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Efficacy of Video Modeling for Treatment of Selective Mutism in Children

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EFFICACY OF VIDEO MODELING FOR TREATMENT OF SELECTIVE MUTISM IN CHILDREN

by

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Bachelor of Arts
University of South Carolina, 2009

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Submitted in Partial Fulfillment of the Requirements

For the Degree of Master of Speech Pathology in

Speech Pathology

Arnold School of Public Health

University of South Carolina

2011

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ABSTRACT

Selective mutism is an extremely rare socio-pragmatic communication disorder that affects less than 1% of the population. The treatment of selective mutism may be addressed via many different approaches, including drug therapies and behavioral approaches or combinations of both. Self-modeling is a behavioral approach and is similar to that of video modeling. Video modeling treatment is becoming a more popular approach to serve individuals with social and behavioral disorders. Video modeling has been documented to improve social and behavioral deficits in individuals with Autism Spectrum Disorders. Because selective mutism is a rare condition and because the effects of video modeling and video self- modeling treatment are not well-documented, this case study explores the effects of a video modeling and video self-modeling hybrid approach on twin, school-aged females, both with a diagnosis of selective mutism.

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Chapter I Introduction

The American Speech-Language and Hearing Association (ASHA) defines

selective mutism as a disorder that usually occurs during childhood in which a child does

not choose to speak in at least one social setting ("Selective Mutism," 2011). The

American Psychological Association defines selective mutism as a psychological disorder

in which an individual does not speak, in a situation that an individual would normally

speak (DSM-IV-TR). The prevalence of selective mutism is less than 1% of the

population seen in mental health settings ("Selective Mutism," 2011). The initial onset

of selective mutism usually occurs before a child is five years old. Selective mutism has

generally been classified as a psychological disorder by the American Psychological

Association. Selective mutism is diagnosed by a team of professionals. A Speech-

Language Pathologist works in correlation with a pediatrician, psychologist or

psychiatrist to diagnose selective mutism ("Selective Mutism," 2011). Classroom

teachers and parents also play an important role bringing first hand observations of day-

to-day social behaviors. Determining the etiology of selective mutism often cannot be

determined without further evaluation by many professionals. The etiologies often are

a combination of many factors, including but not limited to environmental, genetic,

psychological, social (anxiety), temperamental, and developmental (Cohan, Price, &

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Stein, 2006). Other characteristics that are often present in an individual with a diagnosis of selective mutism are anxiety disorders, excessive shyness, fear of embarrassment, and social isolation and withdrawal ("Selective Mutism," 2011). Other behaviors associated with selective mutism that affect nonverbal aspects of communication are lack of eye contact, limited facial expression, and fidgeting (Selectivemutismfoundation.org). These characteristics are secondary to the verbal communication deficits.

The treatment of selective mutism is within the scope of practice of a Speech-Language Pathologist. Selective mutism is a socio-pragmatic disorder communication disorder (Hungerford, Edwards, & Iantosca, 2003). There are many treatments available to address selective mutism. Among them are drug therapies and behavioral treatment programs such as stimulus fading and shaping ("Selective Mutism," 2011). Video modeling is also a technique used to treat selective mutism.

Video modeling is a treatment that uses videotapes of a targeted behavior to provide a model for one to initially memorize and then imitate.   The imitation can then be generalized and adapted for normal communicative interactions (Hitchcock, Dowrick, & Prater, 2003; Neuman, 2004). Video modeling has gained popularity in the treatment of social and behavioral disorders since the increased availability and accessibility of video recording devices and playback capabilities. There are different types of video modeling. The two main approaches are video modeling and video self-modeling. Both video modeling and video self-modeling have been used in the treatment of social and behavioral interactions with individuals on the Autism Spectrum. Video modeling has

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been used to target behavioral aspects of young children with ASD. Peer modeling videos involve peers or siblings as models in the videos. These peer models have shown increased effectiveness in improving language skills necessary in play and independent living skills (McCoy & Hermansen, 2007). The use of adult models in video modeling treatment has been documented to improve conversational skills with individuals with autism (McCoy & Hermansen, 2007). The success of video modeling and video self modeling with the socio-pragmatic, and behavioral aspects of Autism Spectrum Disorders is well-documented in the field of Speech-Language Pathology, but there is well documented research that has explored the efficacy of video modeling treatment for individuals with selective mutism (McCoy & Hermansen, 2007).

A hybrid approach of video modeling and video self-modeling was implemented in five weekly sessions of individual therapy. Two participants, both with a diagnosis of selective mutism participated in a nine- week study. Initially, during two different sessions, a language sample was collected from each participant. Following the initial collection of language samples, the participants were enrolled in five weeks of video modeling and video self-modeling treatment. At the conclusion of the therapy, two post-treatment language samples were collected from each participant.

The post-treatment language samples were compared with the pre-treatment to determine if there was any increase in a) Type-Token Ratio to determine what types of words the participants were using; b) Mean Length of Utterance to determine the average length of statements; c) total number of utterances; d) frequency of initiation of

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conversation; e) frequency of eye contact during interactions; f) use of greeting; and g)

frequency of not responding to prompts/questions.

Chapter II Participants

The participants were selected from a population of clients at the University of South Carolina Speech and Hearing Research Center. The individuals presented in this study were identical twin African American females. They were 11 years old at the time of this study. They were delivered vaginally at 35 weeks. Twin 1 weighed 4 lbs, 13 ounces and Twin 2 weighed 4 lbs, 3 ounces. Their medical history included frequent colds between birth and age 3 and asthma. They were diagnosed with selective mutism in 2003 at the age of three. The twins, referred to as Twin 1 and Twin 2, also had been diagnosed with other speech and language deficits including articulation disorders and language (receptive and expressive) delays. Upon initiation of this study, they had both worn glasses since early childhood due to astigmatism. They had been enrolled in counseling services since being diagnosed with selective mutism. They began private speech therapy at 3 years old. When they started school at age 5 they began receiving services in the South Carolina Public Schools and received additional services at the University of South Carolina Speech and Hearing Research Center. After enrollment into the SC public school system, psychoeducational testing revealed that they qualified for special education services in an itinerant setting due to learning disabilities. At age 11,

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during the completion of the current study, both participants continued speech-language therapy services in the SC public schools, at the USC Speech and Hearing Research Center, and they were still enrolled in special education services.

