

Behaviour Management among Autism Children: A Systematic Review

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Abstract

International communities are encouraged to foster Education for All launched by UNESCO in 1990s. Regardless of their disabilities, special needs children are entitled for a quality education. However, autism children face behaviour problems which block learning and teaching in classroom. Behaviour modification techniques among these children will help teachers and parents modify negative behaviours to enable positive learning environment. The aim of this paper is to analyse the behaviour modification practices for autism children. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model is used to identify articles from the database of Scopus, Web of Science (WOS), Research Gate and Google Scholar. 115 articles were identified at initial stage regarding behaviour modification among autism children however only 16 articles were selected for this study. The selected articles are from the year of 2018 to 2024. The findings of the study were divided into four themes; ABA, PECS, social stories, and video modelling. Consistency and knowledge among special education teachers are important to practise behaviour modification in classroom. PECS, social stories, and ABA are frequently used behaviour modification practise while video modelling is least due to time constraints among special educators. In future, these techniques can be documented in easier manner to be practiced by teachers and parents on daily basis.

Keywords: Behaviour Management, Autism Children, Behaviour Modification

Introduction

Education for All was launched by United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1990. Everyone has the right to access education. The growth of special education in Malaysia is aligned with this motto (Malaysia Education Blueprint 2013-2025). Special education in Malaysia started in 1920s and growing rapidly to provide quality and equal education for all regardless of intelligence and social background (Hana et al., 2022). In Malaysia, special education is divided into three main categories; visually impaired,

hearing impaired and learning disability (LD). Autism falls under the learning disability category (Ministry of Women, Family and Community Development).

Autism is a neurological disorder that affects mental development of a child. This mental disorder often gives negative impact on language development, communication development and social interaction of a child (Salmihah et al., 2021). Besides, autism children often show extreme and repetitive behaviours (Salmihah et al., 2021). Autism is a mental disorder which influences behaviours and adaptation to the new environment (Zulkalfi et al., 2018). According to Khalil et al (2020), autism affects behavioural development, verbal and nonverbal communication and social skills among children. Autism children like to isolate themselves, do not prefer changes in their daily routine, reactionless, anti-socializing and often experience communication difficulties (Bujang et al., 2019).

Autism children often face behaviour issues due to verbal and non-verbal communication deficits (Salmihah et al., 2021). Inability to convey their emotions and feelings lead to behavioural problems among these children. Behavioural problem among autism children cause problem in their daily life such as bully incidents, low performance in their academic and inability to socialise (Norwood, 2021). Behavioural issues among autism children and their impacts affect the children, the parents, siblings, peers, and teachers. To overcome behaviour problems among autism children, interventions were carried out to minimize the behaviour problems, the root cause, and the consequences.

Behaviour modification among autism children is important to prepare them towards learning and socialization in school settings. Parents play vital role to modify negative behaviours into positive behaviours. However, behaviour modification among autism children always start late as parents are lack of knowledge, in denial and time constraints. In school teachers still face difficulties in teaching autism children as they are not able to practice behaviour modification for autism children (Dike et al., 2021).

This study focuses on evidence-based behaviour modification practises and fill the knowledge gap on the modification practise among teachers. The objective of this SLR is to identify behaviour modification practise among autism children. This study can seek type of practises, techniques, and ways to modify negative behaviours among autism children in school settings.

Methodology

In this SLR, PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta- Analyses*) is used as a guidance to identify the behaviour modification techniques among autism children in school settings. Model PRIMSA is used for literature search in this study to identify the articles on autism children's behaviours and the modification techniques used. PRISMA model involves identification, screening, eligibility, and inclusion of the articles for this study. In this SLR, a clearly formulated question is used to identify, select, and analyze data from the selected studies through systematic and explicit methods (Sierra-Correa & Kintz, 2015). Application of PRISMA facilitate a systematic search and enhance documentation according to the selected themes (Sierra-Correa & Kintz, 2015).

