target behavior was to respond appropriately to peer requests to stop engaging in physically inappropriate behaviors e.g. poking his peers, sniffing hair, etc. As such, the graphs display the number of times that he stops physically bothering friends when requested to do so by either peers or a teacher. Again, this behavior was identified by Eric's teacher as being his most prominent social skill deficit. As such, the video models demonstrated a number of different scenarios in which a peer is asked to stop physically bothering others. The videos demonstrated these requests being made by either peers or teachers. Eric's rate of stopping when requested was analyzed at recess, in the classroom, and in the cafeteria. As mentioned above, the level, trend, and variability of the data was analyzed, alongside an analysis using the Percentage of Non-Overlapping Data rubric. As with Tom, a graph of Eric's target behavior across school settings is displayed below, while more detailed graphs depicting the above analyses are included in Appendix O.

Graph 4: Eric's Target Behavior (i.e. stop bothering peers when requested)



Graph 5: Eric's Overall Rates of Physically Bothering Peers



Recess

The level of Eric's target behavior at recess changed from an average rate of once per hour during baseline, 4.3 times per hour during phase one, 3.6 times per hour during phase two, once per hour during phase three, 0.7 times per hour during phase four, and did not occur at all

during maintenance. The trend analysis shows an increase in his stopping when requested during baseline, and a decrease in this behavior throughout treatment phases. Notably, decreases in his target behavior (stopping when requested) coincide with decreases in overall rates of physically bothering friends at recess (as demonstrated in Graph Five), such that he was initiating less physical interference with peers throughout the treatment phases. During maintenance, there were no recorded instances of the target behavior. Eric showed variable rates of the target behavior during baseline, ranging from zero to four times per hour, which is in excess of the recommended 50% variability around the mean. During treatment, this ranged from zero to 18 times per hour. The behavior did not occur at all during maintenance. As there were values of zero during baseline, the PND cannot be calculated.

Classroom

The level of Eric's target behavior changed from an average rate of twice per hour during baseline, to 2.7 time per hour during phase one, 0.3 times per hour during phase two, once per hour during phase three, 0.7 times per hour during phase four, and then did not occur at all during maintenance. The trend analysis shows no change in the direction of the target behavior during treatment, and no recorded instances of the behavior during maintenance. Again, there were variable rates of the target behavior during baseline, ranging from zero to six times per hour, which is in excess of the recommended 50% of variability around the mean. Similarly, there were variable rates of the target behavior during treatment, ranging from zero to 12 times per hour. As was observed in the recess setting also, Eric's overall rates of physically bothering friends also decreased in the classroom setting across treatment phases. As above, there were values of zero during baseline, and so the PND cannot be calculated.

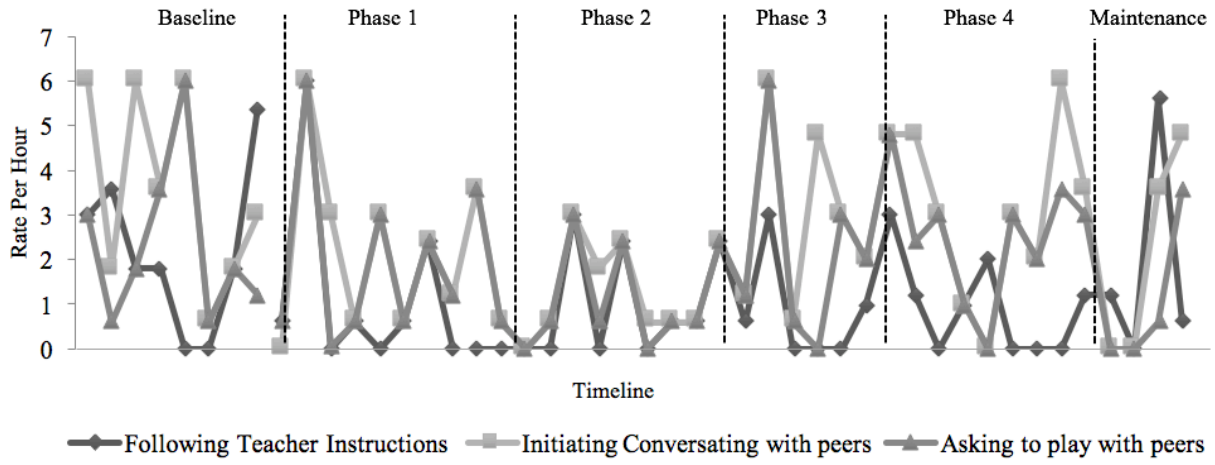
Cafeteria

Eric consistently sat alone in the cafeteria, and was not observed having any social interactions or demonstrating his target behavior in the cafeteria setting at any time during baseline, treatment, or maintenance phases. As such, no data was collected or analyzed regarding his target behavior in the cafeteria.

Eric's Prosocial Behavior

As with Tom, data was collected on Eric's rates of prosocial behavior, in order to assess any collateral gains in social functioning as a result of the video modeling intervention. Again, data was collected on the rate of following teacher directions the first time, initiating conversation with peers, and asking or joining peers in play spontaneously. The pro-social behavior data was analyzed according to level, trend, variability, and with the PND rubric.

Graph 5: Eric's Prosocial Behavior



Following teacher directions

The level of Eric's ability to follow teacher directions the first time, without prompts, changed from an average rate of 2.2 times per hour during baseline, 1.1 times per hour during phases one and two, once per hour during phase three, 0.7 times per hour during phase four, and

twice per hour during maintenance. The trend analysis shows a slight increase throughout treatment. There were variable rates of behavior during both baseline and treatment stages: rates during baseline ranged from zero to five times per hour, while rates during treatment ranged from zero to three times per hour. Again, baseline rates were in excess of the recommended 50% of variability around the mean, which constitutes an unstable baseline. During maintenance, this ranged from zero to six times per hour. As there were values of zero during baseline, the PND cannot be calculated.

Initiating Conversation

The level of Eric's ability to initiate conversation changed from an average rate of 3.2 times per hour during baseline, 2.1 times per hour during phase one, 1.5 times per hour during phase two, 3.2 times per hour during phase three, three times per hour during phase four, , and an average of 2.1 times per hour during maintenance. The trend analysis shows a slight increase in the rate of Eric's initiating conversation during treatment. There were variable rates of initiating conversation during both baseline and treatment phases: rates during baseline ranged from zero to six during both baseline and treatment phases, and ranged from zero to five during maintenance. As above, there were values of zero during baseline, and so the PND cannot be calculated.

Asking or spontaneously joining peers during play

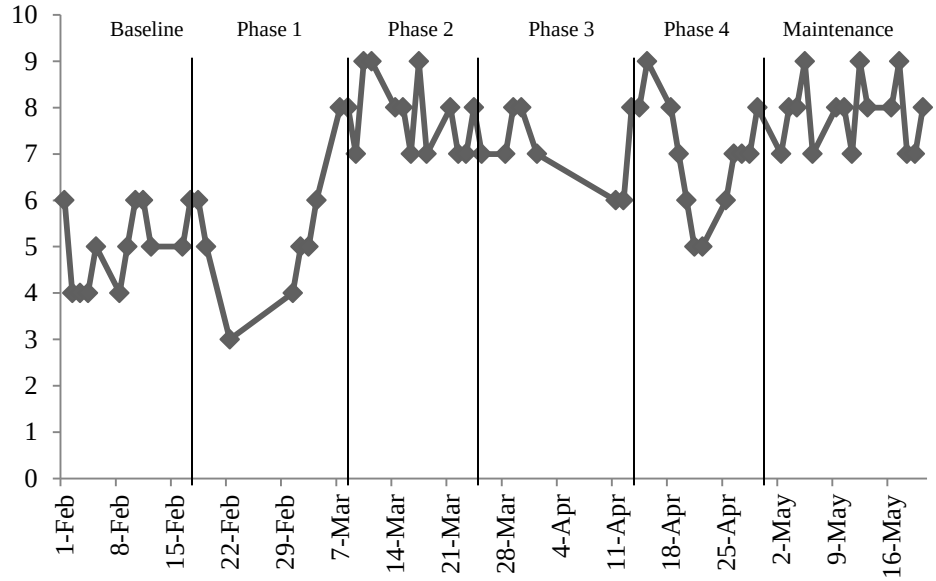
The level of Eric's ability to ask to join or spontaneously join peers during play did not change, with an average rate of 2.1 times per hour during baseline, 1.8 times per hour during phase one, 1.3 times per hour during phase two, 3.4 times per hour during phase three, 2.3 times per hour during phase four, and once per hour during maintenance. Again, there were variable rates of asking or joining play during both baseline and treatment phases: rates during baseline

ranged from one to six times per hour, and rates during treatment ranged from zero to six times per hour. During maintenance, this ranged from zero to four times per hour. The PND is 0%, which constitutes ineffective treatment.

Eric's Teacher Daily Behavior Rating

The level of the teacher Daily Behavior Rating for Eric changed from an average rating of five during baseline, 6.2 during treatment phase one, 7.9 during treatment phase two, 7.1 during treatment phase three, 7 during treatment phase four, and 8.1 during maintenance. The trend analysis shows a slight decrease across treatment phases. The variability shows that teacher daily ratings ranged from four to six during baseline, although increased significantly throughout treatment, such that during treatment phase four the ratings ranged from five to nine, and during maintenance ranged from seven to nine. The PND is 78%, which constitutes effective treatment.

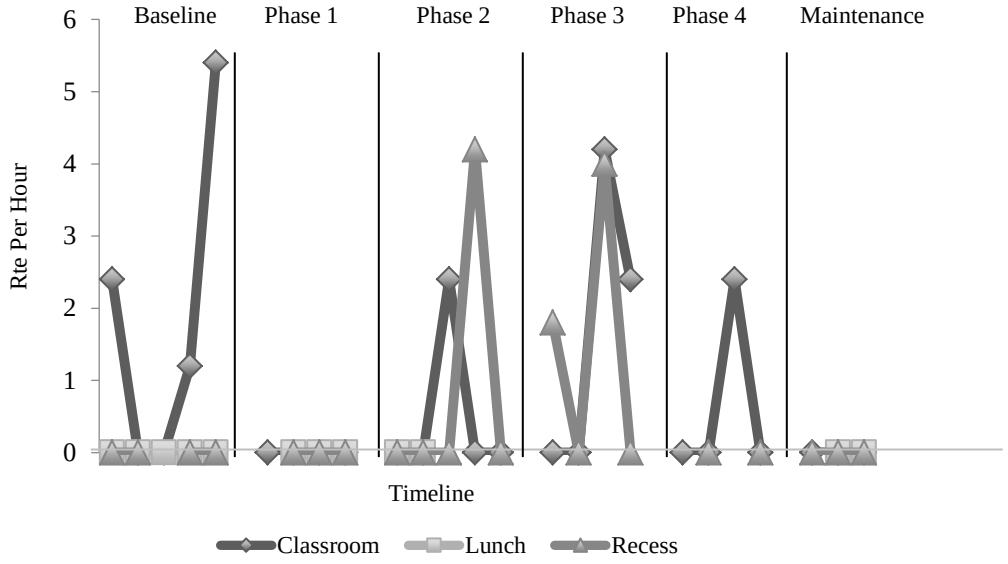
Graph 6: Eric's Teacher Daily Behavior Rating Graph



Jack

Jack's target behavior was to use calming strategies to reduce escalations in specific triggering situations: when given work that he did not want to do, and when he did not get his way during peer work. The video models for Jack provided very targeted examples of how to use calming strategies to de-escalate during specific situations and scenarios that were triggering for Jack, as identified by his teachers (above). As it was not possible to reliably observe his use of calming strategies, it was decided instead to track his number of escalations. Jack's escalations were analyzed at recess, in the classroom, and in the cafeteria. As above, the level, trend, and variability of the data was analyzed, alongside an analysis using the PND rubric. As with Tim and Eric, his target behavior across settings, prosocial behaviors, and teacher DBR ratings are displayed graphs below, while more detailed graphs depicting the mean lines, trend lines, and range lines are included in Appendix P.

Graph 7: Jack's Target Behavior



Classroom

The level of Jack's target behavior in the classroom changed from an average rate of 1.8 escalations per hour during baseline, 0 during phase one, one per hour during phases two and three, 0.8 during phase four, and zero during maintenance. The trend line shows an increase in escalations in the classroom setting throughout the treatment phase. There is significant variability in rates of target behavior both during baseline and treatment phases. During baseline, rates range from two to five escalations per hour, in excess of the recommended 50% of variability around the mean. During treatment, rates range from zero to four escalations per hour. There were no escalations observed during the maintenance period. The PND cannot be calculated, as there were baseline values of zero.

Recess

The level of Jack's escalations at recess changed from zero during baseline and treatment phase one, to an average of 1.5 per hour during treatment phase two, one per hour during phase three, and zero per hour during both phase four and maintenance. The trend analysis shows no change in rates of escalations across the treatment phases. There is variability during treatment phase two, ranging from 0 to 4 escalations per hour during this treatment phase. These variable rates during treatment phase two may be explained by a number of setting events: prior to this treatment phase, Jack had spent recess alone in the cafeteria or hiding in the school bathrooms. This treatment phase marked Jack's first time to integrate and engage with peers at recess. However, Jack struggled to engage appropriately with peers, and had frequent escalations due to lack of appropriate play skills. Nonetheless, Jack's initiation of play with peers at recess may be seen as a positive gain. Further, Jack's mother had a new baby during this phase, and so Jack was adjusting to significant changes at home which may have led to increased disturbance at school. The PND cannot be calculated, as the baseline phase consists solely of values of zero.

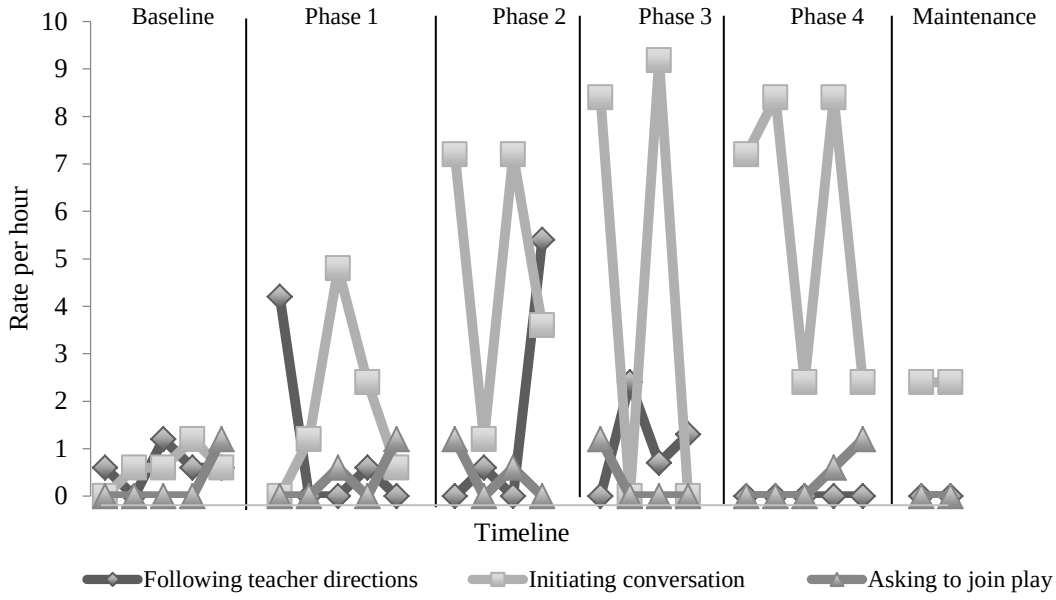
Cafeteria

Throughout all phases of data collection, Jack spent his lunchtimes either sitting alone or hiding in the bathroom. As such, he did not demonstrate any escalations during these periods, primarily because he did not interact with others or have any demands made of him during these times. This was consistent across baseline, treatment, and maintenance phases.

Jack's Prosocial Behavior

As with Tom and Eric, data was collected on Jack's additional pro-social behaviors, to assess whether he experienced improvement in other areas of social functioning. Data was collected on his rates of following teacher directions the first time, initiating conversation with peers, and asking to join or spontaneously joining in play with peers.

Graph 8: Jack's Prosocial Behavior



Following teacher directions

The level of Jack's ability to follow teacher directions the first time, without prompts, changed from an average rate 0.6 times per hour during baseline, once per hour during phase one, 1.3 times per hour during phase two, 1.1 times per hour during phase three, and zero times per hour during both phase four and maintenance. The trend analysis is entirely stable across the treatment phase, showing no change in direction across this phase. The baseline rates here show significantly less variability than do the treatment rates. During baseline, rates range from zero to one times per hour, whereas during treatment, rates range from zero to five times per hour. During maintenance, the behavior was not observed at all. The PND is 15%, which is considered ineffective.

Initiating Conversation

The level of Jack's ability to initiate conversation, without prompts, changed from an average rate of 0.6 times per hour during baseline to 1.8 timer per hour during phase one, 4.8 times during treatment phase two, 4.4 times during treatment phase three, 5.8 times during treatment phase four, and 3.8 times per hour during maintenance. The trend analysis shows an increase in Jack's conversation initiation during the treatment phase. There was very little variability in the participant's rate of initiating conversation during baseline, with a range of just zero to one times per hour. However, the baseline data showed an increasing trend, and so it is not considered a stable baseline. During maintenance, this remained stable at twice per hour. During treatment, the variability ranged from zero to nine times per hour. The PND is 69%, which constitutes mildly effective treatment.

Asking or spontaneously joining peers during play

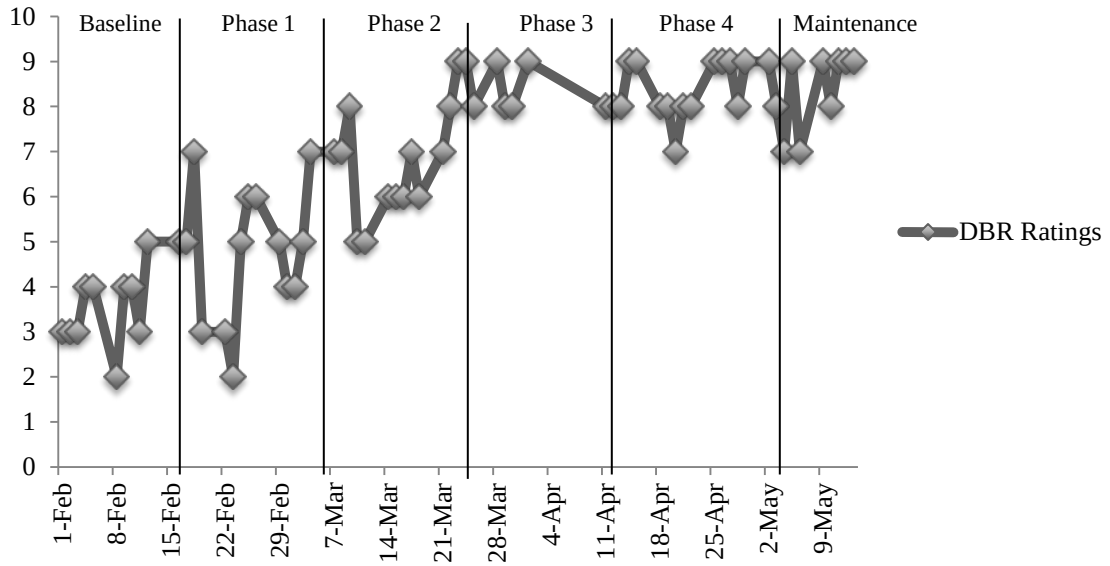
Jack did not show a change in level for asking to join or spontaneously joining

peers during play, with an average rate of 0.3 times per hour during baseline and treatment phase one, 0.5 times per hour during phase two, 0 times during phase three, 0.3 times per hour during phase four, and 0 times per hour during maintenance. The trend analysis shows no change across the treatment phase. There is little variability in the rates of this behavior during both baseline and treatment phases, with rates ranging from zero to one instances per hour for both baseline and treatment phases. Again, the baseline shows an increasing trend, and so cannot be considered stable. The PND is 38%, which is considered ineffective. The behavior did not occur at all during maintenance.

Jack's Teacher Daily Behavior Ratings

The level of the teacher Daily Behavior Rating for Jack changed from an average rating of four during baseline, to an average rating of 4.3 during treatment phase one, 6.7 during phase two, 8.2 during phase three, 8.6 during phase four, and 8.4 during maintenance. The trend analysis shows ratings increasing across treatment phases. The variability during baseline shows ratings ranging from three to five, whereas ratings during treatment phases range from five to nine, and rating during maintenance range from seven to nine. The PND is 81%, which constitutes effective treatment.

Graph 9: Jack's Teacher Daily Behavior Ratings



Social Validity

Parents and teachers also completed pre-intervention and post-intervention social validity interviews, in an effort to examine whether parents and teachers approve of a video modeling intervention as an acceptable and feasible intervention for targeting social skill development. As a means of ensuring the social validity of the treatment goal for each participant, the primary researcher completed semi-structured clinical interviews with parents and teachers, alongside having parents and teachers complete a standardized social skills rating scale. The data from both the interviews and the rating scales were used to inform the target behavior for each participant, and to ensure that the target behavior for each child constituted a meaningful social skill that would potentially aid them both at home and school.

To assess the social validity of the intervention, parents and teachers participated in two social validity interviews, one pre-intervention and one post-intervention, in order to provide

their perspective on the social validity of two aspects of treatment: intervention goals and intervention outcomes. Although the social validity literature suggests (Foster & Mash, 1999; Wolfe, 1978) that a third aspect, intervention implementation, should also be assessed, this was not done in the current study because parents and teachers were not involved in intervention implementation. The question content was the same in both the parent and teacher interviews, although there were slight differences in the wording (e.g. *your child* was used in the parent questionnaire, while *the student* was used in the teacher questionnaire; Appendices I & J). This interview data was analyzed using thematic analysis, a method that allows identifying and reporting on themes in the data. This analysis was done using NVivo Version 10 qualitative software (NVivo, 2012).

The primary focus of the pre-intervention interviews was to ascertain whether the treatment goals had social validity from the perspective of both parents and teachers. As such, the questions focused on the acceptability of the target behavior (i.e. dependent variable) for each participant. Two clear themes emerged from the parent and teacher pre-intervention interviews: developing friendships, and practicing life-long skills. That is, parents and teachers of all three participants identified the treatment goals as being acceptable, given that the treatment goals were related to the participants' ability to develop friendships, a skill amenable to trapping (Baer & Wolf, 1970), which allows for the behavior to be maintained by natural contingencies such as positive peer interactions.

With regard to the theme of developing friendships, Tom's parent reflected that "It could help him start to really seek out his peers more and develop relationships with them." Similarly, Eric's parent noted "If he had this skill, he would able to establish more meaningful relationships with peers." Further, Jack's parent explained "I feel that he will be able to manage interpersonal

relationships better, as well as help see himself in other people's shoes, which is important." These quotes reflect the degree to which parents of all participants felt that the treatment goals were highly relevant to each participant's ability to develop friendships and positive peer relationships.

In consideration of the theme of life-long skills, Tom's mother noted that "I think it's very important because I think it going to lead for a more successful life." Likewise, Tom's teacher reflected that his treatment goal was "pretty important because it'll be the steppingstone to his future education and success." Similarly, Eric's teacher reported of his treatment goal that "it's important because it's something that he is going to have to use from now to later on in life". Finally, Jack's teacher noted "it's targeting life skills… it's going to be something he could take beyond school settings, so he can be especially successful as an adult and being able to… to work in a job field."

The primary focus of the post-intervention interviews was on the social validity of the treatment outcomes from the perspective of both parents and teachers. As such, the questions focused on any changes that parents and teachers had identified in the child's social functioning that could be attributable to the intervention, and the significance of any such changes. Several consistent themes emerged across both parent and teacher interviews: noticeable positive changes in the child's social skills, and recognition that the intervention had been successful for the participants. Interestingly, parents of all participants went so far as to say that they would recommend the intervention to others, whereas two of the three teachers described themselves as being unqualified to make such a recommendation.