When the present study was initiated, Twin 1 and Twin 2 displayed very similar socio-pragmatic deficits. Parents reported that it was typical for them to interact normally with their immediate family (living in the home or spending a lot of time in the home) and close friends. Their teachers reported similar behaviors, stating that they did not initiate conversations with others but spoke only when prompted. Additionally, when responded, they reportedly used brief statements, typically one- to three-word utterances. When initially diagnosed with selective mutism, each child's communication with unfamiliar people was extremely limited, and sometimes, they did not communicate with strangers at all. While their overall communicative tendencies had reportedly improved since they preschoolers, they continued at age 11 to exhibit inappropriate social interactions and overall pragmatic language behaviors when not speaking in a comfortable, familiar setting (home) to immediate family members and close friends. Upon initiation of the study, neither twin used greetings and preferred to wave if a potential conversational partner approached them. They rarely, if ever, initiated greetings; and, on many occasions, they did not respond to greetings. Both participants displayed reduced eye contact. Both twins preferred to use gestures to answer simple questions (head nods or shakes) instead of responding verbally. They used one-word responses or short phrases to respond when presented with a question. Based on the parental reports, they interacted normally with their immediate family

(living in the home). Twin 1 was described as the more communicative of the two. She would often answer for Twin 2. When in therapy, both participants needed repetitive cuing to facilitate communication. If they did not want to speak, or were unsure of how to answer a question, they typically looked at the floor and remained silent until the question was asked again or until they were redirected.

Chapter III Procedures

The study was conducted over nine weeks. Weekly, individual therapy sessions that lasted forty-five to sixty minutes each were held. The training sessions were conducted by graduate clinicians at the USC Speech and Hearing Center. The 9-week period consisted of the following activities: a) Two sessions for language sample collection and obtaining pre-treatment data; b) Five sessions of the video modeling intervention; and c) Two sessions for language sample collection and obtaining post-treatment data. To determine the pre-treatment data, the language samples were analyzed by observing the following features: a) Type-Token Ratio to determine what types of words the participants were using; b) Mean Length of Utterance to determine the average length of statements; c) Total number of utterances ; d) Frequency of initiation of conversation; e) Frequency of eye contact during interactions; f) Use of greeting; and g) Frequency of no response to prompts/questions. Following collection of the pre-treatment language samples, each participant completed a five-week video modeling and video self-modeling treatment protocol. After the treatment portion of the study had been concluded, the final two sessions were used to collect language samples for post-treatment data. The same features that were examined in the pre-

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treatment language samples were also examined in the post-treatment language samples.

The adult-modeled videos were prepared by the clinician/investigator conducting the therapy sessions (a familiar adult) and another adult. During each video, a common communicative interaction would be acted out by several clinicians, all of whom were graduate students enrolled in a speech-language pathology training program. During the 5 weeks of the treatment, the following scenarios were modeled and practiced in the sessions; a) playing a game with a peer (requesting information or action); b) providing directions or information; c) clarifying information or instructions; d) ordering food in a restaurant; e) participating in a telephone conversation.

The procedure of the therapy sessions followed a structured format. Each session commenced with viewing a video in which the clinician/investigator modeled one of the interactions described previously. After viewing the video, the investigator and the participant discussed the social aspects of the interaction seen in the video. Specifically, the following were addressed: greetings, the length of response to questions, the initiation of questions, how to appropriately respond, and how to appropriately state that more time is needed to answer a question. Eye contact and attentiveness during an interaction were also addressed. After the video had been reviewed, the participant and the investigator participated in two activities, each highlighting the important aspects of the interaction that was initially viewed in the video. The final component of each training session was the video self-modeling. The participant was presented with an activity in which they had to approach an unfamiliar