Article Search Strategy

In this research, four databases were used to search for articles and studies on behaviour modification among autism children. Scopus, Web of Science (WoS), Science Direct and Google Scholar. Scopus has more than 13 million articles from 5000 publishers and Google Scholar has more than 165 million articles, this gives an opportunity for wide range literature

search (Loi et al., 2023). Google Scholar and Science Direct were chosen as a supportive database in this study. The keywords used during the search of related study is very important to write a systematic literature review (Joklitschke et al. 2018). The keywords used to search for articles were based on previous research on autism children behaviour modification and keywords suggested by the databases. Details of articles search are presented in Table 1.

Table 1
Search string for the articles based on database

Database	Keyword
Scopus	“behaviour modification among autism”, “autism and behaviour modification”, “behaviour modification techniques for autism children”, “ABA for autism”, “social stories for autism”, “behaviour modification for special needs students”
WoS	“behaviour modification among autism”, “autism and behaviour modification”, “behaviour modification techniques for autism children”, “ABA for autism”, “social stories for autism”, “behaviour modification for special needs students”
Google Scholar	“behaviour modification among autism”, “autism and behaviour modification”, “behaviour modification techniques for autism children”, “ABA for autism”, “social stories for autism”, “behaviour modification for special needs students”
Science Direct	“behaviour modification among autism”, “autism and behaviour modification”, “behaviour modification techniques for autism children”, “ABA for autism”, “social stories for autism”, “behaviour modification for special needs students”

Articles Selection Criteria

In this SLR, articles were chosen based on certain predetermined criteria. The articles that were chosen in this SLR is written and published from 2018- 2024. Time frame of ten years was chosen to maintain the reliability of the findings. Articles written in English language were chosen to be analysed in this study. Besides, the articles regarding behaviour modification were chose if its related or applicable in special education settings. Articles regarding behaviour modification in main stream and typical children were rejected. In Table 2, criteria for article selection are shown in detail.

Table 2
Articles Selection Criteria

Criteria	Acceptance	Rejection
Year	2018- 2024	Publication before 2018
Language	English	Malay, Russian, Chinese
Type of material	Journal articles	Thesis, proceedings, and newspaper edition
Field of articles	Articles on special education and inclusion settings	Main stream settings

Articles Selection Process

For analysing the behaviour modification among autism children, articles and studies were selected from different data bases as discussed earlier. This selection process was conducted according to PRISMA model (figure 1) in February 2024.

