

PHYSICAL ACTIVITIES THROUGH MINI GAMES: INTERVENTION TOWARDS DESIRABLE BEHAVIOR FOR CHILDREN WITH AUTISM

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Abstract

Autism children have a challenge about understanding how to interact with others. They also have an impaired social cognition that makes it difficult to establish friendships and create positive social relationships. This problem can lead to desirable or undesirable behavior. So, this research aims to identify the desirable and undesirable behavior through several games with different interaction patterns, identify suitable physical activities that help interactions and intervention applicable in reducing undesirable behaviors among children with autism. Data was obtained through document analysis and observations conducted. Samples of research consist of eight children with autism from age from 4 to 9 years old from different categories: mild, moderate and severe. Samples were selected by using purposive sampling from Autism children who have learning problems and show the most undesirable behavior reactions and participation in activities conducted at an Autism Centre. Data from observations were reported from several aspects such as the behavior that impede learning activity, as well as the frequency and duration of such specific behaviors. Besides that, some examples of useful activities as interventions to reduce undesirable behavior are presented following the three categories.

Keywords: Autism, Intervention, Desirable behaviors

1. INTRODUCTION

Autism Spectrum Disorder (ASD) is a commercially terms for a group of complicated disorders of brain development. These disorders can be found in different levels and degrees, having adversities in social interaction, either in verbal and nonverbal communication. In a case of children who have Autism, they may have difficulties in developing their understanding level of hearing, language skills and also having difficulty in communication. They usually possess repetitive behaviors and, in many cases, autism kids usually exhibit unconventional or undesirable behaviors such as being aggressive, indicating tantrums or even hurting themselves. Individuals on the Autism Spectrum Disorder also have problems with social skills, communication, empathy and flexible behavior. They may also have abnormal sleep patterns, unusual eating habits and aggression to others.

Unchalee et al. (2013), identified three inconvenience problem involving social skills among children with autism; communication, self-control behavior and teamwork. Hence, this condition makes students with ASD have difficulties in succeeding in school. According to American Psychiatric Association (2000), the basic characteristics of autism include a major impairment in social interaction and communication and impede in

activities and interests. Besides that, people with autism also indicate a continuous impairment in social interaction and express restricted and repetitive of behavior, interest and stereotypical activities. Stereotyped behaviors involve repetitive mannerisms like whole body rocking, clapping hands, finger flicking etc. Hence, to intervene autistic children on social skills, an interactive and flexible teaching method need to be emphasized (Mesibov et al, 2000).

Malaysia has put in many efforts to enhance the quality of inclusive education on special needs students. For example, Ministry of Education of Malaysia (MOE) establishes its mission to give full and equal opportunities to those special needs students in education as stated in National Education Blueprint (2013-2025). To achieve this goal, it is important to find out the desirable and undesirable behaviors shown by autism children and then focusing on the suitable and usable methods as intervention that can be implemented to help them in learning.

Moreover, a difficult relationship between the children, home and teachers is contributed by lack of moral support from schools. Many cases find that parents are always left to fight alone for their children's right to get an education and, they need to deal with the effects of autism alone. Thus, this research investigates the desirable and undesirable behaviours shown by autism children, identify suitable physical activities that aid interactions among children with autism and intervention applicable in reducing undesirable behaviours among children with autism through physical activities in mini games.

The findings of this study will be beneficial to teachers, as they can gain ideas to develop an intervention to deal with behaviour of the children with ASD through certain activities following their needs and interests, help provide appropriate educational environments and programs for students so they have the opportunities in social, behavioural and academic success. Parents can also gain benefits from this study in dealing with autism children who might have learning disabilities, disruptive behaviours and help to develop parent-child communication as well as have better social communication skills.

2. REVIEW OF LITERATURE

Autism's characteristics are divided into three major areas which are challenging and unusual behaviors, speech or language delays and impairments and lack of competent in social interaction skills. This research will focus on challenging behaviors with some descriptions of other diverse types of symptoms.