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adult and interact with that person, using appropriate social and pragmatic behaviors. The interaction was presented by the clinician and reviewed in detail. It was practiced in the therapy room before the participant was required to approach a predetermined conversational partner. The participant then approached the individual and began the interaction. The clinician recorded the entire interaction, but did not participate. An important aspect of the video self-modeling intervention was that if the participant did not appropriately interact with her conversational partner, they were able to review the video and directly observe the breakdown in communication. After the communication task had been completed, the clinician and participant returned to the therapy room and the clinician discussed the interaction with the participant. Specifically, the clinician asked about the participant's feelings before, during and after the interaction, including the participant's gauge of how difficult the speaking task had been to complete. The clinician asked about the participant's feeling because if her emotional state or anxiety was a factor in her effectiveness as a communicator, it would need to be noted so that potentially, additional practice could be provided in a subsequent session to reduce the anxiety associated with that type of task. After the initial discussion, the participant and the clinician viewed the self-modeled video. The participant was asked to critique the interaction, in areas in which she felt she had excelled, as well as areas in which she could have improved. The results are depicted in the tables that are displayed later within this document.
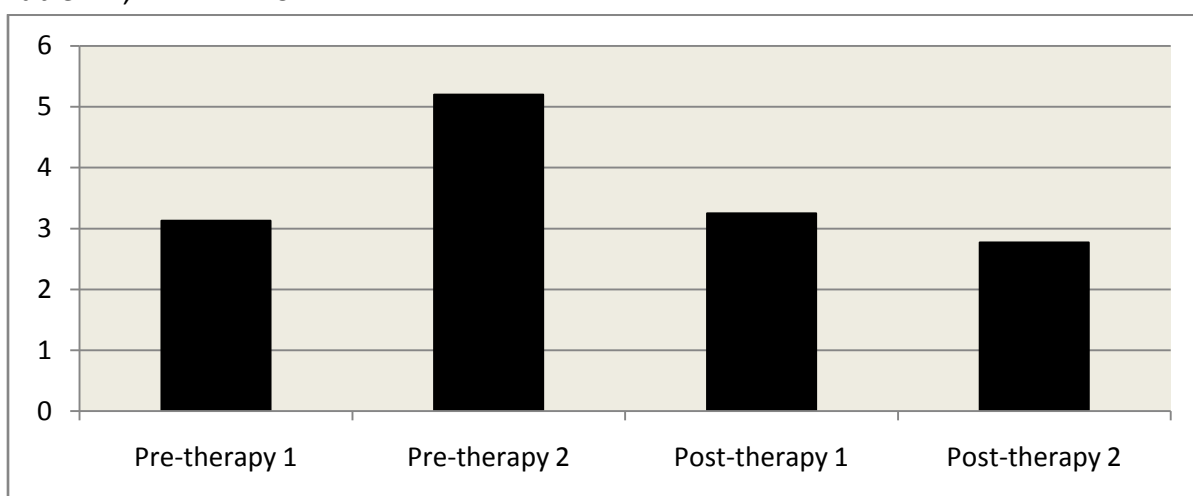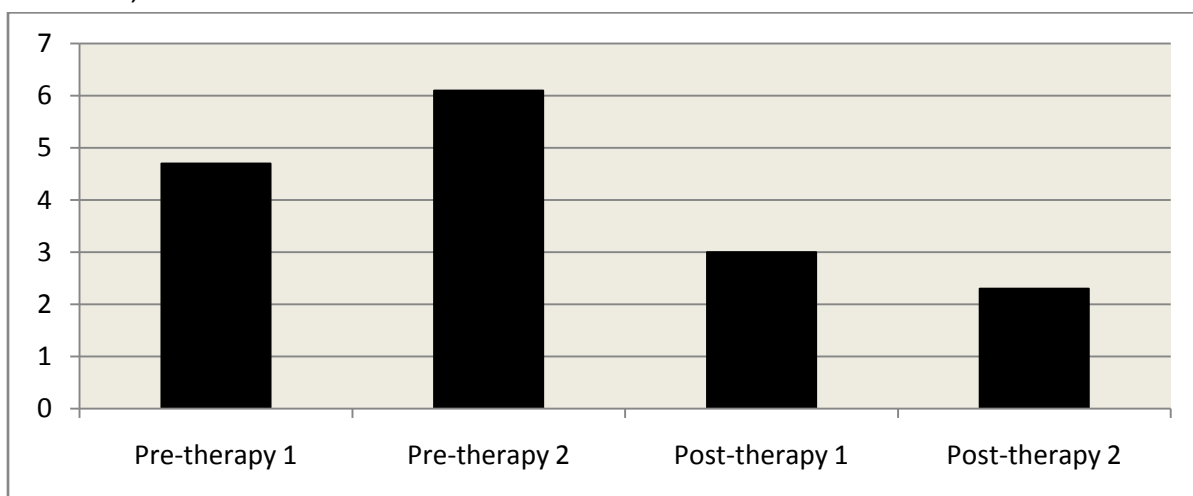
Chapter IV Results

Table 4.1, Twin 1 MLU

Table. 4.2, Twin 2 MLU

Mean Length of Utterance did not increase on average after the implementation

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of video modeling therapy. Twin 1 displayed an average MLU of 4.1 before the trial

sessions (Table 4.1). The average MLU from the language sample collected post-therapy

was 3.0 (Table 4.1). Twin 2 initially exhibited an average MLU of 5.4 (Table 4.2). Her

average MLU from the two post-therapy sessions was 2.6 (Table 4.2).

No improvement was seen with either participant when considering mean length

of utterances. Utterance length was not specifically addressed in the video modeling

but was calculated to see if there was any increase in utterance length congruent with

other gains. Both participants had been diagnosed with expressive language deficits,

which were not addressed within the video modeling treatment. Focus of the video-

modeling intervention was directed toward increasing the number of utterances and

their participation in conversation. The participants were never directed to lengthen

their statements, though it was not discouraged. As seen in Table 4.5 and Table 4.6

there was an overall increase in total number of utterances produced, which was a focus of

the video modeling intervention.
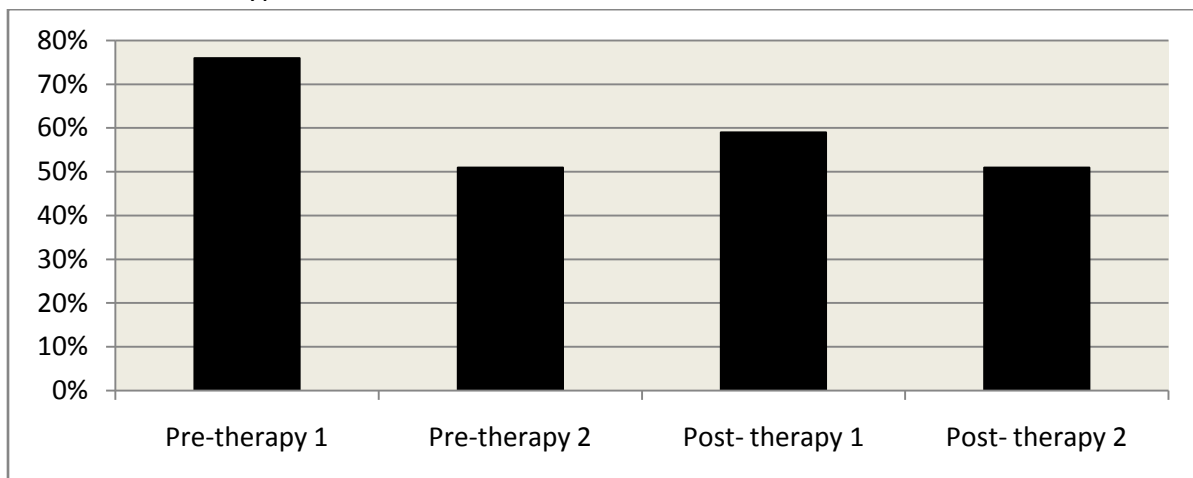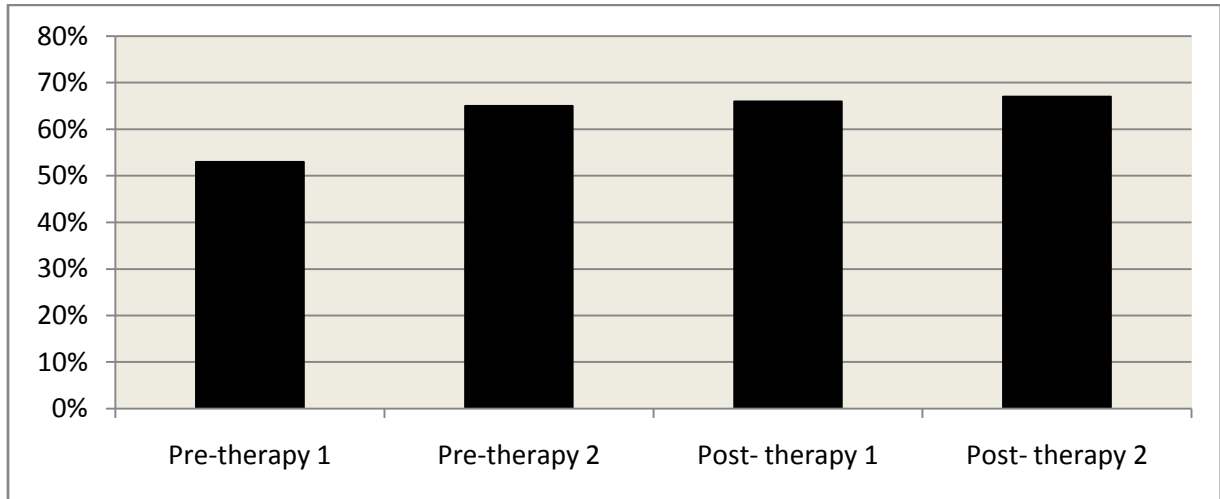
Table 4.3, Twin 1 Type Token Ratio

