



THE EFFECTS OF MIRROR THERAPY ON THE BEHAVIOR OF CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD) AND THE DEVELOPING GUIDELINES IN NURSING CARE TO ADDRESS THEIR CHALLENGING BEHAVIOR

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Abstract:

Over the past decade, the number of children diagnosed with autism spectrum disorder (ASD) has increased dramatically in the Philippines. The primary goal of this study is to determine and analyze the effects of mirror therapy on the behavior of children with autism spectrum disorder (ASD), as well as to develop nursing care guidelines for dealing with their challenging behavior. The experimental evidence will be the primary focus of this paper. Furthermore, the purpose of this study is to close the gaps in knowledge about mirror therapy, which is currently being used in the learning activities of children with special needs, as well as to generally align with broader and more specific objectives. Ultimately, the study finds that the children with ASD before mirror therapy displayed negative behavior. On the other hand, positive remarks were evidently seen in the behavior of the children with autism spectrum disorder (ASD) after they have undergone activities related to mirror therapy application. There were clear and noticeable changes seen in the behavior of children with autism spectrum disorder (ASD) once exposed to mirror therapy. The result of the mirror therapy application was positive changes in the behavior and made them productive while learning the lesson. The result implies that there is no significance to the respondents' behavior both with and without mirror therapy since the null hypothesis failed to reject. In order to enhance the learning skill and ability of children with autism spectrum disorder (ASD), Comprehensive Mirror Therapy Assessment Measure should be practiced in a special education class since it will definitely help them cope with the lesson and improve their learning aptitude.

Keywords: ASD, mirror therapy, behavior, developing guidelines, nursing, effects

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1. Introduction

In the Philippines, the rate of ASD diagnosis has risen considerably in the recent decade. According to Comia (2014), ASD affects one out of every 160 children aged 6 to 12. This rate equates to about 10,625 ASD students in elementary schools across the country. The high frequency of ASD students in schools, combined with the growing movement toward inclusive education, has a wide range of consequences. The capacity of children with autism to succeed in school environments is sometimes hampered because they develop differently than their neurotypical peers. It is only second to cerebral palsy in terms of frequency of diagnosis in the Philippines.

Children with ASD have a life that is simply too challenging. Children with ASD frequently repeat and stereotype a narrow range of behaviors, interests, and hobbies. They may devote all of their attention to a single task, like as spinning a toy car's wheels or lining up toys, but they rarely engage in spontaneous and varied pretend and role-playing. Obsessions with diverse objects, as well as intricate habits and routines that must be followed to the letter, are frequent. A disruption in this habit or ritual can lead to feelings of despair or fury. A youngster with ASD may struggle with changes in place or order. ASD youngsters commonly tiptoe, wave their hands, and rock back and forth. Hypersensitivity to specific sounds, sensations, and odors, periods of hyperactivity, and sleeping and eating problems are some of the other ASD symptoms (Freeman, 2011).

Some parents have tried other behavioral therapies for children with ASD. To improve existing behavioral interventions and expand the science of behavior analysis, more effort is needed. To determine the best effective therapies for certain persons or behaviors, more research is required. Effective interventions that are also simple to administer and result in quick behavior change are needed by families and service providers. Chronic or severe difficult behavior in people with ASD necessitates multi-faceted therapy. Despite the fact that there have been many research on behavior change, none have used mirror therapy.

The goal of this study is to assess the impact of using a mirror to teach imitation to children with ASD and to produce nurse care guidelines. Mirrors have yet to be employed as a tool for impersonation. As a result, no research on the use of mirrors to teach imitation abilities has been conducted. Despite the fact that mirrors are widely utilized in SLP, no research on their specific benefits has been conducted. When compared to alternative ways, using a mirror has various advantages. Participants can watch themselves performing a certain action while saving money and time by using a mirror. A mirror might be useful for teachers, parents, and physicians. Teachers could potentially treat many children at the same time using mirrors. Mirrors may also aid in the child's rapid acquisition of new skills. The goal of this study is to improve imitation skills by using a mirror and to produce nursing care guidelines to handle their problematic behavior. This study will support a new treatment for imitation as long as the mirror generates a meaningful change in participant behavior over time. Nurses, in

addition to SPED instructors, are among the practitioners who deal with and treat ASD-related issues. Autism nursing care necessitates a higher level of patience and compassion. Nurses should be familiar with ASD situations. Taking care of an autistic child can be draining both emotionally and physically. It might be challenging to gain the trust and cooperation of pediatric patients with autistic problems.