With respect to the theme of noticing positive changes in social skills as a result of the intervention, Tom's mother shared several anecdotes as evidence of the changes she had seen in

her son's behavior as a result of the intervention. Specifically, she noted that "we were at the pool one day and a couple of boys walked by and he looked up and said 'hi' to them. Another day he said 'hi' to a classmate and showed him his toy plane. We were totally shocked because we were used to him ignoring others around him." Tom's teacher noted that "he plays with his own friends in the playground, which is awesome, and is definitely playing more with other friends than on his own." Likewise, Eric's teachers noted several indicators of change as a result of the intervention. For example, his English teacher noted "I have not seen as much aggression when he's in line or when he's working with other kids," while his Spanish teacher noted that "He tries harder to interact with the other kids and does so fairly successfully, and I've seen less aggression and heard about less aggression from his peers when he's on the playground." This report from Eric's Spanish teacher is particularly encouraging, given that no behavioral observations were conducted, or data collected, in Eric's Spanish classroom.

Jack's parents and teacher also noted positive changes in his social skills following the intervention. His mother noted "I have heard him talk about intervention strategies and talk about using them and that just sounded really positive," while his step-father reported that "He's had fewer outbursts in the last couple of months of being treated than he ever had." Jack's teacher reported that "he has the ability now to not shut down in class when he doesn't get his way." In fact, Jack's teacher relayed one particular instance when she witnessed Jack using his calming strategies successfully in P.E. class: "A couple weeks ago we did a badminton unit and he really wanted the green racket but he didn't get it. He took a few deep breaths, stopped the tears, and joined us. So that was a huge improvement, just the fact that he was ok to participate and control those emotions where he didn't get his way."

In general, qualitative reports from teachers and parents were more positive than the quantitative data on the participants' behavioral goals. This was particularly true for Tom and Eric, whose quantitative data were variable and showed less improvement. For Jack, qualitative data was the strongest, which was in line with his more encouraging quantitative evidence of improvement. In addition, the more positive qualitative results are consistent with DBR data, which also showed improvements across all three participants. Parents of all participants reported that the intervention had overall been successful from their perspectives. Tom's mother noted that "I think that the intervention was very successful because I saw improvements myself. It was such a short amount of time that I wasn't expecting to see huge improvements, but with the amount of time I am very happy with the results." Eric's parents stated "I know it's very successful. Hearing that his teachers are having less trouble, he's having no trouble with peers, that's huge." Similarly, Jack's step-father reported "There's been a lot of success. His usual behavior in the last three months has been drastically better than the previous couple years since I've known him. I've seen him be more social too, a couple of times at church and on the soccer field."

Interestingly, this theme of deeming the intervention to be successful was not consistent across teacher reports. Specifically, Tom and Eric's teachers were both hesitant to ascribe any success to the video modeling intervention only. Tom's teacher stated "I'm not sure if it was successful because I don't know if it was the intervention or what we are doing in school", while Eric's Spanish teacher reported "I don't know that I'm qualified to answer that question not knowing too much about interventions generally." Again, though, both teachers did note substantial improvements via their DBR data. Jack's teacher was more confident in suggesting that that the intervention had been successful, noting that "things have been going so well in

health and P.E. class." As above, Jack's teacher had an anecdote to share which demonstrated the success of the intervention at school, sharing that "We're just wrapping up our mental health unit and, one of the lessons was on helpful ways to de-stress, and he wrote that his strategy was to keep deep breaths and just think about the situation. When he brought it up to me to be checked I asked 'is that working,' and he said 'it's really been working for me'." Again, this discrepancy between Tom and Eric's teacher reports, compared with Jack's teacher reports, further supports the observational data in demonstrating that Jack experienced the most verifiable treatment gains.

Chapter V

Discussion

Overall Discussion of Results

The purpose of this study was to examine the effects of a clinic-based video modeling social skills intervention, whether it would lead to generalization in a number of school settings for children with ASD, and if treatment effects in the school setting would be maintained at a one and 2 week follow-up. The study also examined whether parents and teachers found the goals and outcomes of the video modeling social skills intervention to be socially valid. This chapter will discuss the findings for each research question included in the study, as well as outlining the limitations of the current study. The chapter will then discuss the contributions that this study makes to the existing research literature on video modeling social skills interventions and social validity, alongside a discussion of the practical significance and implications of the study.

Generalization of Target Behaviors Across School Settings

The results were outlined for each participant in Chapter Four, and will now be discussed relative to each area of inquiry. The first of these asked if the video modeling intervention would facilitate skill acquisition in a school setting after intervention phase one, which showed just two examples of the target social skill for each participant (i.e. two videos). The hypothesis was that this intervention phase would lead to skill acquisition in one of the school settings. Tom showed an initial increase in his target behavior at the beginning of treatment phase one, both in the lunchroom and at recess, although this was not maintained throughout this treatment phase.

Eric showed an increase in his rates of stopping physically bothering peers in two settings during phase one: classroom and recess, although, this initial increase in his target behavior was followed by a decrease. However, there were significant setting events that likely contributed to this decrease: the participant missed several days of school due to illness, and experienced difficulty transitioning back to school after his absence. In addition, he had a substitute teacher

when he transitioned back to school, which further exacerbated his difficulty in school. Jack's rate of escalations decreased to 0 in the classroom setting during treatment phase one, which provides evidence to support the hypothesis that the first phase of treatment would lead to skill generalization in a school setting.

The second area of inquiry examined whether participants would generalize their target behavior to more than one setting upon viewing four examples of their targeted social skill (i.e. during intervention phase two, when two new videos were introduced in addition to both videos from phase one). The hypothesis was that the second phase of treatment would increase rates of target behavior, such that the skill acquisition would occur in more than one school setting. Tom showed increases in the target behavior across settings from treatment phase one to treatment phase two, although the rates during treatment phase two did not differ significantly from target behavior rates during baseline. Eric showed an increase in his target behavior from treatment phase one to treatment phase two, which provides evidence to support the hypothesis that a second treatment phase would lead to generalization in more than one school setting. Jack showed a significant increase in his problem behaviors from treatment phase one to treatment phase two, although there were a number of setting events which may explain this: the participant was ill and absent from school for two days at the beginning of the treatment phase, and reportedly experienced difficulty readjusting to school after his absence, according to both parent and teacher reports. Additionally, and perhaps more significantly, Jack's mother had a baby at the beginning of this treatment phase, and so Jack was adjusting to significant changes at home during this period. It is possible that this adjustment at home contributed to Jack's elevated rate outbursts during this period. Jack's parents reported that he was likely struggling to adjust to

a new sibling at home, and having less attention from his parents, and that these factors may also have contributed to increases in his problem behavior during this time.

The third area of inquiry examined whether the participants' behavior would generalize to all school settings upon viewing six examples of their targeted social skill (i.e. during intervention phase three, when the final two new videos were introduced). Tom's improvements across treatment phases appeared to be specific to the setting. That is, although little improvement was observed in the classroom setting, the mean rates of his target behavior increased for both the recess and the cafeteria setting from baseline phase to treatment phase three. As such, there may be some support for the hypothesis that three phases of video modeling would lead to skill acquisition in multiple school settings. Yet, it is recommended that both mean lines and trend analysis demonstrate treatment effects, and so mean rates alone do not provide sufficient evidence. Eric and Jack did not engage with peers in the cafeteria setting at any point during the data collection period. Specifically, Eric was consistently observed to sit alone in the cafeteria, while Jack would consistently either eat alone in the cafeteria or take his lunch to the restroom and eat alone. As such, Eric and Jack did not engage in any social interactions in the third school setting (cafeteria) at any time during the baseline, treatment, or maintenance phases. This data does not allow for the third hypothesis (i.e. a third phase of video modeling intervention would lead to skill generalization in a third school setting) to be examined for Eric and Jack. Unfortunately, experimental control within the study was limited to the single independent variable (i.e. the video modeling intervention), and so the primary researcher did not have the capacity to increase or program for increased social interactions in the cafeteria setting.

Overall, several improvements in target behaviors can be observed across participants. Specifically, Tom's target behavior shows a slight increase in trend across all three settings,

while both Eric and Jack showed a reduction in their target problem behavior. Eric showed a reduction across both recess and classroom settings, for phases three, four, and the maintenance phase, whereas Jack showed a reduction in the classroom setting for phase four and maintenance.

Maintenance of Treatment Effects

The fourth area of inquiry examined if there would be evidence of maintenance treatment effects. For Tom and Eric, this was assessed at a two and 3 week follow-up, while for Jack it was assessed at a one week follow-up. Unfortunately, Jack was absent from school during the proposed second week of maintenance data collection, and so only one week of data could be gathered. For Tom, maintenance data suggests returns to baseline or near baseline levels, although it varies according to setting. Specifically, Tom's maintenance level of target behavior in the classroom setting returned to baseline rates, whereas at recess his maintenance level of target behavior decreased from treatment, but remained slightly higher than baseline. Although this is discouraging maintenance data, it may suggest the need for consistent and continued implementation of video modeling interventions, in order for treatment to remain effective. For example, if the maintenance phase were conceptualized as a return to baseline, as would be the case in an ABA design, the data suggests that increased levels of target behavior demonstrated during treatment are due to the video modeling intervention (Alberto & Troutman, 2009).

Eric's level of target behavior in both the recess and classroom settings during the maintenance phase remained at a zero, which was a reduction from baseline. This is encouraging, given that his target behavior centered on a reduction in problem behaviors. No maintenance effects could be examined in the cafeteria setting, as Eric did not engage with others in the cafeteria at any point during baseline, treatment, or maintenance, and thus did not have opportunities to display the target behavior. Jack's maintenance data also varied according to

setting. As with Eric, he did not engage with others in the cafeteria at any stage, and so did not display his target behavior in this setting at any point during baseline, treatment, or maintenance. Jack demonstrated no escalations at recess during baseline phase, which was also due to him being socially isolated at recess during this phase of treatment. Jack began engaging with peers at recess only during phase two of treatment, which saw a spike in his escalations. Encouragingly, these escalations at recess reduced to zero during treatment phase four, and remained at zero during maintenance, suggesting that Jack may have acquired adequate social skills throughout the course of treatment to successfully engage with peers at recess. Jack demonstrated no escalations in the classroom setting throughout the maintenance phase, which is a reduction from both baseline and treatment phases. However, it should also be noted that Jack's maintenance phase was shorter than that of the other participants, and provides only one data point. As mentioned above, this was due to scheduling constraints at the end of the school year.

Additional Measures

In addition to the above data, the current study also collected data on additional pro-social behaviors for each participant, and teacher Daily Behavior Ratings related to the participant's target behavior. Broadly speaking, this data was collected in order to examine clinical significance of the intervention, based on more broad measures of social functioning than the observational data alone. Specifically, the pro-social data was collected in order to examine any collateral treatment effects resulting from the video modeling intervention, whereas the teacher Daily Behavior Ratings were collected to supplement the above observational data for each participant's skill generalization of their target behavior to the school setting.

Teacher Daily Behavior Ratings

With respect to the teacher ratings, each participant's teacher was also asked to complete a Daily Behavior Rating (DBR) form, on which they rated the participant's demonstration of their target behavior on a scale from one to 10, with one being very poor and 10 being excellent. Interestingly, the DBR ratings from all teachers suggested much more robust treatment effects than did the observational data. Given that the research time spent observing each participant was about 180 minutes per week across settings, in comparison to the approximately 30 hours per week that teachers spent with each participant, it is clear that teachers had many more opportunities to observe the participants. In interpreting the teacher DBR data, it is important to note that teacher daily behavior ratings have demonstrated reliability and validity within the literature. Indeed, the National Center for Intensive Intervention has identified Daily Behavior Ratings as having convincing evidence of reliability, validity, and sensitivity to change when used to rate both academic engagement and disruptive behavior (NCII; intensiveintervention.org). Further, a recent study demonstrated that teacher Daily Behavior Ratings of social competence demonstrated adequate reliability, with reliability of data improving over time (Kilgus, Riley-Tillman, Stichter, Schoemann & Bellesheim, 2015). Notably, the authors identified procedures to increase the reliability and validity of DBR for social competence: behaviors should be rated on a 10 point scale, specific behaviors should be targeted, and the ratings should be done immediately (Kilgus et al., 2015). Although the immediacy of the above teacher DBR ratings cannot be vouched for, both of the other recommended guidelines were in place. As such, these results can be interpreted as being reliable. As such, the teacher DBR reports within this study may reflect a more comprehensive account of each participant's functioning relative to their intervention goals than what was afforded by the quantitative observational data alone.

Pro-Social Behaviors

In addition to collecting data on each participant's target behavior, data was also collected on additional pro-social behaviors, in an effort to assess any collateral effects of the intervention on the participant's social skills. These pro-social behaviors were the same for all participants: initiating conversation with peers, spontaneously joining or asking to join in play with peers, and following teacher directions immediately. For both Tom and Eric, the additional pro-social data did not demonstrate any substantial treatment effects, based on the PND rubric. Nevertheless, Tom showed a slight increase in his rates of initiating conversation across treatment phases, with maintenance showing a return to baseline levels. Further, Jack's pro-social data (specifically, initiating conversations with peers) suggests that the video modeling treatment was mildly effective in increasing this behavior, based on the PND rubric. It is possible that the reduction in Jack's escalations, as supported by teacher Daily Behavior Ratings and the social validity interview, may have afforded Jack enhanced opportunities for pro-social interactions with peers. Although the results do not demonstrate consistent development of pro-social behaviors across all three participants, it is encouraging that Jack evidenced a mildly effective treatment effect in this domain. It is possible that Jack's enhanced treatment effects may be due to differences in the profiles of the participants, a topic which will be addressed later in the chapter.

Social Validity

This area of inquiry examined whether parents and teachers of participants found the video modeling social skills intervention to have social validity, with respect to the acceptability, relevance, and social importance of treatment goals and outcomes. This is particularly important when working with families of children with ASD, as research demonstrates that such families

may be particularly vulnerable to participating in treatments that lack an adequate evidence base (Fixtsen et al., 2005; Rogers, 2003; Simpson, 2007). As social validity is conceptualized more as a process than an outcome, an optimal way to assess social validity is to establish a collaborative relationship with families and other stakeholders (i.e. teachers) throughout the intervention process (Foster & Mash, 1999), as was done in this study through the pre and post-intervention interviews.

Overall, the results of the social validity pre-intervention interviews demonstrate that the treatment goals were deemed acceptable and valuable by both parents and teachers, with regard to both the participant's current social functioning, and the long term impact of acquisition of their target social skill. This supports other social validity assessments of video modeling interventions within the literature (Buggy, 2005). For example, teacher reports in a prior study outlined improved student demonstration of greater regulation skills following a video modeling intervention, which a teacher reported to be 'life changing' (Buggy, 2005), which aligns with Jack's teacher reports of his behavior change being 'night and day' following the intervention. The social validity post-intervention interviews demonstrated that parents and teachers of all participants noted positive changes in each participant's social skills as a result of the intervention, although some noted more positive change than others. Parents of all participants were unanimous in their opinions that the intervention had been successful, with all parents stating that they would recommend a video modeling intervention to other parents of children with autism. However, Tom and Eric's were less confident in deeming the intervention successful, and could not recount very specific instances of the social skill being demonstrated in school. In contrast, Jack's teacher had specific examples of Jack demonstrating his target social

skill on a number of occasions, which led to her being confident in saying that the intervention had been successful.

Interestingly, both parents and teachers appeared to endorse more robust evidence of treatment effects than was suggested by the observational data. This seems to correspond with the teacher Daily Behavior Ratings, which also reflect a higher rate of improvement relative to target behaviors than what is represented in the observational data. As mentioned above, this may be because teachers and parents spent significantly more time with each participant than did the research assistants, and so were afforded significantly more opportunities to observe each participant demonstrating their target social skill. Interestingly, the literature examining the degree of divergence between teacher reports and observational data of child behavior is mixed, with some studies suggesting poor convergence between teacher reports and behavioral observation (Blunden, Spring, & Greenberg, 1974; Vincent, Williams, Harris, & Duval, 1981), whereas other studies report substantial convergence (Christ, Riley-Tillman, & Chafouleas, 2015). As such, while greater opportunities to observe the target behavior is a plausible explanation for the divergence between the observational data and parent and teacher reports, it is also important to consider that parents and teachers may have wanted or expected to see treatment effects, and that this expectation may have led to bias in their reporting (Andrews & Rose, 2001).

To date, there has been a relative lack of research regarding the social validity of video modeling interventions, leading researchers to call for future studies which incorporate social validity measures as a necessary component of this type of treatment (Delano, 2007; Wang & Spillane, 2009). Indeed, the majority of social validity assessment for video modeling interventions has been conducted using different methodologies from the current study. For

example, Likert scale ratings of treatment acceptability, rather than the qualitative approach used in this study, are most common within the literature. (Wang & Spillane, 2009). Some video modeling studies have utilized various other means of assessing social validity, such as having parents watch videos of their child pre and post-intervention and rate their target behavior in each video (Charlop & Milstein, 1989; Nikopoulous & Keenan, 2003), or simply including parents in the process of developing target behaviors and then gathering anecdotal reports of parent perceptions of improvement following the intervention (Buggy 2005; Buggey et al., 1999).

The more detailed assessment of social validity in the current study provides a more in-depth account of the specific considerations that parents and teachers make when determining whether or not treatment goals and outcomes are socially valid, allowing for an enhanced understanding of parent and teacher values and priorities throughout the intervention process. With respect to the acceptability and importance of treatment goals, both parents and teachers endorsed goals that were not only currently important for each participant, but that would also have a long-term impact on their child's social functioning. Indeed, parents and teachers both highlighted the impact that development of the target behavior would have on wider aspects of the child's functioning, noting the relationship between social skill development and broader academic and vocational success. This prioritization of treatment goals, and comprehensive view of the child's needs, may not be afforded from the perspective of a clinician alone. As such, the current study allows for an understanding of how social validity data may be used to guide interventions and to assess the outcome of interventions, in a manner that is inclusive of the 'real world' considerations of families and school professionals. This inclusion of key stakeholders is critical element of establishing the social validity and acceptability of treatment goals, and is

recommended by researchers as a necessary step towards including families in decisions about their child's treatment (Fixsten et al., 2005; Kazdin, 2008; Rogers, 2003).

Given both the relative paucity of video modeling social validity literature (Bellini & Akullian, 2007), and the differing methodology used in this study to assess social validity, it is somewhat challenging to interpret the above findings within the context of existing literature. Despite this challenge, the above results nevertheless provide valuable information on the range of ways in which social validity interviews can inform treatment, and clearly highlight the importance of collaborating with parents and teachers throughout treatment. Further, the depth of information provided about social validity using the current methodology suggests that a mixed-method approach may be warranted for future research.

The procedural fidelity data indicate that it is possible to implement a video modeling intervention within a clinic setting with a very high level of fidelity. This is consistent with prior video modeling interventions that have collected procedural fidelity data (Buggy, 2005; Buggey et al., 1999; Sherer et al., 2001; Thiemann & Goldstein, 2001; Wert & Neisworth, 2003). However, given Tom's high rates of non-compliance within several sessions, the treatment fidelity form alone did not provide a comprehensive account of each subject's capacity to attend and remain engaged throughout each viewing. As such, additional data would have proven useful in highlighting specific behavioral characteristics of participants that impact participant engagement, and thus underlie potential effectiveness of treatment. For example, gathering data on the number of researcher delivered prompts to attend to the video, or the number and duration of tantrums within session, may have provided valuable information about how behavioral characteristics, as an extension of participant profiles, may determine treatment effectiveness.

Participant Profiles

The current study lends some support to the use of video modeling social skills interventions for generalizing social skills from clinic to school settings. However, results were inconsistent across participants. Each participant within the study experienced varying levels of success in generalizing their target behavior across school settings. All three participants demonstrated improvements in levels of the target behavior in at least one setting during treatment, without strong maintenance effects.

This variability in response to intervention across participants may be explained in part by the differing levels of functioning and adaptive skill of each of the participants. As mentioned above, Tom spent much of his time within a self-contained 'cool down' classroom in school, being regularly placed there following disruptive behavior in the general education classroom setting. Given Tom's high level of disruptive behaviors, which were also observed during the clinic intervention sessions, it is unsurprising that the observational data showed little evidence of improvement. As mentioned above, such behavioral characteristics are not easily captured within a participant profile that focuses only on standardized assessments of intelligence or language, and yet appear in this study to have been an important factor determining success in treatment.

Notably, Jack also demonstrated improvement in one of the additional pro-social behaviors throughout the course of intervention, alongside a more robust endorsement of positive treatment outcomes during the teacher social validity post-intervention interview. Interestingly, there are significant distinctions between Jack's profile, both in term of his cognitive profile and his behavioral characteristics observed during treatment sessions, when compared with both Tom and Eric. Jack's Full Scale IQ score of 138 fell within the 'very superior' range, suggesting a strong cognitive capacity to make sense of the information presented within the video modeling

intervention. Further, Jack demonstrated the greatest engagement and understanding of the content of the video modeling interventions during treatment session. This was evidenced by him requiring no prompts to attend to videos during sessions, alongside several comments indicating his interest and understanding of the material. For example, during the second session he noted 'the people in the videos all have the same problem that I do'. During the third session he noted 'I know just how that feels', when watching a subject in the video become escalated during a peer conflict. Neither Tom nor Eric made any comments to this effect, which again highlights Jack's greater capacity to engage with the materials. Given the range of participant profiles and behavioral functioning, and the consequent varying degrees of improvement of target behavior, it is likely that individual participant profiles may have been an important factor in the degree of treatment effects.

Limitations

Although the current study provides valuable information about the generalizability of a video modeling social skills intervention from clinic to school settings, there are several limitations that should be noted. The first major limitation was the use of the changing conditions design. Researchers posit that a multiple baseline design is the optimal single subject design for demonstrating a functional relationship (Horner et al., 2005). While a multiple baseline across subjects design would have had stronger internal validity, it was not feasible for the current study due to time constraints. Specifically, as the participants were being observed in school throughout the spring, the timeline for data collection was constrained by the school calendar. Additionally, as the research assistants were all university students who were available for data collection only during the university semester, this further shortened the timeline for data collection. Using a multiple baseline across subjects design for this study would likely have

meant that the intervention for the third participant would have begun mid-spring, and thus would not have allowed adequate time for intervention implementation and school-based data collection prior to the end of the school year. This factor highlights the inherent difficulties of conducting experimentally rigorous studies in real world settings. A potential remediation here for future studies may be to begin the study in the fall, thus allowing enough time to implement a multiple baseline across subjects design. However, the data for each participant remained largely unstable for the duration of the study, suggesting that even a prolonged baseline phase would not have remediated some of the challenges inherent in examining generalization effects of emergent social skills across school settings, particularly with the individuals and behaviors captured in the current effort.

Another limitation involves the relatively limited treatmet dosage that each participant received. Tht

A further limitation involves the challenge of scheduling a team of six research assistants to observe for an adequate duration across three school settings each week, given that all research assistants were also university students with full class schedules. As such, the observers were limited in the amount of time that they could spend in the schools each week, and were limited in which days and times they could observe the participants. This meant that each participant was observed for different amounts of time in each setting. Tom was scheduled for observation each week for 100 minutes in the classroom, 50 minutes at lunch, and 30 minutes at recess. Eric was observed for 85 minutes in the classroom, 60 minutes at lunch, and 45 minutes at recess. Jack was observed for 90 minutes in class, 40 minutes at lunch, and 50 minutes at recess. Despite scheduling constraints, there were consistencies across observation schedules: each of the three participants were observed in the classroom, cafeteria, and recess settings, each

of the primary observers conducted 180 minutes of weekly observation, and each of the secondary observers conducted 60 minutes of weekly observation to obtain inter-observer agreement data.

A further limitation was that these observation schedules were fixed weekly, and so in instances where participants were absent during assigned observation times, the observer's schedules did not allow for conducting observations at an alternate time during the school week. This inflexibility of observer's schedule was most problematic with Tom, who spent approximately 60 % – 70% of his school days in the school 'intensive unit', a small classroom used for calming down when escalated. At any time that Tom was in this unit, there were no opportunities for him to demonstrate social skills with peers, as he was either alone or in a very small group where interactions were not encouraged. During instances when Tom was being observed and he was placed in the intensive unit, it was not possible to gather data on his target behavior. Further, it was not possible for the primary and secondary observers to schedule additional observation times during that week, and so many of the observation times provided no opportunity for observing the target behavior.

The scheduling constraints also impacted data collection for Eric and Jack, albeit in less significant ways than with Tom. As mentioned above, Eric attended a bilingual school program, and so spent 50% of each day in his Spanish classroom, and 50% in his English classroom. Although both his parent and teachers reported that he experienced higher levels of problem behavior in his Spanish classroom, it was not possible to observe him in this setting, as neither his primary or secondary observer spoke Spanish. This naturally led to less comprehensive information about the participant's school performance, as data was only collected in his English classroom where he reportedly functioned significantly better than in his Spanish classroom.