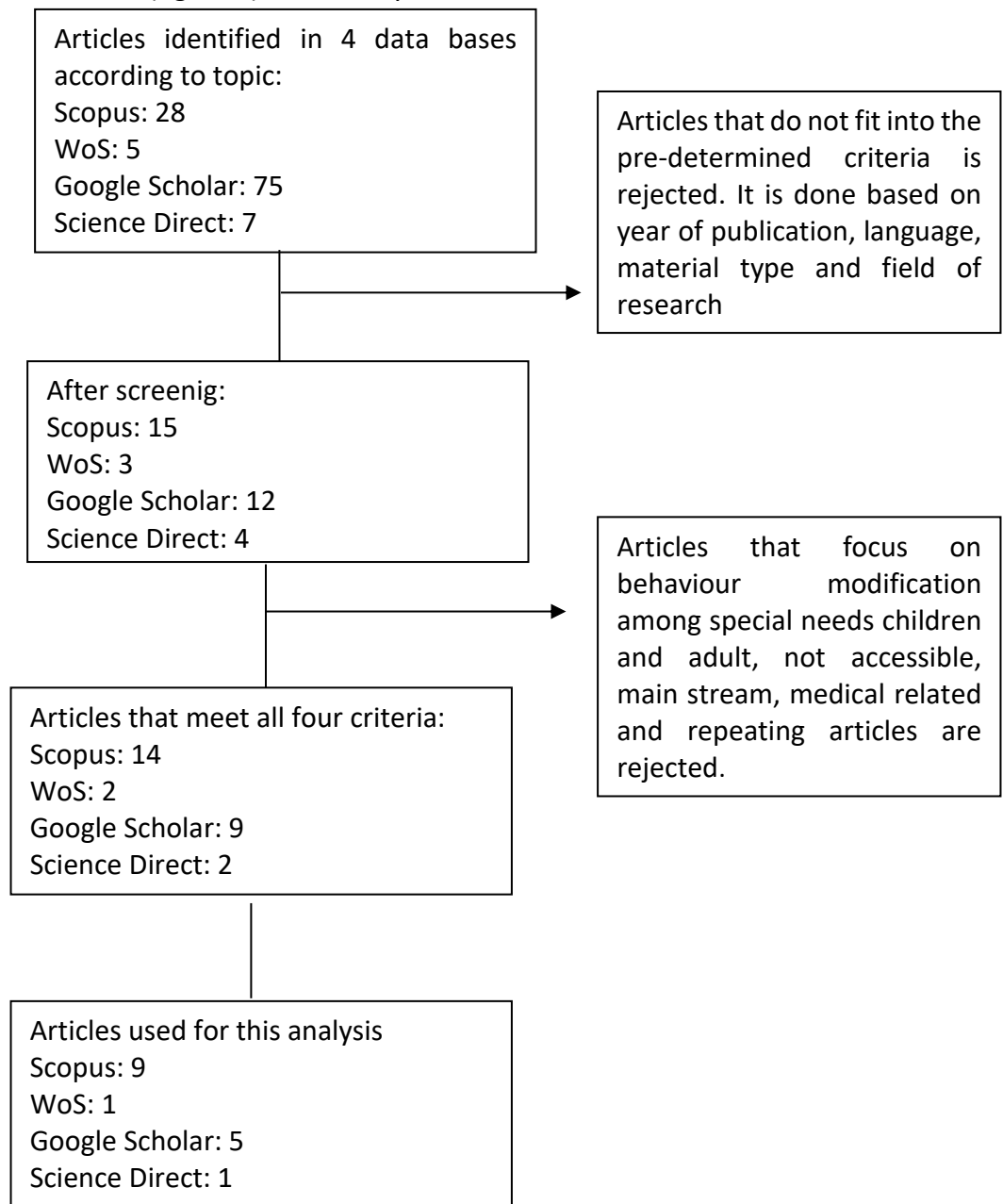


Figure 1: Article Selection Flowchart (PRISMA Model)

Figure 1 shows the selection of articles for this systematic analysis. As per shown in the figure, PRISMA model involves four different stages; identification, screening, eligibility and included. In this SLR, at initial stage, 115 articles were identified during identification process for 4 different databases as per shown in figure 1. After initial screening, only 34 articles were selected during the second stage. Articles that did not fit into the predetermined criteria were rejected. On the 3rd stage, five more articles were eliminated due to repetition, too main stream oriented compare to special education. Lastly, 16 articles were chosen to be analysed in this SLR to identify behaviour modification among autism children. Table 1 shows the chosen articles in detail.

Data Analysis

In this SLR, 16 articles were chosen to study the behaviour modification techniques for autism children. In the SLR, thematic analysis was used to analyse the article to study the behaviour modification techniques, practises, and usage for autism children. In this SLR, data analysis was carried out by categorizing the behaviour modification among autism children in a table format. The data obtained from each article were recorded in a table for comparison and analysis purpose. Thematic analysis in this SLR helped the researcher to obtain data on type of techniques, practices, effects of the techniques, limitations, and problems of behaviour modification among autism children. Besides, thematic analysis also helped the researcher to identify the relationships between previous studies in term of behaviour modification techniques among autism children.

Table 3

List of Selected Articles

No	Author and year of publication	Country	Title	Journal	Study Purpose
1	Silva et al. (2023)	Brazil	Applied behavioural analysis for the skill performance of children with autism spectrum disorder	Front. Psychiatry	Analyse the therapeutic strategy for independence in different skills performance tasks of ASD
2	Mece and Sherifi (2022)	Albania	Effectiveness of the aba method and individual education programs for the treatment of autistic children: a case study	Journal of Educational and Social Research	Examine and highlight the effectiveness of the ABA program in children with autism.
3	Norton, Shkedy and Shkedy (2019)	USA	How much compliance is too much compliance: Is long-term ABA therapy abuse?	Cogent Psychology	Discuss the prevalence of ASD with specific regard to the ABA treatment
4	Anderson and Carr (2021)	Australia	Applied Behaviour Analysis for autism: Evidence, issues, and implementation barriers	Current Developmental Disorders Reports	Explore the reason behind poor practices of evidence-based practises for autism children
5	Renuka, Singh and Rathore (2022)	India	Picture exchange communication system as a behaviour modification technique for oral	J Clin Pediatr Dent	Establish a modality for behavioural intervention for dental management in autistic children using Picture Exchange

