



4-17-2013

Examining the Effects of a Mirror on Imitation in Children with Autism

Chelsea VanderWoude

Western Michigan University, chelsea.k.vanderwoude@wmich.edu

Follow this and additional works at: http://scholarworks.wmich.edu/honors_theses

 Part of the [Psychology Commons](#)

Recommended Citation

VanderWoude, Chelsea, "Examining the Effects of a Mirror on Imitation in Children with Autism" (2013). *Honors Theses*. Paper 2311.

This Honors Thesis-Open Access is brought to you for free and open access by the Lee Honors College at ScholarWorks at WMU. It has been accepted for inclusion in Honors Theses by an authorized administrator of ScholarWorks at WMU. For more information, please contact maira.bundza@wmich.edu.



**Western Michigan University
Department of Psychology**

Examining the Effects of a Mirror on Imitation in Children with Autism

Principal Investigator: Stephanie Peterson, PhD
Student Investigator: Chelsea VanderWoude

Abstract

Those with autism often show deficits in imitation skills (Freitag, Kleser, & Gontardf, 2006; Killen & Uzgiris, 1981; Rogers, Bennetto, McEvoy, & Pennington, 1996; Stone, Ousley, & littleford, 1997). Previous research has suggested that imitation is a prerequisite for major developmental milestones including social communication skills. Past studies have shown Video Modeling to be an effective intervention for teaching imitation skills, especially Video Self Modeling (VSM). However, VSM can cost researchers a great deal of time and resources. The purpose of this study is to find a new intervention that applies the mechanisms of VSM, while expanding on past research. This study seeks to determine the effectiveness of a mirror, as a new treatment method to increase imitation skills in children with a diagnosis of Autism Spectrum Disorder (ASD). Using a multiple baseline design across participants and behaviors, this study will measure changes in participants' imitation skills. Repeated assessment measures will also be used to assess any changes in participants' generalized imitative skills throughout treatment.

Purpose/Background Information

The ability to imitate others is essential to the learning process. While typically developing children imitate a range of behaviors as early as six-weeks old (Meltzoff, 1995; Meltzoff & Moore, 1994), individuals with a diagnosis of Autism Spectrum Disorder (ASD) often show significant imitation deficits as infants (Killen & Uzgiris, 1981), adolescents (Freitag, Kleser, & Gontardf, 2006; Hobson & Lee, 1999; Rogers, Bennetto, McEvoy, & Pennington, 1996; Stone, Ousley, & Littleford, 1997). Research shows that imitation is needed to learn new behaviors, social interactions, vocalizations, and facial expressions of other individuals (Meltzoff & Moore, 1998; Piaget, 1962; Rogers, Cook, & Meryl, 2005). By failing to acquire the imitation skills necessary to begin the social phase of learning, children with autism's learning begin to deteriorate from the normal development of communication skills (Ingersoll, 2008). These deviations form the deficits in communication skills associated with autism. These deviations form the deficits in communication skills associated with autism.

It is vital to teach imitation to children with ASD because of these deficits. Thus it is critical that effective treatments be developed and evaluated to teach children with Autism how to imitate. Discrete Trial Training (DTT) is a form of treatment used for imitation deficits by shaping behavior. To shape a behavior, researchers will often model the desired imitative behavior, while reinforcing responses that are close approximations of that behavior. Once the participant has mastered the approximation of the behavior, the researcher will then gradually

stop reinforcing this behavior while simultaneously reinforcing any approximation that more closely resembles the desired behavior.

Several treatments have been developed to teach imitation skills. Gena, Krantz, McClannahan, and Poulson (1996) used Discrete Trial Training (DTT) (i.e., modeling, reinforcement and verbal prompts) to teach adolescents to imitate verbal and nonverbal affective behaviors (e.g., sympathy, appreciation, and dislike). They found significant results by breaking down emotions into smaller behaviors and then reinforced the appropriate use of these behaviors. With this intervention, participants were able to appropriately respond to statements they had failed to acknowledge during baseline. For example, Gena et. al., taught participants to show appreciation by modeling appreciation as directing eye gaze toward therapist; providing appropriate verbal responses (e.g., “thank you,” “no thank you”); smiling or laughing while providing an appropriate verbal response. The researchers found that children were able to imitate these behaviors, and thereby demonstrate appreciation according to research criteria. These results are important because researchers were able to improve the use appropriate displays of affect for each participant by using DTT. However a weakness of DTT is the unnatural setting in which it must take place. DTT is typically implemented in a controlled environment (i.e., at a child’s desk). When used as a form of intensive treatment for children with autism, DTT is a one-on-one training often requiring 40 hours of intervention per week. These demands can be tremendous for a child. Research has since called for a more naturalistic setting for sessions to take place, to mimic realistic everyday situations and allow children to engage in more typical activities.

Reciprocal imitation training (RIT) was developed as a naturalistic intervention for children with autism. RIT is a behavioral intervention that allows a participant to imitate a targeted behavior in a less structured (thereby more naturalistic environment). During RIT, the therapist imitates the child’s verbal and nonverbal behavior, in the hopes that the child will learn to imitate the therapist’s behaviors (Warren, Yoder, Gazdag, & Kim, 1993). RIT has been found to be an effective treatment for object and gesture imitation for play (Ingersoll, Lewis, & Kroman, 2007; Ingersoll & Schreibman, 2006). From this treatment, studies began focusing on teaching children with imitation deficits to “learn to learn”. Meaning the specific behavior is less significant, than the generalization of imitation abilities.

One particular form of treatment aimed at “learning to learn” is Video Modeling (VM). VM has been a highly successful intervention for teaching imitation skills for children with ASD (Charlop-Christy, Loc, & Freeman, 2001). During VM participants watch a video recording of a targeted behavior (e.g., playing with a toy car), and then are immediately given the opportunity to imitate the behavior modeled (e.g., given a toy car). Various variations of VM have recently developed. Research is still determining the most effective form of VM. Baharav and Darling (2008) were able to increase word production and eye contact over the span of four weeks. In Video Self Modeling (VSM) participants learn to imitate a new behavior by watching themselves on a video performing the targeted behavior with the assistance of researchers, and are then immediately given the chance to engage in the behavior.

