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Parents' Perceptions of Using Picture Exchange Communication System (PECS) in English for Autism Spectrum Disorder (ASD) Children

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Abstract

The purpose of this study is to explore the users' perceptions of using the Picture Exchange Communication System (PECS). The PECS is written in English and designed for Autism Spectrum Disorder (ASD) children. The research questions of this study are: 1) What are the parents' positive perceptions of using PECS in English for ASD children? And 2) What are the parents' negative perceptions of using PECS in English for ASD children? This study is carried out by using a case study approach where the researchers interviewed 5 occupational therapists and 4 parents with ASD children. Data were collected through focus-group interviews and open-ended survey via Google Meet and WhatsApp. The findings for research question 1 are 1) Using PECS in English enhances ASD children's learning, 2) Using PECS in English improves ASD children's communication skills, and 3) PECS in English promotes bilingualism for ASD children. The findings for research question 2 are 1) PECS in English is not suitable for children of all ages, and 2) PECS in English is not ideal for collaborative learning for low-function ASD children. This study could help parents with ASD children to utilize PECS in English to teach them new skills appropriately.

Keywords

Perceptions, Picture Exchange Communication System (PECS), Autism Spectrum Disorder (ASD) Children, English as a Second Language, Communication Skills

1. Introduction

Due to strong demand, the number of therapy centers for children with autism spectrum disorder (ASD) in Malaysia is growing. Treatments and assessments for children with ASD are provided by an occupational therapist (OT) and special education teacher. ASD was unknown and thought to be a rare disorder among children 40 years ago (Lord & Bishop, 2010). ASD is increasingly recognized as a prevalent developmental disease in children, with the National Autism Society of Malaysia (NASOM) reporting that roughly 9000 children in Malaysia are born with ASD each year. ASD is a complicated behavioral syndrome that is linked to neurodevelopmental problems and manifests as dysfunctional or distant interpersonal relationships, emotional disturbances, language disorder such as speech delay or language delay, poor communication system, and frequent repetitive behavior (Sparks et al., 2002).

Aside from therapists and teachers, parents are the people who have the most contact with ASD children at home. However, some parents are perplexed about the effective way to teach and communicate with their ASD children because ASD children have difficulty communicating verbally or nonverbally, particularly when parents want to teach their ASD children basic daily life skills such as dressing and toileting (Howlin et al., 2007). An autistic five-year-old Malay child at an autistic centre in Johor Bahru understands English better than Malay language, despite the fact that Malay language is Malaysia's primary language. He will respond in English to questions asked in Malay language by the therapist. This usually occurs when the therapist asks him to identify colors and he names them in English instead of Malay language. This circumstance is similar to one reported in an Indonesian study by Padmadewi & Artini (2017), who indicated that ASD children could recognize colors in English relatively quickly. One of the factors why the boy prefers to communicate in English is because the parents are always speaking in English with him at home. Hence, he is more familiar with English language rather than Malay language and he always stutter whenever he tries to speak in Malay language since English syllable is shorter than Malay language's syllable. For example, "Red" (English) and "Merah" (Malay language). Thus, this study will use English as the medium of communication with ASD children by using picture exchange communication system (PECS).

According to Amka (2018), ASD children do not receive adequate stimulus or stimulation from their surroundings to aid in effective communication. Hence, an image-driven picture exchange communication system (PECS) in English was implemented in this study to help parents with ASD children to teach them basic life skills. PECS is one of the therapeutic tools used to assist ASD children with language disorders in communicating. Holyfield (2021) asserts that ASD children more efficiently learn when learning materials contain both text and representations, such as images or symbols, to help them understand what is being taught. Thus, PECS was chosen in this study to teach English to ASD children.

As a result, it enables parents to teach their autistic children basic daily life skills in a direct manner, as autistic children learn better through visual learning (Padmadewi & Artini, 2017). The purpose of this study is to identify the perceptions of using PECS in English for ASD children. The perceptions of using PECS in English may assist other parents who are having similar difficulties communicating with their ASD children at home.

2. Literature Review

This section of the paper will discuss and review the literature on visual learning for autism spectrum disorder (ASD) children. Then, the emphasis is on the benefits of picture exchange communication systems (PECS) for ASD children and the importance of learning English for ASD children. This template has been tailored for output on the custom paper size (21 cm * 28.5 cm).

