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**Effective Social Skills Training Intervention for Young People with Challenging Behaviors:
Implementing a Video Self-Modeling**

by

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Chapter 1: Introduction

Importance of Topic

While working as a teacher, we met hundreds of students presenting various behaviors at school. Some of them show exemplary behaviors, otherwise others present opposite behaviors. Some students get along with peer groups or teachers, while others have trouble with building good relationships.

When kids are grown up, they learn how to interact with others by imitating their parents or their peer groups; how their parents do at home or how their peers do in school. How to manage their feelings in front of others, how to express their feelings in healthy way, or how to behave appropriately relates to social skills. Social skills are expected behaviors that individuals exhibit in a specific circumstance to perform social tasks and improve their interpersonal relationships. (Cook et al., 2008). They are also characterized as criterial behaviors that lead to evaluation of social competence by teachers, parents, and peers (Gresham, 2002). Based on the taxonomy of social skills conducted by Caldarella and Merrell (1997), following literatures distributed social skills into five fields: *peer relations skills*, *self-management skills*, *academic skills*, *compliance skills*, and *assertion skills* (Gresham et al., 2001; Milsom & Glanville, 2010).

Young children who display challenging behavior in early childhood have problems in socialization, school dropout, or poor grades as they grow up (Dunlap et al., 2006). Dunlap et al. summarized the definition of challenging behavior through previous empirical literatures. Children who were not identified soon enough, did not receive proper social services, or received low quality of support presented challenging behaviors which impacted their future school life

negatively. Interventions based on scientific evidence practices such as functional assessment, teaching procedures, and providing environmental alterations were helpful in reducing those challenging behaviors. Steinbrenner et al. (2020) reported that the most frequent target skills for students with a primary disability of autism spectrum disorder (ASD) were communication, social skills, and challenging behaviors. Jang et al. (2011) revealed the relationship between the symptom severity of ASD and challenging behavior exhibition. The more severe the disability is, the more challengeable behavior presented. In this paper, I focus on an evidence-based intervention for young people with challenging behaviors regardless of what disability they have.

Background: What is Social Skill Training and Video Modeling Intervention?

Researchers in education constantly reveal that students with disabilities are struggling with building relationships because of their deficit in social skills and with presenting challenging behavior (Riden et al., 2018). Social skill deficit or social competence deficit refers as problematic social competence of students with or at-risk of EBD or ASD. Precedent articles commonly state that students with Emotional/Behavioral Disorder (EBD) who lack social competence experienced negative outcomes, including peer rejection, low academic achievement, or school dropout (Cook et al., 2008; Farmer et al., 1996; Milsom & Glanville, 2010). To improve their lack of social competence, special educators can implement social skill training or social skill interventions.

Social Skill Intervention/Social Skill Training

Social skill intervention (SSI), or social skill training (SST,) is a practice for students with disabilities to cease their misbehaviors by modifying their framework in the area of social interactions, prosocial behavior, and social-cognitive skills (Gresham et al., 2001; Hutchins et al., 2020). There are several techniques, such as role-playing, modeling, or reinforcement to deliver SSIs to students in need (Cumming et al., 2008; Steinbrenner et al., 2020). Researchers have examined and proven the effectiveness of SSI for the last 40 decades. A meta-analysis of 35 studies done by Quinn et al. (1999) figured out that it is expected to be moderately successful for average students with EBD after the SST program. Cook et al. (2004) concluded that SST is an effective intervention when it is implemented to students with EBD in secondary grades by conducting meta-analysis. Clees and Greene (2014) introduced two applications of SST: discriminative stimuli (DS-SST) and peer assisted (PA-SST). They found that discriminative stimuli with the teacher requesting exemplar is effective in compliance, and peer assisted version is warranted for talk-out. Hutchins et al. (2017; 2020) concluded that SSI encourages students with or at-risk for EBD and students with ASD to acquire and perform of social skills through reviewing precedent articles. Ledford et al. (2018) found that prompting and SSTs were the most commonly and frequently used methods for students with ASD through reviewing 113 articles.

Video Modeling

Video Modeling (VM) is introduced across the several articles as a method of teaching social skills (Baker et al., 2009; Buggey, & Ogle, 2012; Goodwyn et al., 2013; Haydon et al., 2017). It is also widely used to teach communication skills and changing interfering behaviors (Steinbrenner et al., 2020). This intervention is introduced as video-based intervention, evidence-

based intervention, technology-based intervention, and strength-based educational programming in other studies (Bellini & McConnell, 2010; Cumming et al., 2008; Goodwyn, et al., 2013; Seok et al., 2018). Fitzpatrick and Knowlton (2009) explained evidence-based intervention by using four types of self-direction strategies and self-monitoring strategy is like video modeling. In addition, there are many variations of VM: *video modeling others as model (VMO or VOM)*, *video self-monitoring (VSM)*, *video feedback (VF)*, *in vivo video modeling*, and *point-of-view video modeling (POV)*.

An enormous number of previous articles proved that VM is effective in teaching skills to students with or without disabilities. Although they covered all ranges of disability, most were conducted on students with ASD (Schaeffer et al., 2016). Recently, many researchers assumed that it might be effective for students with EBD. In the early decades, researchers investigated its effectiveness with elementary settings. Later, the interest toward effectiveness moves to students with EBD in the secondary setting (Buggey & Ogle, 2012; Seok, et al., 2018).

Baker et al. (2009) reviewed 16 studies from 1970s to 2000s which used video modeling for students with EBD who exhibited disruptive behavior in the classroom. The researchers calculated Percentage of Non-overlapping Data (PND) for each study except for the five of 16. The studies were classified into increasing peer interaction, increasing on-task behaviors, and decreasing inappropriate behaviors. All participants showed at least some improvement in their target behavior based one of the three categories, with congruence of the implications of previous articles.