It remains unclear what aspects of Video Modeling are responsible for the change in participant’s imitation skills. Recent studies have begun incorporating first person perspective as a variation of traditional Video Modeling. This first person perspective, also known as Point of View Video Modeling, focuses on what the child (or actor) views as they engage in a targeted behavior. When the videos are made, video cameras are placed on the actor’s forehead so the video is a display of what someone would see if they were engaging in the behavior themselves,

and then shown to the child. The child is given the opportunity to engage in the target behavior. Cotter (2010) determined the rate of imitation acquisition is similar for both VSM and Point of View Video Modeling. Furthermore, Cotter found the Point of View Video Modeling intervention to be an overall ineffective form of treatment. Similarly, a study conducted by Tetreault and Lerman (2010) found mixed results for the effects of Point of View Video Modeling. The study examined the effects of the intervention on imitation of social behavior (e.g., attention, fine motor skills, and engagement in play) for three participants. The study was unable to produce any significant findings advocating for the use of Point of View Video Modeling.

Studies show that Video Self Modeling is more effective than Video Modeling that uses the child's peers (Marcus & Wilder, 2009). These results are meaningful because they demonstrate the significance of participants viewing themselves engage in a targeted behavior as compared to an actor. Current studies have yet to find a cost and time efficient intervention that would allow subjects to improve imitation skills while simultaneously watching themselves engage in an unlearned skill.

While VM studies have been successful, they can be time consuming. Because researchers are required to assist, or "shape" the participants responses, studies on imitation deficits demand a great deal of time. Furthermore, videos must be developed for each target behavior for each individual. It may take several hours to make one video modeling a specific behavior. Therefore clinicians may end up spending time making materials instead of implementing treatment. It may also be the case that clinicians do not have the necessary skills or software to produce video vignettes.

The process of recording and editing film for VM sessions is a difficult task. VM requires the use of actors as a model for children. The fees and equipment required for such may not be within the budget of researchers, educators, or parents. Additionally, it may be the case that to make one VSM video researchers must record and edit copious amounts of footage of a child in order to obtain them engaging in the target behavior correctly. This process also makes VM impractical for teachers and parents who may not have the time or resources to make video vignettes.

These limitations may make VM difficult for parents, teachers, and clinicians to implement. VM is not available to a classroom of students because of these difficulties. The time commitment involved to create a video of one behavior for one child requires a great deal of resources. Moreover, creating a video for multiple behaviors, or multiple students would be nearly impossible using the self-video modeling procedures. Until VM is adaptable to all environments, children with ASD need a more accessible intervention that incorporates features of VM but is cost-and-time efficient and easy for parents, teachers, and clinicians to implement.

The current study proposes an alternative form of treatment by using a mirror to teach imitation for children with autism. Mirrors have yet to be used an intervention for imitation. As a result, there are no published studies exploring the benefits for the use of mirrors to teach imitation skills. However, mirrors are used frequently in the field of Speech and Language Pathology, but there are no speech studies examining the benefit of mirrors specifically. The use of a mirror may have several benefits over past interventions. The use of the mirror will allow participants to observe themselves engaging in a targeted behavior, while being more cost-and-time efficient than video modeling. A mirror would also be more accessible than VM to teachers, parents, and clinicians. Mirrors would also allow teachers to implement a treatment for more than one student at a time. Mirrors could also enable the child to learn multiple behaviors

quickly. As opposed to VM, which requires a great deal of time to record and edit footage before a new behavior can be learned.

The aim of the current study is to evaluate the use of a mirror as an intervention to teach imitation skills to children with ASD. This study hopes that the use of a mirror will provide successful results in increasing imitation skills. If the mirror produces a significant change in participant's behavior over time, then data from this study will be used to support a new form of treatment for imitation.

Participant Recruitment

It is predicted that the majority of recruited participants will be ineligible to continue in the study after the initial assessment. As such, the investigators will recruit up to 20 potential participants with the goal of maintain three to five subjects. To reach this number, the study will recruit from schools within the Kalamazoo area and the Kalamazoo/Battle Creek Autism Society (see letter of support attached in Appendix I).

To recruit participants attending school within the Kalamazoo district, recruitment flyers (see Appendix A for recruitment flyers) will be posted on message boards throughout both schools. If permitted, these flyers will also be sent home with all children attending the local schools. Once approved, these fliers will be sent to the alliances that will post them on the newsletter. The flyers will briefly outline the study and invite interested families to contact the research team by phone or email.

To recruit participants through the Kalamazoo/Battle Creek Autism Society, the study will post recruitment slips (see Appendix B) on the Society's websites. The flyers will instruct interested individuals to call or e-mail the investigators.

After a parent or guardian expresses interest by calling or e-mailing the investigators will contact the individual by phone or email to conduct a brief screening (See Appendix C) and provide additional information about the study. If the interested individual is still interested the investigator will schedule a time to obtained informed consent.

Inclusion

To be included in the study, participants must be between the ages of two and 10, have a diagnosis of autism, and score at 50% or below on the Semi-Structured Imitation Assessment Measure (SSIAM) (see Appendix D for assessment measure). Children will be excluded if they have any severe self-injurious behaviors and/or reoccurring aggressive behaviors to eliminate potential confounds. The primary goal of the study is to teach children imitation skills, not lower problem behavior. As a result, children will be excluded if they are engage in any sever self-injurious behaviors and/or aggressive behaviors.

Informed Consent

Once parents/guardians have expressed interest in the study by contacting the investigators via phone or email a date and time will be scheduled to review the informed consent document (see Appendix F) with a member of the research team. Informed consent will either be reviewed at the child's school, or the parent's home. Upon arrival to the agreed location, a member of the research team will greet the prospective participant's parent/guardian

and read over the informed consent document. Frequently, the investigator will stop reading and ask if the parent/guardian has any questions or comments. Once the investigator has read the entire document, they will ask the parent/guardian if he/she has any questions regarding their child's participation in the study and will be give time to consider volunteering in the study.

Prior to all sessions the researchers will ask the participant if he/she wants to work with the researcher. If the participant says yes, this will be considered as informed assent. If the participant refuses, the researchers will wait 10 minutes and ask again. If the child refuses once again, the session will not be conducted that day. Participation in the study will be terminated if a child refuses to participate for five straight sessions.

If the parent/guardian is still interested in volunteering for the study they will be asked to sign a copy of the informed consent document. The parent/guardian may refuse their child's participation in the study and/or leave the meeting at any point in time. The informed consent document will last approximately 20 minutes. Once the consent is signed, the parent/guardian will be given a copy of the document and the investigators will ask the children to complete the SSIAM. During the informed consent process the child will be waiting with a member of the research team.

Research Procedure

Video Recordings

All sessions will be videotaped using a digital camcorder and scored later for the occurrence of the target behaviors (Appendix G). The duration of every session will be recorded if permitted by parents. Additionally, the videos may be used as **part of media presentations at professional conferences and meetings** (i.e., thesis defense). All parents/guardians of participants in the study will be given the chance to agree to or decline the use of video clips of their child for research purposes (Appendix H).

All videotapes and data files will be identified using initials and numbers for each participant. Thus, the participants' names will not be written on the videotapes or data files.