2.1. Visual Learning for Autism Spectrum Disorder (ASD) Children

Since children with ASD require a specific technique to develop learning, visual learning is one of the effective approaches for teaching them (Jones & Bawazir, 2018). Visual techniques such as picture cues, comic strip dialogue, social storytelling, role-play, and video modeling are integrated into ASD treatment models that adhere to the theory of visually enhanced learning, according to Self et al. (2007). Self et al. (2007) concur that a virtual world can deliver increased visual information that is strategically organized into a concrete manner to ASD children. According to Padmadewi & Artini (2017), ASD children demonstrated a rapid understanding of items presented visually and a remarkable ability to copy things they observed visually accurately. According to Padmadewi & Artini (2017), one of the reasons why children with autism perform better visually is because they have difficulty in smoothly and precise shifting and re-establishing attention. "Because many children with ASD are regarded as visual learners, they tend to demonstrate an improved reaction to material provided visually. These techniques can assist reduce reliance on areas of deficit, such as auditory processing and communication, by utilizing their visual processing strength," writes McCorkle (2012: p. 2). The use of visual tools in teaching and learning can help children have more memorable experiences and relate them to other senses (Wamalwa & Wamalwa, 2014). Because most ASD children are visual learners, this study will use PECS in English as the main technique of communication between parents and children with ASD. The template is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin in this template measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire journals, and not as an independent document. Please do not revise any of the current designations.

2.2. Benefits of Picture Exchange Communication System (PECS) for ASD Children

PECS (Picture Exchange Communication System) is one of the most effective treatment techniques used by occupational therapists and special education teachers to teach autistic children. PECS, according to Amka (2018), assists children with ASD in efficiently expressing themselves due to communication limitations. ASD children can better follow instructions with the use of graphic explanations. A study by Howlin et al. (2007) identified that ASD children who received PECS training were 2.73 times (95% confidence interval 1.22 - 6.08) more likely than ASD children who did not receive PECS training to be in a higher initiation rate category. According to Shminan et al. (2017), parents should use PECS for their autistic children because it is less expensive than other therapeutic tools, as parents with ASD children in Malaysia must spend an average of RM 5 million over the course of their children's lives on therapies, activities, and healthcare. The literature from Shminan et al. (2017) also found that PECS improves education for ASD children, and a mother was satisfied and amazed with PECS since her son knew how to reply when she asked a question and was able to communicate his requirements. Jusoh and Abd Majid (2017) mentioned that employing PECS with a card image is more beneficial in enhancing speech for children with autism. The use of PECS for children with ASD improves their communication skills, as per a study by Jusoh and Abd Majid (2017). As a result, it has been established that PECS is effective in teaching ASD children, and this paper will investigate further the parents' perceptions of using PECS in English. Before you begin to format your paper, first write and save the content as a separate text file. Keep your text and graphic files separate until after the text has been formatted and styled. Do not use hard tabs, and limit use of hard returns to only one return at the end of a paragraph. Do not add any kind of pagination anywhere in the paper. Do not number text heads—the template will do that for you.

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2.3. The Importance of Learning English among Autism Spectrum Disorder (ASD)

Malaysia is placed third in the EF English Proficiency Index (EPI) among Asian countries that speak English. Tun Dr. Mahathir Mohamad, Malaysia's former prime minister, introduced "Pengajaran dan Pembelajaran Sains dan Matematik dalam Bahasa Inggeris" (PPSMI) (the teaching and learning of Science and Mathematics in English) in 2003, emphasizing the importance of learning English in Malaysia's educational system because English is the international language of communication, and mastery of the English language allows easy access to information in the sciences and mathematics fields. In Malaysia, children with ASD will attend a special education class from when they are 7 years old until 17

years old, where they will study English as well. As a result, they must learn English. According to Mueller et al. (2020), children with ASD are not excluded because they must learn English as well although common misunderstandings about bilingualism can make it difficult for parents to decide whether to speak one or more languages to their children, and such decisions are made even more difficult when a child is diagnosed with a developmental disorder. Multilingual exposure, on the other hand, does not have a harmful impact on children with developmental abnormalities, and could potentially have favorable impacts on their social and linguistic development, according to Dai et al. (2018). Instead, children with ASD have the ability to learn and keep a second language (Peterson et al., 2012). Bilingual children with ASD perform similarly to their monolingual peers in terms of expressive and receptive vocabulary and language, according to studies (Dai et al., 2018).