Cumming et al. (2008) compared the effectiveness of traditional social skill interventions to that of multimedia combined social skill interventions in middle school and found that both results of social skill interventions are statistically significant. The researchers concluded that student-generated multimedia SSIs is a successful intervention for students to acquire social skills.

Baker (2010) analyzed 14 studies and highlighted that using video modeling with students with EBD is valuable despite of several gaps. Effectiveness was judged by using Percentage of Non-overlapping Data (PND). The researcher reorganized studies into three groups—increasing peer relationships, decreasing inappropriate behavior, and increasing on-task behaviors. What the researcher found was moderate effectiveness to decrease inappropriate peer interactions, moderate effectiveness to decrease inappropriate behavior such as aggression, or fighting. Ultimately there was a result of 100% of the PND in compliance, which focused on increasing on-task behaviors.

Seok et al. (2018) claimed that video modeling is a significant evidence-based technique for students with EBD after reviewing eight precedent studies with the standards of the CEC and quality indicators.

VM is commonly described as a technique which an eligible participant watching a short video clip using current technology devices such as smart phones, tablets, or computers. The process of VM is roughly five stages: (a) identifying target behavior, (b) setting for the instruction, (c) making the video, (d) watching the video, (e) monitoring. Before intervention, the very first step is deciding a “target behavior.” It could be an increase in appropriate interaction, a decrease in inappropriate behavior, or an increase in on-task behavior. Then, target behavior is

broken down into several specific skills, and the setting where the SST takes place, is determined. Video scenario might be developed for the participants and several practices as rehearsal can be provided in this step. The third step is making a video. The participant performing the target behavior is recorded with a device such as an iPad or smart phone and then the teacher or another implementer trims the video. Finally, the participant will watch the final version of the video including a performance of targeted behavior during the intervention phase alone or under the supervision of the observer (Goodwyn et al., 2013; Graetz et al., 2006; Hitchcock et al., 2003; Haydon et al., 2017; Schaeffer et al., 2016).

In the 1960s, Bandura's social learning theory, and in the late 1950s Skinner's operational behaviorism form a backbone of Video Self-Modeling (VSM) intervention. A majority of articles commonly stated that the very first report of employing a VSM in an educational setting is the research done by Creer and Miklich in 1970 (Bellini & Akullian, 2007; Buggie & Ogle, 2012; Clare et al., 2000; Hitchcock et al., 2003). For this paper, VSM is defined as a process that a student observes a short, edited videotape, about 5 minutes in length, of him/herself depicting target behavior.

As it is explained in former paragraphs, an appropriate behavior could be rehearsed before taking a videoclip. As a sub-form of VM, VSM is also successful method for increasing skills acquisition, improvement of attention span, or enhancement of skills performance to students with EBD or ASD (Bellini & McConnell, 2010; Buggie & Olge, 2012). Hitchcock et al. (2003) reviewed 18 studies which used VSM and proved that VSM intervention is beneficial when dealing disruptive behavior, compliance, language response, peer relationship, or adaptive behaviors in the whole sort of school settings. Graetz et al. (2006) found that

students: (a) who are visual learners, (b) who have trouble with social interactions, (c) who need an innovative learning environment, or (d) who are motivated by watching television, are eligible for VSM intervention.

The fundamental process of video feedback (VF) is the same as VSM except for evaluating the appropriateness of behaviors on their own (Embregts, 2000; 2003; Goodwyn et al., 2013; Kern, 2012; Sibley et al., 2012). Self-evaluation is the most discriminative characteristic compared to the others. Contrary to VSM, the implementer does not edit or crop the video clip. The video is recorded as it is, during the baseline data observation phase. The facilitator gives the participant time to do self-evaluation during the intervention phase, pausing the video clip several times whenever the participant engages in either proper or improper behavior.

There are various ways to utilize this intervention. Some research applied video modeling with tangible reinforcements or positive feedback from implementer or the teacher (Embregts, 2000; Kern, 2012; Mason et al., 2016). Token, reward, or praise were given to the participants whenever they showed desirable behavior or chose the right answer. Other researchers use video-based intervention as one stage of a packet. Murry (2018) used VSM with an e-book to teach social skills to students with EBD in a rural setting. Through the case study conducted to three ninth-grade students with EBD, the researcher concluded that the intervention package worked in that the participants. Mahoney (2020) proposed video modeling, along with role-playing, as an evidence-based practice which can be implemented within multi-tiered system of support in the secondary education.

Research Question

What I want to find from literature review is:

1. Is the Video Self-Modeling intervention effective in reducing challenging behaviors in young people as a method of social skills training?

Focus of Paper

Chapter 1 provides a description of social skills intervention and video modeling intervention. Chapter 2 reviews four meta-analysis and nine experimental design studies investigating young people who display disruptive behaviors in the classroom. Chapter 3 summarizes and concludes findings across the articles.

Articles, literatures, and peer-reviewed journals were found in three steps. First, I used the Educational Resource Information Center (ERIC), PsycINFO, Teacher Reference Center including the key words: *Video self-modeling, video feedback, autism, emotional/behavioral disorder*. Next, I used the Google Scholar to find articles under the keywords: *social skills training, social skills intervention, disruptive behavior, ADHD, emotional disturbance, challenging behavior, etc*. Finally, I looked up the reference lists of the articles. Especially, I limited the search for Chapter 2 within two decades, from 2000 to 2020.