			health assessment in autistic children		Communication System (PECS)
6	Ariwijaya (2020)	Indonesia	PECS vs. iPad intervention for students with autism spectrum disorders: A literature review	Indonesian Journal of Disability Studies	Compare the effectiveness of low-tech intervention (through the utilisation of PECS) and high-tech intervention (through the utilisation of iPad)
7	Doherty, Braken and Gormley (2018)	Ireland	Teaching children with autism to initiate and respond to peer mands using Picture Exchange Communication System (PECS)	Behaviour Analysis in Practice	Evaluated the effects of systematic prompting plus reinforcement on listeners' independent responses to peer mands and on speakers' peer-directed mands using the PECS
8	Taryadi and Kurniawan (2018)	Indonesia	The improvement of autism spectrum disorders on children communication ability with PECS method Multimedia Augmented Reality-Based	Journal of Physics	Examine the usage of PECS method multimedia augmented reality based as a learning alternative in training the communication of autism children
9	Camilleri, Maras and Brosnan (2024)	United Kingdom	Effective digital support for autism: Digital social stories	Front. Psychiatry	Investigate the potential of digital technology to mediate the Social Stories intervention
10	Suraya et al. (2019)	Malaysia	Social stories to enhance communicative strategies among autism spectrum disorder (ASD) children	Malaysian Journal of Communication	Discuss how children with autism spectrum disorder (ASD) could enhance their spoken communicative intent in conversing about moral values
11	Alkinj, Pereira and Santos (2022)	Portugal	The effects of an educational program based on	Heliyon	Examine the effectiveness of an educational

			modelling and social stories on improvements in the social skills of students with autism		program based on multiple strategies, including social stories, animated video modeling, and video self-modeling, to improve the social communication skills of a sample of six high-functioning students with ASD
12	Khantreejitranon (2018)	Thailand	Using a social story intervention to decrease inappropriate behaviour of preschool children with autism	Kasetsart Journal of Social Sciences	investigated the inappropriate behaviour of preschool children with autism in a classroom and examined the effectiveness of the use of social stories to decrease inappropriate autistic behaviour
13	Yakubova, Defayette, and Chen (2022)	USA	Mathematics learning through online video-based instruction for an autistic child	Journal of Autism and Developmental Disorders	Examine the effectiveness of a video modelling (VM) intervention to teach the mathematics skills of addition, number comparison, and subtraction to a five-year old autistic child
14	Almalki (2020)	USA	Using video modelling and video prompting to teach conversational skills to students with autism: a consideration of effectiveness, practicality, and acceptability	Journal of Early Childhood Special Education	Identify the experiences and perceptions of four special education teachers who have used video modelling and prompting with autistic students
15	Duenas, Plavnick and Bak (2018)	USA	Effects of joint video modelling on unscripted play behaviour	Journal of Autism and Developmental Disorders	Evaluate the use of video modelling to teach three young children with ASD to

			of children with autism spectrum disorder		engage in pretend play behaviours with their peers
16	Barnett (2018)	USA	Three evidence-based strategies that support social skills and play among young children with autism spectrum disorders	Early Childhood Education Journal	Discuss the three strategies to promote social skills through play among ASD

Findings

Based on the reading of the selected articles, the analysis produced four main themes on the behaviour modification among autism children. The four themes are 1) Applied Behaviour Analysis, 2) Picture Exchange Communication System (PECS), 3) Social Stories, and 4) Video Modelling.