According to Emerson et al (2001), challenging behaviors are hard, often and long lasting that may interrupt learning, involving the safety of physical and contribute to limited access to community facilities and services such as education. Heyvaert et al, (2010) stated usual categories of challenging behavior consists of physical and verbal aggression towards other people such as hitting, spitting and biting and property damage. Other examples of disruptive behavior include inappropriate verbalizations, temper tantrums, stereotyped or repetitive and self-stimulatory behavior, even self- injurious behavior categories such as self-biting, head punching, skin picking and head hitting, that are usually associated with Autism Disorder symptoms.

Usually, the common repetitive behaviors showed by autism children are hand-flapping, rocking, jumping and twirling, arranging and manipulation of objects and repeating phrases, words or sound. The tendency to engage in this behavior can be seen in the way they play with toys. Some of them spend hours lining up their toys in a specific way instead of using the toys for playing.

Moreover, according to Feeley et al, (2015) restricted and repetitive behavior contribute to stereotypes or repetitive motor movements, use of objects or speech, pressure on sameness, ritualized patterns of verbal or nonverbal behavior, highly impeded interests with high intensity, and hypo or hyper-reactivity to sensory input or having unusual sensory aspects of the environment. Besides, children with Autism also have unusual cognitive style and sensory patterns (Hussein, 2011).

Aggressive behavior is one of the most challenging behaviors that may lead to damaged consequences. The most common aggressive behavior is physical aggression in which an individual trying to or successfully injuring others through physical ways such as kicking, scratching, hitting, biting (Luiselli, 2012).

Aggressive behaviors can cause troubles on teachers, families and others. For examples, aggressive behaviors can limit a student's involvement in social activities because of the possibility to harming and disturbing others (Emerson, 2005; Luiselli & Slocumb, 1983). This aggression also involving physical contact which can cause injury to others and may provoke others to impose physical injury upon the aggressive individual. Hence, individuals who show challenging behaviors are also increasing risk of being neglected or abuse (Muddford, 2008).

Matson (2012) cited that self-injury behaviors may lead to physical and social isolation of the individual which may inhibit opportunities for social development, learning and community participation. Thus, a child's aggression if occurred is to gain access to attention, then a child would be taught an alternative communicative behaviour. In addition, other behavioural techniques like timeout, reinforcing incompatible behaviour, finding interesting physical activities may be some competing forms of reinforcement can be used.

To understand individual's personality, we need to know the social environment in which an individual exists. Cognition, personality, behavior and environment all interact with each other and also possible for counseling and therapeutic strives to be directed at behavioral factors, personal and environmental. Strategies to enhance well-being can also be aimed to improve emotional, motivational process, cognitive, improve behavioral competencies or changing the social conditions under which individual work and live. For instance, in school, teacher face the challenge to improve the academic and confidence level of the children especially children with disabilities and have learning difficulties such as autism, dyslexic, attention deficit, hyperactive and so on.

Children with autism have a challenge about understanding how to interact with others. Hence, this problem can lead to desirable or undesirable behavior. They also have an impaired social cognition for instance perceiving the intentions and emotions of others that makes it difficult to establish friendships and create positive social relationships. Children with autism also develop at a different pace and do not necessarily develop their skills in the same level with other children. Hence, this kind of difficulties in behavior can be associated with interaction between environmental and personal factors as shown in Reciprocal Determinism Model by Albert Bandura. According to Bandura (1977), reciprocal determinism is a model composed of three factors that influence behavior: the environment, the individual, and the behavior itself. This theory suggested that an individual's behavior influences and is influenced by both the social world and personal characteristics.

If a child copies a model's behavior and is given a reward, the child tends to continue repeating that behavior. The way to control their behavior is by giving them reinforcement which can be external or internal and positive or negative. However, positive or negative reinforcement will contribute a negligible impact if this reinforcement does not fit with an individual's need but the key point to highlight here is that it will usually lead to a person's behavior changes. When teachers want to reinforce certain behaviors, understanding what the kids prefer and able to create positive reinforcement help to create a better environment for them at home or learning centers.