Glossary

Challenging Behavior is an umbrella term used to describe a range of behaviors “which may either be harmful to the individual, challenging for cares and care staff (e.g., non-compliance, persistent screaming, overactivity), and/or objectionable to the public (Emerson & Einfeld, 2011, p. 29).

Social Skills Training/Social Skills Intervention is “group or individual instruction designed to teach learners ways to appropriately and successfully participate in their interactions with others” (Emerson & Einfeld, 2011, p. 29).

Video Modeling is “a video-recorded demonstration of the targeted behavior or skills shown to the learner to assist learning in or engaging in a desired behavior or skills” (Emerson & Einfeld, 2011, p. 29).

Video Self-Modeling is the technique that the participant models appropriate behaviors in the video (Bellini & Akullian, 2007; Clinton, 2016; Losinski et al., 2016; Mason et al., 2016; Murry, 2018).

Video Feedback is the intervention makes the student watch video of himself and evaluate “the appropriateness of behavior” in the clip with the evaluation sheet (Sibley et al., 2012).

Chapter 2. Literature Review

Scope of Review

The purpose of this paper was to investigate the effectiveness of VSM intervention as a method of SST for young people with challenging behaviors with various disabilities through reviewing precedent articles. I focused on participants who are from age 10 to 24 from the articles according to the norm of the World Health Organization (WHO). I included adolescents with emotional/behavioral disorder (EBD), attention deficit/hyperactivity disorder (ADHD), oppositional defiant disorder (ODD), and autism spectrum disorder (ASD) for the eligible disabilities. I included video feedback intervention in the range of VSM, as well.

At first glance, I reviewed meta-analysis with video self-modeling intervention, and then the findings from experimental design studies would be introduced into three sections: improving interactions, decreasing inappropriate behaviors, and increasing academic success.

Table 1*Review of Meta-Analysis in VSM*

Author	Study Design	Participants	Procedure	Findings
Bellini & Akullian (2007)	22 studies	73 participants (children & adolescents) with ASD	Calculating PND scores across social-communication skills, functional skills, & behavioral functioning	<i>M PND</i> 80% Effective intervention for addressing three categories. Promote skills acquisition.
Losinski, Wiseman, White, & Balluch (2016)	12 studies	45 participants with EBD age from 7.7 to 17 years.	Calculating PND, Tau-U, SMD among Video-based interventions Quality indicators	88% of the participants said video-based intervention is effective. All studies did not meet the QI of the CEC (Council for Exceptional Children) standards.
Clinton (2016)	19 studies	88 participants School-aged students with EBD	Calculating PND for effectiveness.	56% of the studies: strong to moderate effect size 43%: questionable or unreliable
Mason, Davis, Ayres, Davis, & Mason (2016)	14 studies utilizing VSM.	50 participants with ASD, ID, or EBD in several educational settings	Improvement Rate Difference (IRD) calculated Omnibus ES	Effective to increase social skills or decrease frequency of challenging behaviors.

As a subcategory of VM, VSM is also a credible model to intervene disruptive behaviors. The researchers have drawn the point using overlapping precursor articles. I found four meta-analyses which contained VSM as an intervention to correct disruptive behaviors done by students with disabilities. Common finding from meta-analysis was that execution of VSM intervention to students showing undesirable behaviors at school regardless of disabilities.

Bellini and Akullian (2007) conducted a meta-analysis with 22 studies from the 1980s to the 2000s with adolescents and children with ASD to synthesize and inspect outcomes of existing those studies. The studies were organized into three categories: social communication skills (play behavior, conversation skills), functional skills (self-help skills, buying skills), and

behavioral skills (off-task behavior, prosocial behavior). The researchers calculated each *PND* score and compared figures. The overall average *PND* ($n=22$) score was measured at 80% from a range of 29 to 100%. This figure indicated a moderate effectiveness of VSM interventions across the given studies.

Among 22 studies, 15 studies used VM, and the other seven studies used VSM. The researchers compared the differences; there were moderate intervention effects and moderate maintenance effects in both VM and VSM. When it came to generation effects, moderate effect size was found for VM ($n=5$, $M PND=88\%$, range 22-100%), while smaller effect size was found for VSM ($n=3$, $M PND=65\%$, range 25-94%). However, caution must be taken in interpretation because of the small number of studies.

Looking at the effectiveness of each category, functional skills had the highest intervention effect at 89% of the mean *PND* ($n=8$, range 43-100%), followed by social-communication skills at 77% ($n=15$, range 29-98%), and then behavioral skills at 76% ($n=3$, range 42-95%).

They concluded that video modeling and VSM interventions are both valuable to initiate social communication skills, functional skills, and behavioral skills to children and adolescents with ASD, even though some target skills have small number of studies. Along with foregone research, the acquired skills also kept after the intervention. Findings also proposed that VM and VSM had similar power of treatment.

Losinski et al. (2016) inspected a meta-analysis of 12 studies that conducted VM as an intervention for challenging behaviors range from 1970s to 2010s and evaluated whether it is an effective evidence-based practice for students with EBD by using the Council for Exceptional

Children's (CEC) quality indicators. They compared efficacy of three forms of VM interventions: video modeling others as model, (VOM or VMO), video self-modeling (VSM), and video feedback (VF). They defined challengeable behavior as disruptive behavior, off-task behavior, aggression, and self-injuries in educational settings.

Two of the 12 studies implemented VOM, three implemented VSM, and seven implemented VF. The range of age varied but one article was an average age of 7.7, another article was non-specified, and others were adolescents ages 10 to 17. They calculated *PND*, *Tau-U*, and *SMD* (standard mean difference) to analyze the effectiveness of each single study. Synthesizing all figures together, 88% ($n=40$) of the participants turned out being receive help from the video-based interventions.