When videotaping is being conducted, it will be done in an area of the classroom where other children are not present or in a separate, empty classroom in the school building. The purpose of this is to avoid capturing the faces of any other children in the classroom (for whom consent to videotape has not been obtained) on the videotapes. If sessions must be conducted in a classroom where other children may appear on the videotape, either consent to videotape all children in the classroom will be sought or their faces will be digitally edited so that they are not recognizable. If a student who is not a participant in the project inadvertently appears on the videotape, his/her face will be digitally edited so that it is not recognizable.

Data scored from videotapes will be stored in a locked cabinet in a locked office to which only the PI and research assistants have keys. Summary data will be stored on laptop computers (short term) and compact discs (CDs; long term). The laptop computers on which data will be stored will be computers that are dedicated to the project and will only be used by project staff. After data are scored, they will be transferred to CDs for long-term storage. These CDs and all videotapes will be stored in a locked cabinet in a locked office that houses the project staff. Only project staff will have keys to the office and to the storage cabinets.

Only project staff (the PI, research assistants, and any data collectors) will have access to the data collected as part of this project. The parents of the children and school staff who are

working directly with the children will have access to the resulting graphs of the data files, as this information will be shared with these individuals at intervention planning meetings. These meetings will be held periodically during the project to assist the parents and classroom teachers in providing effective intervention for the children in their homes and classrooms. Any written reports of findings and intervention recommendations will be given to the parents, who may choose whether or not they want the reports entered into the school's records. The parents will be responsible for providing the school with copies of the reports if they would like them to be entered into the records. Project staff will not provide the reports directly to the school unless the parents sign one of the school's release of information forms. (It is important to note that monthly summaries updating school personnel and parents of our progress on the project will be provided. These are narrative and summarize the activities we have completed since the last monthly update. These summaries do not include information on the data outcomes that have been achieved unless parents provide a specific release of information that allows for this type of information sharing.)

Information about the project and its findings will be shared at regional and national conferences, and results will be submitted to professional journals for publication. In all of these activities, the names of the participants and any other identifying information (e.g., the names of the children's schools) will be changed to protect confidentiality. If project staff wish to show a video clip of a participant in the research project, specific parental consent will be sought for this activity. This consent will be separate from the consent for participation in the project. If a parent denies consent to show a videotape of their child at a conference, this will not jeopardize their child's participation in the project.

The data from the project will be kept for seven years after publication of any findings for verification purposes (the standard for our field). After that time, any paper records will be shredded, as will any CDs on which data are stored. Any data that are not intended for publication purposes will be destroyed immediately upon completion of the project, unless parents provide express permission for data to be maintained (e.g., for presentation and/or teaching purposes).

Preference Assessment

A preference assessment will be completed prior to each session to establish a preferred item during that particular session. Because preferred items are likely to change on a daily basis, preference assessments will be conducted before each session. The reinforcer will be established at the beginning of each session through forced choice preference assessments (Fisher, Piazza, Cataldo, Harrell, Jefferson, & Conner, 1993). During forced preference assessments, two items will be placed in front of the child. The stimuli will be presented approximately one foot apart, and one foot in front of the participant. If the participant approaches one of the items, he/she will be given access to that object for 20 s while the other stimulus is removed. If the participant approaches both stimuli simultaneously, both items will be blocked and the trial repeated. If the participant does not approach either item within five seconds, then he/she will be given each object separately for 5 s each. After the allotted 5 s per item, the investigators will present the items again. If the participant approaches one of the stimuli, then he/she will be given the item for 5 s while access to the other stimulus is removed. If the participant does not approach either object for a second time, then two new stimuli will be used in a new forced preference assessment.

Attending Procedures

Participants will be prompted to look at various objects throughout the study (researchers, mirrors, and toys). As a result, children volunteering for the study will need to have attending skills. This will be assessed prior to the initial assessment. Researchers will instruct the participants to look at the researchers by pointing to themselves and stating, “look at me”. If the child does not attend to the researcher for three consecutive prompts it will be determined that the child does not have the attending skills necessary to participate in the study at that time.

Researchers will teach the attending skills for all participants who demonstrate difficulty prior to the initial assessment. To teach attending skills the child will be asked to “look at me”. If the child does so, the researcher will provide a preferred object for 10 s to 20 s and verbal praise. If the child does not look at the researcher, he/she will be prompted. Prompts will consist of the researcher redirecting the child’s face to look at the researcher, and will then be followed by verbal praise.

It will be determined that the child has attending skills when he/she looks at the researcher for three consecutive prompts. If the child is able to attend to the researcher after five sessions, he/she will move on in the study. If the child is unable to attend to researchers after five sessions, he/she will be terminated from the study.

Once a child can attend to the researcher, he/she will be taught to attend to objects in the room. Researchers will ask the child to “look at that” while simultaneously pointing to an object in the room. Participants will be taught to attend to objects in the room using the same protocol as above. It will be determined that the child has attending skills if he/she looks at the correct object for three consecutive prompts. The study will begin the assessment phase once a participant has the necessary attending skills.

Repeated Assessment Measure: Semi-Structured Imitation Assessment Measure (SSIAM)

The Semi-Structured Imitation Assessment Measure (SSIAM) is an assessment measure created by the study investigator. It will be administered by a member of the research team throughout each child’s participation in the study as an assessment probe before during and after intervention and will also determine a child’s eligibility to participate in the study. The first SSIAM will be conducted directly following the informed consent process.

The SSIAM measures a participant’s imitative abilities within five separate categories. The categories are: object, fine motor, gross motor, facial, and echoic. To determine the level of skill for each category, the investigator will provide a modeled behavior. The investigator will then wait five seconds to allow the child to imitate vocally and/or physically. After each opportunity for the child to imitate the modeled behavior, the investigator will code the behavior. Investigators will need to be trained before giving the assessment. The SSIAM will provide an instruction manual to assist members of the research team in scoring and assessing participant’s imitative abilities (see Appendix E for SSIAM manual).

During the SSIAM, participants will be asked to imitate the investigators actions. To help ensure the investigator has the child’s attention, prior to each session the investigator will say the child’s name, followed by a “look at me.” E.g. “Cameron, look at me.” Following such, the investigator will provide a modeled behavior while saying “do this!” The investigator will

then wait 5 s to see if the child imitates the modeled behavior. If the child correctly imitates the behavior the investigator will let the child play for 30 s and then present the next test item. If the participant does not imitate the behavior within 5 s, the investigator will repeat the model. If the participant does not respond, or responds incorrectly after the second model, the assessor will provide the model again and wait 5 s. If the child does not respond or responds incorrectly after the third model, the investigator will wait 30 s and then present the next test item. During the 30 s the child will (explain what the child and investigator will do) the assessor must wait 30 s after each failed model before providing an additional model. During which time the investigator will provide toys to the child and provide reinforcement every 10 s to 20 s. By doing so, the assessor is guaranteeing the child has ample time to respond and is not being overwhelmed by the assessor's models. If the participant responds correctly during any of the three allotted models, the behavior is coded as correct, and the assessor is to move onto the next test item. Following each opportunity for the participant to engage in a modeled behavior, the assessor will code the behavior. No prompts are to take place during the assessment. The SSIAM is only used to measure the abilities of a participant, not to provide an form on intervention.