2.4. Autism Spectrum Disorder (ASD) Children and Sensory Processing

For adaptive reactions to the environment, the brain's ability to receive, process, and respond to a continuous stream of external sensory information is crucial. External stimuli from the environment (via visual, auditory, gustatory, olfactory or tactile receptors) or internal stimuli from our own bodies are captured by sensory receptors (via tactile, vestibular or proprioceptive receptors). These receptors convert the collected input into sensory information, which is then processed by the brain, resulting in a predetermined motor and behavioral response (Fernandez-Prieto et al., 2021). The phrase sensory processing refers to a manner in which the neurological system has difficulty receiving and responding to information received through the senses (Henshall, 2008). Henshall went on to say that the sensory systems serve as a conduit for information to reach the brain. The brain must next interpret this data in order to formulate and execute a reaction. According to Fernandez-Prieto et al. (2021), ASD children are unable or unwilling to detach from all other stimuli that are present at the same time, making it difficult to engage with activities that need an effort of concentration or attention in a single objective to complete a task. Children with ASD may be insensitive to sensory input (hypo-responsiveness), have an exaggerated response to sensory stimuli (hyper-responsiveness), or enjoy sensory activities and seek sensory stimulation by fidgeting or making repetitive noises (sensory seeking) (Kojovic et al., 2019). Environmental stimuli such as loud noise, an ambulance siren overhead, or even a bright light (flashlight) may cause ASD children with sensory processing and integration difficulties to overreact, while others may not perceive or respond to this type of input. Improved therapies may benefit from greater knowledge of the link between sensory processing and social functioning. PECS development is a multi-step process. PECS should not involve intricate processes because there is a lot of information to comprehend and movement (proprioception) to complete for ASD children, which could disrupt their sensory processing (Ghazali et al., 2018). Sound, touch, vision, taste, smell,

movement, and body position are the seven sense systems that make up the nervous system. The sensory systems and their functions are summarized in Table 1.

2.5. Related Theory

2.5.1. Theory of Social Learning (Bandura & Walters, 1977)

Albert Bandura's social learning theory emphasizes the necessity of observing, modeling, and mimicking others' behaviors, attitudes, and emotional reactions. Environmental and cognitive factors interact to influence human learning and behavior, according to social learning theory McLeod (2011). Children observe people in their environment behaving in a variety of ways. This is demonstrated in the well-known Bobo doll experiment. Models are people who have been observed (McLeod, 2011). Children are surrounded by numerous influence models in society, including their parents, characters on children's television, peers from their peer group, and teachers at school. These models show how to observe and replicate certain behaviors. Thus, the PECS model selection is necessary. This study used ASD children's friends as the model, which is similar to a study by Delmolino & Harris (2012), which found that using peers as role models can be more beneficial than using teachers for teaching and modeling social behaviors, particularly for children with ASD. According to Tan & Alant (2018), peer-mediated interventions that fall under the framework of Bandura & Walters's (1977) theory of social learning can be divided into six categories: 1) peer modelling (ASD children copy their peers' movement), 2) peer initiation training (ASD children are motivated to follow the PECS if their peers are doing the same thing), 3) peer monitoring (ASD children watch their peers' movements to ensure that they are following the PECS procedures correctly), 4) peer networking (ASD children develop social skills when communicating with their peers),

Table 1. The seven sensory systems.

Auditory	The ability to perceive sound.
Vision	The ability to see.
Vestibular System	Movement and changes in the position of the head are detected by structures in the inner ear.
Olfactory (The sense of smell)	The ability to perceive odors or scents.
Gustatory (The sense of taste)	Perceiving a soluble sensation in the mouth and throat as a result of contact with that substance.
Tactile System	The ability to touch, feel pressure (on skin), feel pain, and react to temperature.
Proprioception	Perceiving stimuli produced within an organism, particularly those relating to body position and movement.

(Source: Henshall, 2008).

5) peer tutoring (ASD children teach their peers to follow the steps provided in PECS), and 6) group-oriented (ASD children shows interest to learn in a small group as well as developing their social skills). A recent study by Mortada (2017) found that using a peer-mediated picture exchange communication system to improve vocabulary knowledge in children with autism spectrum disorders is an effective intervention technique.