Similarly, Jack's observation schedule changed slightly during week five, due to a schedule change for his primary observer. This change meant that in weeks six through maintenance he was observed across two classrooms in addition to the recess and cafeteria, whereas for baseline and intervention weeks one through five he had been observed in just one classroom in addition to the recess and cafeteria. This posed a challenge, as a different classroom setting may have involved slightly different behavioral expectations, academic demands, and group dynamics, all of which could likely lead to different behavior in this classroom. Finally, the research assistants had limited availability for maintenance data collection following the conclusion of the university semester, which resulted in maintenance data being collected two and three weeks following the end of the intervention delivery. In more optimal circumstances, maintenance data would have been collected until the end of the school year for all of the participants.

Contributions to Research Literature

This study was designed in response to several identified areas for future research within the video modeling social skills literature. Most notably, researchers have called for studies that target social skill development outside of clinic settings (McConnell, 2002), while ensuring that intervention goals have ecological validity across settings. Others have recommended that research examine the generalization of social skills across multiple settings, that procedural fidelity and social validity data be collected (Wang & Spillane, 2009), that a clear profile of the functioning of participants be developed (Shukla-Mehta et al., 2010), and that studies provide a clear account of recommended treatment dosage for video modeling interventions (Bellini et al., 2007). Each of these recommendations were addressed in the current study, which contributes to the literature in several ways.

The current study was unique in evaluating the effectiveness of a clinic-based video modeling social skills intervention for generalizing social skills to a number of school settings. Prior studies have demonstrated generalization effects in more controlled settings, such as generalizing play skills from inside a clinic to directly outside a clinic, generalizing conversation skills from a clinic therapy room to a free-play room within the same clinic, generalizing daily living skills across different restrooms within the same clinic (Charlop-Christy, Le, & Danshevar, 2000), and generalizing conversation skills across home settings (Sherer et al., 2001). However, some video modeling studies have demonstrated skill generalization from clinic to more natural settings, such as a demonstration of generalization of conversational skills from clinic to home (Charlop-Christy, 1989), and demonstration of generalization of daily living skills from a clinic to several stores within the community (Haring, Kennedy, Adams, & Pitts-Conway, 1987).

While these studies provide much promise for the utility and generalizability of video modeling interventions across clinic settings or from clinic to home, they do not provide a comprehensive account of whether a clinic-based video modeling intervention can lead to improvements in a school setting. The current examination of whether video modeling can translate and generalize from clinic to school provides a valuable account of the utility of this intervention in a real-world setting, an issue which has been identified as an important question for both researchers and clinicians alike (NRC, 2001). As outlined above, success of video modeling generalization interventions may be determined by individual participant profiles. As such, future research should include a thorough assessment of participant functioning across key domains (i.e. general intellectual functioning, speech and language capacity, current performance level of target behavior), as this will provide essential information about whom may stand to

make the greatest treatment gains from such interventions.

Implications for Practice

The current study allows an elucidation of several important implications for practice, given the 'real world' conditions in which it was conducted. As was recommended by prior researchers, it is necessary to assess the functioning level of participants in order to identify whom may benefit from a video modeling intervention. Factors to consider in this determination ought to include not only standardized assessments of cognitive or language functioning, but also a broader look at their current functioning within the school setting. For example, assessing how much time students spend within the general education setting compared to a 'time out' or 'cool down' setting, assessing whether students currently engage in any social interactions voluntarily outside of the classroom setting (i.e. recess, cafeteria), alongside potential observations to assess current skill level prior to designing the video modeling intervention. These steps are important for researchers and clinicians to take, to provide a comprehensive account of overall student functioning, current skill level regarding their target behavior, and the currently available opportunities for practicing the target skill.

With regard to intervention design, it is important to ensure that the target skill is clearly modeled within the video, that there are multiple exposures to the target skill across multiple videos, and that the videos be shorter than 3 minutes in length. Practitioners may wish to assess briefly whether a child will attend to all components of the video, as it was observed in this study that all three participants required prompts to attend during the voiceover component of the videos. In terms of intervention delivery, it can be recommended that similar interventions in the future be implemented with less latency between intervention exposure and subsequent opportunities to practice within the desired setting.

Finally, it is vital for further such interventions to continue to document social validity. Inclusion of social validity assessment throughout the assessment process allows for a more complete understanding of the goals and concerns of key stakeholders such as parents and teachers, while also opening a door for greater parent and teacher engagement with the child's treatment. A final implication for practice is fidelity of intervention implementation, which must be assessed consistently across individuals in order to ensure maximal potential benefit for each individual.

Future Research

Future research could address several areas, given the lack of clarity regarding necessary and sufficient conditions for video modeling social skills interventions to be effective in a 'real world' setting. Broadly speaking, there are a number of ways that the question of sufficient programming for generalization could be addressed in future studies. Further research is needed on the implementation of video modeling social skills intervention in pull-out settings within the larger school environment, to determine whether generalization may be present with such conditions. This would of course be extremely valuable to practitioners, given the high rate of students with autism who receive social skills interventions in this pull out format within the school setting (Parson & Charman, 2013). Indeed, this information would further inform future efforts to program generalization from a clinic setting to a school setting.

With respect to the question of recommended latency between intervention exposure and opportunities to practice the target skill, this could be assessed further by implementing a video modeling social skills intervention in a school or clinic setting with a shorter and more controlled duration between exposure and opportunities to practice the target skill than was possible in the current study. Additionally, detailed assessment of participant profiles and behavioral

functioning may be key to understanding whom is likely to benefit from such interventions. Further, it would be beneficial to examine the utility of video modeling social skills interventions when paired with another intervention component such as teacher feedback or reinforcement. For example, assessing the implementation of reinforcement schedules that are viable within a school setting while also being robust enough to contribute to generalization effects would be extremely valuable. It is hoped that further examination of these questions can lead to enhanced understanding of feasible and impactful implementation of evidence based interventions for individuals with autism, within a framework of social and ecological validity. Such research will aid both researchers and clinicians alike in their shared efforts to improve social functioning and overall quality of life for individuals with autism.

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APPENDICES

Appendix A

Parental Permission and Informed Consent

Research Title:
Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator(s):

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Inclusion Criteria:
In order to participate in this study, your child must:

- Be between 6 and 12 years of age, have a diagnosis of Autism Spectrum Disorder, and attend a public school in Missoula or surrounding areas.
- Have language and cognitive skills that are in the average or above average range.

Purpose:
Children with Autism Spectrum Disorders experience difficulties with social interaction and friendship development. Clinic based video modeling interventions may teach children with autism and related disorders specific skills to appropriately interact with others. You are being asked to give permission for your child to take part in a research study examining the effectiveness of a video modeling intervention in a school setting when it is delivered in a clinic setting, and to give consent for your participation in the study also.

Procedures:
This study will take place at the Clinical Psychology Center (CPC) at the University of Montana from January to April/May 2016, for a total of 8-12 weeks. This intervention will be delivered at the CPC, and will last for approximately 20-30 minutes each week. The CPC is open Monday – Thursday 8am – 8pm, and Monday – Friday 8am – 5pm. You may schedule your child's intervention session anytime during these hours. During the intervention session, your child will watch videos that demonstrate a particular behavior or skill that they are learning. They will watch videos that show their target skill being demonstrated in their classroom, in their school cafeteria, and on their school playground during recess.

We are interested in your child's individual progress, and we will provide additional attention to the tracking of your child's behavior. During observational periods, notations will be made when your child partakes in their goal behavior. A trained research assistant would like to visit your child's school for approximately 90 minutes each week, in order to observe and track their behavior.

You are also being asked to participate in this study. If you choose to participate, you will complete a behavior rating form and an interview with the researcher at the beginning of the intervention, so that we can use this information to develop treatment goals for your child. You will also be given an interview at the beginning and at the end of the intervention that asks your thoughts and opinions about the intervention. This interview will be audio-recorded. These audio recordings will be transcribed, with no identifying information being included in the transcription, and will be destroyed following transcription.

Risks/Discomforts:
Your child may experience some mild discomfort from participating in this intervention. Some children with autism and related disorders have difficulty transitioning to a new environment. Transitions and new environment (such as a new clinic) can be difficult for some children on the spectrum. In anticipation of this, the principal investigator will consult with you prior to the first clinic visit about which items or activities that your child finds very motivating and rewarding. For example, if a participant finds Legos very rewarding and motivating, they will have access to Lego play time for approximately 15 minutes following their participation in the video modeling intervention. Each participant will learn about this reward prior to their participation in the video modeling intervention, in order to increase the likelihood that they will engage and participate appropriately. Your child will also be reinforced verbally for his/her participation. The questionnaires you will be completing may cause you to have some mild discomfort. You may choose not to answer any question.

Benefits:
Your child may benefit from this intervention. He or she may learn new strategies and skills related to making friends and interacting with peers.

Alternative Therapy:
If you choose not to take part in this study, other treatments can be used/may be available. For example, these would include social skills group interventions at the Rite Care Clinic at the University of Montana, or social skills group interventions at the Child Development Center in Missoula.

Confidentiality:
All records will be kept private and will not be released without your consent except as required by law. Only the researchers will have access to the files and the data will be stored in a locked file cabinet behind another locked door. Both you and your child's identity will be kept private. If the results of this study are written in a scientific journal or presented at a scientific meeting, neither you nor your child's name will be used.

Voluntary Participation/Withdrawal:
Your decision to allow your child to take part in this research study is entirely voluntary. You may refuse to allow your child to take part in or you may withdraw your child from the study at any time. Your child may leave the study for any reason.

Questions:
You may wish to discuss this with others before you agree to allow your child to take part in this study. If you have any questions about the research now or during the study contact: Laura Ambrose at 406-407-6742. If you have any questions regarding your child's rights as a research subject, you may contact the Chair of the IRB through The University of Montana Research Office at 243-6672.

Parent's Statement of Permission:
I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that a member of the research team will also answer any future questions I may have. I voluntarily agree to have my child take part in this study. I understand that I will receive a copy of this permission and informed consent form.

_____
Printed Name of Subject (Minor)

_____ _____
Signature of Parent or Legally Authorized Representative Date

Parent's Statement of Consent:
I have read the above description of this research study and voluntarily agree to participate in the study. I have been assured that a member of the research team will also answer any future questions I may have. I understand that I will receive a copy of this permission and informed consent form.

_____
Printed Name of Subject

_____ _____
Signature of Subject Date

Parent's Statement of Consent to be Audiotaped:
I understand that audio recording may be taken during the interviews that I complete with the researcher before and after the intervention. I consent to being audio recorded. I understand that audio recordings will be destroyed following transcription, and that no identifying information will be included in the transcription.

_____
Printed Name of Subject

_____ _____
Subject's Signature Date

Appendix B

Minor Informed Assent

Research Title:
Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator(s):

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We are doing a research study about using videos to help you learn new ways to talk and play with your friends and family. A research study is a way to learn more about people. If you decide that you want to be part of this study, you will be asked to watch some videos about practicing new ways of talking to your friends and family. A researcher will come to your school each week to see how you are doing with learning these new skills.

There are some things about this study you should know. A researcher will come to your school each week to see how you are doing with learning these new skills. It might feel a little funny to have a researcher visit you at school each week.

Not everyone who takes part in this study will benefit. A benefit means that something good happens to you. We think these benefits might be that you learn new ways to talk and play with your friends and family. We hope that this will make it easier to get along with your friends and your family.

When we are finished with this study we will write a report about what was learned. This report will not include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents and teachers know about the study too.

If you decide you want to be in this study, please sign your name.

I, _____, want to be in this research study.

_____ _____
(Sign your name here) (Date)

Appendix C

Verbal Assent Script for Minors

We are doing a research study about using videos to help you learn new ways to talk and play with your friends and family. A research study is a way to learn more about people. If you decide that you want to be part of this study, you will be asked to watch some videos about practicing new ways of talking to your friends and family.

There are some things about this study you should know. A researcher will come to your school each week to see how you are doing with learning these new skills. It might feel a little funny to have a researcher visit you at school each week.

Not everyone who takes part in this study will benefit. A benefit means that something good happens to you. We think these benefits might be that you learn new ways to talk and play with your friends and family. We hope that this will make it easier to get along with your friends and your family.

When we are finished with this study we will write a report about what was learned. This report will not include your name or that you were in the study.

You do not have to be in this study if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents and teachers know about the study too.

If you decide you want to be in this study, please tell me that you want to.

_____

Subject's Name Date

The researcher's signature below indicates that the subject has verbally assented to participate.

_____

Researcher's Signature Date

Appendix D

Teacher Permission and Informed Consent

Research Title:
Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator(s):

Laura Ambrose
243 Skaggs Building
Psychology Department
Missoula, MT 59802
laura.ambrose@umontana.edu

Greg Machek, PhD
240 Skaggs Building
Psychology Department
Missoula, MT 59802
greg.machek@umontana.edu

Inclusion Criteria:
In order to participate in this study, the student must:

- Be between 6 and 12 years of age, have a diagnosis of Autism Spectrum Disorder, and attend a public school in Missoula or surrounding areas.
- Have language and cognitive skills that are in the average or above average range.

Purpose:
Children with Autism Spectrum Disorders experience difficulties with social interaction and friendship development. Clinic-based individual video-modeling interventions may teach children with autism and related disorders specific skills to appropriately interact with their peers. One of your students is taking part in a research study examining the effectiveness of a video modeling social skills intervention for children with autism that is delivered in the Clinical Psychology Center clinic on the University of Montana campus in Missoula. Their parents have already given permission for their inclusion in the study, and are aware that we are contacting you. You are being asked to give permission for members of a research team from the University of Montana to observe the student in school for 90 minutes each week, from approximately late January until late April, in order to collect data and observe whether they are displaying new social skills at school. You are also being asked to give your consent to participate in the study.

Procedures:
This study will take place at the Clinical Psychology Center at the University of Montana. The student will participate in a video-modeling intervention each week. He or she will watch videos that demonstrate a particular behavior or skill that they are learning. They will watch videos that show their target skill being demonstrated in several school settings: classroom, recess, and cafeteria. We are interested in examining if this intervention leads to the development of their targeted social skill in these settings in school.

We are interested in the student's individual progress, and we will provide additional attention to the tracking of your child's behavior. During observational periods, notations will be made when your child partakes in the target behavior. As I am interested in observing the effects of the intervention not only in the clinic, but also at school, I would like to observe the child in school

for approximately 60 minutes each week, in order to observe and track their behavior. I will need your permission in order to have a member of the research team visit your classroom each week to observe and track the student's behavior.

You are also being asked to participate in this study. If you choose to participate, you will complete a behavior rating form and an interview with the researcher at the beginning of the intervention, so that we can use this information to develop treatment goals for the student. You will also be asked to complete an interview at the beginning and end of the intervention that asks your thoughts and opinions about the intervention. This interview will be audio recorded. Finally, we ask you to complete a brief daily behavior rating form (attached), which will allow us another measure of the student's behavior throughout the intervention.

Risks/Discomforts:
The questionnaire and interviews you will be completing may cause you to have some mild discomfort. You may choose not to answer any question.

Benefits:
The student may benefit from this intervention. He or she may learn new strategies and skills related to making friends and interacting with peers.

Confidentiality:
All records will be kept private and will not be released without your consent except as required by law. Only the researchers will have access to the files and the data will be sored in a locked file cabinet. Both your and the student's identity will be kept private. If the results of this study are written in a scientific journal or presented at a scientific meeting, neither you nor the student's name will be used.

Voluntary Participation/Withdrawal:
Your decision to allow members of the research team to visit your classroom to collect data is voluntary. You may refuse to take part in or you may withdraw from the study at any time.

Questions:
You may wish to discuss this with others before you agree to allow members of the research team to collect data in your school. If you have any questions about the research now or during the study contact: Laura Ambrose at 406-407-6742. If you have any questions regarding your as a research subject, you may contact the Chair of the IRB through The University of Montana Research Office at 243-6672.

Teacher's Statement of Permission:
I have read the above description of this research study. I have been informed of the risks and benefits involved, and all my questions have been answered to my satisfaction. Furthermore, I have been assured that a member of the research team will also answer any future questions I may have. I voluntarily agree to have the student take part in this study. I understand that I will receive a copy of this permission form.

_____
Printed Name of Subject (Minor)

_____ _____
Signature of Teacher Date

_____ _____
Signature of Researcher Date

Teacher's Statement of Consent:
I have read the above description of this research study and voluntarily agree to participate in the study. I have been assured that a member of the research team will also answer any future questions I may have. I understand that I will receive a copy of this permission and informed consent form.

_____
Printed Name of Subject

_____ _____
Signature of Subject Date

Teacher's Statement of Consent to be Audiotaped:

I understand that audio recording may be taken during the interviews that I complete with the researcher before and after the intervention. I consent to being audio recorded. I understand that audio recordings will be destroyed following transcription, and that no identifying information will be included in the transcription.

_____
Printed Name of Subject

_____ _____
Subject's Signature Date

Appendix E

Parental Permission of Peer Model

Project Title: Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator:

Laura Ambrose
243 Skaggs Building
Psychology Department
Missoula, MT 59802
laura.ambrose@umontana.edu

Greg Machek, PhD
240 Skaggs Building
Psychology Department
Missoula, MT 59802
greg.machek@umontana.edu

Purpose of the Research: Children with Autism Spectrum Disorders experience difficulties with social interaction and friendship development. Video modeling interventions may teach children with autism and related disorders specific skills to appropriately interact with their peers. You are being asked to give permission for your child to take part in a research study examining the effectiveness of a video modeling intervention for teaching social skills in a school setting.

Procedure: Your child will serve as a same-age peer model performing a specific social skill on video e.g. saying hello to peers, asking peers to join in play, etc. The researchers will create video recordings of your child demonstrating these behaviors with other children in a clinic setting. It will take approximately 30 – 60 minutes to create these videos, and they will be created in the Clinical Psychology Center on the University of Montana campus.

Anticipated Risks and/or Discomfort: Every effort will be made to recognize any distress or discomfort of your child. Trained staff familiar with your child will monitor them and allow them to delay or discontinue the video modeling if needed. You may be present during the recording sessions that will be conducted at a school setting in Missoula.

Benefits to the Student: Students will be allowed an opportunity to increase their social skills by watching your child model appropriate skills. Furthermore, this study may contribute to the research for effective teaching tools and interventions for students with autism spectrum disorder.

Confidentiality: No records of your child's participation in this research will be shared with others. Your child's real name will not be used in any documents resulting from this research. The videos will be viewed by the research team and the four students participating in the study. All data and the video will be destroyed within six months after the results of the study are finalized.

Contact Person for Questions or Concerns: If you have any questions or concerns regarding this research, contact Laura Ambrose at 406-407-6742, laura.ambrose@umontana.edu. If you have any questions regarding your child's rights as a research subject, you may contact the Chair of the IRB through The University of Montana Research Office at 243-6672.

Permission to Participate: I have voluntarily decided to allow my child to participate in this research project. The investigator has sufficiently answered all questions I have about this research, the procedures involved, and my child's participation. I understand that the investigator or her program advisor will be available to answer any of my questions participate or voluntarily terminate my child's participation in this research at any time without penalty or loss of benefits. The investigator may also terminate my child's participation in this research if she feels that this would be in my child's best interest. In addition, I certify that I am my child's legal guardian.

_____ _____

Signature of Parental Guardian Date

_____ _____

Signature of Researcher Date

Appendix F

Assent of Child Peer Model

Research Title:
Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator(s):

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243 Skaggs Building
Psychology Department
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Greg Machek, PhD
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Psychology Department
Missoula, MT 59802
greg.machek@umontana.edu

We are doing a research study about using videos to help other children you learn new ways to talk and play with their friends and family. A research study is a way to learn more about people. We would like you to be in the videos that we make. We will make these videos in a clinic on the UM campus. You will come to a clinic on the UM campus sometime in December or January and spend about 1 hour acting in the videos, along with some other children. We will tell you what to say in the videos, and will help you if you have any questions when we are making them.

After we make the videos, we will show them to some children who go to school in Missoula, so that they can learn new ways to play with their friends. These children will come to campus each week to watch the videos. After they have finished watching the videos, we will delete them.

When we are finished with this study we will write a report about what was learned. This report will not include your name or that you were in the videos for the study.

You do not have to be in the videos if you do not want to be. If you decide to stop after we begin, that's okay too. Your parents know about the study too.

If you decide you want to be in the videos for this study, please sign your name.

I, _____, want to be in the videos that are used for this study.

_____ _____
(Sign your name here) (Date)

Appendix G

Principal Letter of Permission

Research Title:
Investigating the Utility of Video Modeling Interventions for Generalization of Social Skills

Investigator(s):

Laura Ambrose
243 Skaggs Building
Psychology Department
Missoula, MT 59802
laura.ambrose@umontana.edu

Greg Machek, PhD
240 Skaggs Building
Psychology Department
Missoula, MT 59802
greg.machek@umontana.edu

To Whom It May Concern:

This letter is to confirm that I grant permission for the above study to take place at _____, Missoula.

Specifically, I grant permission for the researchers to visit the school weekly from January to May 2016 in order to observe the participants in a variety of school settings such as the classroom, cafeteria, and at recess, in order to collect data on the participant's behavior in these settings.

Additionally, the researchers may contact and meet with the classroom teachers of the participant(s) in order to learn about the student's behavior and social skills.

_____
Printed Name of Principal

_____
Signature Date

Appendix H

Demographics

1. What gender is your child?

   _____

2. What age is your child?

   _____

3. What ethnicity is your child?

   _____

4. What age was your child when they were diagnosed with autism?

   _____

5. What autism-related services does your child currently receive, and when did they begin receiving this service? How frequently do they receive this service?

   _____

6. What autism-related services has your child received in the past? For how long and how frequently did they receive this service?

   _____

7. Does your child have any other diagnoses or medical conditions?

   _____

8. If so, what age was your child when they were given this/these diagnosis/diagnoses?

   _____

9. Is your child currently receiving services for other diagnosis/diagnoses?

   _____

Appendix I

Parent Social Validity Interview Protocol

The following statements and questions will help researchers understand the effectiveness of the video modeling intervention. The interview will commence with an initial statement, listed below, and then address aspects of the social skills group.

Interview Script

Welcome. Thank you for participating in this interview. For approximately the next 15 minutes, we will be asking you different questions to learn more about the effectiveness of the video-modeling intervention outside of a clinical setting. You will be asked to discuss topics such as your experiences and knowledge of children with autism, specifically your child, your assessment of other interventions, and your perceived effectiveness of the video modeling intervention.

Before we begin, we will review the informed consent form. After reading it, please sign it acknowledging that you have read and agreed to participate in this interview.

The Information you provide during the interview will be kept confidential. That is, I will make sure that we do not link you or your child's name with any information we share through publications or presentations. Additionally, I will be taking notes to make an accurate record of your answers to the open-ended questions. There is no right or wrong answer to the questions. The important thing is that you share your experiences and opinions.

The information you provide in the interview will be kept confidential. Only those of us involved in this research will have access to the information we collect. This information will be kept in a locked research lab on the University of Montana campus. No one else outside of the research team will see your responses.

Do you have any questions about how we will be spending the next 15 minutes?

(*PLEASE NOTE: the questions below include both the questions that will be asked during the pre-intervention interview, and also the questions that will be asked during the post-intervention interview. The protocol remains the same for both).*

Open-ended Questions for Interview: Pre-Intervention

1. How important is it that your child work on this particular social skill?

2. What will change in your child's life if they develop this social skill?

Open-ended Questions for Interview: Post-Intervention

1. In what ways have you seen your child's social skills change as a result of this intervention?

2. Have you seen other changes in your child's behavior that you believe to be the result of this intervention?

3. Overall, how successful do you think the video modeling intervention was for your child? Why? How could it be improved?

4. If your child participated in another social skills intervention or group, what do you notice that is different about the video modeling intervention?

5. Would you recommend a video modeling intervention to other parents of children with autism? Why or why not?

6. To what extent do you think the video modeling intervention helped your child learn specific strategies and social skills?