Each response will be scored as either No response (NR), Incorrect Attempt (IA) and Correct Response (CR). The SSIAM will be administered repeatedly throughout the study as an assessment probe.

Prompting Hierarchy: Least to Most

A least to most prompting hierarchy will be used for the duration of this study. The participant will be given 5 s to respond independently to a modeled behavior. Similar to past research (Libby, Weiss, Bancroft, & Ahearn, 2008), prompts will be given on a 5 s interval. If there is no response, the investigator will give the participant the next most invasive prompt available. The order of prompts is as follows: independent, light touch/shadow, manual guidance at upper arm, and hand over hand.

Participants have 5 s to independently model a behavior once a prompt is given. If the child does not respond, or responds incorrectly the next most invasive prompt will be given. The light touch/shadow prompt will consist of the researcher guiding the child's hand to the target object by lightly touching his/her upper arm.

The participants will then have 5 s to complete the modeled behavior. If they fail to do so, the next most invasive prompt will be given. A manual guidance at the upper arm requires the research to grab the child's upper arm and place it on or next to the desired object.

The participant will then have 5 s to complete the modeled behavior. If he/she fails to do so, the next and final prompt will be given. When using a hand over hand prompt, researchers will place their hand on top of the participant's. They will then complete the modeled behavior together.

In example, if the researcher places their hand on top of their head and states "Christine, do this." Christine then has 5 s to independently respond correctly. If Christine fails to do so, the research will lightly place their hand on Christine's upper arm and gently move her arm towards her head. The researcher will let go of Christine's arm and give her 5 s to finish the modeled behavior. If the participant fails to respond or places her hands on an object besides her head, the researcher will place their hands on top of Christine's and place her hand on top of her head.

Verbal praise will be given after the behavior is modeled, regardless of the prompt needed to do so. All imitation behaviors will be scored as an Incorrect Attempt or a No Response in accordance to the scoring protocol.

Pre-teaching: Discrete Trial Training (DTT) for Imitation

Baseline will be scheduled after the child is determined eligible based on the SSIAM scores. All baseline sessions will last a maximum of 45 minutes with three sessions per week. During this time, investigators will begin facial imitation trials with each participant. Baseline will take place in the child's general play area if applicable. If such a location is not available, all procedures will then take place at the child's desk, located in his/her classroom. If the study is to be conducted in the child's home, then sessions will be run on the floor of the family area. If sessions are to be completed within the home, one or more of the participant's parents will be present. If sessions are to be held within the school, the participant's teacher or paraprofessional will be in the room.

Prior to the beginning of each session, investigators will prepare the materials. The materials for baseline will be score sheets, a puzzle, paper, crayons, beads, and other reinforcers determined by the preference assessment. The investigators will have the materials packed into a container. These materials will sit behind the investigator during baseline sessions. Before initiating the first session, the investigator will conduct a preference assessment according to the protocol.

The targeted behaviors for each participant will be touch nose, pat head, and touch ears through the study. Each behavior will have five trials for each baseline session. These behaviors will be assessed interchangeably during each session. Investigators will model each behavior after they have asked the child to attend by saying the child's name followed by a "look at me". If the child does not attend, the researcher will repeat the instructions until he/she is attending. The researcher will then provide the child with a model while simultaneously saying, "do this". The participant will be given 5 s to engage in the modeled behavior. If he/she does not model the behavior, the researchers will prompt the child using a least to most hierarchy and the response will be coded accordingly. All responses will be coded as one of the following: No response (NR), Incorrect Attempt (IA) or Correct Response (CR).

A No Response code signifies the participant made no attempt to imitate the modeled behavior within allotted time. For example, if a participant is prompted to touch nose, but only stares at the researcher, the behavior will be coded as having not occurred, or NR. If the child is prompted to touch nose and he/she knocks a toy on the floor over, the behavior will be coded as NR as it is impossible to tell whether he/she attempted to touch nose and was unable.

An Incorrect Attempt code demonstrates the child made some form of movement after the prompt, but was unable to correctly match the modeled behavior. For example, if the child is prompted to touch nose and he/she knocks an object off the table or touches the researcher's face instead, the behavior will be coded as IA.

A Correct Response code signifies the participant was successfully able to match the behavior of the model. For example, if the researcher models touch nose and the child touches his/her nose a CR code will be given. If the participant is asked to touch nose and the child touches the ground, a CR code will not be given. CR codes are only provided when the child has closely demonstrated the modeled behavior. CR codes will still be given if the child uses a different hand or finger than the clinical.

If the participant correctly imitates the behavior the investigator will provide the preferred item to the child for 20 s and verbal praise. Preferred items will only be provided on CR codes. For trials in which the child makes no response or makes an incorrect attempt, the investigator will prompt the participant using the least to most hierarchy. Following all prompts the investigator will provide verbal praise.

Baseline sessions will end according to the multiple baseline research design protocol. However, If a participant learns the modeled behavior at a 75% success rate during baseline, he/she will be terminated from the study.

Discrete Trial Training with Mirror

During the intervention phase of the study, procedures will be identical to baseline except the use of a swivel mirror is the intervention for this research project. Intervention sessions will be exactly like baseline sessions except a full-length cheval mirror (Appendix J) will be placed in front of the child. Prior to providing the model, the investigator will point to the mirror while gaining the attention of the child by saying their name, followed by “look at that.” E.g. “Cameron, look at that.” This will ensure the child is looking at the direction of the mirror prior to the imitation prompt. Thereby, increasing the child’s likelihood of looking into the mirror while engaging in the behavior. Once the child is attending to a model will be provided.

Dependent Variable

The dependent variable for this study is the percentage of correct trials of facial imitative behaviors for each session. Imitation will be defined as a match between the behavior of the investigator and the student’s behavior within five seconds of the model (e.g., “David, do this.”). The investigator must correctly provide the child with a model of the requested behavior and used the phrase “(Child’s name), do this.” in a neutral tone, while simultaneously providing a model. The investigator will do so by physically demonstrating the behavior using his/her own body. All behaviors will be coded as: Correct Response (CR), Incorrect Attempt (IA), or No response (NR).