2.5.2. Sensory Design Theory

Sensory design is for living in which the way a space feels, sounds, looks, smells, and functions can have a huge impact on one or more of the seven senses, which can have a huge impact on a person's life (Ghazali et al., 2018). Sensory Design Theory has been used in a variety of sectors to better understand and address the requirements of autistic children (Mostafa, 2014). Because it is known that meeting the needs of individuals is essential, physical learning environments are designed to meet students' basic needs through acoustics, color, smell, brightness, connectivity, signalization, compartmentation, building scale, quiet room, and safety (Mostafa, 2008; Vogel, 2008). The issue of the sensory environment and its relevance to autistic behavior appears to be the key to designing for autism (Mostafa, 2014). Color selection is important when creating PECS for children with ASD. Mostafa (2008, 2014) proposes a sensory design theory, which states that the more advantageous an environment is, the more beneficial it is for people with ASD in terms of sensory perception. Color-coded visual aids can be helpful tools for children with ASD. Color has psychological consequences on children with ASD, according to Cherry & Underwood (2012), because they are color sensitive. Colors that are soothing children with ASD are fascinated by comfort (Cherry & Underwood, 2012). Cherry & Underwood (2012) show the following effects of changing colors on human perception:

1) Red: Increases appetite and blood circulation while stimulating the mind.
2) Vibrant yellow: Stimulates and reflects light excessively.
3) Pale yellow: Has a relaxing effect on the mind.
4) Blue: Lowers blood pressure and promotes relaxation.
5) Green: It's associated with nature and inspiration, and it's calming.
6) Orange: Disturbance and overstimulation.
7) Light pink or rose: Calming.

The author also mentioned that blue could help to keep the ASD children calm and relaxed. As a result, the PECS model in this study is using blue t-shirt, as indicated by Torky et al. (2013), who recommend using soft and neutral colors for children with ASD (**Figure 1**).

2.6. Other Related Past Studies on Teaching English Using PECS for Autism Spectrum Disorder (ASD) Children

Several studies have been conducted on teaching English to children with ASD from Indonesia. In dealing with students with ASD, Padmadewi & Artini (2017) from Indonesia used peer-mediated instructions such as group work

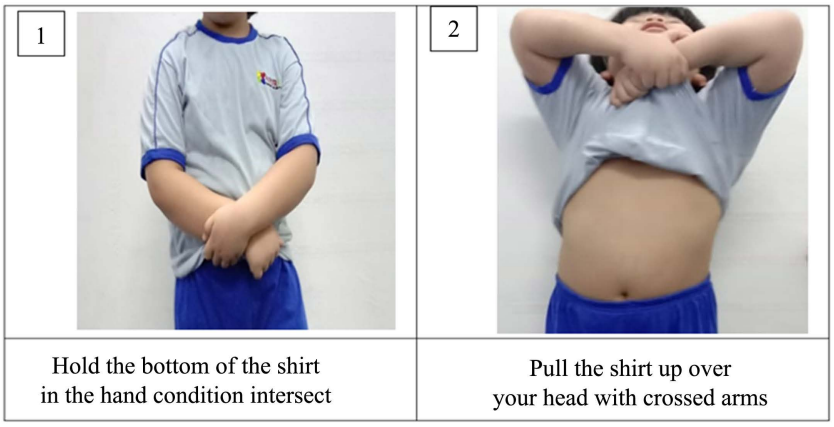

Figure 1. Picture Exchange Communication System (PECS).

activities and interventions. In order to achieve the school objective as a bilingual school, this study conducted by Indonesian researchers used two languages to implement the techniques. The main teacher, who is a native English speaker, uses English only, and if the meaning is unclear, the assistant teacher/shadow teacher could utilize Bahasa Indonesia to enhance the students' understanding. This study used visual media as the primary medium for teaching English to children with ASD and found that using visual media in differentiated instruction has a significant and positive impact on the motivation and achievement of ASD students in learning English. The employment of a co-teaching technique in an inclusive classroom, as well as visual support and a buddy program, enhance this impact. The buddy program refers to a teaching method applied by researchers to teach ASD students by letting them learn English with their friends.