What they found is that the calculated effectiveness of all video-based intervention was overall *PND* of 75%, suggesting that VM may be a successful intervention for reducing problematic behaviors for students with EBD. When focused on each variation of the video-based intervention, VSM had the highest effect size ($PND=84\%$; $Tau-U=.89$; and $SMD=4.769$) despite the small number of cases ($n=5$), followed by VOM ($n=6$, $PND= 81\%$; $Tau-U=.90$; and $SMD=3.867$), and VF had the lowest effect size ($PND= 79\%$; $Tau-U= .79$; and $SMD= 2.045$) despite of the biggest number of studies.

The researchers inspected whether all studies met the quality indicators (QI) set by CEC (2014) or not. To prove as an evidence-based practice, each study must meet all eight domains of CEC standards. However, all studies did not prove imperativeness because each study did not

supply details in description of the intervention agents, description of qualification of those agents, or implementation fidelity.

They summarized that video-based intervention could be an influential tool to teach a variety of skills to students with EBD even though those studies did not prove to be an evidence-based practice. More systematic replications are needed before consideration of earning the status of evidence-based practice in reducing challenging behaviors.

Clinton (2016) examined a meta-analysis of 19 studies between 1970s and 2010s which administered the video modeling (VM) method for children and adolescents suffering from EBD. The purpose of this meta-analysis was to improve the potential utility of using VM intervention to improve social behaviors.

Two variations of VM (VMO and VSM) were compared to judge effectiveness. Paired components included role-playing, self-monitoring, social skills instruction, and teacher feedback in both interventions. The dependent variables across the studies were decreasing inappropriate behaviors (disruptive behaviors, aggression, talk outs, negative interactions) and increasing appropriate behaviors (on-task, compliance, social skills knowledges, pro-social behaviors, positive classroom behavior, hand-raising response, positive interaction, participatory behaviors).

Three of 19 studies used VMO intervention for 28 students from 10 to 17 years old while the remaining 16 studies used VSM for 60 students aging from 5 to 18 years. The researcher involved video modeling with feedback in the VSM. Looking at the measured figure of *PND*, two studies with VMO showed 82% and 100%. One cannot calculate *PND*, but its pre-t-test result (3.8) rose steeply to 12.8 at the post-t-test.

Fourteen studies with VSM showed the figures range from 14% to 100%, and two were not able to calculate PND. One study described that the frequency of inappropriate behaviors decreased in the post-test compared to the pre-test, and the other study reported that the median of on-task frequency rose from 28% to 58%.

In a summary of the 19 studies, 56% proved their effectiveness or treatment as strong or moderate, while 43% indicated questionable or unreliable effectiveness. It seemed to be executing VMO intervention more effective than those of VSM; however, the implementer should be cautious of interpreting the result because of the small number of studies with VMO. Clinton (2016) supposed that VM is a strong to moderate promising intervention for students with EBD to changing their rebellious behaviors in the classrooms.

Mason et al. (2016) investigated 14 articles which used a VSM intervention to decrease the chance of inappropriate behaviors from students with various setting and various disabilities from 1990s to 2010s. Researchers wanted to figure out the value of VSM and which one is more successful comparing VSM implemented only to VSM with reinforcements. Target outcomes were coded as one of four categories: academic, behavior, independent living, and communication. VSM was separated into two types: feedforward (FF) and positive-self review (PSR).

Three of 14 studies ($n=10$) were about students with EBD in elementary and secondary school, and eight of 14 studies ($n=32$) were about students with ASD in preschool, elementary, secondary, and postsecondary school. Looking at the *Improvement Rate Difference (IRD)* effect size, *IRD* size of secondary level and postsecondary level were similarly high at .85 [.76, .94] and .86 [.73., .99]. *IRD* size of EBD ($n=10$) was .81 [.75, .88] and that of ASD ($n=32$) was

.88[.85, .91], showing both substantial enormous sizes. In terms of comparison among the forms of VSM, implementing alone had the highest *IRD* effect size at .86[.83, .89] than implementing as a packet or with reinforcements.

Mason et al. (2016) concluded that utilizing VSM for students with EBD and ASD was valuable to subside challenging behaviors in any educational settings.

Findings of Experimental Designs in VSM

I classified nine articles into three categories following the trends of earlier articles: peer relationships, academic success, and inappropriate behaviors.

Table 2

VSM Intervention to Improve Peer Relationships

Author	Study Design	Participants	Method (VSM/ VF)	Findings
Embregts (2000)	Experimental Design (Withdrawal design)	6 youths with ADHD	VF	Decrease inappropriate interactions. (Baseline 8,9-22.1%, Intervention 1.4-13.0%)
Kern (2012)	Experimental Design (Single Case)	1 adolescent with Asperger Syndrome	VF with reinforcement	Decrease inappropriate interactions & noises. (24.8% to 6%)
Detar (2013)	Experimental Design (Single Case)	3 college students with ASD	VF	Increase question-asking initiation.

Three studies focused on peer interactions (Detar, 2013; Embregts, 2000; Kern, 2012).

Improving peer relationships include decreasing inappropriate interactions, inappropriate behavior such as making noises during communication and increasing social initiation. All three studies used VF for students with ASD.

Embregts (2000) experimented the effectiveness of video feedback and self-management as a packet of intervention for reducing inappropriate interactions shown by six youths whose age ranged from 14 to 18 with primary disability of ADHD. The target behaviors across the participants were instances of inappropriate interactions such as reacting violently, poor impulse control during interactions, or provocative gestures.