Drash and Tudor's (2004) revealed that deficits in language and undesirable verbal behavior can be identified not only as characteristics of autism, but major causal factors which leading to the other characteristics of autism such as social interaction impairment and disruptive behavior. So, theory of social cognitive reveals about behaviorism and the focuses on behavior changes affected by observing others without active participation. This theory also pointed out that there is many passive learning by direct reinforcement (Schunk and Cherry, 2012), for instance, children can learn new behaviors and information by modeling and observation. Children with autism also can change their undesirable behavior into desirable behavior by observing and imitating others although without an active participation as long as with guidance from teachers, peers and parents.

Thus, physical activities and games can be alternatives to help managing disruptive behaviors and set as a tool to create quality programs for the students, whether the students are the active or non-active participants.

3. METHODOLOGY

This is a case study method which involves systematic and detailed collection of data on the actions of an individual, their social environment and specific events to find out how the individual reacts and the changes in social behaviour. It is also designed to investigate the desirable and undesirable behaviour from three categories of autism classification at an Autism Centre. Data were collected through observations and documentation analysis.

3.1 Population and Sampling Technique

The population in this study is children with Autism Syndrome Disorders (ASD) at an Autism Centre in Selangor. Purposive sampling techniques was employed where subjects were selected from three different categories which are mild, moderate and severe category. This type of sampling is to choose sample based on specific needs and characteristics.

In the mild category, three children were selected which are Darwisy (9 years), Wan (4 years) and Zaki (7 years), and labeled as A1, A2 and A3. Mild autism category may have advanced academic abilities and communication skills but they have very delayed social skills, severe sensory issues and extreme difficulties with organizational skills.

There were three children who were identified as moderate category: Nizam (9 years), Adam (7 years) and Haziq (6 years). They are labeled as B1, B2, and B3. The children in this category may be able to cooperate, imitate or attend in one to one setting or small groups setting and they were also able to participate in simple activities. Besides that, the children have the ability to receptively learn nouns, verbs and may have some expressive language.

The third category is severe: Luqman (8 years) and Asyraf (7 years) who were then labeled as C1 and C2. Severe Autism children are considered as requiring very substantial support which have severe deficits in verbal and nonverbal social communication skills, thus cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others.

During the activities, 25 facilitators were involved in the program with the Autism kids. After reviewing the data, researcher decided to choose samples from 3 different categories which are mild, moderate and severe. They were chosen due to their overall involvements in all activities.

Table 1: Background of samples

CATEGORY	NAME	AGE
A (MILD)	A1 Darwisy	9 years
	A2 Wan	4 years
	A3 Zaki	7 years
B (MODERATE)	B1 Nizam	9 years
	B2 Adam	7 years
	B3 Haziq	6 years
C (SEVERE)	C1 Luqman	8 years
	C2 Asyraf	7 years

This research employed document analysis and observation. Document analysis is a way to analyze data by gathering information related. Researcher chose to analyze the students' information details, after gaining permission from the school and parents. Document analysis was to identify samples for the study and observations are to identify desirable and undesirable behaviours among autism children. Two observation forms were designed to gather information during observation process. The first form was to take note on the desirable and undesirable behaviours of the children that impede learning and activity participation, the recorded actions included the duration and frequency of such behaviours, as well as prevention of targeted behaviours during the observations. Each child will be monitored by one or two assistants to help them in activities who would then record any undesirable behaviours shown.

The second form is to observe the children's social, cognitive, motor and emotional or expression skills. All these skills were evaluated through 5 games conducted: Hopscotch, Smash the Balloon, Colour Stamping, Musical Chair and Mannequin Challenge. The choices of the games were based on different Interaction Patterns by Avedon (1974) which are Interindividual, extra individual, aggregate and multilateral.