Ending the Interview

Thank you again for taking the time to participate in this important research. We want to remind you that your name will be kept confidential and separate from any of your answers in the interview. If at any point you have any questions or are concerned about your comments being used, please contact the primary investigator, Laura Ambrose, at the contact number provided in the informed consent. Do you have any questions before we end? Thank you.

Appendix J

Teacher Social Validity Interview Protocol

The following statements and questions will help researchers' understand the effectiveness of the video modeling intervention. The interview will commence with an initial statement, listed below, and then address aspects of the social skills group.

Interview Script

Welcome. Thank you for participating in this interview. For approximately the next 15 minutes, we will be asking you different questions to learn more about the effectiveness of the video-modeling intervention outside of a clinical setting. You will be asked to discuss topics such as your experiences and knowledge of children with autism, specifically this student, your assessment of other interventions, and your perceived effectiveness of the video modeling intervention.

Before we begin, we will review the informed consent form. After reading it, please sign it acknowledging that you have read and agreed to participate in this interview.

The Information you provide during the interview will be kept confidential. That is, I will make sure that we do no link you or your student's name with any information we share through publications or presentations. Additionally, I will be taking notes to make an accurate record of your answers to the open-ended questions. There is no right or wrong answer to the questions. The important thing is that you share your experiences and opinions.

The information you provide in the interview will be kept confidential. Only those of us involved in this research will have access to the information we collect. This information will be kept in a locked research lab on the University of Montana campus. No one else outside of the research team will see your responses.

Do you have any questions about the informed consent or how we will be spending the next 15 minutes?

(*PLEASE NOTE: the questions below include both the questions that will be asked during the pre-intervention interview, and also the questions that will be asked during the post-intervention interview. The protocol remains the same for both).*

Open-ended Questions for Interview: Pre-Intervention

1. How important is it that the student develops this particular social skill?

2. What will change in the student's school life if they develop this social skill?

Open-ended Questions for Interview: Post-Intervention

1. In what ways have you seen the student's social skills change as a result of this intervention?

2. Have you seen other changes in the student's behavior that you believe to be the result of this intervention?

3. Overall, how successful do you think the video modeling intervention was for the student? Why? How could it be improved?

4. If the student participated in another social skills intervention or group, what do you notice that is different about the video modeling intervention?

5. Would you recommend a video modeling intervention to other teachers of children with autism? Why or why not?

Ending the Interview

Thank you again for taking the time to participate in this important research. We want to remind you that your name will be kept confidential and separate from any of your answers in the interview. If at any point you have any questions or are concerned about your comments being used, please contact the primary investigator, Laura Ambrose, at the contact number provided in the informed consent. Do you have any questions before we end? Thank you.

Appendix K

Procedural Integrity Form

Please complete this form by recording ‘yes’ for correct implementation or ‘no’ for incorrect implementation.

1. Did you watch the videos in a quiet space, and without interruptions?

Yes No

2. Did the videos work, playing without interruptions?

Yes No

3. Did you provide reinforcement to the participant for sitting and watching the videos?

Yes No

4. Did you watch the second video immediately after the first?

Yes No

5. Did you watch both videos three times during the session?

Yes No

5. If no, how many times did you view the video(s) in session?

Appendix L:

Event Recording Form

Participant Initials: _____ Setting: _____

Observer Name: _____ Start Time: ____ End Time: _____

Behavior: _____

Date	Tally every time the behavior occurs	Total number of times behavior occurred

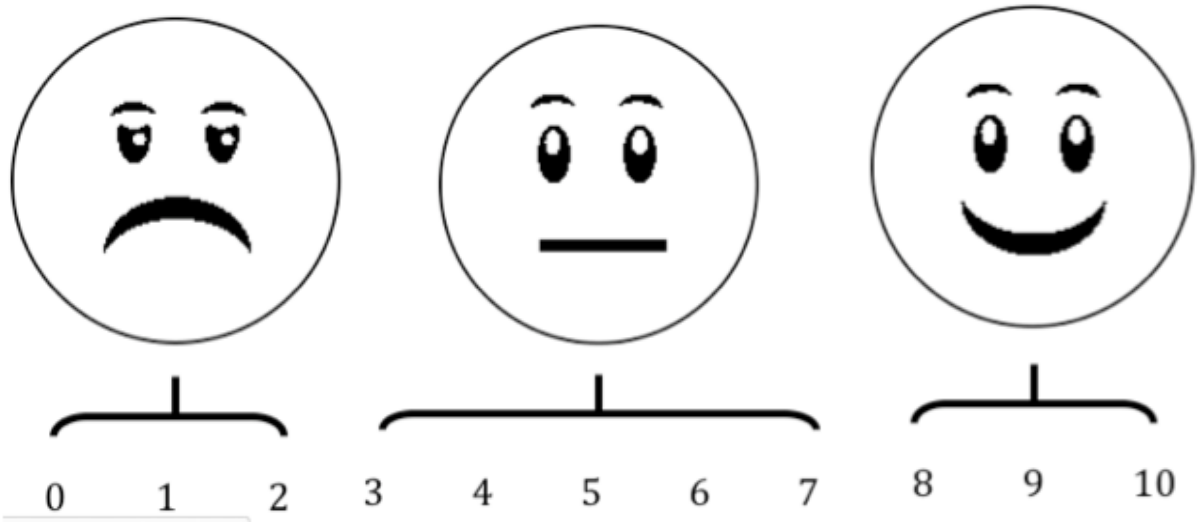
Notes:

Appendix M

Teacher Direct Behavior Rating

Today's Date: _____

Circle the number that best represents how the student asked friends to play today *(sample behavior):*



Appendix N

Video Modeling Scripts

Tom Group 1 Script A:

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 1: "Hi Jane!"
Peer 2: "Oh, hi Sarah!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 1: "What are you doing?"
Peer 2: "I'm playing with a puzzle".
Peer 3: "Hi guys!"
Peers 1 and 2: "Hi Kelly!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This tells my friends that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 3: "How are you guys?"
Peer 1: "I'm really good!"
Peer 2: "I'm good too – this puzzle is really fun!"
Peer 3: "It looks like fun. I love playing with puzzles!"
Peer 2: "Me too!"
Peer 1: "I got a puzzle for my birthday, and I play with it all the time!"
Peer 3: "Wow, that's so cool. I would love to get a puzzle for my birthday".
Peer 1: "Maybe you will get a puzzle this year, that would be fun!"
Peer 3: "I hope so, then we could all play together! I've got to go now. Bye!"
Peer 1: "Goodbye!"
Peer 2: "See you later!"

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over. Here, the kids look at each other and say goodbye, so everyone knows the conversation is over".*

Tom Group 1 Script B:

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 1: "Hi Jane!"
Peer 2: "Oh, hi Sarah!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 1: "What are you doing?"
Peer 2: "I'm coloring a picture – look!"
Peer 1: "Wow, that's a great picture!"
Peer 3: "Hi guys!"
Peer 1 and Peer 2: "Hi!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 2: "Look at the picture I'm coloring!"
Peer 3: "Wow, that's neat!"
Peer 2: "Thanks!"
Peer 3: "I love coloring, especially Star Wars pictures!"

** Voiceover: When we are having a conversation with our friends, we listen to what they say, then we make a comment or ask a question about what they have said".*

Peer 1: "I love Star Wars pictures too!"
Peer 2: "Let's color together!"
Estelle and Peer 1: "Ok!"
Peer 2: "Awesome!" (all sit down and begin coloring).
Peer 3: "Oh wait, my mom is here to pick me up. I've got to go".
Peer 1: "Ok, bye!"
Peer 2: "Goodbye, see you tomorrow!"
Peer 3: "Bye guys, see you tomorrow!"

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over. Here, they look at each other and say goodbye, so everyone knows the conversation is over".*

Tom <u>Group 2 Script A:</u>

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 1: "Hi Eli!"
Peer 2: "Hi Gus!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 1: "Eli, I got a new puppy yesterday!"
Peer 2: "Wow, that's so cool"
Peer 3: "Hi guys!"
Peer 1 and Peer 2: "Hi EB!"
Peer 2: "EB, did you know that Gus got a new puppy yesterday?"
Peer 3: "Wow! I have a puppy too. Her name is Chip!"
Peer 1: "My puppy's name is Frosty, because his fur is all white".

** Voiceover: When we are having a conversation with our friends, we listen to what they say, then we make a comment or ask a question about what they have said".*

Peer 1: "What kind of dog is she?"
Peer 3: "She's a poodle, and she has black hair"
Peer 1: "Does she like going on walks?"
Peer 3: "Yep, I love taking her for walks to play fetch in the park."
Peer 2: "I went to the park yesterday to play on the swings, and there were lots of people there playing with their dogs"
Peer 1: "Wow, I hope that my new dog really likes playing with me in the park!"

** Voiceover: When we are having a conversation with our friends, we listen to what they say, then we make a comment or ask a question about what they have said".*

Peer 3: "I bet your dog will love the park! Ok, my mom is here to pick me up. I've got to go".
Peer 1: "Ok, bye!"
Peer 2: "Goodbye, see you tomorrow!"
Peer 3: "Bye guys, see you tomorrow!"

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over".*

Tom Group 2 Script B:

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 1: "Hi EB!"
Peer 3: "Hi Gus!"

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 1: "What are you playing?"
Peer 3: "I'm just playing with some Legos. I'm building a fort".
Peer 1: "Wow, that's cool! What kind of fort is it?

**Voiceover: When my friends ask me questions, I look at my friends and answer their questions. This lets them know that I like having conversations with them. Here, they are taking turns and answering questions".*

Peer 3: "It's an underwater fort, built to keep out invaders".
Peer 1: "Wow, can I help?"
Peer 3: "Sure!"
Peer 2: "Hi guys!"
Peer 3: "Hi Eli!"
Peer 1: "Hi Eli!"
Peer 2: "What are you guys doing?"
Peer 1: "We're building a fort. It's underwater".
Peer 2: "Wow, I really love playing Legos and building forts. I have Legos at home. Can I help you build your fort?"
Peer 3: "Sure. We need some more blue pieces. Can you find them for me?"
Peer 2: "Ok, I'll go look. Can I add some green pieces too?"

**Voiceover: When my friends ask me questions, I look at my friends and answer their questions. This lets them know that I like having conversations with them. Here, they are taking turns and answering questions".*

Peer 3: "Yeah, I love green!"
Peer 1: "Aw, it's time for me to go to reading, so I can't help with the fort right now. Can I build it later?"
Peer 3 and Peer 2: "Yeah!"
Peer 1: "See you later!"
Peer 3: "Bye!"
Peer 2: Goodbye!"

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over".*

Tom Group 3 Script A:

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 1: Hi Lily!
Peer 2: Oh, hi Ella! How are you doing?
Peer 1: Really good, thanks. Hi Scott!
Peer 3: Hi guys!

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 3: What are you guys doing?
Peer 1: We've got some quiet reading time. I'm reading this book called Green Eggs and Ham.
Peer 2: Oh, I love that book!
Peer 3: Green Eggs and Ham? I don't know that book. What's it about?

** Voiceover: When we are having a conversation with our friends, we listen to what they say, then we make a comment or ask a question about what they have said".*

Peer 1: Well, Sam-I-Am is in the books and he tries to give his friends green eggs and ham to eat. It's really funny!
Peer 2: (to Scott) What's your favorite book?

**Voiceover: When my friends ask me questions, I look at my friends and answer their questions. This lets them know that I like having conversations with them. Here, they are taking turns and answering questions".*

Peer 3: I love the Gruffalo!
Peer 1: My brother has that book. It's really fun!
Peer 3: Ok, I've gotta go now. My mom is here to pick me up. Bye guys!
Peer 1: Bye!
Peer 2: See you tomorrow!

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over".*

Tom Group 3 Script B:

**Voiceover: To have a conversation with our friends, we first have to get their attention by saying hi or hello. Then we take turns speaking and listening to one another. We talk about the same things that our friends are talking about. In this video, you can watch kids saying hello and having conversations."*

Peer 3: Hi guys!
Peer 1: Oh, hi Scott!

**Voiceover: "When my friends say hi or hello, I say hi or hello back. This lets my friends know that I like them and that I want to talk to them. Here, the kids are looking at each other and saying hello".*

Peer 2: Hi Scott!
Peer 3: What are you guys doing?
Peer 1: We're cleaning up. We were coloring, but we've got to finish up now.
Peer 2: Yeah, we're cleaning before we go to reading.

** Voiceover: When we are having a conversation with our friends, we listen to what they say, then we make a comment or ask a question about what they have said".*

Peer 3: Oh. Can I help you guys clean?
Peer 2: Yes! Can you put the markers back on the shelf?
Peer 3: Sure thing! Then we'll be ready for reading.

**Voiceover: When my friends ask me questions, I look at my friends and answer their questions. This lets them know that I like having conversations with them. Here, they are taking turns and answering questions".*

Peer 1: Ok, it's time for us to go to reading. See you later!
Peer 2: Bye!
Peer 3: Bye guys, have fun at reading. See you later!

**Voiceover: "I say goodbye, bye, or see you later to my friends when it's time to end our conversation. This tells my friends that I had fun talking to them, and our conversation is over".*

Eric Group 1 Script A:

**Voiceover: When we play with our friends, it's important for everyone to enjoy the game. Sometimes, we think something is fun but our friends don't like it. If our friends don't like what we're doing, they ask us to stop. When someone asks us to stop, we know they're not having fun and it's time to stop. In this video, you can learn how to listen when our friends ask us to stop, and how to stop doing things that make our friends upset".*

Peer 1: Hey, do you wanna play at recess?

Peer 2: Sure!

Peer 3: Sure! What do you wanna play?

Peer 1: I've got a cool new Minecraft game that I've been playing – it's awesome!

Peer 3: "Awesome, I love Minecraft, I can't wait to play!"

Peer 2: Hey, I've got this game that I like to play! (starts poking friend)

Peer 1: Hey! (looks upset)

Peer 2: "Let's play this game today!" laughing, poking

**Voiceover: When our friends ask us to stop doing something, we know that they don't like it and it's time to stop. The will use words like "hey, stop, or quit it", and they will look and sound upset. This means it's time to stop"*

Peer 1: "Hey, stop!"

Peer 2: "I love this game!" laughing, poking

Peer 1: "Stop!'

Peer 3: "Yeah, quit it!"

**Voiceover: His He listened to his friends, and looked at their faces. Their faces looked upset, and their words told him that they wanted him to stop. He listened to what his friends asked, and he stopped doing things that they didn't like.*
Peer 3: "You can play with us, but not like that"

Peer 2: "oh…ok" stops poking

Peer 1: "yeah, that wasn't fun, but you can play Minecraft with us at recess"

Peer 2: "Ok!"

Eric Group 1 Script B:

**Voiceover: When we play with our friends, it's important for everyone to enjoy the game. Sometimes, we think something is fun but our friends don't like it. If our friends don't like what we're doing, they ask us to stop. When someone asks us to stop, we know they're not having fun and it's time to stop. In this video, you can learn how to listen when our friends ask us to stop, and how to stop doing things that make our friends upset".*

Peer 3 and Peer 1: (playing a puzzle together, not paying attention)
Peer 1: "Oh, this piece goes here, I think"

Peer 2: "I'm a robot, I'm a robot!" (makes choppy robot actions with arms)

Peer 3 and Peer 1: (playing a puzzle together, not paying attention)
Peer 3: "I can't figure out which piece goes here"

Peer 2: "I'm a robot, I'm a robot!" (makes choppy robot actions with arms, gets closer to them)

Peer 3 and Peer 1: (keep playing the puzzle, look at him and are annoyed)

Peer 2: "I'm a robot, I can do your puzzle" (gets closer and starts to mess with puzzle

Peer 1: "No, don't mess it up!"

Peer 2: "I'm doing your puzzle. The robot is doing your puzzle!"

**Voiceover: Sometimes, things are fun for us but not fun for our friends. If we are doing something that our friends don't like, they will ask us to stop".*

Peer 3: "You're messing it up, stop!" (looks very annoyed)

Peer 2: "Robots love doing puzzles!"

Peer 1: "Stop, you're messing up our puzzle!"

Peer 3: "You're making a mess and we can't do our puzzle. Quit it!!"

**Voiceover: When our friends ask us to stop doing something, we know that they don't like it and it's time to stop. The will use words like "hey, stop, or quit it", and they will look and sound upset. This means it's time to stop"*

Peer 1: "Yeah, you've got to quit it – we want to work on the puzzle instead of playing robots!"

Peer 2: "Oh, you guys don't want to play robots?"

Peer 1 and Peer 3: "No!"

Peer 3: “We just want to play with the puzzle. You can join if you want, but we just don’t want to play robots and mess things up”.

**Voiceover: He listened to his friends, and looked at their faces. Their faces looked upset, and their words told him that they wanted him to stop. He listened to what his friends asked, and he stopped doing things that they didn’t like.*

Peer 2: “Ok, I guess I can stop playing robot then and just join you guys”

Peer 1 and Peer 3: “Ok, sure”.

Eric Group 2 Script A:

**Voiceover: When we play with our friends, it’s important for everyone to enjoy the game. Sometimes, we think something is fun but our friends don’t like it. If our friends don’t like what we’re doing, they ask us to stop. When someone asks us to stop, we know they’re not having fun and it’s time to stop. In this video, you can learn how to listen when our friends ask us to stop, and how to stop doing things that make our friends upset”.*

Peer 1: “Hi!”
Peer 2: “Hey Sam!”
Peer 3: “Hey Sam!”
Peer 1: “What are you guys doing?”
Peer 3: “We’re drawing. I’ve doing a picture with Olaf from Frozen”.
Peer 2: “I’m drawing too. I already did Olaf, so now I’m doing Elsa”
Peer 1: “Cool. I’ll do an Olaf too”. (Gus sits down and starts coloring. After a few seconds, he starts poking and tickling Eli).
Peer 2: “Hey, stop, I want to color!”

**Voiceover: Sometimes, things are fun for us but not fun for our friends. If we are doing something that our friends don’t like, they will ask us to stop”.*

Peer 1: “You’ve got tickles!” (keeps tickling and poking Eli)
Peer 2: “Stop it! I want to color, so quit it!”
Peer 1 keeps tickling and poking Peer 2.
Peer 3: “He wants to color. Stop tickling him!”
Peer 2: “Ugh, that’s so annoying, stop!”

**Voiceover: When our friends ask us to stop doing something, we know that they don’t like it and it’s time to stop. The will use words like “hey, stop, or quit it”, and they will look and sound upset. This means it’s time to stop”*

Peer 3: “It’s not funny – cut it out!”
Peer 1 stops tickling Peer 2 and looks at him.
Peer 2: “Stop it – that’s really annoying. I just want to color!”.

**Voiceover: He listened to his friends, and looked at their faces. Their faces looked upset, and their words told him that they wanted him to stop. He listened to what his friends asked, and he stopped doing things that they didn't like.*

Peer 1: "Ok, maybe I'll do some drawing with you guys for a little while".
Peer 3: "Ok, let's draw".
Peer 2: "Yeah. Let's just draw together. Do you need colors?"
Peer 1: "Yeah. I need blue for Olaf. Thanks!"

Eric Group 2 Script B:

**Voiceover: Sometimes, we think something is fun but it is disruptive for our friends or teacher. If our friends or teacher don't like what we're doing, they ask us to stop. When our teacher tells us to stop doing something, we know it's time to stop. In this video, you can learn how to listen when our teacher and friends tell us to stop, and how to stop doing things that make our teacher or friends upset".*

Teacher: "Ok everyone, it's time to line up for recess"
Peer 2 (to Peer 3): "Hey, I've got this awesome new game for us to play at recess. You're gonna love it!"
Peer 3: "Oh cool! What is it?"
Peer 1 starts poking Peer 2.
Peer 1: "Yeah, what is it? What is it?"
Peer 2: "Hey, cut it out!"
Peer 1 continues poking Peer 2.
Peer 1: "What's the game you want to play at recess? I wanna play too!"
Peer 3: "Stop poking her – she doesn't like it!

**Voiceover: Sometimes, things are fun for us but not fun for our friends. If we are doing something that our friends don't like, they will ask us to stop".*

Peer 2: "Yeah, quit it. I don't like that. Really!"
Peer 1 looks at Peer 2, and stops poking him.
Teacher: "What's happening here? Your friend is asking you to stop. That's not a nice thing to do to our friends. Please just wait with your hands by your sides".

**Voiceover: When our teacher asks us to stop doing something, we know that what we are doing is disruptive or unhelpful for my friends. This means it's time to stop"*

Peer 1 looks at Peer 2 and listens, and puts his hands by his sides.
Peer 1: "Ok"
Peer 2: "Thanks for stopping. I really didn't like that"
Peer 3: "Do you want to play with us at recess?"
Peer 1: "Sure!"
Peer 2: "Ok, let me tell you about this game!"

Eric Group 3 Script A:

**Voiceover: When we play with our friends, it's important for everyone to enjoy the game. Sometimes, we think something is fun but our friends don't like it. If our friends don't like what we're doing, they ask us to stop. When someone asks us to stop, we know they're not having fun and it's time to stop. In this video, you can learn how to listen when our friends ask us to stop, and how to stop doing things that make our friends upset".*

Peer 1 and Peer 2 are playing ball and they look like they are really enjoying themselves.

Peer 1: "Ok, getting ready to score another point!"
Peer 2: "No way! I'm gonna score next!" (she's joking - both are smiling and having fun)
Peer 1: "Dream on – I'm gonna win!"
Peer 3 has been watching them play, and goes up and grabs the ball from Peer 1.

Peer 3: "Hey, I bet you can't catch me!"
Peer 2: "Hey Scott, cut it out – we were playing basketball".

**Voiceover: Sometimes, things are fun for us but not fun for our friends. If we are doing something that our friends don't like, they will ask us to stop".*

Peer 1: "Yeah, quit joking around and give us our ball back"
Peer 3: "You've got to try and catch me first!"
Peer 2: "Stop it – we just want to play basketball. We don't want to chase you".

**Voiceover: When our friends ask us to stop doing something, we know that they don't like it and it's time to stop. The will use words like "hey, stop, or quit it", and they will look and sound upset. This means it's time to stop"*

Peer 1: "Yeah, just give us back our ball. Stop kidding around".
Peer 2: "Why can't you listen? We don't want to play chase right now. We want to play basketball"

**Voiceover: He listened to his friends, and looked at their faces. Their faces looked upset, and their words told him that they wanted him to stop. He listened to what his friends asked, and he stopped doing things that they didn't like.*

Peer 3 looks at Peers 1 and 2, and realizes that they are both upset and want him to stop.
Peer 3: "Oh…ok…you can have your ball back".
Peer 2: "Thanks!"
Peer 1: "Thanks! We didn't want to play chasing, but you can play ball with us if you like?"
Peer 3: "Sure, that sounds like fun!"

Eric Group 3 Script B:

**Voiceover: Sometimes, we think something is fun but it is disruptive for our friends or teacher. If our friends or teacher don't like what we're doing, they ask us to stop. When our teacher tells us to stop doing something, we know it's time to stop. In this video, you can learn how to listen when our teacher and friends tell us to stop, and how to stop doing things that make our teacher or friends upset".*

Teacher: "So, we've got five minutes for quiet reading before we go out to recess. Everybody please take out your books. If you come to a word you don't know, just put your hand up quietly and I'll come help you with it".

All three all take out their books and start reading quietly. They read for about 10 seconds before Peer 1 starts talking.

Peer 1 (to herself): "Yay, I love reading Harry Potter!"
Peers 2 and 3 look at Peer 1, but don't speak to her. They both look annoyed.
Teacher: "We're reading quietly, thank you".
Peer 1 goes back to reading, and is quiet for another few seconds.
Peer 1 (to herself): "Dumbledore is definitely my favorite, but I really like Ron too".
Peer 2 (loud whisper to Peer 1): "This is supposed to be quiet reading time, so stop talking!"

**Voiceover: Sometimes, things are fun for us but not fun for our friends. If we are doing something that our friends don't like, they will ask us to stop".*

Peer 3 (loud whisper to Peer 1): "Yeah, sshhh!"
Peer 1 goes back to reading, and is quiet for another few seconds.
Peer 1 (to herself):"I would love to play Quidditch some day! I bet I would have the fastest broom, and I could even win"
Teacher: "Right now it's time for quiet reading before recess. This is not a time for talking"
Peer 1 (to herself):"It might be scary at first, but I could probably learn how to do it quickly. That would be my favorite sport to play, definitely!"
Peer 2: loud sigh, rolls her eyes, looks annoyed
Peer 3: "I can't concentrate".
Peer 1 looks at Peers 1 and 2, who both look annoyed.