Subekti (2020) used a self-made vocabulary card and differentiated tests to improve the English of ASD children. In the "Vocabulary Building" class, this study used differentiated instruction with two treatments. They employ self-made vocabulary cards as the foundation for learning, as well as differentiated assessments that include quizzes, a mid-semester evaluation, and a final exam. This allows for recycling and repetition, which is beneficial to vocabulary retention and learning in general. The results showed that the ASD children had mastered bilingual (Indonesian to English) words to a satisfactory level. These studies are relevant to this paper because an occupational therapist in an autistic house in Johor Bahru, Malaysia, used peers' activity when teaching skills using PECS in English, and most ASD children in the autistic house in Johor Bahru are bilingual (Malay language and English), with the Malay language as their native language and English as the target language in this study.

2.7. Related Past Studies on Teaching English for Autism Spectrum Disorder (ASD)

In Malaysia, there have been a few studies on teaching English to children with ASD. Hashim et al. (2021) conducted a study to look at the difficulty that child-

ren with ASD encounter when learning English as a second language, as well as the issues that teachers who work with children with ASD face. Children with ASD are regarded to be able to receive the same therapy and inclusion as other children, according to this study. In trying to understand their ESL teaching and learning process, both instructors who work with ASD children and teachers who work with normal children have received little attention. In order to bridge the gap and provide equal educational opportunities for both ASD and mainstream children, the very least that can be done is to gain an understanding of their environment and learn about the hurdles and obstacles they face in their ESL learning.

Sabri et al. (2021) look at how three high-functioning Malaysian children with ASD (HFASD) learned English morphology, particularly English plural forms, using Developmentally Moderated Focus-on-Form (DMFonF) instruction. Di Biase invented DMFonF, an instructional approach that blends Pienemann's Processability Theory developmental stages with Long's Focus on Form feedback. According to the findings, HFASD children may have acquired the targeted structures faster than their typically developing classmates. Because they are high-functioning children with ASD, they have an edge in terms of rote learning recall.

This study, on the other hand, focuses on ASD children in a single autistic house in Johor Bahru. In the future, more ASD children could be observed learning English with PECS. The parents' perspectives on utilizing PECS in English solely are discussed in this study. Researchers could produce PECS in both languages and compare parents' perceptions of using PECS in English and Malay language for further research.

3. Methodology

As this study focuses on the perspectives of occupational therapists and parents regarding the use of PECS in English for ASD children, it used a qualitative research design with semi-structured focus-group interviews and an open-ended survey as the instruments. Qualitative research is used to better understand people's cultures, ideas, and values, as well as human experiences and situations, and to generate theories that explain these experiences (Creswell, 2011). Qualitative research is used to comprehend human experiences and events in a variety of areas, including behavioral and social sciences.

3.1. Settings

Autism awareness has lately risen over the world, as indicated by an increase in the number of parents seeking assistance on how to raise children with autism and it is still unclear in Malaysia how children with autism spectrum disorder (ASD) learn English in an ESL situation (Sabri et al., 2021). As parents are busy with their work, they have limited time to teach their ASD children at home. Thus, they send their ASD children to an autism center to receive a good inter-

vention from an occupational therapist. This study focuses on a single autistic house in Johor Bahru, which has about 80 autistic children, five occupational therapists, and six special education teachers. The goals are to generate self-sufficient ASD children and to ensure that ASD children are ready to attend school by the age of seven. At the very least, before starting school, ASD children might practice social skills, write, and listen to instructions. Bahasa Malaysia is the primary language spoken in the autistic house. Most ASD children in the autistic house, on the other hand, are fluent in English since their parents communicate with them in English and Bahasa Malaysia at home.

3.2. Instruments

The questions for semi-structured focus-group interviews and open-ended surveys are adapted from "(Alsayedhassan et al., 2019), A survey of parents' perceptions of Picture Exchange Communication System for children with autism spectrum disorders and other developmental disabilities". There are six questions given to the occupational therapists and five questions for the parents.

3.3. Data Analysis

This study applied thematic analysis as described by Thomas and Harden (2008) to synthesize and analyze the data. Data were analyzed from the interview session and open-ended survey with occupational therapists and parents via Google Meet and WhatsApp. The interview was done online because of the COVID-19 pandemic.

The data gathered from the parents and ASD children concerned the researchers. In order to obtain permission to use their image as the PECS model and to request parents to participate in an interview for this study, the autistic house produced a letter. This step is essential since some parents may feel a need for privacy and not want to expose their children with ASD to the public. Parents who agreed to participate in the study were asked to leave their email address and phone number to the autistic house so that the researchers could get in touch with them and schedule an interview session using Google Meet.