3.2 Observation

The observation was conducted during the activities held in stations and data were collected by one facilitator in each station during the observational period. Each game was selected based on specific interaction patterns for behavioral patterns as shown in Table 2.

Table 2: Children's Behaviours in Games

	Game 1: Hopscotch	Game 2: Smash the Balloon	Game 3: Colour Stamping	Game 4: Musical Chair	Game 5: Mannequin Challenge	Game 6: Dough Activity
Interaction Patterns/Skills	Extra- individual	Inter - individual	Aggregate	Aggregate	Multilateral	Extra - individual
Social Skill						
Cognitive Skill						
Motor skill						
Emotional Skill / Expression						

Interindividual pattern indicates the action expressed by children based on what is in their mind but no contact with another person or external object are required. Extra-individual represents the action relating with no contact with others and directed by a person toward an object in the surrounding. While, aggregate patterns are similar to parallel play where the action directed by a person and other person toward objects in the environment. Multilateral pattern is an action of a competitive nature involves three or more persons where one person as an antagonist player.

Hopscotch activity was chosen as this game aims to enhance the cognitive development of children by helping them to recognize the numbers and sequence of numbers besides developing their psychomotor skills. Second activity was Smash The balloon. Gross motor and social skill can be improved in this activity where strength, coordination, and balance skill were included. Children's social skill can be expressed through developing an understanding of the relationship between higher verbalization and actions on others. For Color Stamping, children were introduced with colors and help enhancing their color identification. This activity can promote fine motor skill and sensory motor skill development. Musical Chair aims to test children's alertness and reaction which has similar objectives with Mannequins Challenge activity with an emphasis on cognitive skills through acting according to the instructions given. Finally, dough activity was to enhance children's imagination, creativity skills and eye-hand coordination. Children are encouraged to create more experimentation skill because dough can stimulate their curiosity and they manipulate the dough into various shapes.

4. RESULTS AND DISCUSSIONS

Desirable behaviours are referred to behaviours that show engagement of individuals in the activities engaged by following instructions in a pleasant or desirable way. Undesirable behaviours or challenging behaviours refer to behaviours that frequently disrupt the learning process thus lead to threaten physical safety. Besides, it also represents emotional disturbance that have many negative impacts such as aggression, avoidance, escape or behavioural replacement. This negative consequence may oppress the behaviour temporarily, but the impacts are not long-lasting.

Table 3: Behaviours Shown during Activities by Categories

Category	Desirable behaviours	Undesirable behaviours
Category A (Mild)		
A1	- Enjoyed activity that involves music and colours	- Always distracted
A2	- Did not fear of balloons	- Repetitive behaviours
A3	- Able to do problem solving activity (dough)	- Walking around
	- Can do better than others (on their	- Cannot focus on activity
		- Crying and screaming

	own) - Easy coping with changes of activities - Express by communicating	- A resistance to being hold or touched - Have difficulty starting or continuing a conversation
Category	Desirable Behaviours	Undesirable Behaviours
Category B (Intermediate) B1 B2 B3	- Emphasized on cleanliness - Love colours (know the rule of activity) - Enjoyed the music and movement	- Kept running around - Shouting (tantrums) - Like to play alone (in their own world) - Lack of body balance (cannot stand properly) - Lack of motor skill - Always covering the ears (B1)
Category	Desirable Behaviours	Undesirable Behaviours
Category C (Severe) C1 C2	- Can follow activity after imitate (with teacher's guidance) - Enjoyed dancing and movement (with teacher's guidance)	- Did not understand simple instructions - Totally non responsive - Unusual eating behaviours - No respond to verbal instructions - Did not speak at all

Table 3 shows the summary data on subjects' behaviours based on three categories which are mild, moderate and severe. The recorded information from the observations indicated more undesirable behaviours shown during the activities. However, mild category seemed to be able to follow instructions and involved in more games as compared to Intermediate. Severe category has very limited responses and required special assistance and guidance to engage in simple activities.