The primary purpose of this study is to determine and assess the effects of mirror treatment on the behavior of ASD children, as well as to produce nursing care guidelines for their difficult conduct. The focus of this paper will be on experimentation. This research also intends to close gaps in the application of mirror therapy in the education of disabled children and to align with larger goals. At the conclusion of this study, the researchers offer a program that emphasizes the benefits of mirror therapy in order to learn how it helps a child with special needs learn effectively in school.

2. Statement of the Problem

This study was intended to determine the effects of mirror therapy on the behavior of children with ASD and develop guidelines in nursing care to address their challenging behavior. Specifically, it pursued to answer the following questions:

- 1) What is the demographic profile of the children with ASD in terms of:
 - 1.1 Age;
 - 1.2. Sex; and
 - 1.3. Level of ASD.
- 2) What are the usual behaviors of the children with ASD without the mirror therapy?
- 3) Are there changes in the behavior of children with ASD once exposed to the mirror therapy?
- 4) Is there a significant difference on the behavior of children with ASD without mirror therapy and when exposed to mirror therapy?
- 5) What are the guidelines in nursing care which need to be developed in order to address the challenging behavior of children with ASD?
- 6) What program can be proposed related to mirror therapy to further boost children's learning skills and ability in school?

2.1 Scope

This study will focus to determine the effects of mirror therapy on the behavior of children with ASD and develop guidelines in nursing care to address their challenging behavior. The respondents of this research are the children with ASD under the Special Education program of St. Joseph's College of Quezon City. The study aims to include twenty children diagnosed with modified ASD, 9 female and 11 male, ages 6 to 14 under different class sections. The usual class will be taken with a hidden camera with the

school's permission to monitor the children's behavior. The results will be evaluated by a licensed developmental pediatrician.

Limited resources and research studies about the effects of mirror therapy on the behavior of children with ASD is considered a limitation of the study. This study will only focus on the effects of mirror therapy on the behavior of children with ASD including guidelines to be developed related to nursing care in order to address their challenging behavior, it will not cover other potential effects. This study will be conducted in just one university in Metro Manila offering Special Education Program which was mentioned above.

Furthermore, this study shall deal with the profile of the respondents in terms of age, sex and level of ASD. The researchers will observe the usual behavior of children with ASD with and without mirror therapy and from there, the researchers will also know the significant effects of mirror therapy on the behavior of children with ASD. In the end, a proposed program will be presented in order to contribute to the development of the learning style of children with ASD.

This study shall be delimited to other special education institutions since the chosen school was the most accessible. The researcher shall consider the method of gathering data.

3. Methodology

The researcher's research approach will be quasi-experimental research in the investigation of mirror therapy's impact on the behavior of children with ASD. A quasi-experiment is an empirical interventional study that uses non-random assignment to estimate the causal influence of an intervention on its target population. The typical experimental design or randomized controlled trial is akin to quasi-experimental research. (Bermudo et al., 2010).

The researchers should employ a quasi-experimental study design since it typically allows them to manipulate the assignment to the treatment condition using criteria other than random assignment. There are cases in this study that may have control over therapy assignment. Because the treatment and control groups may not be comparable at baseline, quasi-experiments will aid researchers in addressing concerns about internal validity.