The researcher exercised self-management as a strategy of problem-solving and video recording as a method of establishing social behaviors. As a result, the video recording and self-evaluation were set as a discrete step of algorithm of intervention and followed the process thoroughly. The phase described into three phases: pretraining, intervention, and maintenance (Embregts, 2000).

During the pretraining session, the participants watched several videos and distributed proper behaviors to inappropriate ones. Once the participants distinguished 80% of the appropriate behaviors, the next session commenced. If not, the trainer aided them to reach the level of 80%. While in the intervention phase, they watched the self-recorded video and they had to decide whether their behavior was correct or incorrect in that situation when the trainer gave them intervals. Then they reported their behavior with a given evaluation sheet. Whenever they classified behaviors in a right way, they received a point as reinforcement. They exchanged the points for a reward after earning 15 points. For the maintenance session, video feedback and self-management were terminated. This session began when the targeted behavior decreased to 50% frequency. The participants were encouraged to exhibit attained social skills without individual

sessions. They earned a credit when avoided engaging in undesirable behavior all day and exchanged for a tangible reward reaching 20 points (Embregts, 2000).

The given graphics stated that the six participants showed the decreasing flow of inappropriate behaviors. They recorded from 8.9% to 22.1% of mean frequency of target behavior during the baseline. Those figures reduced from 1.4% to 13.0% given the period of intervention. Three of them stayed their frequency of inappropriate behaviors lower than baseline data at the maintenance (8.9% to 1.9%, 18.9% to 8.2%, and 22.1% to 7.4%). The researcher did not gain maintenance data for the others (Embregts, 2000).

The results followed the trace of earlier research which proved the effectiveness of video modeling, even though there were some partial differences in the condition of participants (Embregts, 2000).

Kern (2012) compared the effectiveness of implementing video feedback to in vivo self-monitoring intervention to a 14-year-old student with Asperger syndrome. Observation data were collected on inappropriate social interactions (speaking in a louder volume than others, interruption, negative remarks, etc.), inappropriate noises (nonword sounds, self-talk), and right interaction (waiting quietly, contextually appropriate manner) when he interacts with teacher, peer, and parents.

The intervention was introduced in two steps. Once the video feedback intervention was done, in vivo self-monitoring intervention was started. The researchers used a reversal design with replication so the set of video feedback and vivo self-monitoring repeated. During baseline, the 14-year-old participant participated in a game with his peer, teacher, or mother without

instruction and his communications with others were recorded. A 15-minute initial training was given to the student on how to use a self-evaluation form and the operational definition of appropriate and inappropriate behaviors before the video feedback session. The trainer modeled three examples of proper interactions and improper behaviors and then watched a self-recorded video. When the video stopped at 15-second intervals, the student was required to assess the appropriateness of each interaction with the self-recording sheet. The student gained credits whenever choosing the right answer and earned credits were exchanged into tangible rewards (Kern, 2012).

After visualizing the data, the researcher found that graphs show decreasing patterns in inappropriate behaviors (interactions and noises), while they described increasing flow in the frequency of proper behaviors. For example, the baseline data of inappropriate interactions with a teacher was a mean of 24.8% (range of 6.66 to 46.66%). This figure dropped slightly to 20.59% (range, 3.33-57.4%) after the video feedback session, dropped again significantly to 10.07% after the video self-monitoring phase, and stayed at low level around 6% after two sets of intervention completed (Kern, 2012).

In summary, video feedback and in vivo self-monitoring were effective to reduce undesirable social behaviors and to start desirable social behaviors for interactions, although in vivo self-monitoring is more powerful method than video feedback (Kern, 2012).

Detar (2013) explored three college students with ASD who suffer from adequate social interaction and social conversation due to lack of skills. The researcher pointed out that most research about this issue were conducted on children and adolescents, yet college students with ASD also need the same support expanded from secondary setting. The purpose was examining

the effectiveness of video feedback intervention to teaching social initiation, especially question-asking initiation, to improve their interrelationship.

The result implies that video feedback intervention is a successful intervention to train question-asking initiation to young adults with ASD, with having extra benefits in improvement of general conversation skills (Detar, 2013).

Table 3

VSM Intervention to Decrease Inappropriate Behavior

Author	Study Design	Participants	Method (VSM/ VF)	Findings
Embregts (2003)	Experimental Design (Withdrawal design)	Six youths with ODD (Oppositional Defiant Disorder)	VF	Decrease externalizing behavior problems. (from 10.38% to 1.81%) Increase desirable target behavior with internalizing problems. (from 40.58% to 53.9%)
Graetz, Mastropieri, & Scruggs (2006)	Experimental Design (Single Case)	One adolescent with Autism	VSM with feedback	Decrease handwringing, arm-flailing.
Baker (2010)	Experimental Design	Two secondary culturally & linguistically diverse students with EBD	VSM	<i>PND</i> 100% (Laughing obnoxiously, profanity)
Sibley, Pelham, Mazur, Gnagy, Ross, & Kuriyan (2012)	Experimental Design (Single Case)	One adolescent with ADHD in summer program	VF	Improvement in aversive social behavior. (frequency 5.33 to 4.25)

Four studies focused on decreasing inappropriate behaviors that include wide range of aversive social behaviors affecting their relationships negatively such as laughing out, aggression, teasing, externalizing or internalizing behavior problems, self-injurious (Baker, 2010; Embregts, 2003; Graetz et al., 2006; Sibley et al., 2012).

Embregts (2003) examined the effectiveness of video-feedback and self-management for six adolescents, ranging in age from 13.11 years old to 15.7 years old, with Oppositional Defiant Disorder in a residential setting. Three of them related to externalizing behavior problems, so their target behaviors included offensive responses, verbal aggression, and insulting. The other three related to internalizing behavior problems, and target behaviors included unresponsive to social interaction, unassertive behaviors, and avoided talking.