Applied Behaviour Analysis (ABA)

From the selected 16 articles, four articles discuss about Applied Behaviour Analysis (ABA) for behaviour modification among autism. ABA is a therapy that utilizes behaviour principles. ABA uses different techniques and strategies to teach and improve the behaviours of an autistic child. ABA is a therapy that focuses on reinforcement; positive and negative. ABA utilizes behaviour principles to set goals, reinforce desired behaviour and measure the outcomes after certain time frame (Mece and Sherifi, 2022). According to Mece and Sherifi (2022), ABA has shown positive impact on children with autism. It improves the behaviour, social, language and cognitive skills of autistic children. In 2023, research conducted by Silva et. al shown that ABA is an effective approach to help students with ASD. ABA treatment among 16 autism students showed improvement on post-test over pretest (Silva et al., 2023). Silva et al (2023) reported that after ABA treatment ASD children managed to show improvement in terms of social, academic, and daily activities.

In the case study conducted by Mece and Sherifi (2022), ABA treatment for 3 years old autism boy showed the same result. Mece and Sherifi (2022) showed after 3 years of ABA treatment, the respondent showed positive outcome in social and linguistic aspects. However, in both researches, the ABA treatment was not discussed in details for the readers to understand the procedure of ABA treatment. In 2019, Norton et al., argued that ABA treatment for autism children brings more harm than good. ABA treatment for autism is time consuming and not suitable for nonverbal autistic child (Norton et al., 2019). ABA treatments for nonverbal and low functioning autism children are limited and research showed that ABA treatment is suitable only for verbal, mild and high functioning autism children (Norton, et al., 2019). ABA treatment involves dependency on operant conditioning compare to self-motivation. Norton et al., (2019) have reported that external reinforcement in ABA therapy caused low self-esteem and lack of independency functioning among autism children. Researches showed that ABA treatment consumes time and money (Silva et al., 2023; Mece & Sherifi, 2022).

However, in the research conducted by Anderson and Carr (2021), misconception about ABA is discussed in detail. Anderson and Carr (2021) argued that the misconception about autism is peer reviewed article and not evidence-based method. ABA treatment had shown

positive impact on autism children as it focuses on individual strength and modifications are permitted according to student's capabilities and developments (Silva et al., 2023).

Picture Exchange Communication System (PECS)

Autism children are often associated with behavioural problems due to their communication difficulties. Autistic children often show tantrums when their requests and wishes are not understood or fulfilled by teachers, parents, and people around them (Salmihah et al., 2021). Picture Exchange Communication System (PECS) is an intervention used for special needs students especially autism children to cater their communication difficulties (Ni & Mohd Mokhtar, 2023). Four articles out of 16 articles in this systematic review is regarding PECS. In general application, PECS is used to improve the social and communication skills among autism children. In research done by Renuka et al (2022), PECS is used to promote oral hygiene among autism children in India. In this research 30 autism children took part as respondents whereby, oral hygiene was taught using PECS by teachers and parents (Renuka, et al., 2022). Autism children pose poor dental care due to their cognitive ability, motor coordination deficits, over sensitivity, and poor dietary habits. PECS were used to teach dental care and hygiene among autism kids as they are visual learners compare to oral or auditory (Renuka et al., 2022; Taryadi & Kurniawan, 2018).

Visual cues are used in PECS to improve the communication skills among autism children (Renuka et al., 2022; Ariwijaya, 2020). Deficits in communication skill affect behaviours of autism children in their daily life. Analysis on 17 articles in research by Ariwijaya (2020) showed that use of PECS at home and school help to reduce behavioural problems among autism children. Autism children able to express feeling and emotions, able to make requests, able to converse with typical peers through PECS (Ariwijaya, 2020; Doherty et al., 2018). PECS encourages independency among autism children as they can use PECS to converse with teachers, parents, and friends. PECS is very common among autism children and teachers as it very easy to use, simple, and cheaper option compare to high tech devices such as iPad (Renuka et al., 2022). The visual aids in the PECS are usually common images among autism children and this enable them to follow the steps easily and comprehend the visual cues without struggle.