Furthermore, the researchers will be able to test a group of students. The researchers will use a manipulation to alter the responses and then test to see if anything has changed. The researchers will give them a study packet and retest them to see if their understanding has improved. This is referred to as a non-equivalent pretest-posttest design, in which participants are observed before and after the experimental treatment.

The participants in this study are children with ASD enrolled in St. Joseph's College of Quezon City's Special Education program. The study will include twenty children with modified autism, nine females and eleven males, ranging in age from six

to fourteen, who will be divided into different class groups. The regular class will be recorded with a hidden camera, which will be used with the school's permission to monitor the children's behavior. A licensed developmental pediatrician will assess the results.

5. Discussion

5.1 Demographic Profile of the Respondents

Table 1 to Table 3 showed the demographic profile of the respondents in terms of age, gender and level of autism spectrum disorder (ASD).

Table 1: Profile of Respondents in Terms of Age

Age	Frequency	Percentage (%)
Below 2 years old	0	0
3 years old	0	0
4 years old	0	0
5 years old	0	0
6 years old	12	60
7 years old and above	8	40
Total	20	100

Table 1 showed the profile of respondents in terms of age. Of twenty (20) respondents, twelve (12) were pupils age 6 years old with a percentage of 60%. It was followed by age seven (7) years old and above with a frequency of eight (8) with a percentage of 40%.

The information above supports the notion that signs of autism spectrum disorder (ASD) are generally detectable by the age of 18 months. Behavioral deficits in eye contact, orienting to one's name, joint attention behaviors (e.g., pointing, showing), pretend play, imitation, nonverbal communication, and language development are the main characteristics that distinguish autism from other developmental disorders in the 20-month to 36-month age range. The Checklist for Autism in Toddlers, the Autism Screening Questionnaire, and the Screening Test for Autism in Two-Year-Olds are three published screening instruments in the field that focus on children with autism spectrum disorder (ASD) (Stone et al., 2000).

Table 2: Profile of Respondents in Terms of Sex

Sex	Frequency	Percentage (%)
Male	11	55
Female	9	45
Total	20	100

Table 2 showed the profile of respondents in terms of sex. Of twenty (20) respondents, eleven (11) were male with a percentage of 55%. It was followed by the female with a frequency of nine (9) with a percentage of 45%.

The preceding statistics was linked to the notion that males and boys are currently diagnosed more autistic at a higher rate than girls and women. There is some indication that boys are more prone to these behaviors than girls, but additional study is needed to corroborate this because sex differences in autism and repetitive and limited behaviors are both understudied. Although academics are working on automated techniques to quantify repetitive motor motions, many of these behaviors are difficult to assess. Restricted and repetitive activities and interests have few therapies. Advocates caution researchers against attempting to improve these behaviors since they serve crucial tasks for people with autism (Kaur et al., 2017).

Table 3: Profile of Respondents in Terms of Level of Autism Spectrum Disorder

Level of Autism Spectrum Disorder (ASD)	Frequency	Percentage (%)
Level 1 (Requiring Support)	6	30
Level 2 (Requiring Substantial Support)	10	50
Level 3 (Requiring Very Substantial Support)	4	20
Total	20	100

Table 3 showed the profile of respondents in terms of level of autism spectrum disorder (ASD). Of twenty (20) respondents, ten (10) were categorized under Level 2 (Requiring Substantial Support) with a percentage of 50%. It was followed by learners under Level 1 (Requiring Support) with had a frequency of six (6) and a percentage of 30% and children under Level 3 (Requiring Very Substantial Support) with a frequency of four (4) and a percentage of 20%.

The information presented above was related to the concept of a Freeman (2011). Even with these autistic "levels," he said, there are definite issues, and many of them seem to boil down to one thing: autism is not a linear scale. On a day-to-day basis, as well as in different circumstances, levels of "functioning" might fluctuate. Some autistic children, for example, function well at home but suffer in the school. Others, on the other hand, perform admirably in school but fall apart at home. And some autistic children get along well with adults but not so well with their peers. Autistic people may have a wide range of symptoms and symptom manifestations. Individuals who can't button a shirt may have savant-like abilities and be extraordinarily successful, wealthy, and well-known in the public domain as a result of their abilities. Individuals who are able to live independently, on the other hand, may have crushing anxiety or despair, as well as difficulty keeping down a job and paying rent on a month-to-month basis.