**Voiceover: He listened to his friends, and looked at their faces. Their faces looked upset, and their words told him that they wanted him to stop.*

Teacher: "This is not time for talking. It's quiet reading time. You can put your hand up if you have questions, but please be a quiet reader right now. Talking is disruptive for our friends".

**Voiceover: When our teacher asks us to stop doing something, we know that what we are doing is disruptive or unhelpful for my friends. This means it's time to stop"*

Peer 1: "Ok, sure".
Peer 1 goes back to reading quietly. Peers 2 and 3 continue reading for a couple of minutes.
Teacher: "Ok, it's time for recess. Let's all put our books away and line up for recess".
Peer 1: 'Hey Lily, have you ever read Harry Potter?"
Peer 2: "Sure, I love Harry Potter! First I saw the movies, and then I read the books with my dad".
Peer 3: "Do you guys wanna play Quidditch at recess?"
Peer 2: "Yeah!"
Peer 1: "Sure!"

Jack Group 1 Script A:

**Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Peer 1, 2 and 3: all sitting together and working on a group project

Peer 3: "I love working on this project with you guys. It's awesome to learn more about food and healthy eating".
Peer 1: "Yeah, me too! I thought it would be boring but it's actually fun"
Peer 3: "It's always way better to work in groups too. I like getting time to talk with my friends when we're working!"
Peer 1: "I know!"
Peer 3: "Guys, I think that we should glue both of these pictures together for our project".
Peer 1: "I don't know, I kind of like them separate. I don't think we should glue them together".
Peer 3: "Yeah, I like them separate too. Wanna just keep them separate?"
Peer 2: "No, I really don't like that idea. I think they should be glued".
Peer 1 and Peer 3: (roll their eyes, looking a little frustrated)
Peer 1: "Come on, let's not glue them.
Peer 3: "Yeah, we can take turns, like our teacher says. It's no big deal"
Peer 2: "No, I don't want to – my idea is the best!"

**Voiceover: Sometimes it's hard to understand why other people want different things than we do. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath or counting to ten. Staying calm helps us to treat other people nicely and get along better with our friends."*

Peer 3: "But we don't like the idea of gluing them together. Can't you just give up the idea of gluing them?"

Peer 1: "Yeah, we can always glue a different part of the project, but we just don't want to glue this part".
Peer 2: (takes a deep breath, counts to 10 quietly) "Well…you guys really don't want to glue this, huh?"
Peer 3: "No, not really".
Peer 2: "And you'd prefer it if we glued a different part?"
Peer 1: "Yeah, we can always glue a different part, if you really want to".
Peer 2: "Um, ok. Let's do that".
Peer 3 and Peer 1: "Cool!"

**Voiceover: In the video, she stayed calm even though she was feeling frustrated and didn't get what she wanted. She stayed calm by taking deep breaths and counting to 10. Doing this helped her to feel calm, and to get along better with her friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."*

Jack Group 1 Script B:

** Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Teacher: "Ok guys, let's split up. We'll do red team, blue team today. I'll pick who's on each team".
Peer 3: "I love basketball, I can't wait to play!"
Peer 2: "Ha, me too!"
Teacher: "Ok, listen up. Estelle, you're on the blue team. Laney, you're on the red team. Cat, you're gonna be a sub for now, and then you'll come on when we take a half-way break".
Peer 2: "Alright, red team!"
Peer 1: What, no way! I don't want to be a sub! I want to play!"
Teacher: "Cat, it's time to do as I say. For this game, you'll be a sub."
Peer 1: "But that's not fair, I don't want to be a sub!"

**Voiceover: Sometimes, things don't go the way that we want them to. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath or counting to ten. Staying calm helps us to treat other people nicely and get along better with our friends."*

Peer 3: "Come on Cat, you just have to be a sub for a little while. It's not for the whole game".
Peer 1: "But I wanted to play the first half too!"
Peer 2: "It's not so bad. You'll get to play the second half with us".

Peer 1: (takes deep breaths, counts to 10 quietly) "Well, I guess I'll be the sub then for the first half"
Teacher: "That's right Cat, we'll get you on for the second half!"
Peer 2: "And you can cheer me on this half"
Peer 3: "No way, I'm gonna win!"

**Voiceover: In the video, she stayed calm even though she was feeling frustrated and didn't get what she wanted. She stayed calm by taking deep breaths and counting to 10. Doing this helped her to feel calm, and to get along better with her friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."*

Jack Group 2 Script A:

** Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Teacher: "Ok guys, you've got 10 minutes free time before recess. You guys can choose an activity to work on together until recess".
Peer 1: "Sweet! Let's play on the iPad"
Peer 3: "Ok – I know a fun game we can play"
Peer 2: 'I don't want to play on the iPad. I want to keep working on our poster".
Peer 1: "Come on, it's not a big deal. Let's just play on the iPad."
Peer 2: "NO! I don't want to do that – that's a terrible idea!"
Peer 3: "Come on, we can work on the poster another time. Let's just play the iPad now"

**Voiceover: Sometimes, things don't go the way that we want them to. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath and counting to 10. Staying calm helps us to treat other people nicely and get along better with our friends."*

Teacher: "Guys, just choose an activity. You can always choose a different activity tomorrow".
Peer 2: "But I want to work on our poster today – I don't want to play on the iPad!"
Peer 1: "Just relax Eli, we can work on the poster tomorrow"
Peer 2: (takes deep breaths and counts to 10) "Well…ok, I get it. I guess we can do what you want today, and then it'll be my turn to choose tomorrow".
Peer 3: "Great – let me show you my favorite iPad game!"
Peer 1: "Awesome!"
Peer 2: "Ok, sounds good".

**Voiceover: In the video, she stayed calm even though she was feeling frustrated and didn't get what she wanted. She stayed calm by taking deep breaths and counting to 10.*

Doing this helped her to feel calm, and to get along better with her friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."

Jack: Group 2 Script B:

** Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Teacher:	"Ok guys, let's all line up so I can choose teams. Gus, you'll be the captain of the blue team and EB, you'll be the captain of the green team".
Peer 1:	"Alright!"
Peer 2:	"Hey, no way! That stinks – I wanted to be a captain!"
Teacher:	"Well, it's not your turn to be captain today. Maybe another day."
Peer 2:	"No way – I'm not playing unless I can be captain!"
Peer 3:	"But Eli, you can be captain the next time".
Peer 1:	"Yeah – it's not so bad. We're just taking turns".
Peer 2:	"But it makes me so mad! I need to take a break".

**Voiceover: Sometimes, things don't go the way that we want them to. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath and asking for a break. Staying calm helps us to treat other people nicely and get along better with our friends."*

Teacher:	"Ok, just let us know when you're calm and ready to play"
Peer 2:	Steps aside, takes deep breaths and counts to 10. "Ok, I'm feeling more calm now"
Peer 3:	"That's great – are you ready to play?
Peer 2:	"Yep, I'm calm and ready to play, even if I don't get to be the captain".
Teacher:	"Alright, nice job calming down and joining us again!"
Peer 1:	"Time to play, you guys!"

**Voiceover: In the video, she stayed calm even though she was feeling frustrated and didn't get what she wanted. She stayed calm by taking deep breaths and asking for a break. Doing this helped her to feel calm, and to get along better with her friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."*

Jack Group 3 Script A:

** Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Peer 1: "Oh wow, I can't believe I scored a goal!"
Peer 3: "Yeah, that was awesome!"
Peer 2: "No you didn't! There's no way that was a goal"
Peer 1: "What? Yes it was – our teacher said so".
Peer 3: "Yeah it was definitely a goal. You can't pretend that it wasn't just because you want your team to win"
Peer 2: "You're cheating – it wasn't a goal!"
Peer 3: "Quit being so unfair – it was a goal!
Peer 1: "Come on, don't be like that. You know it was a goal".

**Voiceover: Sometimes, things don't go the way that we want them to. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath or counting to ten. Staying calm helps us to treat other people nicely and get along better with our friends."*

Peer 3: "It was definitely a goal. Your team can't win all the time you know, even if you want them to".
Peer 2: (takes deep breaths and counts to 10) "Ok, I guess you guys are right. It was a goal"
Peer 1: "Alright! Are you ready to keep playing?"
Peer 2: "Sure!'
Peer 3: "Awesome, let's play!"

**Voiceover: In the video, she stayed calm even though she was feeling frustrated and didn't get what she wanted. She stayed calm by taking deep breaths and counting to 10. Doing this helped her to feel calm, and to get along better with her friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."*

Jack Group 3 Script B:

** Voiceover: Sometimes when we don't get our way, it feels very frustrating. It's important to learn how to act and how to speak to our friends and teachers when we feel frustrated. If we take our frustration out on them by saying mean things, they won't feel very good. In this video, you'll see some good ways to stay calm and be nice to your friends and teachers, even when you feel frustrated"*

Teacher: "Ok kids, we're going to keep working on our Science project today. Who has ideas about the topic for our project?"
Peer 1: "I think it should be about marine life"
Peer 3: "I want to do it on Mars"
Peer 2: "Marine life sounds great – let's do that!"
Peer 3: "No – Mars would be way better!"
Teacher: "Well, we've got a vote of 2:1, so we'll do the project on marine life"
Peer 3: "But I don't care about that! I want to do a project about Mars!"
Peer 1: "Too bad. We're doing it about marine life.

**Voiceover: Sometimes, things don't go the way that we want them to. This can make us feel frustrated. When we feel frustrated, it's important to stay calm and think about how other people are feeling and thinking. We can stay calm by taking a deep breath and asking for a break. Staying calm helps us to treat other people nicely and get along better with our friends."*

Scott looks really mad, like he might start shouting and getting very upset.

Peer 3: "Ugh, that's so frustrating. I need to take a break to calm down"
Teacher: "Good idea Scott. Let us know when you're ready to join in again"
Peer 3 steps aside, takes a deep breath, and counts to 10.
Peer 3: "Ok, I'm feeling calm. I'm ready to join in with you guys again"
Peer 1: "Awesome, let's get to work!"
Peer 2: "Yeah, I've got a great idea"
Peer 3: "Ok!"

**Voiceover: In the video, he stayed calm even though she was feeling frustrated and didn't get what she wanted. He stayed calm by taking deep breaths and asking for a break. Doing this helped him to feel calm, and to get along better with his friends. That's why it's important to notice when we are feeling frustrated, and to practice taking deep breaths and counting to ten so that we can feel calm."*

Appendix O: Graphs for Tom

Graph 1: Target Behavior All Settings

Graph 2: Target Behavior: Lunchroom Setting Level Analysis

Graph 3: Target Behavior: Lunchroom Setting Trend Analysis

Graph 4: Target Behavior: Classroom Setting Level Analysis

Graph 5: Target Behavior: Classroom Setting Trend Analysis

Graph 6: Target Behavior: Recess Setting Level Analysis

Graph 7: Target Behavior: Recess Setting Trend Analysis

Graph 8: Additional Pro-Social Behaviors

Graph 9: Following Teacher Directions Level Analysis

Graph 10: Following Teacher Directions Trend Analysis

Graph 11: Initiating Conversation Level Analysis

Graph 12: Initiating Conversation Trend Analysis

Graph 13: Joining Play Level Analysis

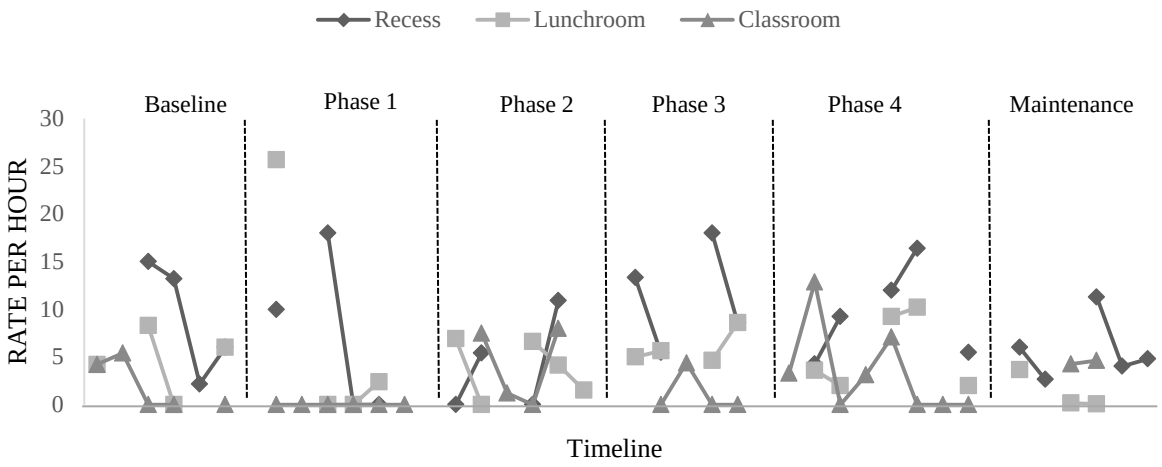
Graph 14: Joining Play Trend Analysis

Graph 15: Teacher Daily Behavior Ratings

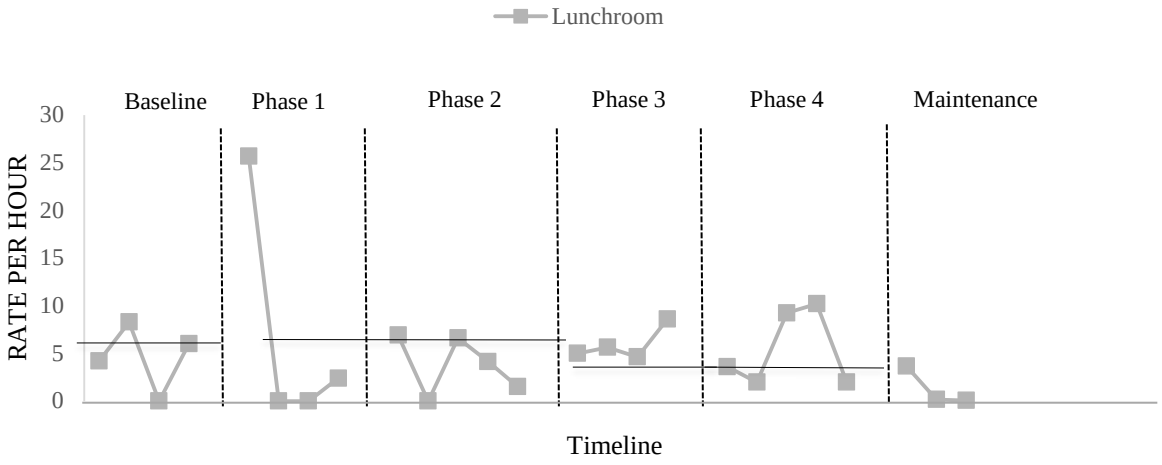
Graph 16: Teacher Daily Behavior Ratings Level Analysis

Graph 17: Teacher Daily Behavior Ratings Trend Analysis

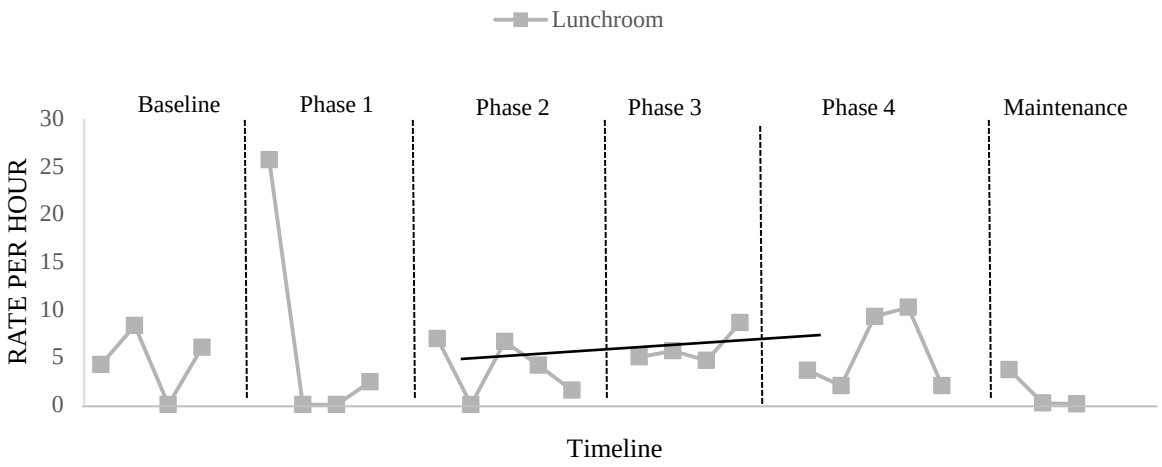
Graph 1: Target Behavior All Settings: Tom



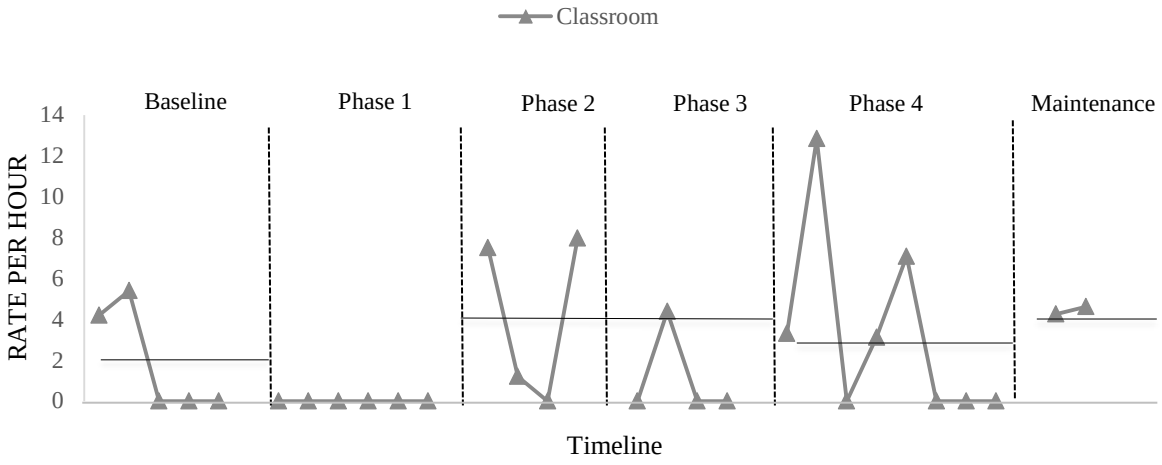
Graph 2: Target Behavior: Lunchroom Setting Level Analysis: Tom



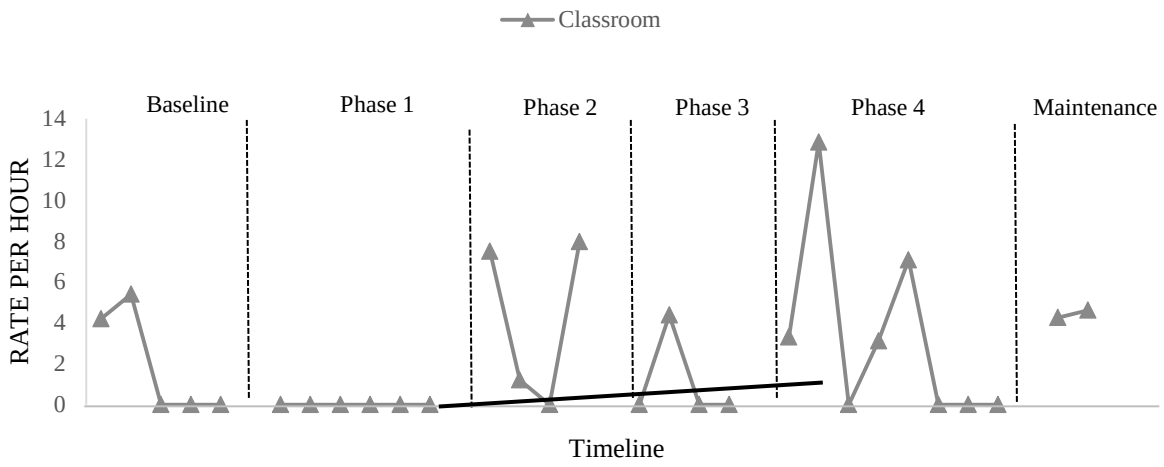
Graph 3: Target Behavior: Lunchroom Setting Trend Analysis: Tom



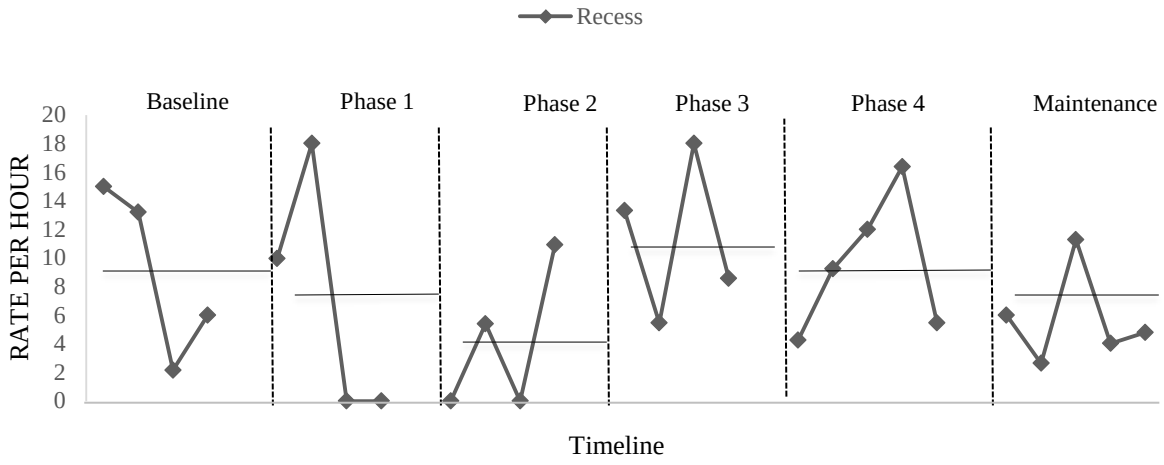
Graph 4: Target Behavior: Classroom Setting Level Analysis: Tom



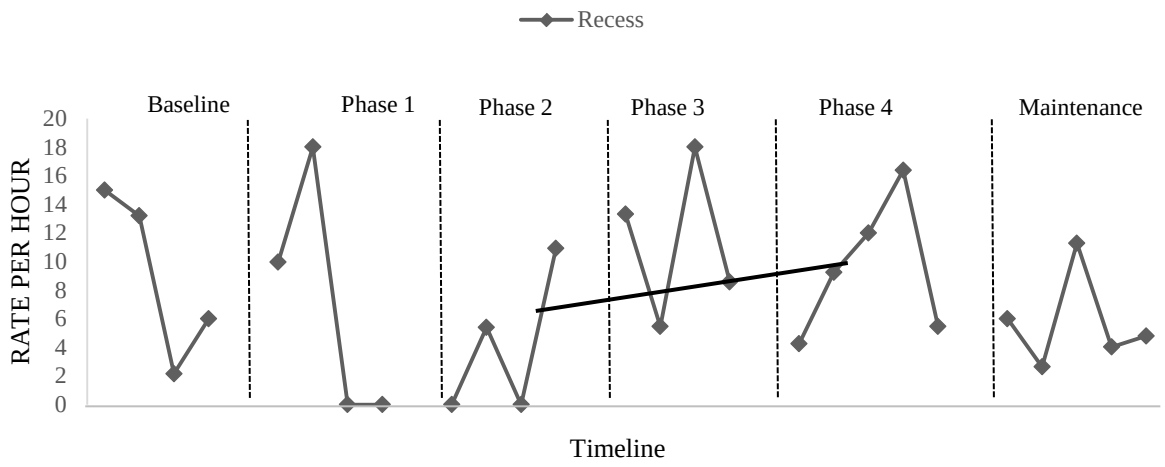
Graph 5: Target Behavior: Classroom Setting Trend Analysis: Tom