Examples of correct imitative behavior: investigator says “David, do this.” while simultaneously placing the investigator’s hands over the investigator’s ears. If David then immediately placed his hands over his ears, the trial will be given a CR code and a tangible reinforcer will be provided. The investigator says, “Christine, do this.” while placing both of the investigator’s hands on top of his/her head. If Christine then places both of her hands on top of her own head, this behavior will be coded as correct.

An example of an incorrect response: child places a finger on his/her nose, when the model provided was to touch mouth. The behavior would be coded as IA, due to a mismatch between the behavior of the investigator and the behavior of the student. The investigator will then prompt the child for a correct imitative behavior, while providing only verbal praise. If a child uses his/her dominant hand over the hand the researcher uses, he/she will receive a CR code.

An example of a no response code: the investigator says “Christine, do this.” while placing both hands on top of his/her head. If Christine does not move or is not attending, the behavior will be coded as a no response.

Social Validity

Social validity will be assessed through a variety of resources. First off, after the conclusion of the study, investigators will allow participants to select between baseline conditions and intervention conditions. To determine participant's preference, investigators will have the child stand in front of two settings. One will have the baseline conditions available and one will have the treatment conditions available. The investigator will take the participant to both settings, running the imitation sessions adherently based on the studies protocol for one minute each. After the protocols are demonstrated to the child, investigators will have the child stand in front of both options, and determine preference by asking the child "which one?". The child will then be able to respond according to his/her preference. These preferences will be recorded and used as a measure of social validity.

Social validity will also be assessed by showing the child's teachers/parents video of sessions and asking them if they would be able to run sessions within the school/home setting. Responses will be recorded and used as a social validity piece.

Investigators will ask speech and language therapists if they use mirrors as a treatment option for children with speech delays. These responses will be recorded and used as a social validity piece.

Duration of Participation and Location

Each session will consist of 20 trials, for a maximum of 45 minutes, ranging from one to five sessions per week. Participants will be asked to participate in the study for approximately six months from the informed consent, to the posttest. The SSIAM will take approximately 30 minutes per participant.

Depending on the preference of the parent/guardian, each session will be completed in either the home or classroom of the child. If sessions are to be conducted in the home, the sessions will take place in either the family's common area (e.g., living room, kitchen) or the child's bedroom.

If the sessions take place within the child's school, each session will be conducted in the participant's classroom. The sessions will take place in classroom's common areas (playroom, hallways). If such a space is not available, sessions will take place at the child's desk.

Methodology

The study will use a multiple baseline design across participants and target behaviors. Each participant will begin the study in baseline. After data are stable during baseline, one participant will begin the intervention phase, while all other participants are held in baseline. During the intervention phase, each participant will be asked to imitate one behavior not currently in the repertoire. After the data for this behavior stabilizes, the participant will then imitate a new behavior in addition to the behavior mastered in the previous intervention. A behavior will be deemed as stable, once it is occurring at a 75% success rate, for two or more sessions. Once the first participant has entered the second phase of treatment, another participant will enter the intervention phase. When a participant begins the second intervention phase of treatment, it will serve as a cue for investigator s to start another participant into the intervention

phase. The study will commence once all participants have entered in the second phase of treatment.

Data Analysis

Data collected from this study will be analyzed using visual inspection of the graphs. The changes in data (i.e., magnitude, trends, and level) will be noted by the investigators at the conclusion of the study. The study will also analyze its data based on the percentage of correct responses from baseline to intervention. The study hypothesizes an increase in the percentage of correct trials after implementing the intervention.

In addition to visual inspection, a Post Hoc measurement of trials to criterion will be used to analyze the data. This design will analyze the number of trials required before each participant mastered each behavior used during the intervention. A mastered behavior will be seen as any trial that consists of a 75% correct accuracy.

Dissemination

The study will serve as Chelsea VanderWoude's honors thesis. The results will be submitted for presentation at professional conferences and meetings within the field. The results may also be submitted to a scholarly journal.

Risks and Cost to Participants and Protections for Participants

Participants could potentially experience distress while participating in the study. If participants become frustrated in the session and begin to demonstrate severe problem behaviors, he/she will be redirected to engage in an unrelated task by playing with the various toys provided by the investigator. This task will allow the child to take a break from the tasks presented in the study.

One potential cost to the participants is the length of participation. Participants will be asked to volunteer between one and two hours of their time weekly, for a maximum of six months. Participation in this study may take time away from the child's classroom instruction, if parents choose to have sessions conducted during school hours. Additionally, the parents/guardians may expend spend time on the study during the informed consent process and by allowing investigators to come into the home.

Benefits of Research

This research may potentially increase participant's imitation skills. This research may increase each participant's ability to engage in imitation, both in a school and home setting. In addition, results may establish support for the efficacy of a mirror for both motor and vocal imitation.

Confidentiality of Data

Within the extent of the law, all of the participants' information collected in the study will remain confidential. Any information containing personal identifiers (including signed consent forms and telephone or email contact information) will be kept separate from

participant's data. The telephone and email contact information will only be used to contact participants for sessions, and will be destroyed following each participant's completion of the final session. All data will be stored in the Behavioral Assessment and Treatment Laboratory, located in 3522 Wood Hall. Data will be retained for a minimum of 7 years at which time it will be destroyed.