Some undesirable behaviours that impede learning and activities involvement seen from all samples in three categories were tantrums, screaming, covering ears, crying and repetitive movements, running and walking around, and did not show any verbal and nonverbal communications. Although such behaviours are associated with Autism Disorder, but, physical activities have many benefits; games for example, when designed appropriately, can provide a fun, safe setting for interacting with other children, which offer excellent opportunities for practicing social skills. So, the activities may give the impact on children's ability to deal with appropriate behaviours.

Individuals with a higher level of functioning may be diagnosed as Asperger's Disorder. This mild category child work and live independently. The characteristics can be described as having normal intelligence although they may struggle with some tasks requiring them to make a sudden decision or changes their regular routines. They may struggle with functional communication, may show some resistance to routine and repetitive motions and struggle with social interaction including eye contact and so on.

B1, B2, B3 are samples for moderate category. Those who have this autism type may often need assistance, but they can also have some level of independence in their works and living conditions. The characteristics represent them is having some degree of mental problems and may find self-care tasks challenging. Besides, they also have a communication problem and over or under-sensitive to sights, sounds and other types of stimulation. They also have challenges to initiate an interaction with others.

As for severe category, those children who have this type of autism also have a degree of mental disabilities.

They cannot use spoken words to communicate with others or they are diagnosed as non-verbal.

However, functional level of children on the spectrum can change drastically with the right treatment and therapies. In addition, early intervention can improve social functioning, adaptive behaviours, language and issues of behaviours. So, what is the intervention applicable in reducing undesirable behaviours among children with autism? To answer this question data from the behaviours through game activities engagement were analysed from all categories.

a) Mild Category

From the observations made during all activities, they preferred activities which involved music and colour. They were not scared with the balloons and can smash the balloon. Their communication skills were also better than other categories and can-do activities with little support by teachers or facilitators. Samples seemed to be easily coping with changes. However, the undesirable behaviours reported based on results were samples were usually distracted and having repetitive behaviours such as walking around without purposes. Samples were also not able to pay attention on one activity for a long time. They also showed disruptive behaviours such as crying and screaming during the activities conducted. Besides that, they also refused to be touched because they preferred to walk and run around, disturbed their friends and also difficult to start or engage in conversations.

So, the intervention that is applicable for this category could be in aggregate interaction patterns which are emphasized on parallel play or cooperative play. Southwest Autism Research and Resource Center (1997) suggested parallel or cooperative play, which are having the same play activity as peers separately but still within close proximity are suitable for mild autism children category such as drawing using the chalk, playing tag with friends and talking to a friend about games they are watching. Parents or teachers may teach the children with autism the way to play functionally with various activities and materials. Activities and environment setting also play a significant role to motivate them and promote closer proximity with peers. When teaching them parallel play, teachers or parents also need to consider how close the children tolerate with others.

b) Moderate Category

The desirable behaviours shown during the observation were that all the samples were very much cared for their cleanliness. This can be proven during colour stamping activity. They will wash their hands each time after stamping the colour rather than wait until it's over. They also love to see colours because samples know the rule and how to do colour stamping with teacher's assistance. Samples also enjoyed the music and movement very much. They danced and moved their body when doing aerobic activity. It can be concluded that samples in this category are still showing interest in certain objects or activities with assistance from teachers.

However, they preferred to play alone and be in their own world. Samples were also having lack of balance and coordination because they cannot stand and walk properly. Besides, they were also having problems with their motor skill because they were unable do the activities without assistance. For example, B1, showed rapid repetitive behaviours by covering his ears most of the times and sometimes he screamed to others when he heard sounds. Results also indicate that the samples lack social interaction because they showed no communication with peers and kept acting in their own world and sometimes, they did not respond to noise or when their names were called.