Table 4.4, Twin 2 Type Token Ratio

Type Token Ratio (TTR) was used to examine the participants' lexical diversity in their spoken language. Twin 1 showed a decrease in her TTR from 63.5% lexical diversity before the implementation of video modeling treatment to 55% lexical diversity (Table 4.3). This is an overall decrease of 8.5% in lexical diversity. Twin 2 increased in lexical diversity from 59% to 66.5%, an overall improvement of 7.5% (Table 4.4).

Change in lexical diversity was another aspect that was observed, though not directly addressed in the study. Twin 2, who exhibited an increase in TTR, had the lower expressive language abilities of the two participants prior to the intervention. Following intervention, Twin 1 displayed an overall decrease in lexical diversity.

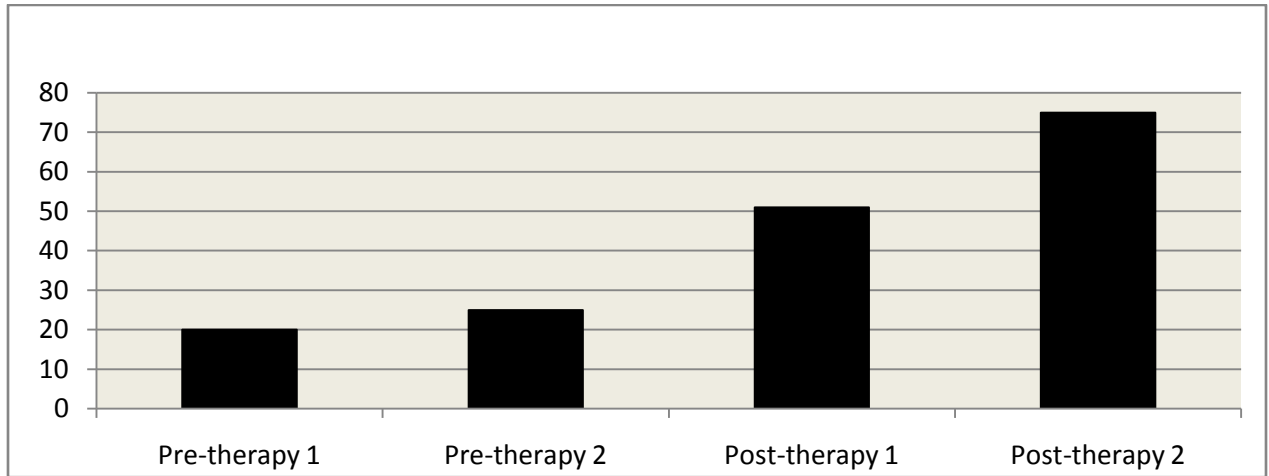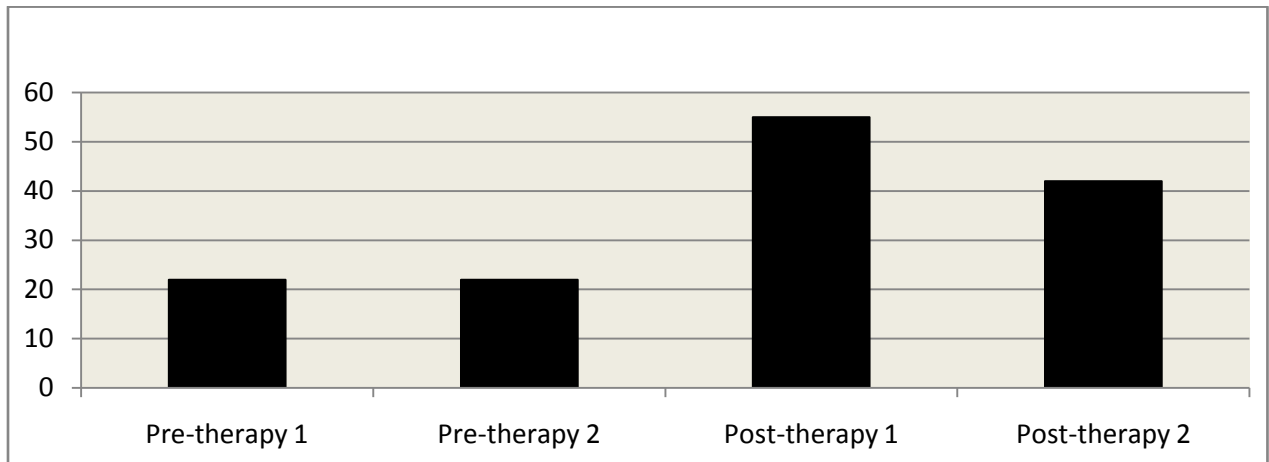Table 4.5, Twin 1 Total Number of Utterances

Table 4.6, Twin 2 Total Number of Utterances

The total number of utterances increased overall throughout the study. Twin 1 had an average of 22.5 utterances per session (Table 4.5). Post-treatment utterances increased to an average of 63, an increase of 40.5 utterances on average (Table 4.6). Twin 2 also had an increase in utterances from 22 pre-treatment, to 48.5 post-treatment, an overall increase of 26.5 utterances (Table 4.6).