Data were collected in a multiple baseline design, and he employed the same process what he used before (Embregts, 2000; 2002). Once the participants should reach 90% of criteria to discriminate proper behaviors to improper ones during pre-training session, intervention with video-monitoring and feedback sessions were initiated. Participants could exchange equivalent credits for a reward when they earned 15 points (Embregts, 2003).

The three participants with externalizing behavior problems also showed dramatic dropped figures in the mean percentage (1.81%, range 0.74-6.46%) of inappropriate behaviors compared to baseline data (10.38%, range 4.29-15.89%). Only one stayed at the lower level (0.53%), and follow-up data from two cannot be gathered. The other three participants with internalizing behavior problems showed an increase in mean percentage (53.90%, range of 42.05% to 63.72%) of appropriate behaviors compared to baseline data (40.58%, range of 32.06% to 46.09%). Two of them could not keep an elevated level while only one did (58.06%) (Embregts, 2003).

The researcher analyzed statistical differences between phases of the study by conducting a time-series analysis (Oud et al., 1993). Participants with externalizing behaviors reported significant decreases in the frequency of inappropriate target behaviors from baseline to

intervention ($F(1,2)=60.83, p=.03$). The other participants with internalizing behaviors showed increased frequency of appropriate target behaviors during the same phases, but it was not statistically significant ($F(1,2)=13.92, p=.07$) (Embregts, 2003).

Overall, the findings strengthened the power of training package involving video feedback and self-management. In this study, it seemed that video feedback is more effective to students who display externalizing behaviors because researcher failed to prove statistically significant effect with students exhibiting internalizing behaviors (Embregts, 2003).

Graetz et al. (2006) described an experiment implementing VSM to a 13-year-old boy with autism in the middle school. The boy behaved inappropriately as a result of anxiety, limited communication skills, and sensory issues. His special education teacher reported that social story intervention was not successful in intervening his disruptive behaviors as he was a visual learner. The purpose of this experiment was decreasing his handwringing and arm-flailing, which were precursor behaviors for agitation.

For 4 weeks, his behaviors in the classroom were videotaped and the facilitator edited it into two clips—one is him performing in a desirable behavior, while the other is him performing in inappropriate behavior. A 1-minute-video clip with desirable behaviors was named ‘Way to Go,’ and another 1-minute clip with undesirable behaviors was titled as ‘Oh No.’ The researcher showed him the ‘Oh No’ video first and provided verbal feedback about his misbehavior. After 1 minute, the researcher replaced the video with ‘Way to Go’ and then the student watched the new one. The researcher provided him with verbal details about his correct behaviors. The student went back to the general classroom after watching two videos. The researchers did not give us specific figures about the participant; however, the journal illustrates that the frequency

of inappropriate behavior was decreased, and the teacher and the parent used the videotape as a reference to prevent expected agitation (Graetz et al., 2006).

The researchers concluded that VSM is a successful intervention for students who are visual learners and stimulated by watching videos. They supposed that if the VSM is implemented with augmentative strategies, the method would be more effective (Graetz et al., 2006).

Baker (2010) researched four participants with EBD in secondary school aging from 15 to 18 years. Two of the four participant, who are 18 years old and 15 years old, showed inappropriate behavior (laughing obnoxiously out and using profanity) so those behaviors were set as target.

Videotaping without any script was occurred during their school days. Unlike other experiments, in this study the investigator did not edit the video. Instead, a desirable behavior regarding each target behavior was requested before recording. Also, the researcher gathered generalization data in a different setting at every phase to confirm the efficacy of the intervention (Baker, 2010).

While collecting baseline data, the researcher observed two participants in a general education classroom every other day for 14 weeks for 20-30 minutes. The researcher recorded an occurrence of target behaviors. A multiple baseline design was used across the participants and the percentage of nonoverlapping data (*PND*) statistic was estimated to measure the effectiveness. During the intervention period, the participants watched the individual video clip describing correct behavior two to three times a week at the investigator's office. At the end of each session, the primary investigator only gave praise after watching the clip (Baker, 2010).

The student with laughing obnoxiously reported performance at the mean of 19 times (range, 17-23) during the baseline. This high frequency was decreased to the mean of 5 (range, 3-10) given the intervention period, stayed at the same level (range, 1-9), and finally continued declining pattern ranging from 1 to 2 at the maintenance phase. The other student with profanity performed at the mean of 12 occurrence (range, 7-21) unpredictably. This performance declined gradually during the intervention session ($M=3$, range 0-6), and none of the performance during the final session (Baker, 2010).

When calculating the *PND* treatment with both participants, they reported 100% of mean *PND*, manifesting that VSM was highly effective in decreasing the incidence of laughing obnoxiously and using profanity (Baker, 2010).

Sibley et al. (2012) conducted a single case experimental design with a 16-year-old adolescent having an ADHD during an 8-week summer program. The participant showed aversive social behaviors such as self-stimulation or making off-topic comments during STP-A, summer program.

The researchers collected 9 days of baseline data in his group meeting. During the group meeting, the participant was recorded on how he communicated with others. The participant watched a self-recorded video in every video-feedback session. There were 10, 30-second length of intervals in every video. Whenever, the facilitator pauses a video, the participant should evaluate properness of his behavior. Adolescent-Counselor agreement was calculated to judge the congruency. Once he matches with the gold standard set by the counselor, he received a token which he could trade for a low-value prize at the end of the week. Negative behavior

frequency was tracked to measure the benefits, with comparison to control group (Sibley et al., 2012).