Comparison between PECS and iPad showed that parents and teachers still prefer low tech PECS as the autism children can use PECS independently after few trainings (Ariwijaya, 2020). High tech devices such as iPad are least favourable since at early-stage autism children face difficulties in using high tech devices. Research conducted by Doherty et al (2018) showed that reinforcement can motivate autism children to use PECS to interact with typically developing children. Reinforcements such as toys, foods, sweets, and favourite activities encourage autism children to interact using PECS with peers in normal settings (Doherty et al., 2018). However, Doherty et al (2018) stated that in normal setting no interaction takes place if there is no reinforcement presented. External intrinsic play important role to motivate autism children to practise interaction in natural settings.

PECS encourages autism children to request and listen in a social interaction. However, the usage of PECS among autism children influences by other factors as well. Cognitive ability, visual symbol in PECS, self-motivation, reinforcements, autism children spectrum level play role in determining the PECS usage among autism children (Taryadi & Kurniawan, 2018). Despite the external factors, pre and post-test done by Taryadi & Kurniawan (2018), showed 11 out of 12 autism children showed improvement in their communication skills. PECS is an important tool to modify behavioural issues among autism

children at early stage. Teacher should be provided with adequate training to promote the PECS application in school settings (Ariwijaya, 2020).

Social Stories

Social story is an intervention developed in the form of visual and text. It was developed to explain daily routines, changes in daily routines, social situations, teach social skills, deal with behavioural problems such as aggressiveness, tantrums, obsessiveness, and disruptiveness (Kuin & Norshidah, 2021). According to the study conducted by Kuin & Norshidah (2021), the interventions of social stories can reduce behavioural problems among autism children. Four articles in this study are related to social stories intervention among autism children. Social stories can be presented in traditional and modern way. Social stories can be presented in iPad, mobile, and electronic books (Camilleri et al., 2024; Alkinj et al., 2022; Khantreejitranon, 2018). The research conducted by Suraya et al (2019), showed that social stories that presented by books are more suitable to low and high functioning autism children.

Social stories app (SOFA) can be used by downloading the app in mobile and iPad to be used by autism children on the go. These apps are very easy to use, portable, convenient, and very user friendly (Camilleri et al., 2024). Parents prefer app based social stories as it is easy to carry around and small compare to the traditional way. Research by Camilleri et al. (2024) showed that social stories are more suitable to older autistic children and verbal. The comprehension level among older children is higher compare to younger children. The effectiveness of social stories intervention is determined by the understanding level of autistic children and their ability to answer the questions. Younger autistic children showed lower comprehend level compare to older children (Camilleri et al., 2024).

Text illustration and pictures in the social stories can attract autistic children to read social stories with teachers (Suraya et al., 2019). Social stories able to improve the attention span of autistic children showed to eagerness to take part in reading and answering question regarding the social stories. The ability to answer the question determine the effectiveness of the social stories towards the autistic children (Suraya et al., 2019; Camilleri et al., 2024). Behaviour problems among autism children are always connected to their social communication deficits. It has been proven that the communication skills among autism children can be fixed by using social stories. Social communication and social interaction among autism children improved as social stories were introduced (Camilleri et al., 2024; Suraya et al., 2019; Alkinj et al., 2022). In the research conducted by Suraya et al (2019), autistic children able to convey the moral and social values in social stories and converse in English language despite facing difficulties in communicating in English language.

Social stories improve the autistic children's abilities in terms of communication, requesting, greeting, self-introduction, ask and respond to questions, and expressing sympathy (Alkinj et al., 2022). Social stories can be used to cater problematic behaviours among autistic children. Social stories intervention able to reduce social problems among autism children (Khantreejitranon, 2018). Behaviour problems such as biting, hitting, moving around in the class, and repetitive behaviours shown by autism children can be reduced with the help social stories (Alkinj et al., 2022). Social stories enable children to learn moral values and moral messages. Research conducted by Khantreejitranon (2018) showed that problematic behaviours among four autism children reduced after social stories intervention in the classroom. In the research one child out of five respondents did not show any changes in his problematic behaviours after intervention. Khantreejitranon (2018) concluded that

despite the benefit of social stories, it is not applicable to all autism children for behaviour modification.