The increase in total number of utterances was consistent in both participants. Throughout the post-treatment sessions, it was observed that the participants were

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more willing to ask a question or to participate in a conversation while also adding to a conversation with personal opinions or feelings on a topic. These aspects of communication were specifically targeted within the video-models presented. The clinician would provide examples of equal participation by conversational partners, noting how a lack of participation resulted in a breakdown in communication.

Table 4.7, Twin 1 Frequency of Initiation of Conversation
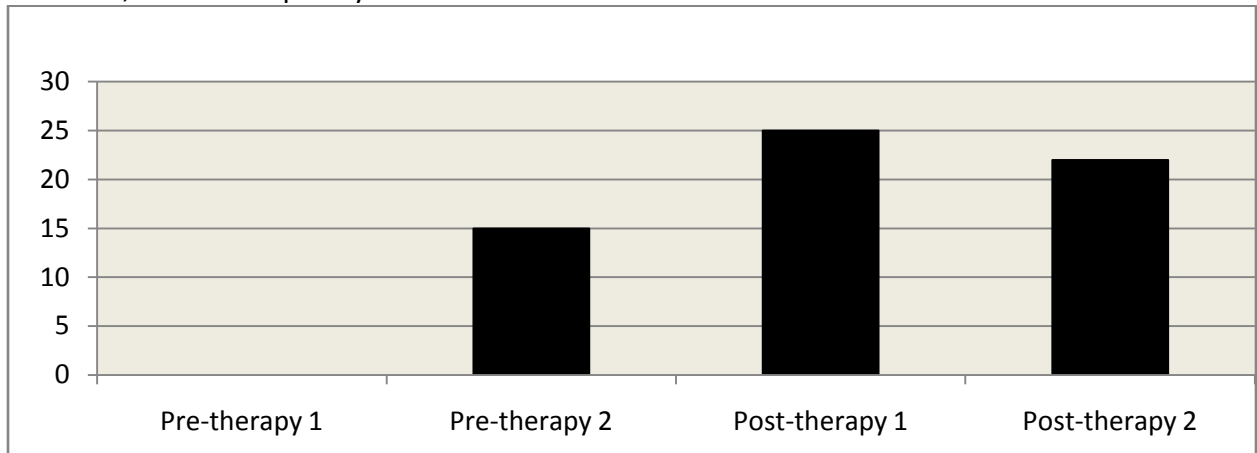
Table, 4.8, Twin 2 Frequency of Initiation of Conversation
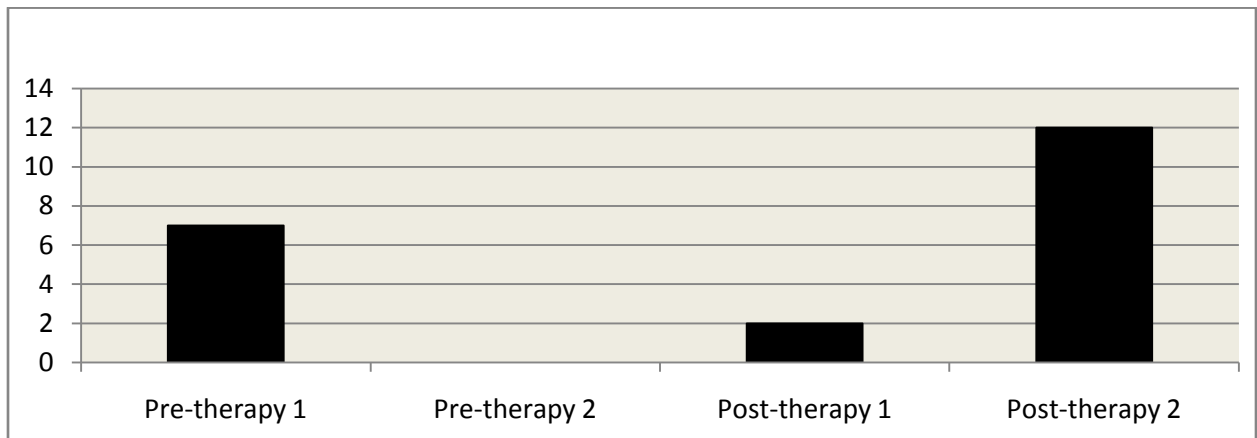
The initiation of conversation increased in both participants. Participant initiation included requesting information, requesting objects, informing and clarifying directions. Twin 1 initiated an average of 7.5 times within the two pre-therapy sessions

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(Table 4.7). After the implementation of video modeling treatment, Twin 1's frequency

of initiation of conversation increased to an average of 23.5 per session (Table 4.7).

Twin 2 increased initiation of conversation from an average of 3.5, 7 overall, to an

average of 7 per session and 14 attempts overall in the post-treatment sessions (Table

4.8).