Looking at what they found, the frequency of intervals of inappropriate behavior given the 5-minute video rise steady during the baseline phase ($M=5.33$, range 1-9). After applying seven interventions, the frequency declined except for once, and finally hit the zero point on 33-day ($M=3.57$, range 0-9). The number of targeting behavior rose steeply during the four consecutive post-interventions ($M=4.25$, range 2-6). When it comes to agreement during six session, ratio of agreed-on intervals was range of 60% to 90%. At the last session, finally, the counselor and the participant corresponded with coded inappropriate behavior (Sibley et al., 2012).

The findings from this study advocates the first influence of video-feedback intervention to alleviate social impairment of teenagers with ADHD, with showing gradual reduction in typical aversive behavior under the situation (Sibley et al., 2012).

Table 4*VSM Intervention to Improve Academic Success*

Author	Study Design	Participants	Method (VSM/ VF)	Findings
Clare, Jenson, Kehle, & Bray (2000)	Experimental Design	Three elementary students with serious emotional disorder.	VSM	Increased mean percentage of on-task behavior. (33% to 87%)
Baker (2010)	Experimental Design	Two secondary culturally & linguistically diverse students with EBD	VSM	<i>PND</i> 100% (Requesting help)
Coyle & Cole (2004)	Single-subject Design (Withdrawal design)	Three elementary students with Autism	VSM + self-monitoring strategy	Time sampling record declined. (25.5 second to 1)

Three studies focused on improvement of academic success (Baker, 2010; Clare et al., 2000). Increasing on-task behaviors, compliance, and requesting help are included in the category of academic success.

Clare et al. (2000) employed VSM to three elementary students with serious emotional disorder from 9 to 11 years old who showed off-task during the class. They believed improving students' "on-task behaviors" resulted in enhancing academic functioning. A multiple baseline data across the participants was used to prove the effectiveness of treatment and the on-task behavior of same gender peers was observed as comparison data.

Before implementing the VSM, the mean percentage of students' on-task intervals were 33%. The three students watched five footages in a 5-minute length of themselves engaging in assigned task twice a week for 3 weeks. During the 10 interventions, the mean of on-task intervals rose steeply to 87% in despite of data fluctuation. Two of follow-up data were gathered

after the intervention was terminated. Two of three students kept the target behavior, showing similar level of around 80% during the follow-up session, and the researchers could not get results from the other student because of the transfer (Clare et al., 2000).

This study showed the rapid shift of behavior as a result of self-modeling treatment in accordance with precedent articles. The participants stayed at advanced level of on-task behavior (Clare et al., 2000).

Baker (2010) concluded that using VSM works for increasing the amount of requesting help after researching four participants with EBD in secondary school aging from 15 to 18 years. Two of four participants, who are both 17 years old, showed low occurrence of requesting help.

Observation baseline data for two participants were gathered every other day during 8 weeks in the general education classroom for 20-30 minutes. A frequency of targeted behavior was counted. The researcher conducted a multiple baseline design was used across the participants and the percentage of nonoverlapping data (*PND*) statistic to judge the treatment.

Both students displayed low incidence of requesting help with the mean occurrence of 1 (range, 0-1) and 3 (range, 1-4), respectively. This performance increased by the mean of 9 (range, 4-12) and 8 (range, 7-10) during the session implementing VSM interventions. After withdrawn the intervention, they remained at the high level.

Both generalization data showed an upward pattern in requesting help and their treatment *PND* figure recorded the mean of 100%, implying that VSM was effective in increasing the event of requesting help.

Coyle and Cole (2004) employed VSM with self-monitoring strategy to three elementary students with autism, showing off-tasks. The frequency of off-task behavior was recorded with

using 30-second intervals of time-sampling. The researchers used withdrawal design, which means the experiment goes back to gain another baseline data after the first intervention was given. Their behaviors were recorded, and the desired behavior is edited into 3-minute long before the intervention session started. The intervention phase starts with self-management training. When each participant watches the clip, self-record material which they are required to mark the “working” picture was given. The next phase is classroom self-monitoring where the participant received only a “visual reminder” of expected behaviors. Their off-task behavior also recorded. New baseline data were obtained after two previous steps were completed. Second intervention and intervention follow-up session were performed.

Of the three participants, an 11.7-year-old student recorded off-task behavior with a mean of 25.5 second ($SD=4.9$) at first. Ten data fluctuates from 17 to 30 seconds during the first baseline session. These figures dramatically dropped to a mean of 1.6 second ($SD= 2.7$, range =11) during the consecutive intervention session. Off-task figures rose by a mean of 14.5 ($SD=6.8$, range=26) and recorded a mean of 14.2 ($SD=5.9$), respectively, during the second baseline session and baseline follow-up session. After intervention was reintroduced, the target behavior fell near zero level. The mean of off-task behavior recorded one ($SD=1$, range=2) (Coyle & Cole, 2004).

The other two participants showed similar patterns. This study shows immediate large fall in off-task behavior when implementing an intervention (Coyle & Cole, 2004).

Chapter 3: Conclusions and Recommendations

This purpose of this research was to examine the effectiveness of Video Self-Modeling (VSM) in reducing disruptive behaviors in young people. In Chapter 1, I described the definition of social skills training, video modeling, and provided a brief history of video self-modeling and precursor reviews done with video modeling intervention. And then I explained the subcategories of video modeling and characteristics of video self-modeling and video feedback. Four meta-analysis and nine articles were reviewed in Chapter 2 to examine the feasibility of implementing VSM as a method of Social Skills Training to students with disruptive behaviors in the educational settings. Chapter 3 depicts the conclusion across the research I found, recommendation for further research, and implications for current practice as a professional.