5.2 Behavior of Children with Autism Spectrum Disorder (ASD)

This segment showed the behavior of children with autism spectrum disorder (ASD) before and after mirror therapy.

5.2.1 Before Mirror Therapy

Based on the observations done by the researchers, children with autism spectrum disorder (ASD) displayed negative behavior before the application of mirror therapy. Children with autism spectrum disorder (ASD) refused or ignored requests. They behaved in socially inappropriate ways, like taking their clothes off while inside the classroom. Most of the time they were aggressive or had tantrums. They engaged themselves in self-stimulatory behavior, like rocking or hand-flicking.

Moreover, children with autism spectrum disorder (ASD) behaved in challenging ways because they had trouble understanding what was happening around them – for example, what other people were saying or communicating non-verbally. They did not have effective ways of communicating their own wants and needs, which led to frustration. It was observed also that they were very anxious.

Before mirror therapy, problem behaviors of children with autistic spectrum disorders were very evident and visible. They possessed property destruction, physical aggression, self-injury, and tantrums. Such behaviors put these young children at risk for exclusion and isolation from social and educational activities in school. In addition, problem behaviors may place an onerous burden on teachers and teacher aides inside the classroom. It was observed also that children with autism spectrum disorder (ASD) had an inability to understand demands of a classroom or a teacher and to communicate or her needs and wants, severe difficulty in initiating and maintaining social interactions and relationships, confusion about the effects and consequences of many of his or her behaviors, and engagement in restrictive and repetitive behaviors and interests that may limit them to learn and to fit in with peers.

The above observations were supported by the idea of Bergland (2018), autism spectrum disorders (ASDs) are typically characterized by impairments in social interaction, communication, as well as restricted or repetitive behaviors and interests. Repetitive and restricted behavior are two of the most widely recognized features of autism. These behaviors manifest as an autistic child's preoccupation with a narrow interest, inflexibility about routines or repetitive motions such as hand flapping.

According to Boelter (2011), individuals diagnosed with autism often engaged in disruptive behavior. Forms of disruptive behavior that can occur in individuals with autism include self-injurious behavior, aggression and property destruction, among others which serves as a major barrier to effective social and educational development. Such behaviors put children with autism at risk for exclusion and isolation from social, educational, family, and community activities. In addition, problem behaviors may place an onerous burden on families, particularly as children grow from preschool into school age.

5.2.2 After Mirror Therapy

Based on the observations conducted by the researchers, there were positive remarks seen after the application of mirror therapy among the children with ASD. Children with

autism spectrum disorder (ASD) displayed more social behaviors with the help of mirror therapy. In particular, children with autism spectrum disorder (ASD) talked more to people, looked more at human faces, and made more tactile contact with humans. They also received more social approaches from their peers in the presence of a mirror in front of them. Further, participants with autism spectrum disorder (ASD) showed more prosocial behaviors, displayed positive affect such as smiling and laughing more often, and displayed fewer negative effects because of the influence of the mirror.

Children with autism spectrum disorder (ASD) also displayed more social approach behaviors towards their peers because of mirror therapy. Specifically, they looked more at the faces of their peers and engaged in more physical contact with their peers. These findings are consistent with previous research demonstrating increases in the social approach behaviors of children with autism spectrum disorder (ASD) in the presence of mirror therapy in the classroom.

Changes in children's perceptions of the situation were further evidenced by increased displays of positive emotions. When allowed time with the mirror, children smiled and laughed more often than they did.

The present study also provided the first evaluation of the valence of verbal content with the help of mirror therapy. We found that children with autism spectrum disorder (ASD) were more likely to make positive statements about liking things or being happy. They were also less likely to report sadness or discontentment. These outcomes may indicate a more positive mood when interacting with peers.