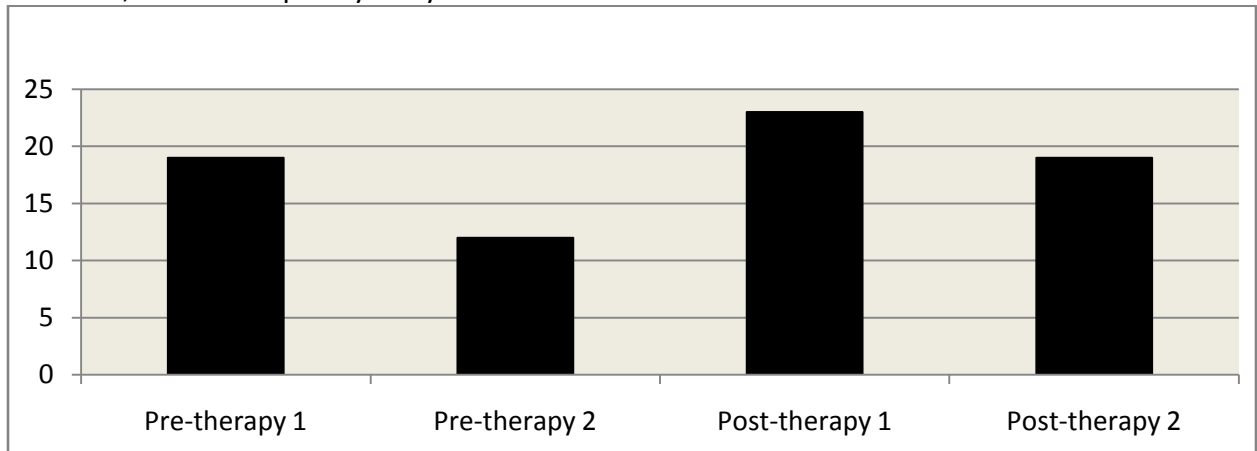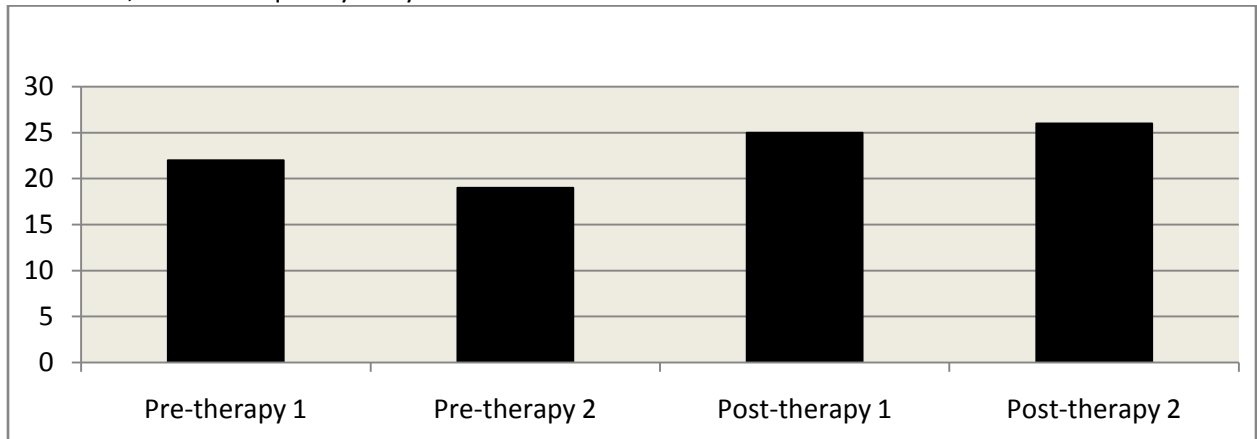Table 4.9, Twin 1 Frequency of Eye Contact

Table 4.10, Twin 2 Frequency of Eye Contact

Frequency of eye contact increased in both participants. Twin 1 increased an

average of 5.5 episodes of eye contact a session (Table 4.9). Twin 2 increased an

average of 5 episodes per session (Table 5.10). Within this study, the investigator

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emphasized to the participants that eye contact was important for conveying attentiveness to the conversational partner. Its importance was stressed when reviewing the important aspects of the training video. In the post-treatment sessions, it was observed that the participants made better eye contact when engaged in a conversation. Twin 1 was much more likely to maintain eye contact for longer periods of time, while Twin 2 would often break eye contact quickly after speaking. During the training sessions, it was typical for each participant to avoid eye contact and look at the table or floor until redirected. After noting such behaviors, the investigator would reinforce the need for the participants to inform their conversational partner that they: a) did not understand the question and needed it rephrased; b) did not know the answer; or c) needed more time to answer.
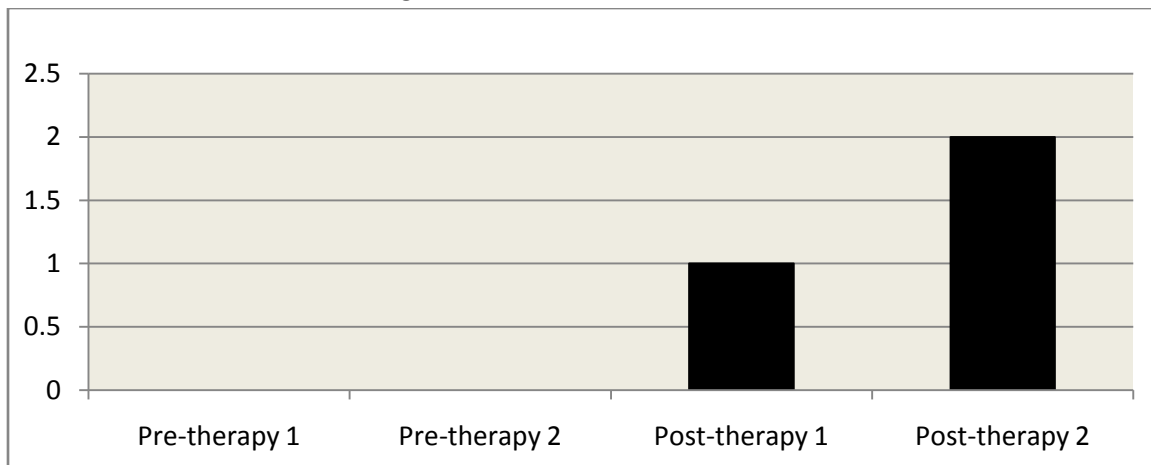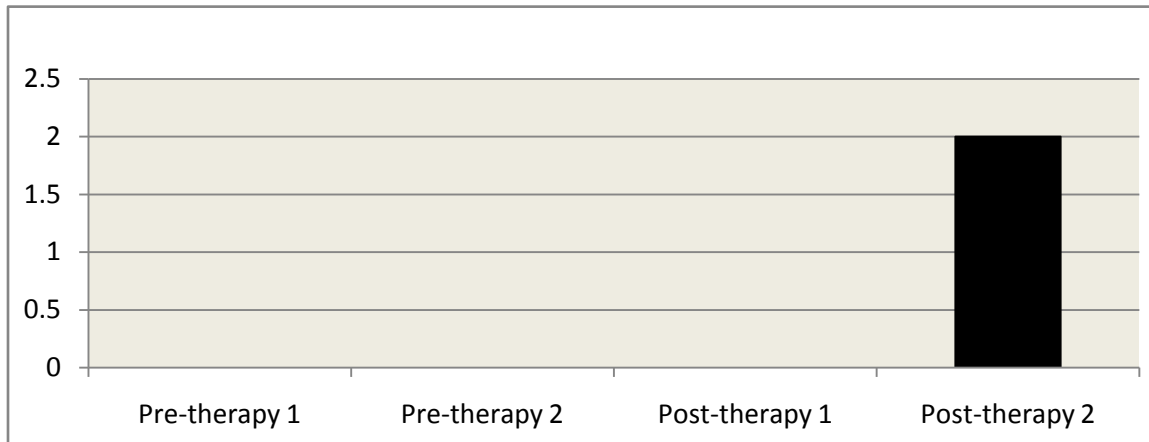
Table 4.11, Twin 1 Use of Greetings