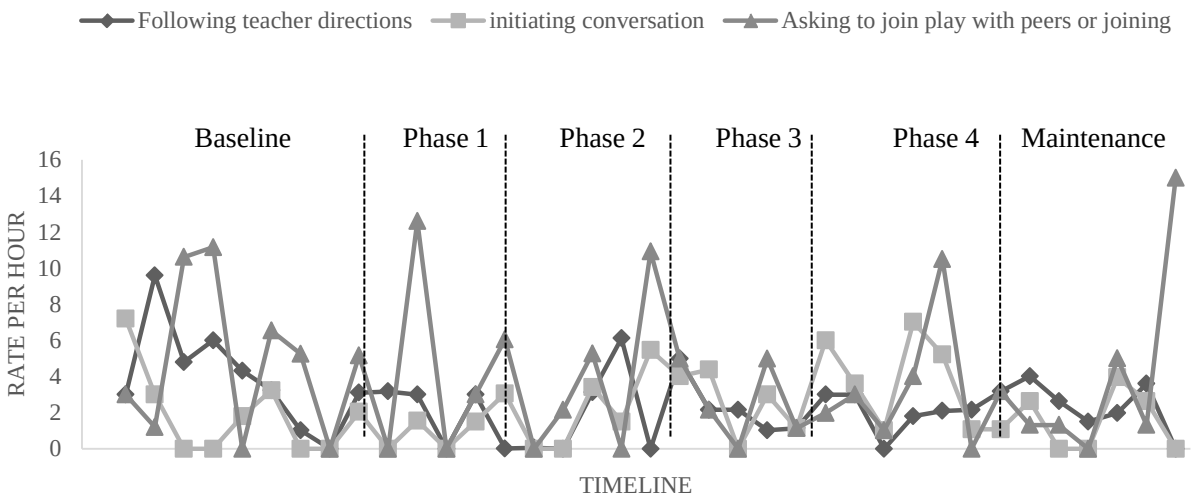
Graph 6: Target Behavior: Recess Setting Level Analysis: Tom



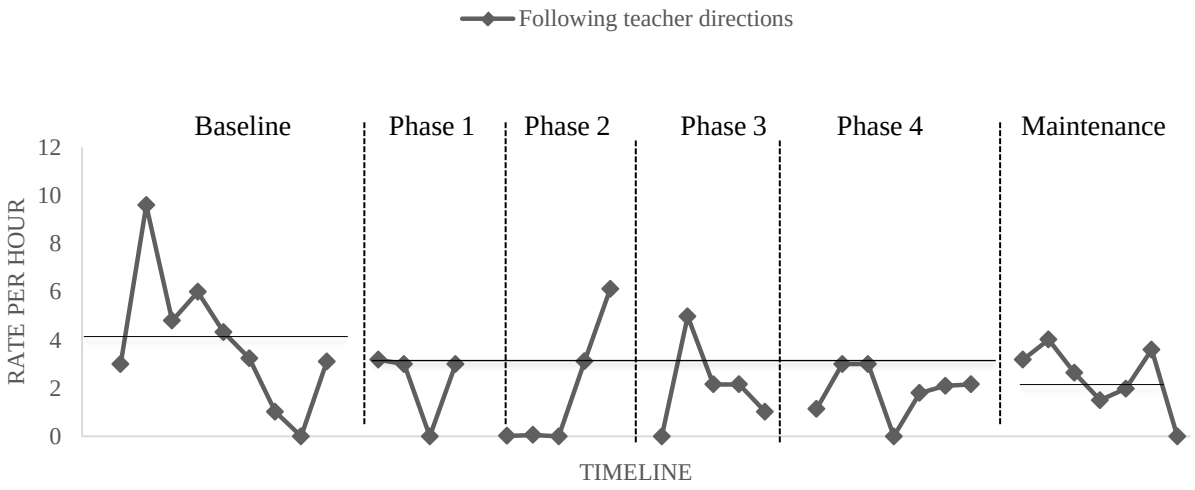
Graph 7: Target Behavior: Recess Setting Trend Analysis: Tom



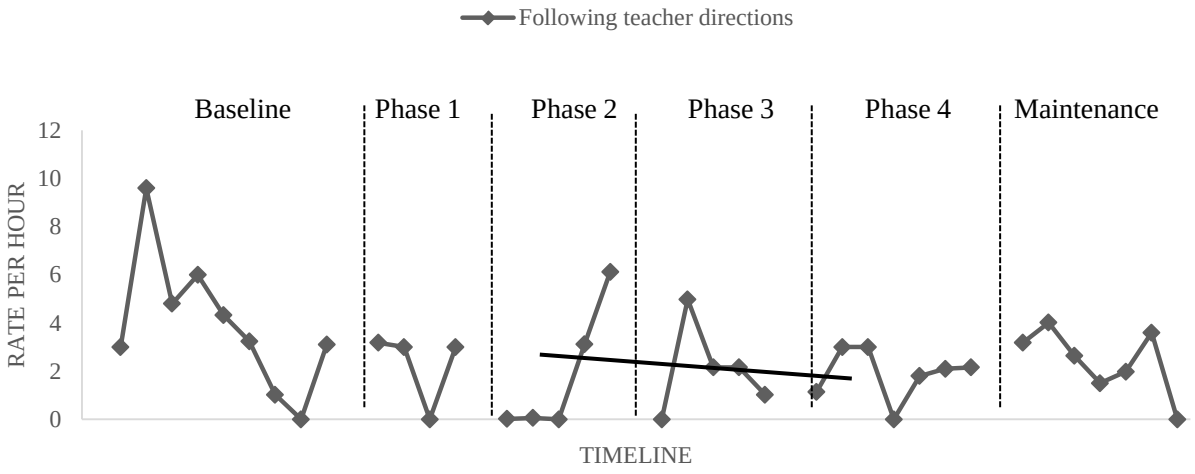
Graph 8: Pro-Social Behaviors: Tom



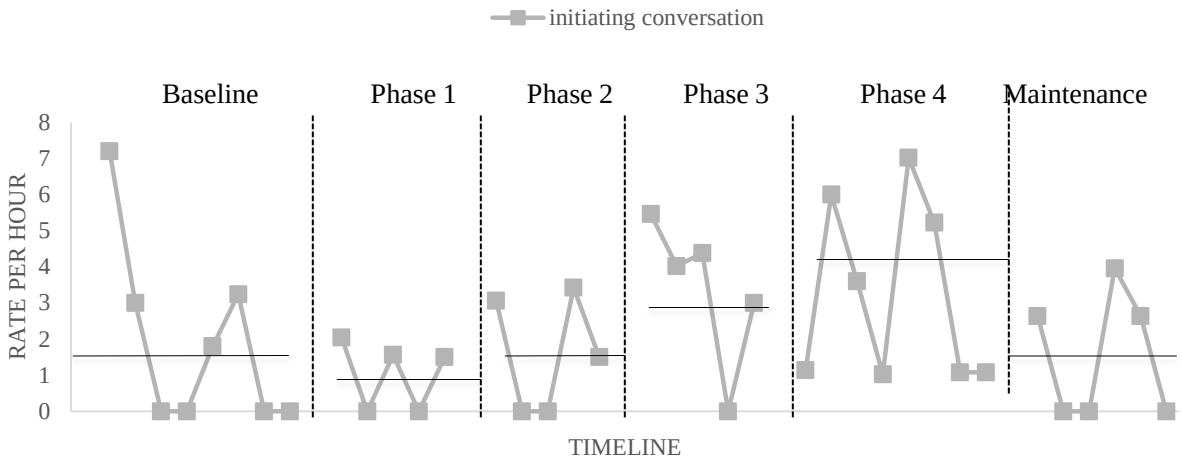
Graph 9: Following Teacher Directions Level Analysis: Tom



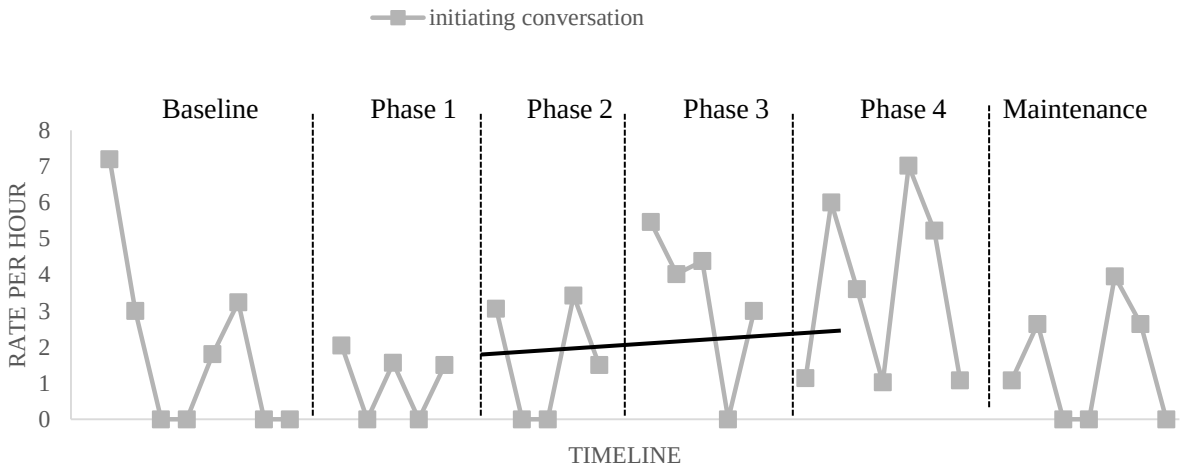
Graph 10: Following Teacher Directions Trend Analysis: Tom



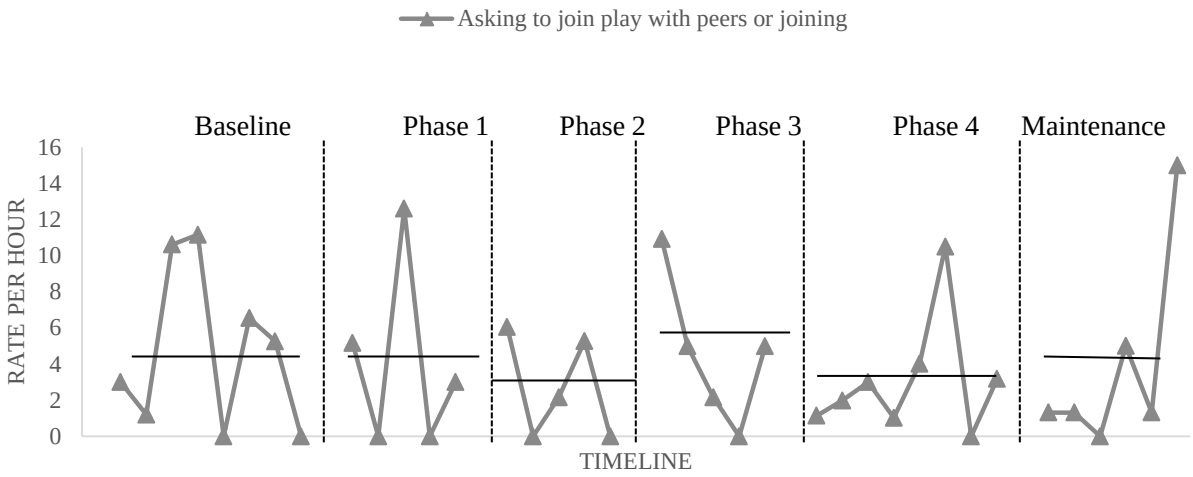
Graph 11: Initiating Conversation Level Analysis: Tom



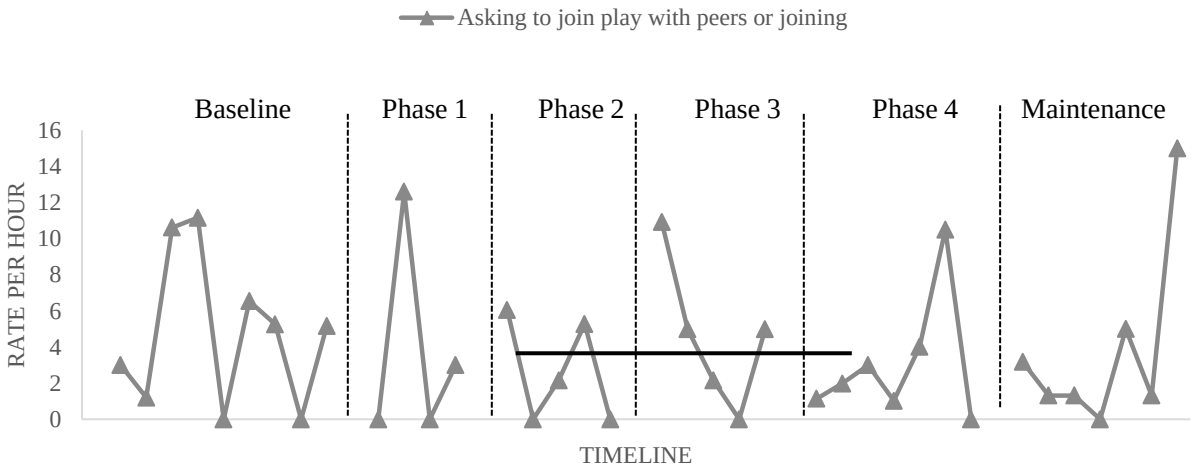
Graph 12: Initiating Conversation Trend Analysis: Tom



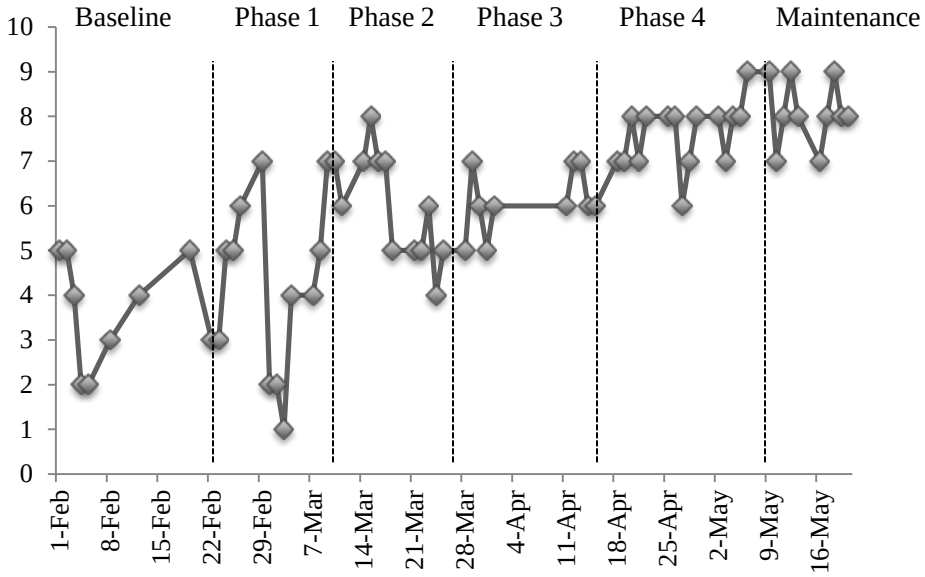
Graph 13: Joining Play Level Analysis: Tom



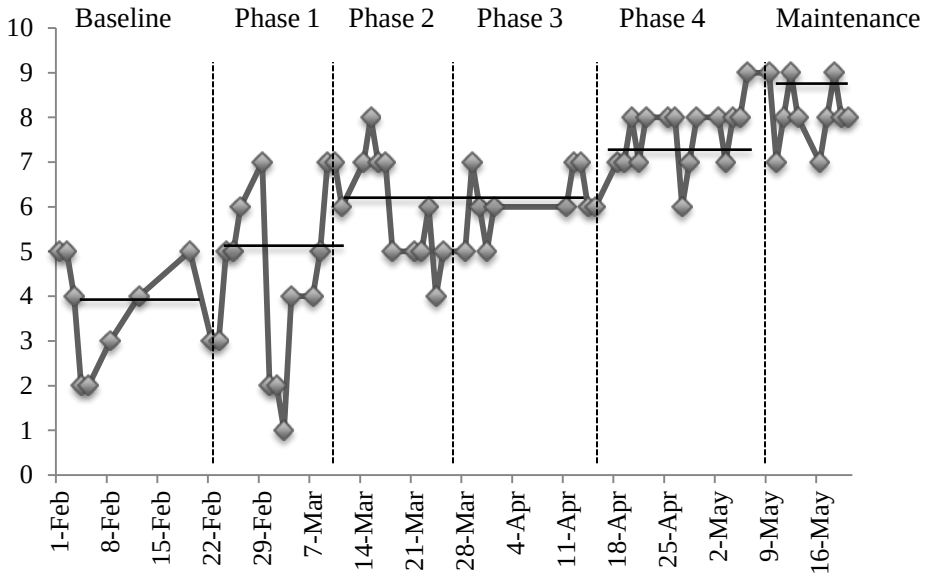
Graph 14: Joining Play Trend Analysis: Tom



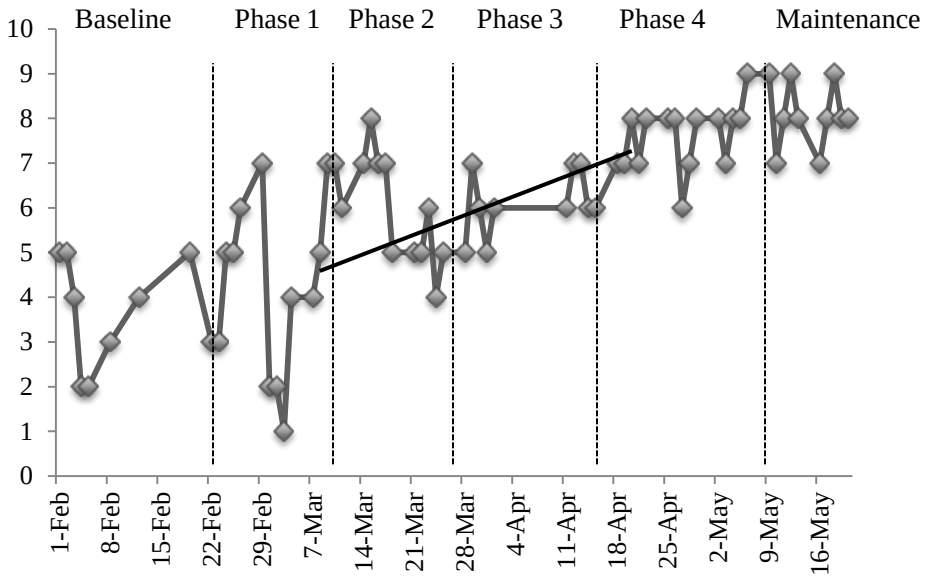
Graph 15: Teacher Daily Behavior Rating



Graph 16: Teacher Daily Behavior Rating Level Analysis: Tom



Graph 17: Teacher Daily Behavior Rating Trend Analysis



Appendix P: Graphs for Eric

Graph 1: Target Behavior All Settings

Graph 2: Target Behavior: Classroom Setting Level Analysis

Graph 3: Target Behavior: Classroom Setting Trend Analysis

Graph 4: Target Behavior: Recess Setting Level Analysis

Graph 5: Target Behavior: Recess Setting Trend Analysis

Graph 6: Additional Pro-Social Behaviors

Graph 7: Following Teacher Directions Level Analysis

Graph 8: Following Teacher Directions Trend Analysis

Graph 9: Initiating Conversation Level Analysis

Graph 10: Initiating Conversation Trend Analysis

Graph 11: Joining Play Level Analysis

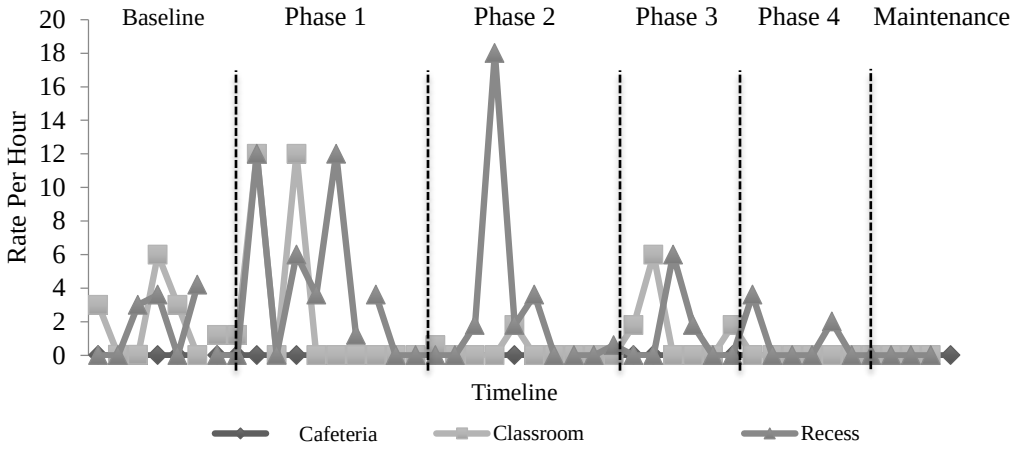
Graph 12: Joining Play Trend Analysis

Graph 13: Teacher Daily Behavior Ratings

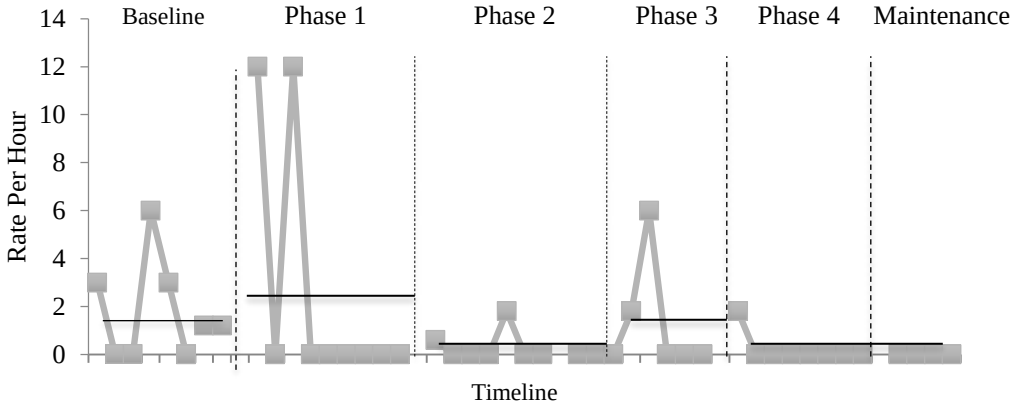
Graph 14: Teacher Daily Behavior Ratings Level Analysis

Graph 15: Teacher Daily Behavior Ratings Trend Analysis

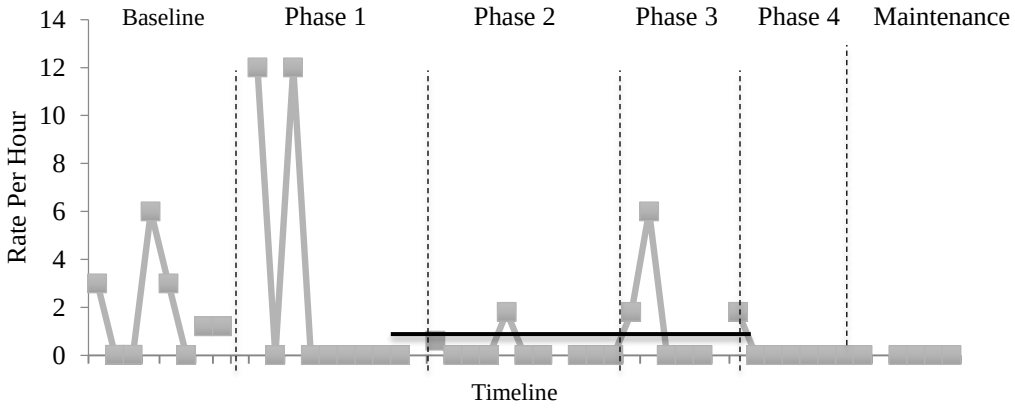
Graph 1: Target Behavior All Settings: Eric



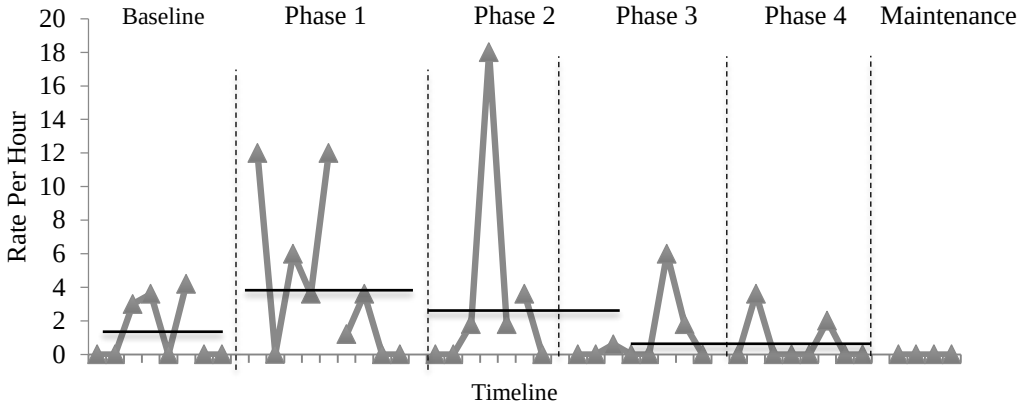
Graph 2: Target Behavior: Classroom Setting Level Analysis: Eric