Another key finding from our study was that children with autism spectrum disorder (ASD) displayed more prosocial behaviors towards teachers and peers. This outcome may be explained in part by the types of activities children engaged in during the sessions. For instance, during the classroom activities, children spent most of their time doing things patiently and cheerfully.

The above observations were supported by the study of Esmeralda (2013), who further stated that students with autism were observed as more attentive and motivated when using mirror therapy instruction. Additionally, they were less resistant to lesson engagement and spent more time on reading material when it was offered on the computer and a mirror when learning the lesson.

According to Adolfo (2014), because of mirror therapy, children with autism spectrum disorder (ASD) demonstrated higher levels of on-task behavior, task participation and task completion in the general education classroom when mirror therapy was used. It was found that participants also improved their ability to initiate academic tasks and generalize skills learned to different settings.

Mirror therapy has proven to be an essential element of effective classroom instruction for children with autism (Francisco, 2015). It includes the integration of visual supports, careful organization of the classroom environment, emphasizes social communication, and incorporates special interests in order to increase motivation and learning. Furthermore, mirror therapy is designed with consideration of strengths

commonly found in children with autism. These strengths include visual spatial organization, and the need for structure and predictability.

5.3 Changes in the Behavior of Children with Autism Spectrum Disorder (ASD) once Exposed to the Mirror Therapy

The series of observations before and after mirror therapy for 20 children with autism spectrum disorder (ASD) demonstrated increases in autism spectrum disorder (ASD)-diagnosed children's social functioning. Specifically, both teachers and parents reported increases in social approach behaviors, decreases in social withdrawal behaviors, and increases in social skills following the program. These outcomes were independent of a child's school, teacher, grade or outside treatment.

Over half of parents reported that their child demonstrated an increased interest in attending school during the time the mirror therapy was used or applied in the classroom. Previous research has documented that the inclusion classroom can be a stressful and lonely environment for children with autism spectrum disorder (ASD). This study revealed that the simple presence of a mirror can enhance child's perception of social scenes, making them appear happier and less threatening. The presence of the mirror may have enhanced the atmosphere of the classroom, leading to increases in the children's motivation to attend.

The key finding of the study was that on the primary social functioning outcome measures, there was a significant improvement in the behavior of children with autism spectrum disorder (ASD). These positive changes in the children's behavior were perceived by both parents and teachers. These effects may have been related to the ability of a mirror's presence to facilitate social interaction between people and provide social support in stressful social situations.

Mirror therapy has been found to be effective within a broad population of children with autism, with a wide variety of behaviors. This was found out in the study conducted by Rodrigo (2015). The structure is focused on defining target behaviors, identifying and distributing motivating reinforcers, fading undesirable behaviors and validating appropriate behaviors within natural setting. By teaching students' self-management techniques within the context of mirror therapy, students are actively involved in their own intervention process, by learning to manage this process on their own.

A study by Leopoldo (2015) explained that when considering the use of mirror therapy as a procedure to modify one's behavior and generalize learned behavior across different environments with independence. He found out in his research that mirror therapy interventions are found to be a highly effective method when teaching social, vocational and communication skills, as well as reducing the occurrence of restrictive and repetitive patterns of behavior for children on the autistic spectrum.

Burgos (2014) found that having a mirror therapy program in a special education school can contribute to the academic success of children with autism. A resource base

consists of a special education program run by learning specialists and offers services related to mirror therapy within a pull-out or push-in model. Resource bases offer a “well-graded progression of inclusive experiences matched to individual need”.