Table 4.12, Twin 2 Use of Greetings

The use of greetings increased during the study. In the initial language samples that were collected before the video modeling treatment was implemented, neither twin utilized greetings. They would make eye contact with the investigator but would make no other communicative effort. After the completion of the study, both participants were attempting to use greetings. Twin 1 increased from 0 greetings to 3 greetings (Table 4.11). When verbally greeted by the investigator upon arrival, she made appropriate eye contact and waved. When departing the session, Twin 1 would respond to the investigator's salutation by making eye contact, waving, and saying "bye". Twin 2 increased her use of greetings from 0 before the implementation of the video modeling treatment to 2 (Table 4.12). Like her sister, she would respond to the investigator with a gesture at the beginning of the session. At the end of the session, she would wave and say "bye." Though a wave is not a verbal greeting it was included because it represented an increase in communication from pre-intervention behaviors.

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Table 4.13, Twin 1 Frequency of Not Responding to Prompts/Questions
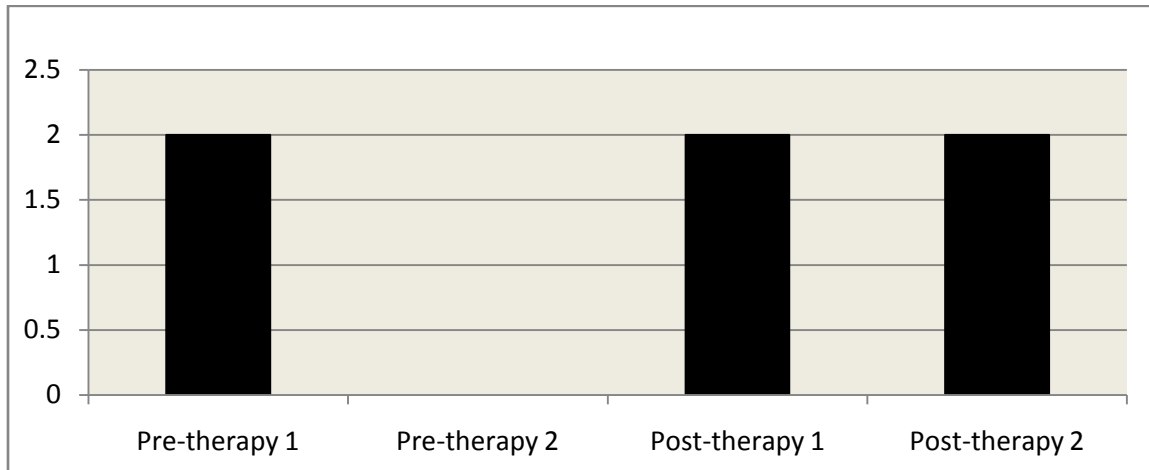
Table 4.14, Twin 2 Frequency of Not Responding to Prompts/Questions
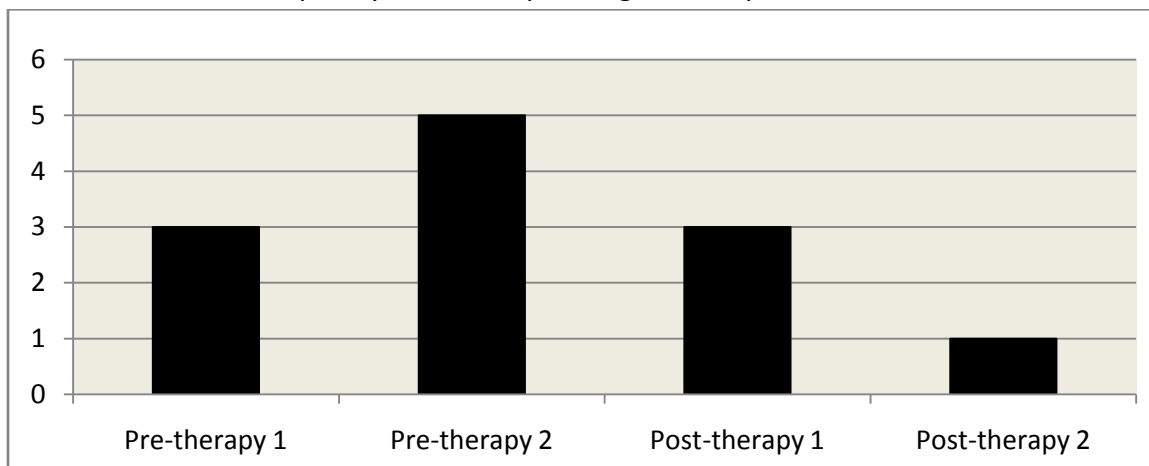
The frequency of failure to respond to questions or prompts during conversations decreased in one participant. Twin 2 decreased from an average or 4 "no responses" per session to 2 per session (Table 4.14). Twin 1 increased an average of 2 episodes of not responding per session (Table 4.15). Although Twin 1 showed an overall increase in use of verbal responses, she continued to respond with gestures much of the time. The participants' inclination to not respond when directly addressed appeared to

be due to the participant's inability to answer the question. Because of this, models were presented to demonstrate how one should respond in a conversation if he/she is unsure of an answer or does not know how to appropriately answer. The participants were giving cues to say, "I don't know" or "Can you repeat that?" if they were unsure of the information or question presented. The participants would often needed repeated cuing for them to respond.