References

- Baharav, E., & Darling, R. (2008). Case report: Using an auditory trainer with caregiver video modeling to enhance communication and socialization behaviors in autism. *Journal of Autism and Developmental Disorders*, 38(4), 771-775.
- Cotter, C. (2010). *Evaluating the effects of camera perspective in video modeling for children with autism: Point of view versus scene modeling* Doctoral dissertation, ProQuest Dissertations and Theses
- Fisher, W. W., Piazza, C. C., Cataldo, M. F., Harrell, R., Jefferson, G., & Conner, R. (1993). Functional communication training with and without extinction and punishment. *Journal of Applied Behavior Analysis*, 26(1), 23-36.
- Freitag, C. M., Kleser, C., & Gontardf, A. (2006). Imitation and language abilities in adolescents with autism spectrum disorder without language delay. *European Child & Adolescent Psychiatry*, 15(5), 282-291.
- Gena, A., Krantz, P. J., McClannahan, L. E., & Poulson, C. L. (1996). Training and generalization of affective behavior displayed by youth with autism. *Journal of Applied Behavior Analysis*, 29(3), 291-304.
- Hobson, R. P., & Lee, A. (1999). Imitation and identification in autism. *Journal of Child Psychology and Psychiatry*, 40(4), 649-659.
- Ingersoll, B. (2008). The effect of context on imitation skills in children with autism. *Research in Autism Spectrum Disorders*, 2(2), 332-340.
- Ingersoll, B., Lewis, E., & Kroman, E. (2007). Teaching the imitation and spontaneous use of descriptive gestures in young children with autism using a naturalistic behavioral intervention. *Journal of Autism and Developmental Disorders*, 37(8), 1446-1456.
- Ingersoll, B., & Schreibman, L. (2006). Teaching reciprocal imitation skills to young children with autism using a naturalistic behavioral approach: Effects on language, pretend play, and joint attention. *Journal of Autism and Developmental Disorders*, 36(4), 487-505.
- Killen, M., & Uzgiris, I. C. (1981). Imitation of actions with objects: The role of social meaning. *The Journal of Genetic Psychology: Research and Theory on Human Development*, 138(2), 219-229.
- Libby, M. E., Weiss, J. S., Bancroft, S., & Ahearn, W. H. (2008). A comparison of most-to-least and least-to-most prompting on the acquisition of solitary play skills. *Behavior Analysis in Practice*, 1(1), 37-43.
- Marcus, A., & Wilder, D. A. (2009). A comparison of peer video modeling and self video modeling to teach textual responses in children with autism. *Journal of Applied Behavior Analysis*, 42(2), 335-341.
- Meltzoff, A. N. (1995). Understanding the intentions of others: Re-enactment of intended acts by 18-month-old children. *Developmental Psychology*, 31(5), 838-850.
- Meltzoff, A. N., & Moore, M. K. (1994). Imitation, memory, and the representation of persons. *Infant Behavior & Development*, 17(1), 83-99.
- Piaget, J. (1962). The stages of the intellectual development of the child. *Bulletin of the Menninger Clinic*, 26(3), 120-128.
- Rogers, S. J., Bennetto, L., McEvoy, R., & Pennington, B. F. (1996). Imitation and pantomime in high-functioning adolescents with autism spectrum disorders. *Child Development*, 67(5), 2060-2073.

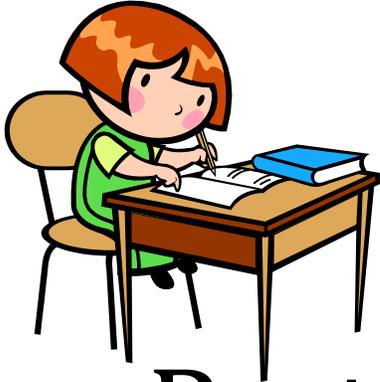
Rogers, S. J., Cook, I., & Meryl, A. (2005). *Imitation and play in autism*. Hoboken, NJ, US: John Wiley & Sons Inc, Hoboken, NJ.

Sherer, M., Pierce, K. L., Paredes, S., Kisacky, K. L., Ingersoll, B., & Schreibman, L. (2001). Enhancing conversation skills in children with autism via video technology: Which is better, "self" or "other" as a model? *Behavior Modification*, 25(1), 140-158.

Stone, W. L., Ousley, O. Y., & Littleford, C. D. (1997). Motor imitation in young children with autism: What's the object? *Journal of Abnormal Child Psychology*, 25(6), 475-485.

Tetreault, A. S., & Lerman, D. C. (2010). Teaching social skills to children with autism using point-of-view video modeling. *Education & Treatment of Children*, 33(3), 395-419.

Warren, S. F., Yoder, P. J., Gazdag, G. E., & Kim, K. (1993). Facilitating prelinguistic communication skills in young children with developmental delay. *Journal of Speech & Hearing Research*, 36(1), 83-97.



Research Participants Needed!

The Behavioral Assessment and Treatment Laboratory at Western Michigan University is seeking participants for a study examining the effects of a mirror on imitation for children diagnosed with autism.

The study is looking for participants with a difficulty imitating others. If you know a child with autism who struggles imitating others, please contact the researcher, Chelsea VanderWoude by email at Chelsea.k.vanderwoude@wmich.edu



Appendix C

Prescreening Session Email/Phone Contact Script

Hello my name is _____. Thank you for your interest in the study being conducted at the Behavioral Assessment and Treatment Laboratory at Western Michigan University. The title of the study is “Examining the Effects of a Mirror on Imitation for Children with Autism.”

The study is interested in using a mirror to potentially increase the imitative abilities of children with developmental disabilities between the ages of two and 10. Imitation is the match between the behaviors of two independent people, and is commonly difficult for children with developmental disabilities. The study is using a mirror to teach children how to imitate.

Only children who are between the ages of two and 10 can participate in the study. Participants must have difficulty imitating the behavior of others. In order to find out whether or not a child is eligible to participate in the study, he/she will be asked to complete an imitation assessment, which should take about one hour. The assessment will ask the child to imitate play actions. After the assessment is completed it will be determined if the child is eligible to participate in the study.

If you decide to let your child participate in the study, he/she will be asked to participate in one to 10 sessions a week, up to 6 months. Each session will last approximately between 15 and 45 minutes. Sessions can take place in the home or school setting, depending on your preference.

During sessions, the participant will be asked to imitate a facial behavior modeled by a member of the research team. Some sessions will use a mirror to help the child imitate the model. If your child is unsuccessful at imitating the behavior, an investigator will prompt the participant by providing assistance to match the behavior of the model. Each participant will be asked to engage in two imitative behaviors not previously mastered. Once the participant demonstrates mastery of both behaviors over duration of time, the study will be eligible for conclusion.

Once the sessions have ended, the child will be asked to participate in a posttest measure. The posttest will ask the child to engage in a number of imitative behaviors, both physically and verbally. The assessment will take approximately one hour, and will help us determine the increase of imitative skills your child may have mastered.

All of the information provided during the study is confidential and will be coded and kept separately from any of the information that is provided containing personal identifiers such as names, telephone numbers, or email address. Participation in this study is completely voluntary and you may pull your child from the study at any time without any effect on our relationship with your child’s school or Western Michigan University.

Phone Script: Do you have any questions? Would you like to set up an appointment?

Email Script: Please do not hesitate to contact me if you have any additional questions or concerns. Would you like to set up an appointment?

Appendix D
Semi-Structured Imitation Assessment Measure (SSIAM)

Assessor:

Participant:

Pre/Posttest:

Date:

Instructions: Each test item will be scored for echoic and motor imitation.

The key for coded such, are as follows:

No response (NR): Indicate NR when the participant does not begin to imitate within 5 seconds of the discriminative stimulus.

Incorrect Attempt (IA): An IA signals the participant made an attempt to engage in the prompted behavior, but was unsuccessful.

Correct Attempt (CR). A CR code denotes a match between the behavior of the model, and the behavior of the participant.