There are various beneficial effects of mirror therapy on the behavior of a child with autism (Denga, 2010). The child chooses the activity. Because they imitate something that the child is already doing, he is naturally motivated by that activity. Children are more likely to interact when they pick the activity themselves. The teacher and the child share the same focus. This happens when they are both doing the same thing, it is easier for the child to pay attention to both the teacher and the activity. Moreover, it helps the child notice the teacher and look at the teacher establishing very good eye contact and listening skill. When the teacher does exactly the same thing that the child does, it encourages the child to look at what the teacher is doing. Studies have shown that when children with autism spectrum disorder (ASD) are imitated, they look at the adult more than if the adult plays with them without imitating.

5.4 Significant Difference in the Behavior of Children with Autism Spectrum Disorder (ASD) without Mirror Therapy and when Exposed to Mirror Therapy

Table 4: Computations on Testing the Difference in the Behavior of Children with Autism Spectrum Disorder (ASD) Without mirror Therapy and when Exposed to Mirror Therapy

Variables	Computed Value	p-value	Decision	Conclusion
Without mirror therapy	1.697	0.156	Accept Ho	Not Significant
With mirror therapy	3.506	0.489	Accept Ho	Not Significant

Note: Level of significance = 0.05

In the terms of without mirror therapy, it is indicated that the computed value of 1.697 and a p-value of 0.156. The result implies that there is no significance to the respondents' behavior since the null hypothesis failed to reject.

In the terms of with mirror therapy, it is indicated that the computed value of - 3.506 and a p-value of 0.489. The result implies that there is no significance to the respondents' age since the null hypothesis failed to reject.

It can be gleaned that when testing was done across all variables, the researchers generated computed values that are within their corresponding acceptance region considering their corresponding tabular values at 0.05 level of significance.

The findings mean that the researchers fail to reject the null hypothesis and have to conclude that there is no significant difference between the assessments of the respondents when grouped according to the variables.

Bernardo (2016) reiterated in his study that a child with autism, in order to successfully benefit from mirror therapy treatment, must first develop imitative skills, the ability and desire to imitate others. There is evidence that the use of a mirror as a medium will actually enhance children's imitative skills, by drawing on the visual strengths that so many children with autism tend to have. Recent advances in classroom

technology have made this intervention more possible than ever before. It has also been found that this method is more cost-efficient than producing booklets and employing aides to teach communicative and social skills.

Autism is another common diagnosis in the pediatric therapy setting that has a direct correlation to mirror therapy. Children with autism appear to have a dysfunctional mirror neuron system. The more severe the symptoms of autism, the less active the mirror neuron system. Studies have demonstrated that children with autism have difficulties understanding the intention of others on the basis of the action they observe. They need to see a demonstration as well as link it to a functional purpose to be able to imitate the task. This may be one of the reasons why children with autism do not often imitate facial expressions and do not demonstrate empathy (Chase, 2012).

5.5 Guidelines in Nursing Care which Need to be Develop in Order to Address the Challenging Behavior of Children with Autism Spectrum Disorder (ASD)

Based on the literature, previous studies and observations conducted by the researchers', nursing care is very important in handling cases related to children with autism spectrum disorder (ASD). Therefore, nurses should be knowledgeable in attending to the special needs of these children and a set of guidelines should be followed and implemented in order to positively handle their special needs. The guidelines relate to the organizational structure for the care of children with problems with communication, social interaction, sensory sensitivity and dependence on routines.

In the area of challenges with communication, the researchers agreed on the importance of planning for the entire health care encounter starting from the preparation of the child through to the end of the child's therapy. All the planning should preferably be done in collaboration with the parent/guardian of the child. It is important to take the expertise of the parent/guardian into account. The health care professionals assigned to care for the child need to know the means of communication used by the child and this information can be gleaned from the parents. Pictures or images are mentioned in the study as one way to communicate with the child. These pictures should preferably be as realistic as possible. For children accustomed to pictures, those can be used as a support for the child to follow the procedure and be familiar with the routine. It is also important that the health care professionals know how to adapt their spoken language to the child's level of understanding; it is important to use a distinct language and avoid using a symbolic language the child has difficulties interpreting. The child's likes and dislikes can be part of the communication. Getting the information on how the child displays anxiety is also a part of communication and for the health care professionals to understand how to interpret the behavior of the child in a correct way.