Conclusion

The overall of four meta-analyses depicted that VSM is an effective way to teach social skills to school-age students displaying undesirable behaviors due to their disability. Nine experimental designed articles which facilitated VSM, or video feedback (VF) suggested self-modeling treatment with or without feedback strategy is a credible and strong intervention in improving peer relationships, reducing inappropriateness, and increasing academic success.

Improving Peer Relationships

Embregts (2000), Kern (2012), and Detar (2013) employed a VF intervention to intervene inadequate social interactions between students with ASD and their peers. Three articles showed drastic effect in improving peer interaction.

Embregts (2000) performed video feedback and self-management strategies as a discrete stage in an intervention and proved effectiveness in reducing inappropriate interactions. This research concluded that the video feedback and self-management process played a role as ‘positive reinforcement.’

Kern (2012) carried out video feedback and in vivo self-monitoring to halt disturbing behaviors for interactions such as noises to students with ASD. This study showed that improvement in decreasing inappropriate behaviors when facilitating video feedback and in vivo self-monitoring.

Detar (2013) experimented with three college students diagnosed with ASD to teach question-asking initiations in their communications. The experiment demonstrated that effectiveness in increasing the frequency of question-asking initiations.

Decreasing Inappropriate Behaviors

Baker (2010), Embregts (2003) Graetz et al. (2006), and Sibley et al. (2012) performed VSM and VF to secondary students with autism spectrum disorder (ASD) and emotional and behavioral disorder (EBD) who showed inappropriate behaviors such as aggression or profanity. Four articles demonstrated moderate to strong effect in diminishing the occurrence of improper behaviors.

Embregts (2003) concluded that implementation of VF is more effective to students presenting external behavior problems than those with internalizing behaviors after comparing the result of conducting VF with six adolescents.

Graetz et al. (2006) determined that a visual learner or those who are reinforced by watching television benefits from VSM intervention when teaching relevant social skills after observing a student with ASD. They also inferred that the VSM will work better when an augmentative strategy is addressed with.

Baker (2010) assumed that VSM is a useful intervention to swift students' problematic behaviors into correct ways by observing culturally and linguistic diverse high school students presenting unpleasant laughing and use of profanity.

Sibley et al. (2012) agreed that their findings were consistent with precedent articles in that video feedback intervention might be effective in decreasing aversive behaviors shown by adolescents with similar symptoms after initiation VF to a participant with Attention Deficit/Hyperactivity Disorder (ADHD).

Increasing Academic Success

Baker (2010), Clare et al. (2000), and Coyle and Cole (2004) focused on using VSM intervention with increasing academic success. Three studies illustrated that strong effectiveness in increasing on-task performance, compliance, and requesting help.

Clare et al. (2000) determined that VSM worked significantly and immediately to increase on-task performance to elementary students. Their immediate result was congruent to the previous findings with on-task.

Baker (2010) found that VSM was efficient to increase the incidence of requesting help for students with culturally and linguistically diversity.

Coyle and Cole (2004) suggested that VSM with self-monitoring strategy gives instant result in reducing off-task behavior.

Recommendations for Future Research

While searching for adequate resources, I excluded other articles because they are video modeling others or focused on preschoolers or low-grade elementary school students aging 7 to 9 years old. In other words, there was limitation of finding articles involving adolescents, youths, or video self-modeling, video feedback.

Even though the effectiveness of implementation of VSM is strong and dramatic across the studies, researchers referred limitations and recommendations at the end of each article. For this reason, careful interpretation is required for the readers and VSM facilitators candidates.

As the target behavior was selected one among the several candidates, not all inappropriate behaviors are ceased during the intervention and maintenance phase (Embregts, 2000). Some problematic behaviors are so subtle that they do not track into the system (Sibley et al. 2012).

While Clare et al. (2000) proved that on-task performance was maintained after termination of the intervention for 6-8 weeks, Kern (2012) found that the frequency of aversive behavior did not maintain during generalization phase. In the experiment of Sibley et al. (2012), the result did not continue the reduced levels of inappropriate behavior after terminating the intervention. It draws us the question that how many times of intervention or how long the intervention related to the maintenance with reduction of the target behavior.

Kern (2012) also criticized reduction of disruptive behaviors does not mean development of desirable behaviors, especially to students with autism.

Embregts et al. (2000; 2003) pointed out the ignorance of intensity or magnitude of target behavior when gathering the data because all data were recorded with the frequency given two studies. Embregts indicated the reliability of observer during the intervention sessions and the lack of normative standards.

The procedure of Clare et al. (2000) is distinguished from other literatures by using multiple exemplars in intervention session. They threw a further research under the relationship between the number of videoclips and treatment effects.

In Coyle and Cole's (2004) research, visual prompts were constantly given during the intervention session either in their self-record sheet or cards used in the class self-monitoring session. Providing visual cues or prompts in any way would have a chance to impact the treatment effectiveness for other studies.

Implications for Practice

Working as teachers in the school, we met several students displaying disruptive behaviors regardless of having disability or not. Most of my responsibilities at school, except for developing classroom curriculum, was related to intervening in students' conflicts with peers or encouraging students who were frequently off-task during class. Following the abundant previous research, lack of social skills impacts negatively to students by resulting in poor academic achievement, high peer group rejection, etc.

Most schools already have technology equipment such as computers, monitors, television, and cameras to provide computer-based educational materials. Educators can utilize this equipment to modifying students' undesirable behaviors in the classroom. Most students these days depend on visual materials so we may anticipate immediate and intensive results once implementing VSM.

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