Video Modelling

Four out of 16 articles discuss about video modelling for autism children to cater their needs in behaviour modification. Autistic children often related lower concentration and focus in classroom and these children are often interfere learning process in classroom. The use of video modelling (VM) for autism children attracts these children attention and enable them to engage in learning and socialization with their peers (Halimaton & Mokhtar, 2019). VM described as an effective tool to improve language development, social behaviours, play skills, and functional adaptation skills (Wahoski, 2015). VM can be used to modify disruptive behaviours such as running, jumping, and learning disrupting behaviours.

In this systematic review two articles mentioned that VM can be used to promote play among autism children and typically developing children in natural settings (Duenas et al., 2018; Barnett, 2018). As per discussed earlier, VM can be used to cater social communication among autism children to prevent disruptive behaviours in classroom. Studies by Duenas et al (2018) and Barnett (2018) showed that VM able to increase the occurrence of unscripted verbalization, scripted verbalization, and action play among autism children with their typically developing peers in classroom. Classroom environment and choice of play an important part in defining the effectiveness of VM application among autism children. ASD children interact better in the presence of toys and play they like. Suitable environment creates positive interaction in the classroom.

However, special education teachers argued the effectiveness of VM in modifying disruptive behaviours and improving social communication among autism children (Almalki, 2020). VM intervention involves a lot of work such as video preparing, video prompt editing and showing video to autism children (Almalki, 2020). VM intervention required high commitment among special education teacher to be implemented in classroom. Almalki (2020) stated that special education teachers prefer PECS over video modelling. Besides social communication among autism children, VM also used in classroom to cater autism children academically. Yakubova et al (2022) researched the implication of VM intervention in learning addition, subtraction and arranging number among autism children. VM improves the ability the autism respondent to concentrate and solve mathematic problems during the generalization phase after intervention (Yakubova et al., 2022).

Discussion

Research has shown that behaviour modification among autism children is an important element in catering autism children in school. Past researches have proven that behaviour modification among autism children able to modify negative behaviours so that these children able to overcome social and communication deficits. Analysis on the previous researches as shown that ABA, social stories, PECS, and video modelling are behaviour modification techniques for autism children. All these techniques can be an insight for special education teachers to apply evidence-based practise for behaviour modification process among autism children.

Application of ABA among autism children is a therapeutic approach to help modification of negative behaviour into positive behaviours (Silva et al., 2023). ABA treatment among autism children able to help improve communication, social and behaviour skills

among autism children (Mece & Sherifi, 2022). Both the researches conducted by Silva et al (2023); Mece and Sherifi (2022) showed ABA treatment can be used among autism children in school settings to teach them to be independent and community integrated. Besides social and behaviours modification, ABA treatment also can be used to cater academic deficits among autism children (Silva et al., 2023). ABA treatment can be used to teach colour recognition, hold, and write using pencil and writing name (Silva et al., 2023). Data obtained from pre and post-test in ABA intervention show that the autism children behaviour improved after ABA treatment (Silva et al., 2023; Mece & Sherifi, 2022).

Even though pre and post data of ABA treatment showed improvement, some researchers argue that effectiveness and the suitability of ABA treatment among autism children. ABA treatment required more time and money (Norton et al., 2019). ABA treatment is also connected to environmental factor, positive and negative reinforcement. Common positive reinforcements are toys, favourite activities, favourite food while negative reinforcements are punishment, time out, electric shock. These external reinforcements have contributed to low self-esteem among autism children who undergo ABA treatment (Norton et al., 2019). Data from Norton et al (2019), shows that punishment practise in ABA has contributed psychological impact on autism children. So, the application of ABA treatment among autism children must be done under supervision and under control by trained teachers and therapist.

PECS is another form of behaviour modification tool that are used by autism children's teachers. Autism children often show disruptive behaviours because of the communication skills deficits. PECS can be used in special education and inclusive settings to cater communication issues faced by autism children (Doherty et al., 2018; Taryadi & Kurniawan, 2018). PECS helps autism children to use visual cues to express their feelings and needs. Autism children are visual learners, thus the usage of PECS among autism children encourage them to communicate with parents, teachers, and peers. Parents and teachers prefer to use PECS for autism children because it is user friendly, autism children can use PECS independently after few trainings, and it involves less cost compare to high tech tools such as iPad (Ariwijaya, 2020).