Semi-Structured Imitation Assessment Measure

<u>Skill</u>	<u>Behavior</u>	<u>Motor</u>
Object Imitation	Put phone to ear. "Do this!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Put baby to chest. "Let's hug the baby!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Bang on Drum. "Let's make music!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
Fine motor	Crosses hands over one another. "All done"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Makes a thumb up, places opposite hand flat underneath. "Help"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Waves hand. "Say hi!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
Gross Motor	Point to sky. "Over there!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Hold both arms out at sides. "It's a plane!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Touches toes. "Let's touch our toes!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
Facial Imitation	Make O shape with mouth. "Oooh."	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
	Touch ear lobe. "Let's touch ears!"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR <input type="checkbox"/> NR

	Pat top of head. "Pat!"	<input type="checkbox"/> IA <input type="checkbox"/> CR
Echoic Imitation	"Say Dog" "Say Help" "Say Please"	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR <input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR <input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
<u>Motor Behavior Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	<u>Object Motor Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	
<u>Facial Imitation Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	<u>Fine Motor Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	
<u>Gross Motor Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	<u>Echoic Trial Totals</u> <input type="checkbox"/> NR: <input type="checkbox"/> IA: <input type="checkbox"/> CR:	

Appendix E
Semi-Structured Imitation Assessment Measure
(SSIAM) Manual

Summary The SSIAM was created to measure an individual's imitative abilities within five separate categories, object, fine motor, gross motor, facial, and vocal for non typically developing participants. The SSIAM scores are used to determine the level of skill for each category, as well as an overall score for imitative abilities in both motor behavior and vocal behavior.

Details The SSIAM was created as an assessment tool to be used in an undergraduate honor's thesis at Western Michigan University in the 2012 academic year.

Description The SSIAM is a semi-structured assessment aimed to measure imitative abilities categorically.

The overall assessment takes approximately 30 minutes to administer, (depending on the level of skill) and slightly less than 15 minutes to score. Training is required to administer and score the assessment.

Assessment Prior to beginning the assessment, if possible, it may be useful for the assessor to tell the participant that they are going to start playing a game. The game is to copy whatever the assessor does.

To determine the level of skill for a participant, an assessor will provide a modeled behavior in combination with a vocal request to imitate the assessor through motor and vocal behavior. The modeled behavior is provided in the middle column of each imitation category. The behavior is listed, as well as the desired command to be issued by the assessor. For example, the fine motor skills specify that the assessor wave hand, while telling the participant to "Say Hi!" After doing so, the assessor will then wait five seconds to allow the participant to imitate both vocally and physically.

If the participant does not imitate the behavior, or imitates the behavior incorrectly after the first model, the assessor is then required to give the child an additional model. If the participant fails to respond or responds incorrectly after the second model, the assessor is required to give one more final model. If the child fails to respond correctly after the third final model, the behavior is then coded. The assessor must wait 30 seconds after each failed model before providing an additional model. By doing so, the assessor is guaranteeing the child has ample time to respond and is not being overwhelmed by the assessor's models.

If the participant responds correctly during any of the three allotted models, the behavior is coded as correct, and the assessor is to move onto the next behavior. Following each opportunity for the participant to engage in a modeled behavior,

the assessor will code the behavior. No prompts are to take place during the assessment. The SSIAM is only used to measure the abilities of a participant, not to provide feedback.

Scoring

Scoring for the SSIAM is divided into seven categories, in order to highlight the participant's strengths and weaknesses objectively. The scoring categories are: motor behavior, object motor, fine motor, gross motor, facial, and echoic.

Motor behavior describes the participant's overall physical imitative abilities. To correctly imitate the researcher a participant's behavior matches that of the modeled behavior. The imitation skill total can be calculated by totaling all of the motor scores for each category.

Object motor is the participant's ability to imitate the assessor using toy objects. The objects used within the SSIAM are a phone, a small doll, and a drum. These items are essential to assess the participant's object imitation using the SSIAM.

Fine motor assesses a participant's ability to engage in imitative behaviors involving small muscles in the hands. Within the SSIAM, these abilities are assessed using basic words in sign language, such as "All done", "Help" and "Hi". The assessment measure uses these skills specifically, because these fine motor skills are most applicable to a developmentally disabled population.

Gross motor is the participant's ability to imitate behaviors involving coordinated movements of major muscles. Having the child engage in large movements assesses gross motor. Due to such, it is suggested that the participant and assessor be in an environment that is spacious enough to allow for such movements.

Facial imitation measures the participant's ability to imitate behaviors of the facial region. The facial region is described as anything pertaining to a body part above the neck. To assess this category it is essential to remove all mirrors and reflecting objects from the environment to ensure the validity of the codes.

Echoic behavior assesses the participant's ability to engage in imitation that directly mimics the assessor's verbal behavior on a point-to-point correspondence. To assess this category, the assessor may choose up to three verbal behaviors that the child was unsuccessful in imitating on past items.

The key for the previous categories is as follows: No response (NR), Incorrect Attempt (IA) and Correct Response (CR).

An NR code signifies the participant made no attempt to imitate the modeled behavior within five seconds. For example, if a participant is prompted to pick up the phone, but does not attempt to do so within the allotted five seconds, the behavior will be coded as having not occurred, or NR.

An IA signals the participant made an unsuccessful attempt to engage in the prompted behavior. For example, if the investigator says, “Pick up the phone!” but the child only responds with “pick up”, then the behavior will be coded as incorrect, or IA, due to the lack of a match between the investigator and participant.

A CR code denotes a correct match between the behavior of the model, and the behavior of the participant within five seconds. In example, for a child to correctly imitate the assessor vocally, the child will need to vocally match the prompting statement issued by the assessor. In example, Investigator: “Let’s talk on the phone!” Participant: “Yeah! Let’s talk on the phone!” If the participant then correctly imitated the investigator by picking up the phone, and holding it to his/her ear, the behavior would be coded as correct, or CR.

Appendix F
Western Michigan University
Department of Psychology

Principal Investigator: Stephanie Peterson, PhD
Student Investigator: Chelsea VanderWoude
Title of Study: Examining the Effects of a Mirror on Imitation for Children with Autism

Your child has been invited to participate in the study titled “*Examining the Effects of a Mirror on Imitation for Children with Autism.*” This study is being conducted by Dr. Stephanie Peterson and Chelsea VanderWoude from Western Michigan University’s Department of Psychology, and will serve as Chelsea VanderWoude’s honors thesis project.

What are we trying to find out in this study?

This study is interested in using a mirror to potentially increase the imitative abilities of children with developmental disabilities between the ages of two and 10. Imitation is the match between the behaviors of two independent people, and is commonly difficult for children with developmental disabilities. The study is using a mirror to assist children who have had previous difficulty with imitation.