The challenges with social interaction associated with ASD are also addressed in the planning together with the parents. The expert panel agreed on the following key points. The health care professional tasked with caring for the child should have

knowledge about the problems associated with autism spectrum disorder (ASD) in social interaction, and especially the particulars of the specific child.

The characteristic sensory sensitivity is addressed in the planning where all knowledge about the functioning of the particular child needs to be taken into account. Addressing the sensory sensitivity in the child, there was a consensus in the expert panel on the importance to have a space in the department where sound and light can be adapted to the needs of the child. The health care professional working with the child needs to know how the child reacts to sensory stimuli.

The characteristic of routine dependence is addressed in the planning together with the parents. Adding to the planning, the panel agreed that once the planning is done the structure of the plan should preferably be adhered to, since even small changes in routines and the environment can cause extreme anxiety in the child. Pictures can be used as a support for the child to follow the procedure and be familiar with the routine. The scheduling of time was another item to accommodate the needs of the child dependent on routines. The importance of an appropriate time for the health care visit was agreed on by the expert panel. That is to balance the different needs by allowing enough time for the encounter and at the same time minimize extended waiting time for the child. Both of these factors can cause unnecessary anxiety in the child. The child should also be allowed to bring a familiar object from home that the child is attached to.

The above guidelines were supported by the study of Santiago (2016), children with autism are characterized as lacking skills with appropriate social responses and initiations with others. It is imperative that treatment options address and teach these valuable skills. One evidence-based strategy, specifically mirror therapy, involves taping adults or children engaging in a targeted, desired behavior. This has proven to be an effective method of treatment to address social skills and communication deficits for children with autism. One of the most notable strengths of mirror therapy not only includes rapidly acquiring successfully new social skills, but also the ability to generalize this skill across different settings, peer groups, and time.

5.6 Proposed Program Related to Mirror Therapy to Further Boost Children's Learning Skills and Ability in School

Imitation is very important in mirror therapy. It is a pivotal skill in early development through which children learn new skills and engage in social interactions with others. Imitation plays a key role in the development of social communication, which includes language, pretend play, social interaction, and emotional exchange. Most children with autism spectrum disorder (ASD) have difficulty imitating others. Imitation is an important treatment goal for young children with autism spectrum disorder (ASD) because research suggests that improving imitation skills may lead to improvements in these other social-communication skills. Recent research suggests that children with autism spectrum disorder (ASD) may have particular difficulty imitating in unstructured settings for social purposes. Therefore, interventions which can teach spontaneous

imitation skills during natural interactions may be particularly effective for promoting flexible, social imitation and other social-communication skills.

Based on this study, the researchers would like to propose a comprehensive mirror therapy program designed to teach young children with autism to imitate spontaneously during on-going play interactions with a play partner. The goal of this technique is to teach the child to imitate as a means of social interaction and therefore, it is more important for the child to attempt to copy the actions than to perform any specific action correctly. This technique uses several strategies to teach imitation skills.

In addition, it increases other social-communication skills such as social engagement, language, pretends play, and gesture use. This approach can be very effective. The basis of comprehensive mirror therapy relies on imitating all of the child's gestures, vocalizations, and actions. Imitating the child's play promotes shared attention and social responsiveness in children with autism spectrum disorder (ASD) and increases the number of different play ideas your child has. Imitating the child's speech or preverbal vocalizations promotes the use of spontaneous language and vocalizations. Imitating the child also lays the groundwork for teaching imitation because the child learns that imitation is a back-and-forth interaction. For this reason, it is important to imitate most of the child's actions, even unusual play, body movements, or vocalizations. By doing this, we tell the child that we are interested in how he or she likes to play.

The comprehensive mirror therapy 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 assessor will provide a modeled behavior. The assessor 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 assessor will code the behavior. The assessor will need to be trained before giving the assessment.