So, some interventions for the undesirable behaviours may include the role of communication pictures where the child can select specific pictures to explain what is happening, what they want and what they need. According to Willis (2009), children with autism show a good respond to real pictures compared to line drawings. Picture Exchange Communication System (PECS) is suitable to help children with autism to develop their communication skills with others. This kind of activity implemented by the use of a series of graphics and pictures that can help nonverbal children communicate. This is because many individuals with autism respond better to visual aids. According to previous study, Picture Exchange Communication System (PECS) were reported as an effective intervention for autism children in reducing aggressive behaviour (Frea et al., 2001). Moreover, PECS can be implemented to moderate category due to their lack of communication skills and aggressive behaviours such as crying and screaming. This method is different from other communication because it was designed to address inadequacies of motivation for social reinforcement, no need prerequisite skills and it immediately educate them how to initiate, instead of teaching responding before initiating (Bondy & Frost, 1994).

c) Severe Category

The last category is severe. The samples showed limited behaviour to represent them. They can do activities after imitating or with teacher's assistance, but they preferred dancing or doing any movement with teacher's guidance also. They did not show more actions or undesirable behaviours because they preferred to be quiet and not responding at all unless with fully support by teachers. Samples did not understand simple requests or instructions given and totally non-responsive to others. They are in their own world and did not speak at all. They just tilt their heads and sometimes just nodding their heads. Besides, they also have unusual eating behaviours for example playing, scratching and scattering the food.

So, the intervention that is applicable for this category should focus on helping them to function in their daily life, build connections with others and established a sense of self. Children in this category need to be developed with fine motor skills in the fingers and hands in order they have endurance and strength in their hands before going to manipulate objects such as papers and pencils. Fine motor activities that can help to improve their development of motor skills are rolling and playing dough into shapes by using their palms of the hands, playing puppet fingers, catching bubbles and pickings the objects like coins and beads.

5. CONCLUSION AND RECOMMENDATIONS

Interventions applicable in reducing undesirable behaviours among children with autism are given according to the classifications or categories of abilities from mild to severe. The games which were carefully chosen were meant to explore their behaviours and helped researchers identify potential activities to increase desirable behaviours. It was found out that games like Hopscotch, Musical chair and Mannequin Challenge were not suitable for them especially who have severe Autism. The games emphasized on cognitive skills and seemed difficult for them to follow due to the inability to grasp basic rules of shared play. In fact, they are less likely to engage in games that require 'make-believe', collaboration, or social communication, thus revealed intensified undesirable behaviours.

Therefore, for mild category, parallel play or cooperative play which involve more than one child in a same activity are suitable if the objective is to enhance their interactions with peers. Children with autism may learn to share space with others while engaging in parallel play. The example of activities in parallel play includes colouring, play dough, puzzles, blocks and painting.

For moderate category, Pictures Exchange Communication Systems were identified as an intervention where it is aimed to enhance the functional communication skills of children with autism. This method may help children with autism to build increasing complex forms of communication, developed the speech and improve vocabularies.

Developing the children with motor skills are required for severe conditions. Language, social communicative skills and adapted behaviour can be improved by enhancing their motor skills. Another approach can be used as an intervention is active play because play encourage emotional growth, cognitive enrichment and influences personality development. Imagination and creativity are fostered by play. So, little achievements should be reinforced and celebrated so the child is going to be willing to try again the next time. Simple activities, like walking, playing with bubbles and throwing balls help them to explore objects around them, and increase desirable behaviours.

In the school setting, a teacher will identify first environmental hints to which the child will react and then the behaviours selected to respond to the signals such as making eye contact. If the child can correctly respond to the signals, the teacher reinforces the behaviour through verbal praise, rewards and so on. That is why, some physical activities through games can be used to help to teach certain desirable behaviours because children learn from imitation.

Therefore, activities or game selected must be suitable and flexible to children with autism because not all children can participate in the activities. So, identifying the categories and conditions of the children before choosing any activities should be implemented.

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