Who can participate in this study?

Children between the ages of two and 10 with a developmental disability and a difficulty in imitating others may participate in this study.

Where will the study take place?

Sessions can take place in the home or school setting, depending on your preference.

What is the time commitment for your child’s participation in this study?

Your child will be asked to attend a screening session, to determine their eligibility to participate in the study. The screening session will last approximately one hour. If your child is selected to participate in the study, they will be asked to complete between one to 10 sessions a week, for a maximum span of 6 months. Each session will last approximately between 15 and 45 minutes

What will your child be asked to do if they are chosen to participate in this study?

The screening session of the study will last approximately one hour and will ask your child engage in a number of imitative behaviors, both physically and verbally. If your child qualifies for the study, they may be invited to begin sessions. During sessions, the participant will be asked to imitate a facial behavior modeled by a member of the research team. Some sessions will use a mirror to help the child imitate the model. If your child is successful in imitating the modeled behavior, they will be given a reward for correctly responding. These rewards could take the form of toys, food, or verbal praise. If your child is unsuccessful in imitating the behavior, the investigator will prompt the participant by providing assistance to match the behavior of the model. Each participant will be asked to engage in two imitative behaviors not previously mastered. Once the participant demonstrates mastery of both behaviors over duration of time, the study will be eligible for conclusion.

What information is being measured during the study?

Investigators will collect information regarding your child's imitation skills. The study will keep track of both correct, and incorrect responses throughout the study.

What are the risks of your child participating in this study and how will these risks be minimized?

As in all research, there may be unforeseen risks to the participant. If an accidental injury occurs, appropriate measures will be taken; however, no compensation or additional treatment will be made available to except as otherwise stated in this consent form. In the event of an injury, this study will not provide compensation or additional treatment.

Another potential risk of your child's participation is that they may experience distress or become upset while participating in the study. If your child becomes frustrated in any of the sessions or becomes upset, he/she will be redirected to engage in a previously mastered task. This task will allow the child to take a break from the research at hand.

What are the benefits of your child participating in this study?

This research may potentially increase your child's imitation abilities. This may improve the wellbeing of your child by decreasing the level of distress for future imitation procedures. The research may increase each participant's ability to engage in imitation, both in a school and home setting.

Are there any costs associated with your child's participation in this study?

There are no costs associated with your child participating in this study.

Is there any compensation for your child's participation in this study?

There is no compensation offered for allowing your child to participate in the study.

Who will have access to the information collected during this study?

All of the information collected in the study is confidential. This means you and your child's name will not be included on any of the data collection sheets. In addition, all of the information provided from you and your child will be coded and kept separately from any telephone or email that was used to schedule this appointment. Your telephone and email contact information will be destroyed after the study is complete. All of the collected information will be kept in a locked file in the principal investigator's research lab for at least seven years.

What if you want to stop your child from participating in this study?

You can choose to remove your child from the study at anytime for any reason. You and your child will not suffer any prejudice or penalty by your decision to end your child's participation. Neither you nor your child will experience any consequences either academically or personally if you choose to withdraw your child from this study. The investigator can also decide to stop your child's participation in the study without your consent.

Should you have any questions prior to or during the study, you can contact the primary investigator, Dr. Stephanie Peterson at (269) 387-4479 or at stephanie.peterson@wmich.edu, or

the student investigator, Chelsea VanderWoude at (269) 352-3818. You may also contact the Chair of Human Participants Institutional Review Board at (269) 387-8293 or the Vice President for research at (269) 387-8298 if questions arise during the course of the study.

The Human Participants Institutional Review Board (HSIRB) as indicated has approved this consent document for use for one year by the stamped date and signature of the board chair in the upper right corner. Do not participate in this study if the stamped date is older than one year.

I have read this informed consent document. The risks and benefits have been explained to me. I agree to my child taking part in this study.

Please Print Your Name

Please Print Your Child's Name

Parent's Signature

Date

Appendix G
Datasheets

Participant:

Date:

Assessor:

Session number:

Behavior:

1	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
2	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
3	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
4	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
5	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
6	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
7	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
8	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
9	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR
10	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR	<input type="checkbox"/> NR <input type="checkbox"/> IA <input type="checkbox"/> CR

Appendix H
Western Michigan University
Department of Psychology

Parent Permission for Media Presentations

This permission form concerns your child’s participation in a Western Michigan University Psychology Department research project entitled “Examining the Effects of Mirror on Imitation” conducted as part of an honors thesis by Chelsea VanderWoude (student investigator) and Dr. Stephanie Peterson (primary investigator).

Your written permission on this form allows short (e.g., 1-3 minutes) video clips of your child to be shown as part of media presentations at professional conferences and meetings (e.g., thesis defense) to illustrate the specific training procedures used in this research project. To protect confidentiality, your child’s name will not be used and a pseudonym will be substituted. No other use of these video clips is approved or implied.

You may choose not to allow such presentations and your child’s participation in this project will in no way be affected or jeopardized.

You may withdraw this permission at any time. If, after granting permission, you change your mind and do not wish to have your child’s videotapes used in media presentations for professional training purposes as described above, please contact the principal investigator to request that your child’s video clips be excluded from use. Call or write to:

Dr. Stephanie Peterson, Dept of Psychology
3522 Wood Hall, WMU, Kalamazoo, MI 49008
Phone: (269) 387-4479

Your signature below indicates that you, as parent or guardian, can and do give your permission for video clips of your child to be included in professional presentations as described above. If you do not wish to provide permission, please check the NO box and write N/A on the parent signature line.

Child’s Name: _____

Your Name: _____
(please print)

- Yes, you may use my child’s video clips as described
 No, you may NOT use my child’s video clips

(Parent/Guardian signature)

Date

Signature of person obtaining permission

Date

Appendix I



Kalamazoo / Battle Creek Autism Society

Kalamazoo/Battle Creek Autism Society
812 S. Westnedge Ave.
Kalamazoo, MI 49008
www.asa-kal.org

November 12, 2012

Dear Members of the WMU HSIRB,
Chelsea K. VanderWoude has requested to recruit participants for her honor's thesis via the Kalamazoo/Battle Creek Autism Society's website, www.asa-kal.org. I have reviewed the proposal for Chelsea's honor's thesis titled, *Examining the Effects of a Mirror on Imitation for Children with Developmental Disabilities*. I approve having the study listed on our website for the purposes of recruiting participants, on the condition that the study has HSIRB approval and we are given a copy of this formal approval with our website listed as an approved means of recruiting participants.

Most sincerely,

Kris Bodine
Vice President
Kalamazoo/Battle Creek Autism Society
kris@asa-kal.org
www.asa-kal.org

Appendix J