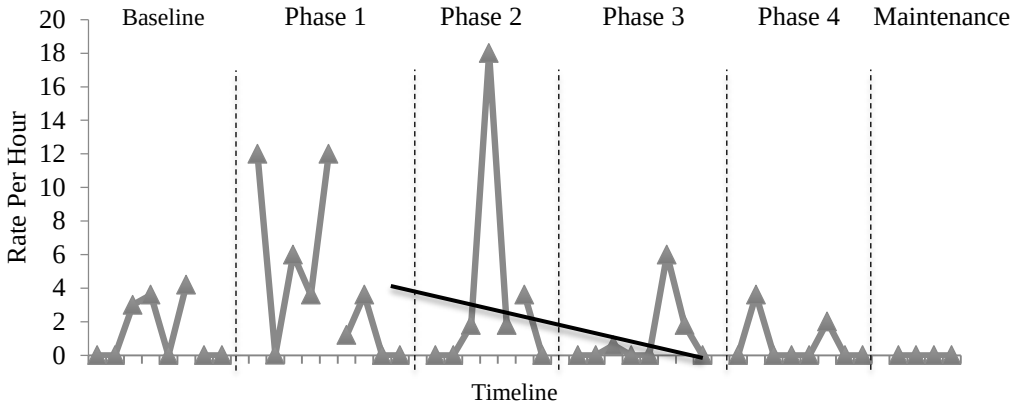
Graph 3: Target Behavior: Classroom Setting Trend Analysis: Eric



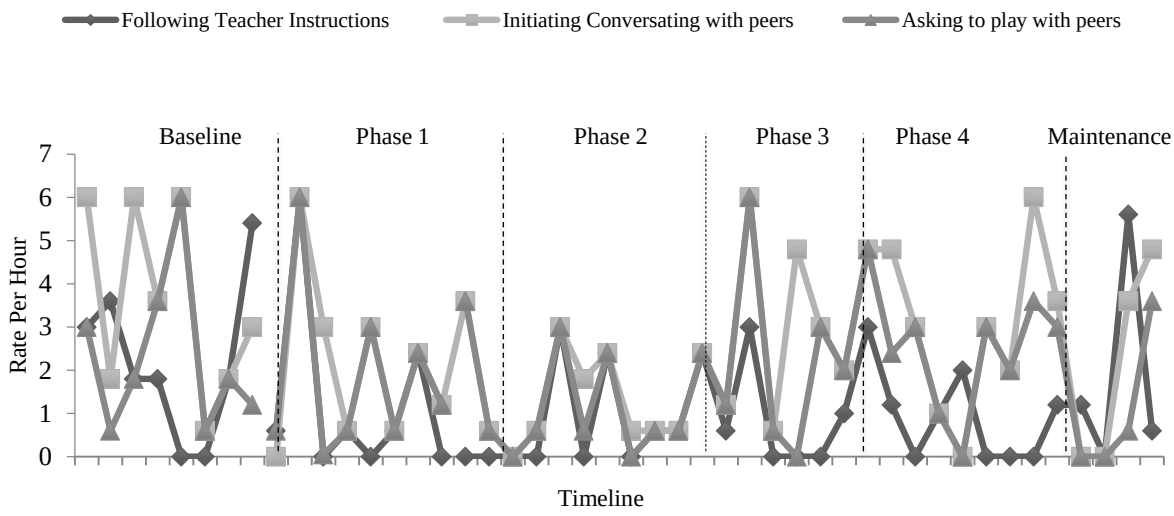
Graph 4: Target Behavior: Recess Setting Level Analysis: Eric



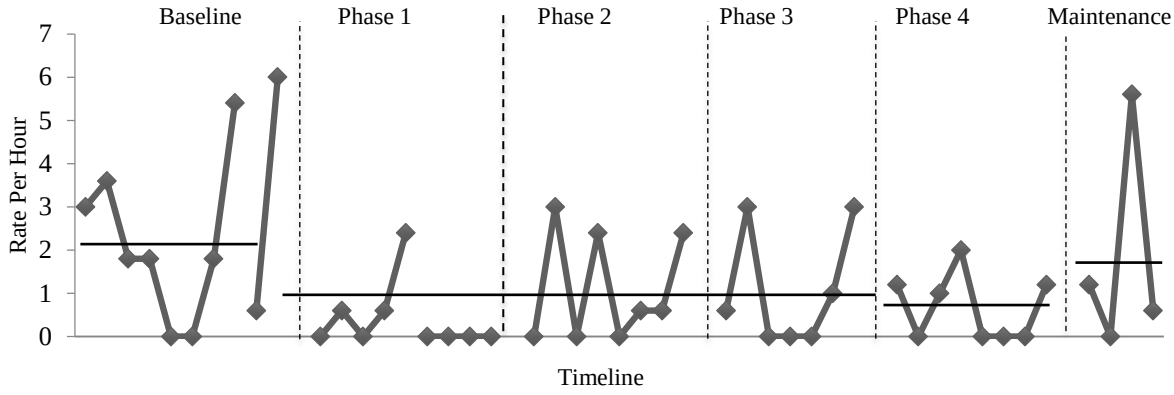
Graph 5: Target Behavior: Recess Setting Trend Analysis: Eric



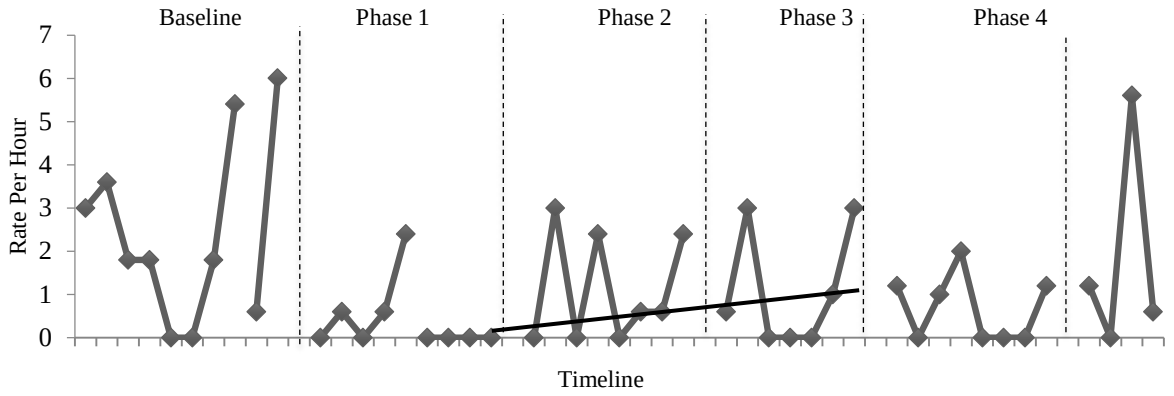
Graph 6: Additional Pro-Social Behaviors: Eric



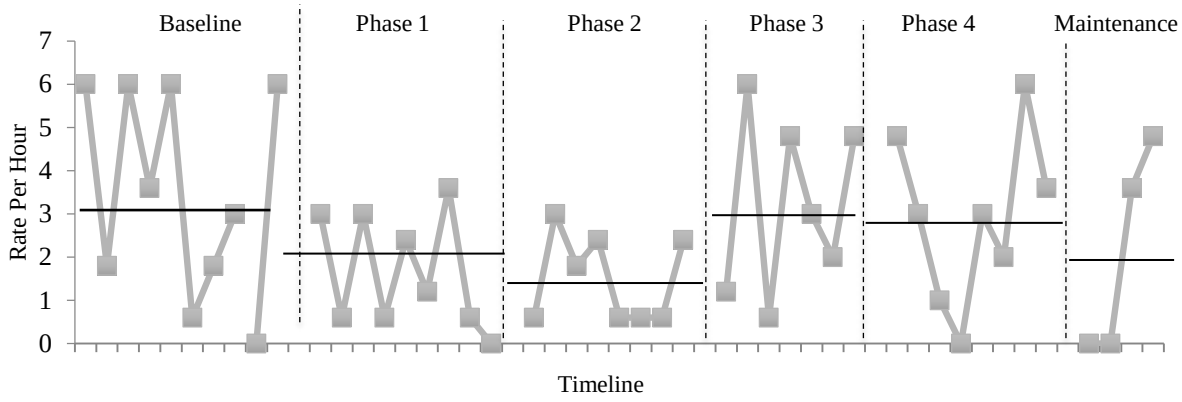
Graph 7: Following Teacher Directions Level Analysis: Eric



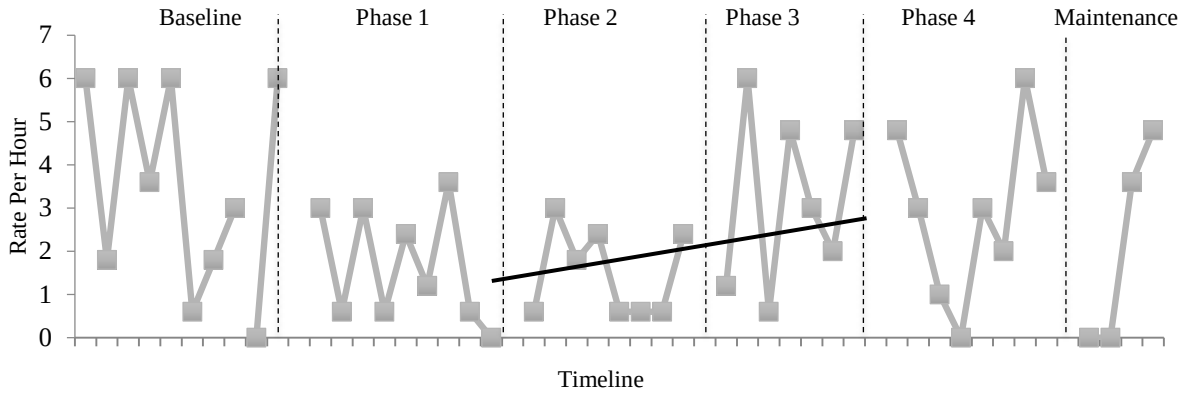
Graph 8: Following Teacher Directions Trend Analysis: Eric



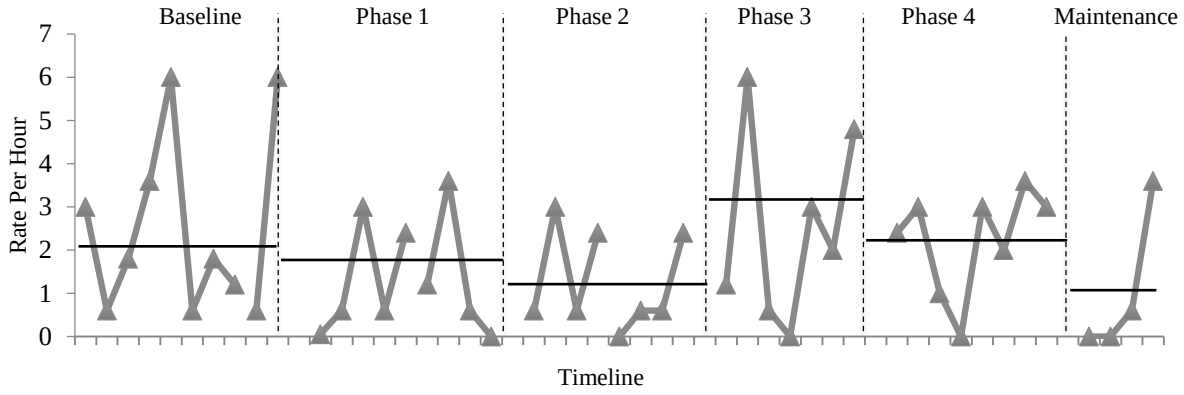
Graph 9: Initiating Conversation Level Analysis: Eric



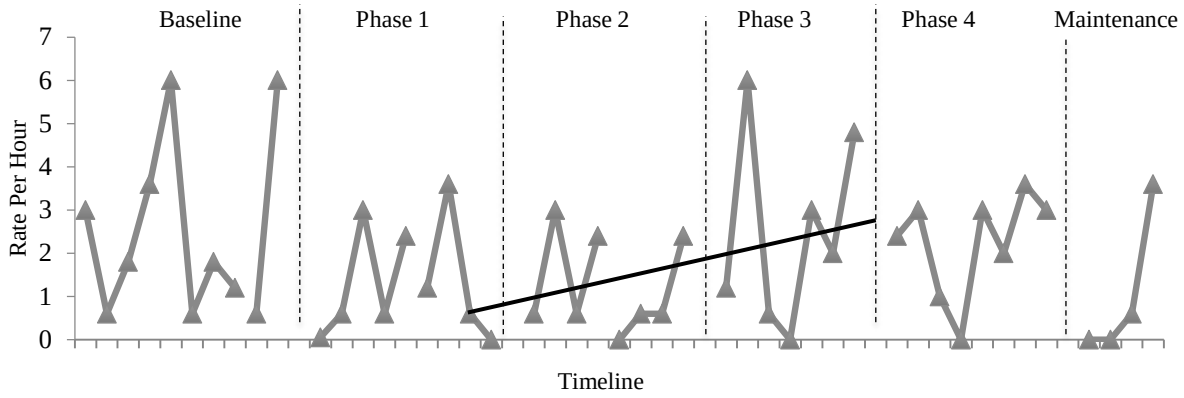
Graph 10: Initiating Conversation Trend Analysis: Eric



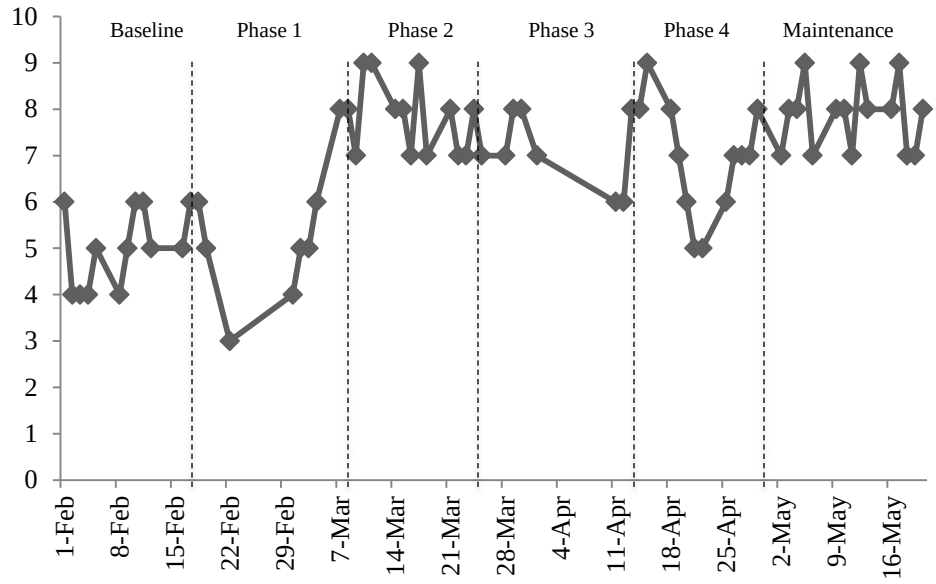
Graph 11: Joining Play Level Analysis: Eric



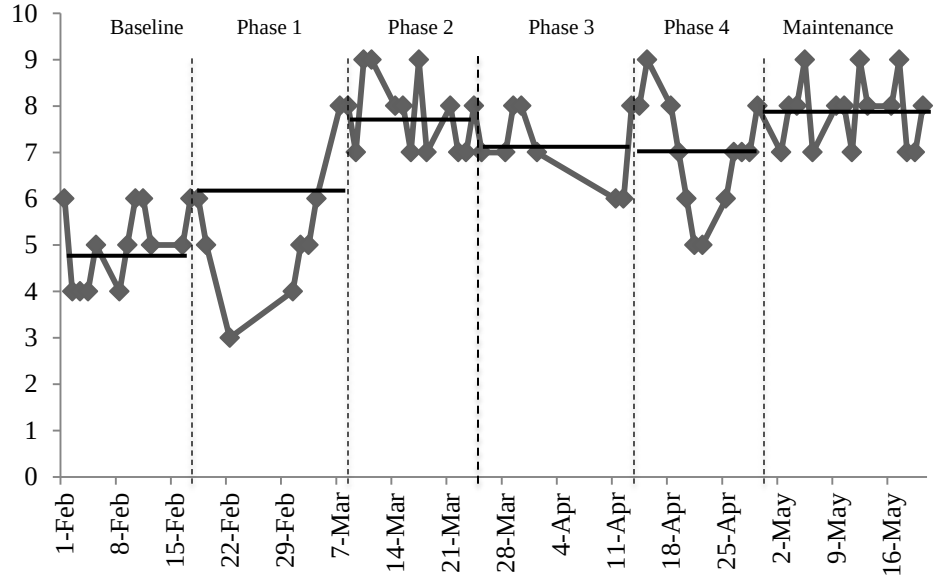
Graph 12: Joining Play Trend Analysis: Eric



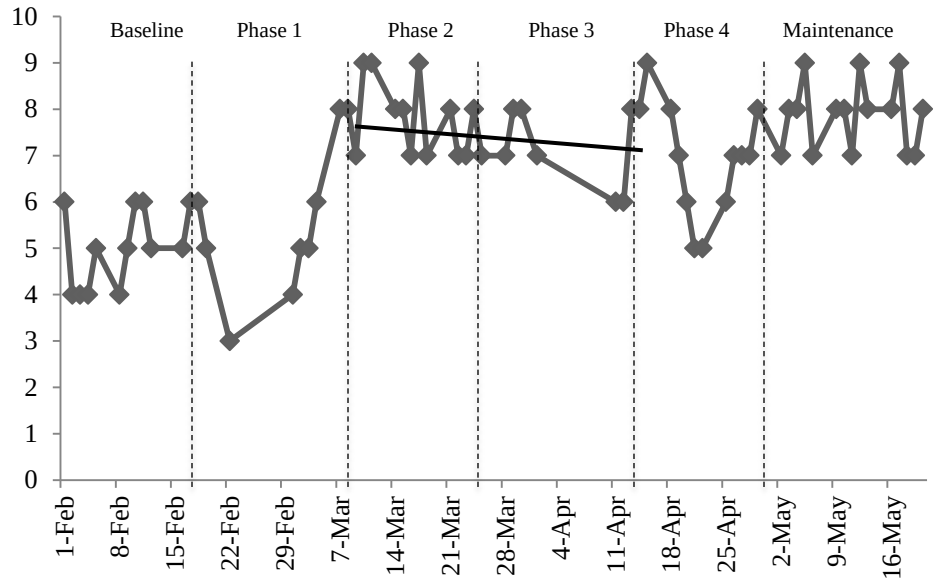
Graph 13: Teacher Daily Behavior Ratings: Eric



Graph 14: Teacher Daily Behavior Ratings Level Analysis: Eric



Graph 15: Teacher Daily Behavior Ratings Trend Analysis: Eric



Appendix Q: Graphs for Jack

Graph 1: Target Behavior All Settings

Graph 2: Target Behavior: Classroom Setting Level Analysis

Graph 3: Target Behavior: Classroom Setting Trend Analysis

Graph 4: Target Behavior: Recess Setting Level Analysis

Graph 5: Target Behavior: Recess Setting Trend Analysis

Graph 6: Additional Pro-Social Behaviors

Graph 7: Following Teacher Directions Level Analysis

Graph 8: Following Teacher Directions Trend Analysis

Graph 9: Initiating Conversation Level Analysis

Graph 10: Initiating Conversation Trend Analysis

Graph 11: Joining Play Level Analysis

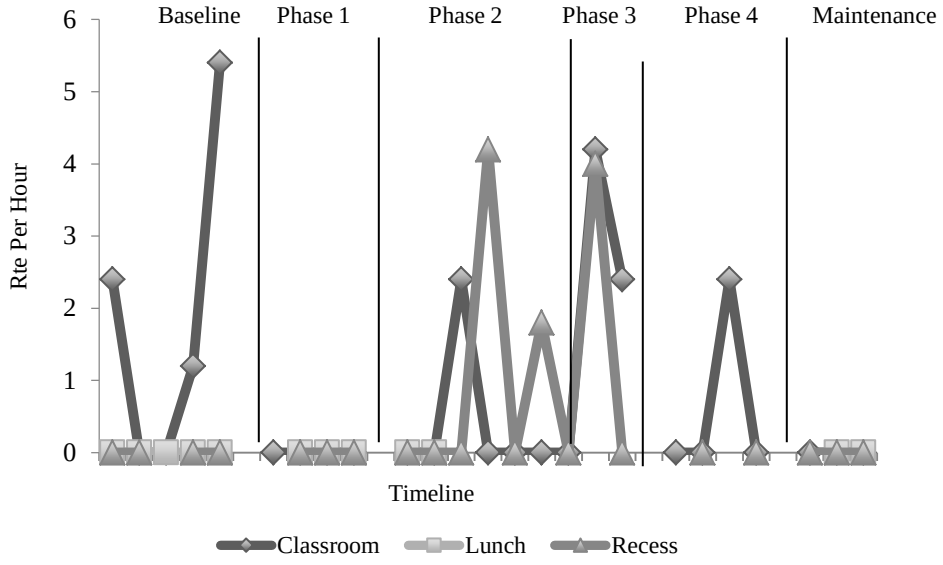
Graph 12: Joining Play Trend Analysis

Graph 13: Teacher Daily Behavior Ratings

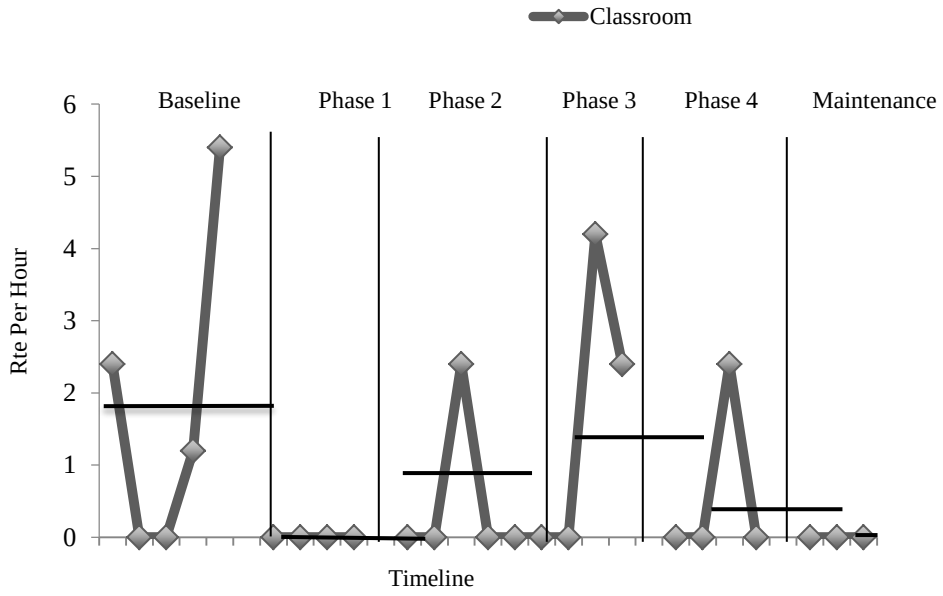
Graph 14: Teacher Daily Behavior Ratings Level Analysis