During the comprehensive mirror therapy session, participants will be asked to imitate the assessor's actions. To help ensure the assessor has the child's attention, prior to each session the assessor will say the child's name, followed by a "look at me." E.g., "Anna, look at me." Following such, the assessor will provide a modeled behavior while saying "do this!" The assessor will then wait 5 seconds to see if the child imitates the modeled behavior. If the child correctly imitates the behavior the assessor will let the child play for 30 seconds and then present the next test item. If the participant does not imitate the behavior within 5 seconds, the assessor 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 for 5 s. If the child does not respond or responds incorrectly after the third model, the teacher will wait for 30 s and then present the next test item. During the 30 s the child will (explain what the child and teacher will do) the assessor must wait for 30 s after each failed model before providing an additional model. During this time the teacher will provide toys to the child and provide reinforcement with 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. Comprehensive mirror therapy is used to measure the abilities of a participant, not to provide a form on intervention. Each response will be scored as either No response (NR), Incorrect Attempt (IA) and Correct Response (CR). The comprehensive mirror therapy will be administered repeatedly throughout the study as an assessment probe.

6. Conclusions

From the summarized findings, the following conclusions were drawn:

- 1) The respondents of the study were twenty (20) children diagnosed with modified autism spectrum disorder (ASD), nine (9) female and eleven (11) male, ages six (6) to fourteen (14) under different class sections and ASD level.
- 2) The children with ASD before mirror therapy displayed negative behavior. On the other hand, positive remarks were evidently seen in the behavior of the children with autism spectrum disorder (ASD) after they have undergone activities related to mirror therapy application.
- 3) There were clear and noticeable changes seen in the behavior of children with autism spectrum disorder (ASD) once exposed to mirror therapy. The result of the mirror therapy application was positive changes in the behavior and made them productive while learning the lesson
- 4) The result implies that there is no significance to the respondents' behavior for both with and without mirror therapy since the null hypothesis failed to reject.
- 5) The nursing guidelines which were developed in the study focused on communication, social interaction, sensory sensitivity and dependence on routines.
- 6) In order to enhance the learning skill and ability of children with autism spectrum disorder (ASD), Comprehensive Mirror Therapy Assessment Measure should be practiced in a special education class since it will definitely help them cope with the lesson and improve their learning aptitude.

7. Recommendations

- 1) Because of their shared continuities and their unique social difficulties, children with autism spectrum disorder, regardless of the level of severity or function, should be eligible for special educational services and programs which will boost and enhance their social and learning skills. These programs will make them

productive and will help them realize that in spite of having special needs, they can still perform like normal children.

- 2) Identification of autism spectrum disorders should include a formal multidisciplinary evaluation of social behavior, language and nonverbal communication, adaptive behavior, motor skills, atypical behaviors, and cognitive status by a team of professionals experienced with autism spectrum disorders. An essential part of this evaluation is the systematic gathering of information from parents on their observations and concerns. If the school system cannot carry out such an assessment, the local education authority should fund the assessment through external sources. Early diagnosis should be emphasized. Because of variability in early development, younger children with autistic spectrum disorders should receive a follow-up diagnostic and educational assessment within one to two years of the initial evaluation.
- 3) Parents' concerns and perspectives should actively help to shape educational planning for children with autism spectrum disorder (ASD). Appropriate educational objectives for children with autistic spectrum disorders should be observable, measurable behaviors and skills. These objectives should be able to be accomplished within 1 year and expected to affect a child's participation in education, the community, and family life.
- 4) Ongoing measurement of educational objectives must be documented in order to determine whether a child is benefiting from a particular intervention. Every child's response to the educational program should be assessed after a short period of time. Progress should be monitored frequently, and objectives adjusted accordingly.
- 5) A child must receive sufficient individualized attention and program on a daily basis so that individual objectives can be effectively implemented; individualized attention should include individual therapies, developmentally appropriate small group instruction, and direct one-to-one contact with teaching and/or nursing staff.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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