Chapter V Discussion

Within this small case study, video modeling interventions appeared to positively influence specific pragmatic language behaviors of the participating children. Both participants displayed an increased overall tendency to verbalize rather than to communicate with gestures. Prior to the video modeling interventions, on most occasions, the participants would respond to questions or prompts with gestures, head shakes/nods, or by shrugging their shoulders. With appropriate models and repeated cuing in the sessions, the participants began to use verbal responses instead of gestures. The verbal responses initially occurred after they would gesture; however, over time, they tended to verbalize more frequently than they used gestures, particularly in the final two sessions. They appeared to self-monitor their behaviors and gained an understanding that a verbal response was expected when engaged with a communication partner. Although the average length of utterance was not influenced by the intervention, the results suggest that video modeling treatment may be effective in increasing the overall number of verbalizations that a speaker uses, particularly when the intervention includes instruction on the importance of participating in conversations.

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Prior to participation in this study, the participants displayed inappropriate eye contact, especially when interacting with unfamiliar adults. Each video modeling session directed specific attention to this aspect of communication. By the study's end, in addition to the frequency of eye contact increasing in both participants, one child also demonstrated an increase in the duration of eye contact that she made with the communication partner. The video modeling intervention permitted the investigator to direct the participants' attention specifically to this aspect of a communication interaction, enhancing their awareness and permitting opportunities to more objectively view their behaviors as communicators.

The influence of video modeling intervention on the frequency of initiation was an important aspect of this study. Prior to the study, the participants were not likely to speak, unless they were prompted to participate in conversation by someone else. Initiation of conversation was a main theme in the video modeling sessions. Focusing on the socio-pragmatic behaviors associated with selective mutism, it was important to address the need for the participants to not only be passive participants in a conversation, but be able to initiate conversation by requesting objects, requesting actions, asking questions, and contributing opinions to a conversation. Throughout the study, the participants became more interactive during therapy activities without the clinician's cues.

Specific to the use of greetings, prior to the intervention, the investigator would initiate a greeting upon the start of each session but would not receive a response from either participant. Similarly, the participants would not say goodbye at the end of the

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session. During the intervention, clinician prompting would inconsistently facilitate the participants' use of greetings or saying goodbye. By the end of the intervention period, the participants continued to inconsistently use verbal greetings and say goodbye; however, they demonstrated verbal greetings when cued by the investigator/clinician. Therefore, it is possible that greater gains in this area might possibly have been exerted by a longer duration of intervention and more specific focus on the use of appropriate greetings.

One participant showed a decrease in the tendency of not responding when a prompt or question was presented. However, both participants continued to display episodes of failing to respond, despite the video modeling interventions. The participants' lack of response appeared to be due to reduced understanding of how to appropriately respond to what was presented to them, possibly being influenced at least partially by the presence of the coexisting language deficit, rather than only a feature of the selective mutism condition. Therefore, the underlying language impairments would need to be concurrently addressed with the selective mutism interventions in order for the participants to optimally benefit.

Of the seven pragmatic behaviors that were explored in this study, improvements in four of them were observed in both participants. Throughout the study, both participants showed improvement in all of the areas, except for not responding to questions or prompts, increase in Mean Length of Utterance (MLU), an increase of Type Token Ratio (TTR). Specific to the MLU and TTR outcomes, the participants' diagnosis of receptive and expressive language impairments should be

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considered. Further, the video modeling intervention did not address vocabulary/semantic abilities or utterance length. The complexity of the treatment of this disorder is demonstrated within this case study, as the language deficits that exist in conjunction with the selective mutism may exacerbate the resulting features of communication that one observes.

While the results of this study may provide insight to potentially effective strategies for managing a rare and challenging condition, several limitations are present and must be considered. The clinician/investigator was casually acquainted with one of the participants prior to conducting the study. Specifically, approximately one year prior to the start of this study, as a requirement for completing a clinical practicum course, the investigator had provided therapy services for two semesters to one of the participants. Therefore, one may argue that the interactions that took place between them during the study are not comparable to the types of exchanges that might have occurred if the participant were interacting with a completely unfamiliar person. A future investigation would ideally observe for the types of improvements that were noted within this study to occur if the participants were engaged in the interventions by a clinician with whom they were completely unfamiliar.

Although the training videos that were used to model appropriate communication exchanges included student clinicians other than the investigator, the data collection and analysis were independently conducted, solely by the investigator. Therefore, the validity of results would be strengthened by independent raters of the data that was analyzed.

The duration of the video modeling intervention within this study was relatively brief. Acknowledging that facilitating novel behaviors often requires much repetition and many opportunities for the learner to acquire new skills, it is possible that different effects might have been observed had the participants received additional training and practice of the targeted pragmatic skills.

Another consideration to be made is that of the topics, conditions, and circumstances surrounding the activities that were completed to facilitate collection of the communication samples in all sessions. A number of studies have reported that the method of elicitation used for collecting a sample, along with the activities and events of the session will influence the length and content of the sample. This might be controlled in future studies by designing activities that are focused around predictable and/or repetitive routines that might provide consistent speaking opportunities across sessions.

Because selective mutism is so rare, there are not as many opportunities to conduct research with individuals with the diagnosis. Continued research, with a larger sample of affected individuals, needs to be conducted to provide more insight into managing the condition. Additional studies that explore the effects of video modeling interventions may offer positive outcomes to facilitate the overall communicative competence of individuals who have the selective mutism diagnosis.

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