Graph 15: Teacher Daily Behavior Ratings Trend Analysis

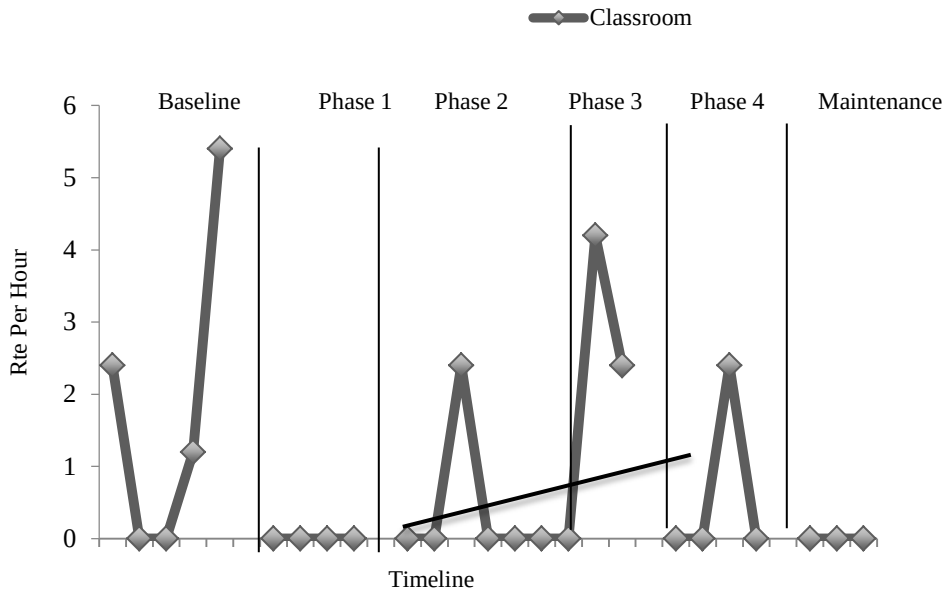
Graph 1: Target Behavior All Settings: Jack



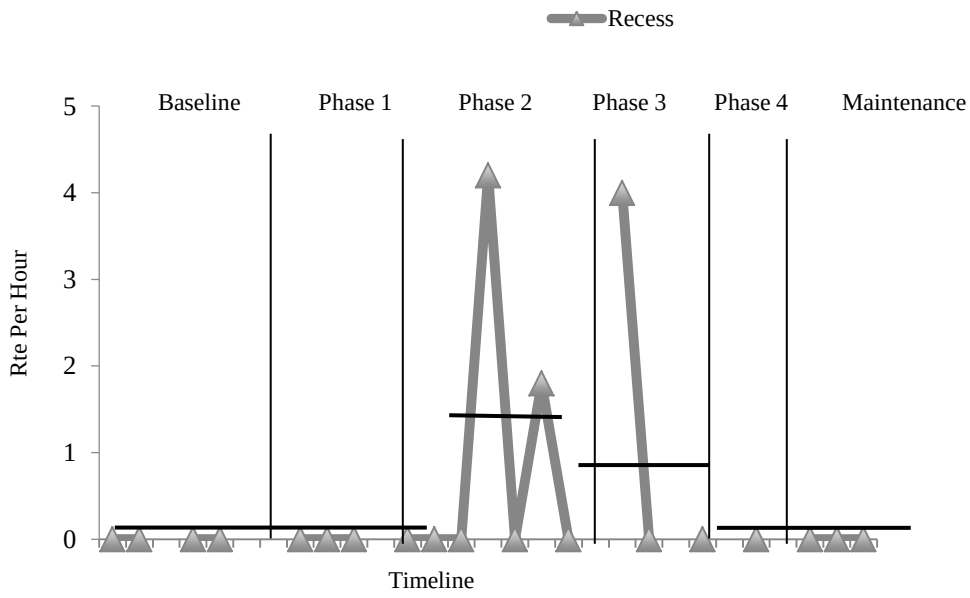
Graph 2: Target Behavior: Classroom Setting Level Analysis: Jack



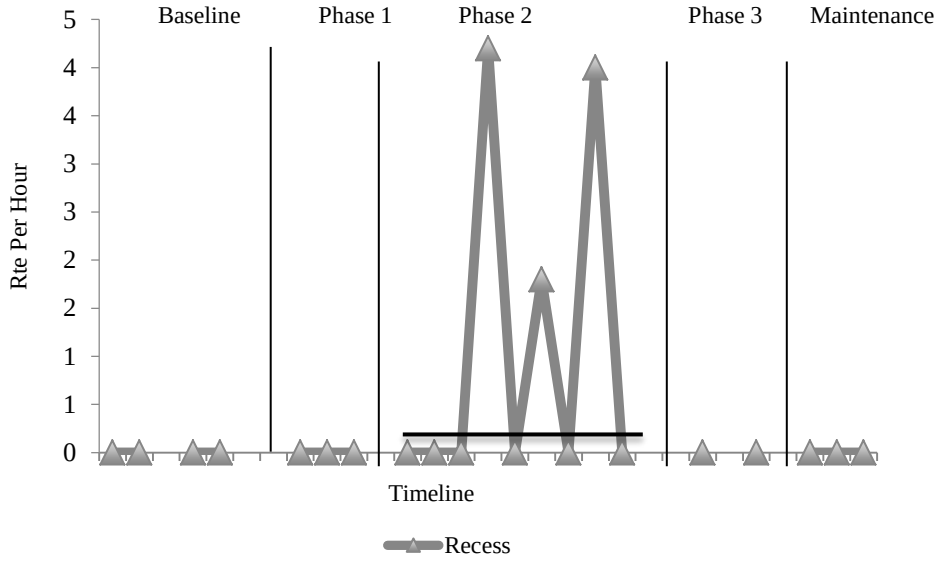
Graph 3: Target Behavior: Classroom Setting Trend Analysis: Jack



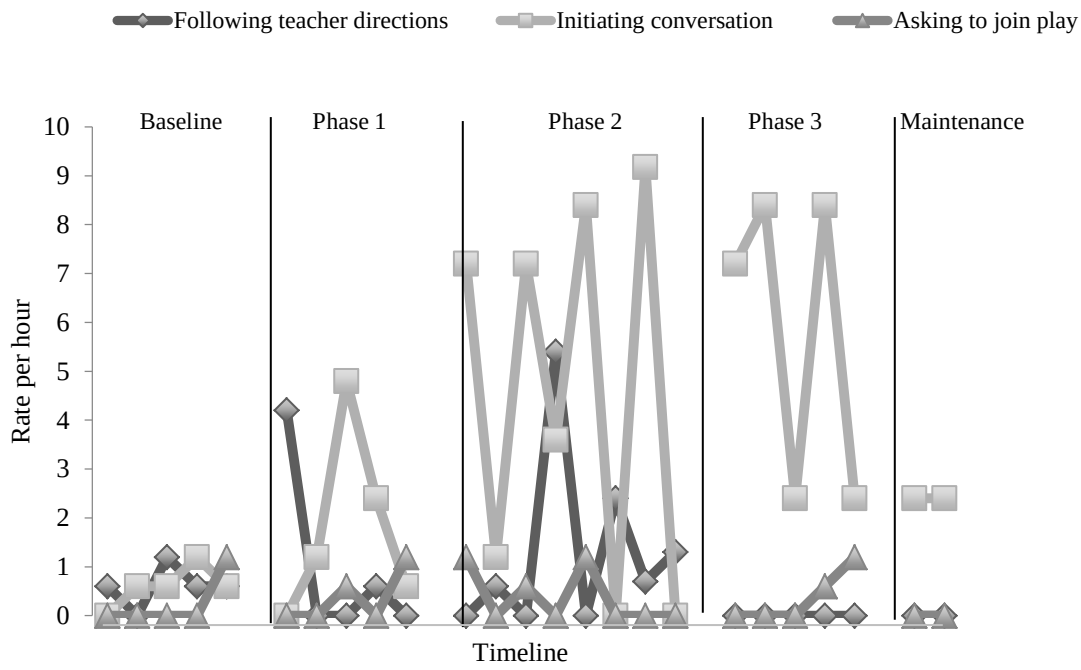
Graph 4: Target Behavior: Recess Setting Level Analysis: Jack



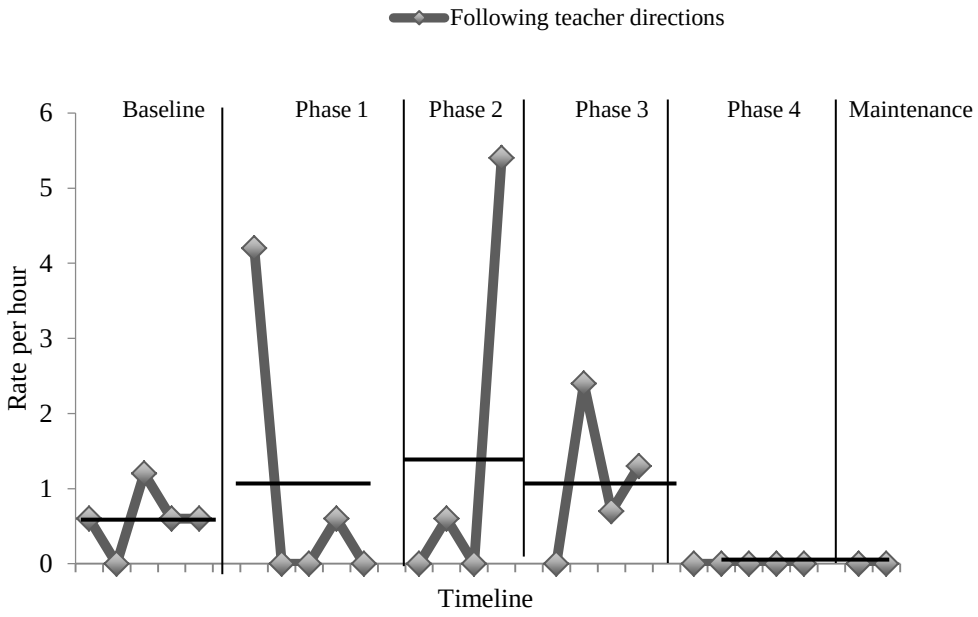
Graph 5: Target Behavior: Recess Setting Trend Analysis: Jack



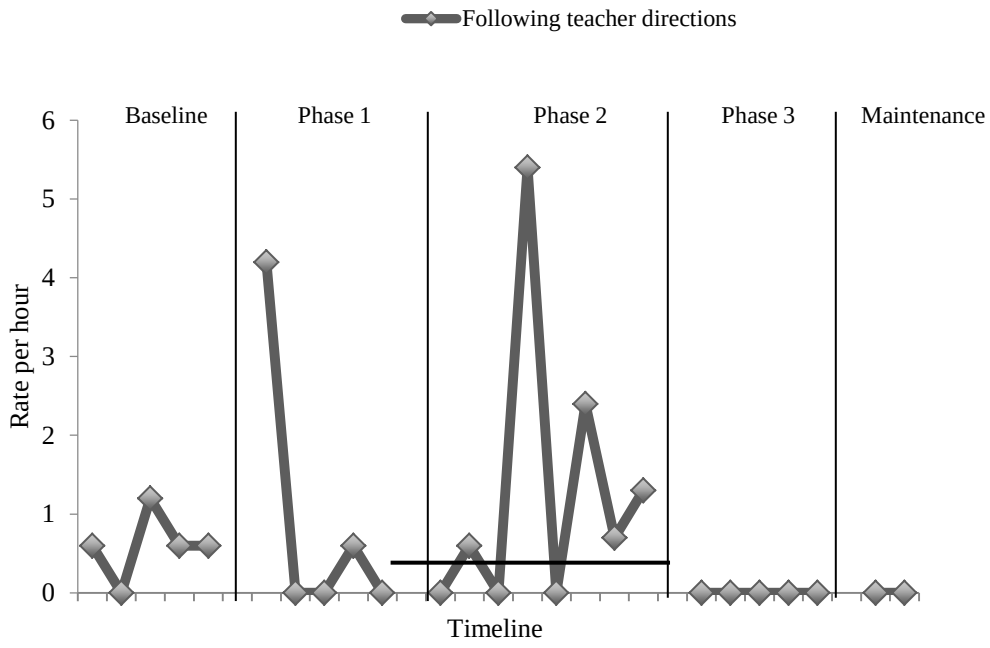
Graph 6: Additional Pro-Social Behaviors: Jack



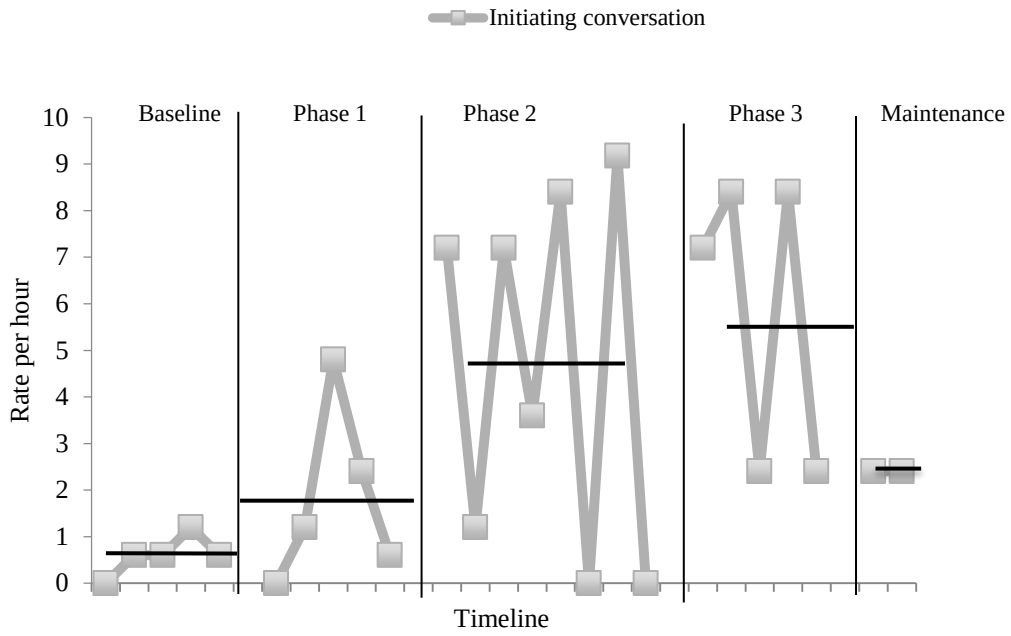
Graph 7: Following Teacher Directions Level Analysis: Jack



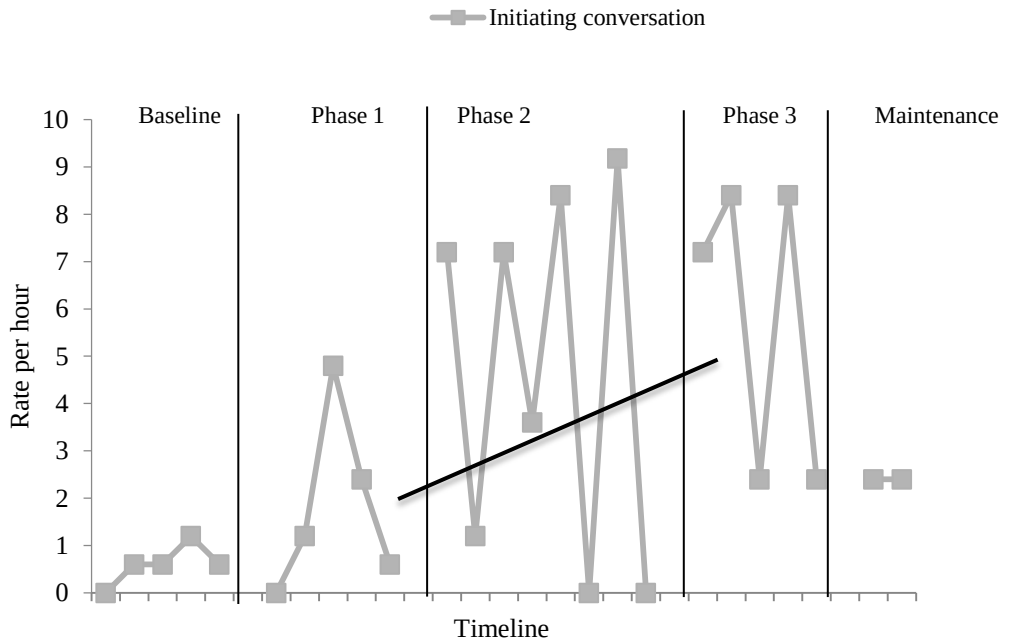
Graph 8: Following Teacher Directions Trend Analysis: Jack



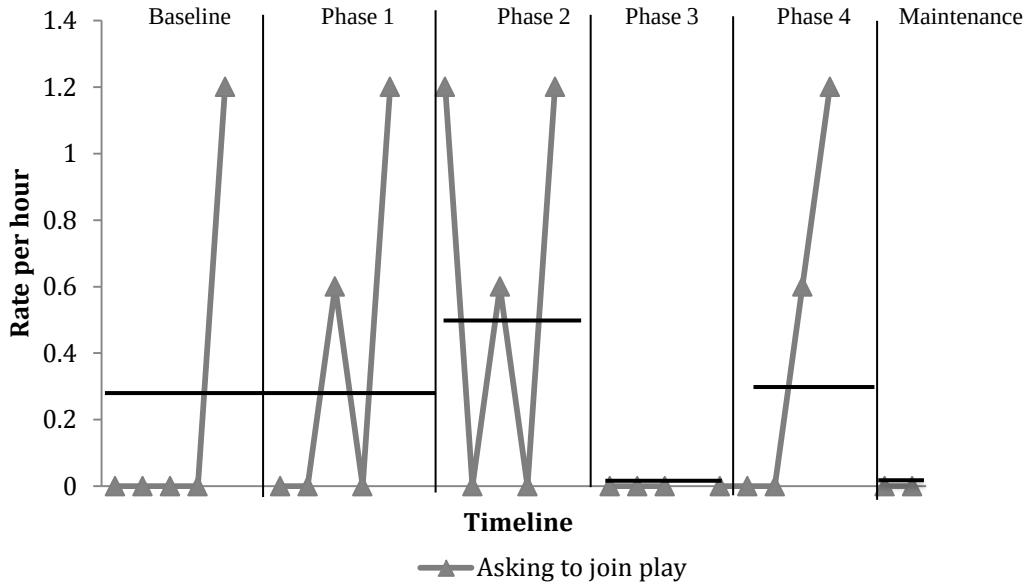
Graph 9: Initiating Conversation Level Analysis: Jack



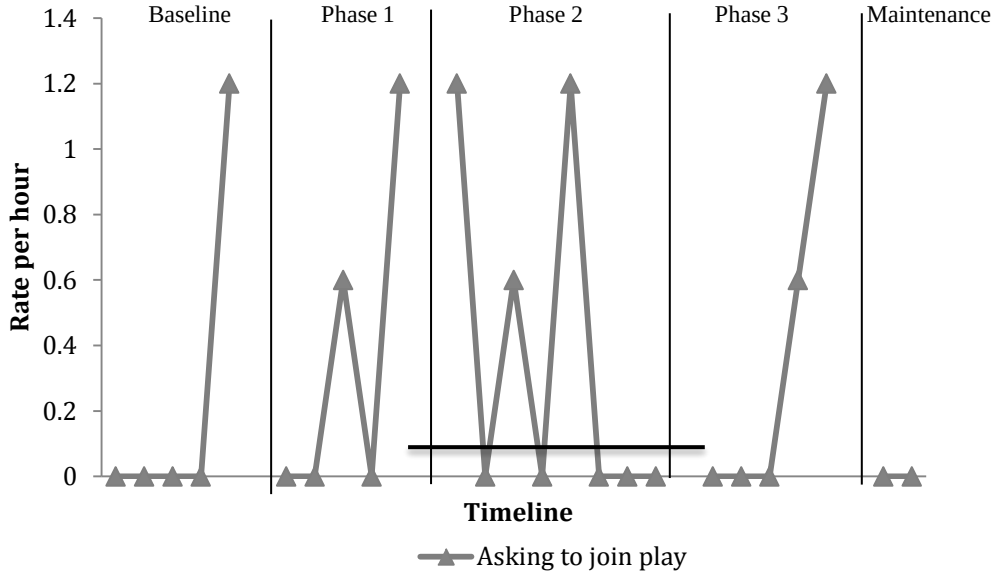
Graph 10: Initiating Conversation Trend Analysis: Jack



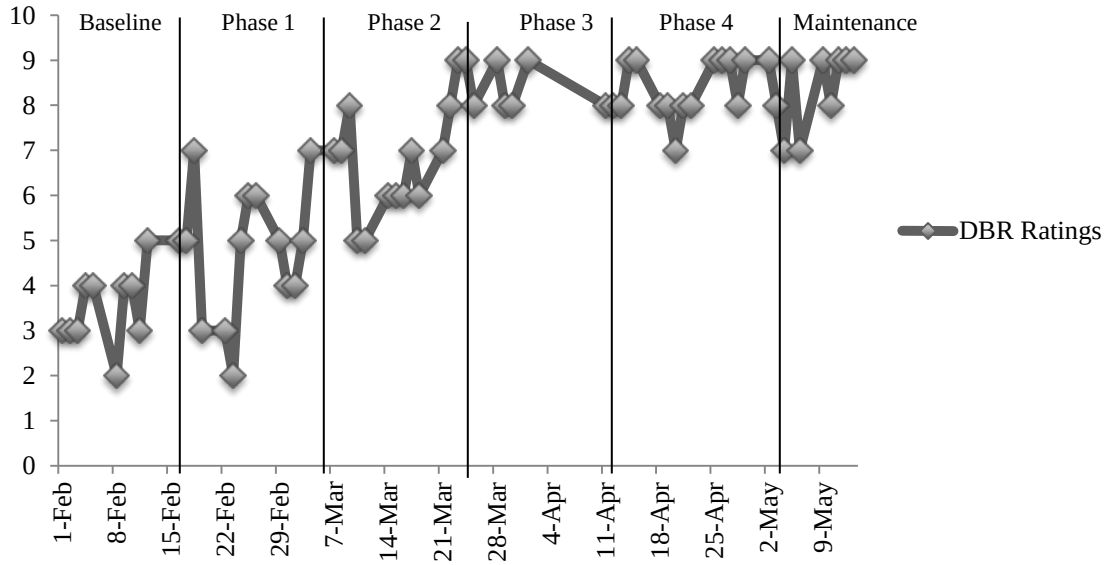
Graph 11: Joining Play Level Analysis



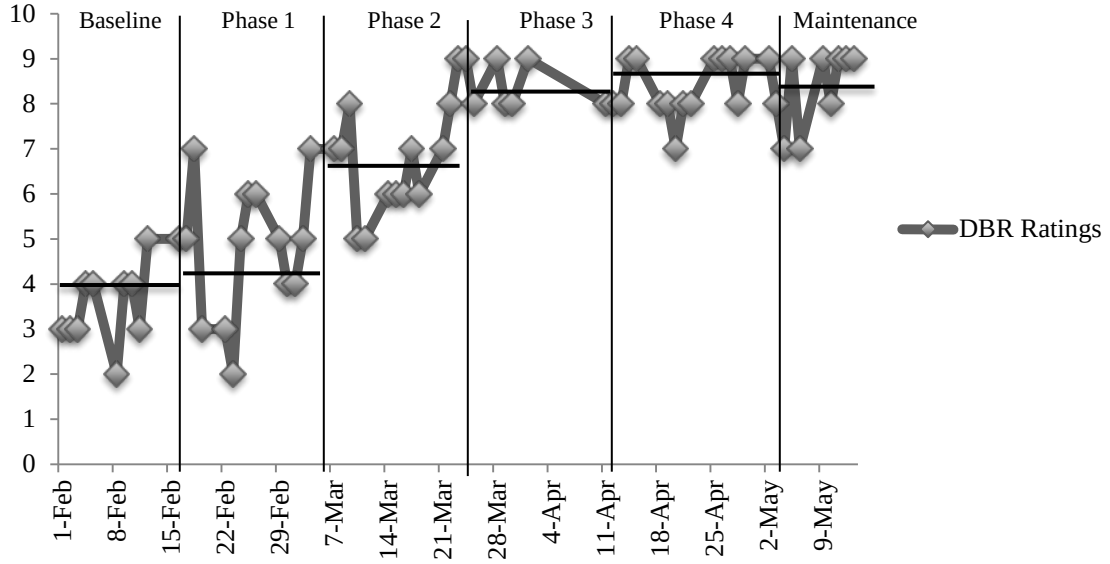
Graph 12: Joining Play Trend Analysis



Graph 13: Teacher Daily Behavior Ratings



Graph 14: Teacher Daily Behavior Ratings Level Analysis



Graph 15: Teacher Daily Behavior Ratings Trend Analysis