Usage of PECS among autism children influence by many factors such as cognitive level of autism students, spectrum level, self-motivation, rewards, and visual cues (Taryadi & Kurniawan, 2018). Taryadi and Kurniawan (2018) have stated that reinforcements and rewards in classroom setting improves autism children desire to use PECS in classroom. This statement was also supported by (Doherty et al., 2018). Reinforcement able to prompt autism children to use PECS to communicate with teachers and peers. However, fading the practice of reinforcement is important to normalise PECS in natural setting in school and at home (Doherty et al., 2018).

PECS in the form of mobile apps were develop to help autism children who face challenges in speech. *Voice4U* is an app developed to cater autism children who face communication difficulties. However, Ariwijaya (2020) has proved that in term of efficiency manual PECS has outperformed high tech PECS among autism children. Autism children with low cognitive level face difficulties in using high tech tools such as iPad. Research showed that special education teachers are lack of training and knowledge on high- and low-tech PECS in general. Teachers have shown indication in-house training are needed to improve their knowledge on PECS before they could teach autism children in classroom (Ariwijaya, 2020).

Social stories intervention is one of the ways of helping autism children with behaviour problems. All four articles chosen in this study shows that social stories able to improve social

skills and social communication among autism children. Social stories can be presented to students in traditional and modern method. Traditional method focuses more on books with pictures while modern method involves mobile apps and electronic books (Camilleri et al., 2024; Khantreejitranon, 2018). Social stories able to attract autism children to involve in the intervention due to the visual and audio cues. Autism children enjoy watching and listening to social stories (Camilleri et al., 2024). In general, autism children who are verbal able to answer questions related to moral values and messages learned from social stories inventions. The ability to convey moral values and messages of social stories increases as the child grows (Camilleri et al., 2024).

Behavioural problems among autism children are mainly due to their communication and social skills deficits. Social story interventions able to reduce behaviour problems among autism children (Khantreejitranon, 2018). However, social stories are more suitable to high functioning autism children compare to low functioning autism children (Alkinj et al., 2022). Ability to understand and respond is high among high functioning autism children due to their cognitive ability. The ability to react and absorb the benefits of social stories is normally influenced by spectrum class of these children (Suraya et al., 2019). Thus, social stories are not suitable to all autism children (Khantreejitranon, 2018).

In classrooms, video modelling (VM) used to help autism children socially and academically (Yakubova et al., 2022). 3 researches in this study have proven that video modelling increases autism children's social skills and social communication however research done by Almalki (2020) showed opposite result. Almalki (2020) stated that special education teacher in the research felt that VM is not an effective intervention to improve their communication and conversational skills. Some special education teachers prefer PECS over VM (Almalki, 2020).

Teachers especially special education teachers require more training in preparing VM intervention for autism children. Knowledge and skills among teachers are at a point where 75% of teachers do not prefer to use VM in classroom (Almalki, 2020). Government should cater for teachers lack of training in preparing, editing videos, and prompting videos.

Limitation of Study

This study covers the researches from the year of 2018 to 2024. This time frame has limited the search for articles and ignored the researches done before 2018. Researcher's purpose is to analyse latest behaviour modification practise among autism children. However, many articles regarding behaviour modification among autism were rejected because of this predetermined criterion. In future, researcher perhaps can expand the time frame to extract more information regarding behaviour modification techniques among autism children.

Conclusion

This SLR aimed on identifying the techniques used to modify negative behaviours among autism children. 16 articles were used after a through selection and screening to meet the determine criteria to identify the behaviour modification among autism children in school settings. 16 articles from 4 different databases (Scopus, WoS, Science Direct and Google Scholars) were chose to be analysed in the study. From the analysis, ABA, PECS, social stories, and video modelling are the most popular behaviour modification techniques used by teachers and parents to cater autism children. Behaviour modification among autism children plays an important part to adapt autism children into inclusive and natural setting. However,

behaviour modification among autism children takes time and consistency play important part in the modification process.

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