3.4. Participants

This study had a total of 9 participants. Five occupational therapists with various work experiences in an autistic house in Johor Bahru, and four parents with various occupation backgrounds who live in Johor Bahru. The following are the profiles and information for the participants: (**Table 2** and **Table 3**).

Limitation—Representativeness.

The results of this study could not be extended to a larger population because the study only included a limited number of participants due to their voluntariness from one autistic house in Johor Bahru. In order to achieve results that may be applied to the general population, the researchers advise conducting a quantitative study.

Table 2. Occupational therapists' background.

Respondents	Age	Working Experience
R1	33	5 years at private autistic house
R2	30	7 years at private autistic house
R3	25	1 year at Hospital Sultan Ismail, Johor Bahru and 2 years at an autistic house
R4	25	1 year at Hospital Sultan Ismail, Johor Bahru and 2 years at an autistic house
R5	27	4 years at private autistic house

Table 3. ASD children parents' background.

Respondents	Age	Occupation
R6	38	Housewife
R7	41	English Teacher
R8	45	General Manager
R9	43	Mathematics Teacher

4. Findings and Discussion

4.1. Occupational Therapist Perceptions of Using PECS in English

Table 4 demonstrates occupational therapists' (OTs) perspectives on utilizing PECS in English at an autistic house in Johor Bahru. PECS is beneficial to people of all ages, according to 60% of OTs, whereas 40% have a negative attitude about it. They are all indifferent on item number 2, which is that employing PECS in English improves communication between the therapist and ASD children. They all agree that students learn better using PECS and don't favor verbal instruction. For item number 4, 80% of OTs are neutral, while the remaining 20% agree and have a positive perception that ASD children need a partner (friend) while using PECS to communicate.

4.2. Parents Perceptions of Using PECS in English

Table 5 shows parents' perceptions of using PECS in English. According to Table 5, 75% of the parents have positive perception on using English at home while the remaining 25% are neutral. All parents know how to teach their ASD children to communicate by using PECS in English at home. This is because they were trained by occupational therapists on how to teach PECS to ASD children correctly. All of them also find that it is easy to teach their ASD children dressing skills by using PECS in English and all of them notice any improvement of their ASD children when learning by using PECS in English.

Table 4. Occupational therapists' perceptions of using PECS to teach English.

No	Item	Negative Perception (%)	Neutral (%)	Positive Perception (%)
1	PEC is useful for all ages.	40	0	60
2	Using PECS in English make the communication between the therapist and ASD children better.	0	100	0
3	Students learn better using PECS and do not prefer verbally instruction.	0	0	100
4	ASD children need a partner (friend) when communicate by using PECS.	60	20	20

Table 5. Parents perceptions of using PECS in English.

No	Item	Negative Perception (%)	Neutral (%)	Positive Perception (%)
1	Use English to speak at home.	0	25	75
2	Know how to teach your ASD children to communicate by using PECS in English at home.	0	0	10
3	Find it is easy to teach your ASD children dressing skills by using PECS in English.	0	0	100
4	Notice any improvement of your ASD children when learning by using PECS in English.	0	0	100

4.3. The Perceptions of Using PECS in English among Parents

This section discusses the usage of PECS in English by parents of ASD children at an autistic house in Johor Bahru. This section is separated into two sections: positive perceptions of using PECS in English for ASD children and negative perceptions of using PECS in English for ASD children, both of which are related to the study's research questions.

4.3.1. Positive Perceptions

The research questions are grouped into three categories: 1) Using PECS in English enhances ASD children's learning, 2) Using PECS in English improves ASD children's communication skills, and 3) PECS in English promotes bilingualism for ASD children.

1) Using PECS in English enhances ASD children's learning

Autism children may have social and communication problems; however, they learn better through visual cues such as PECS (Smutkeeree et al., 2020). Some respondents agree that their ASD children learn better using PECS in Eng-

lish as they do not prefer verbal instruction. The statement is supported by an interview session from R4: "Autism children are more visual learners. They catch information from a picture easily. Sometimes if just using verbal, they could not focus. Pictures are more interesting to them to catch attention", R6 "He can speak English in full sentence now. Now, he is 6 years old", R7 "He can speak in full sentences. For example, if he wants to go to the toilet, he will mention the word toilet in English instead of Malay. He will show us the toilet picture", and R8 "Yes, he can speak English fluently".

In summary, R6, R7, and R8 believe that visual cues such as PECS help their ASD children learn better and have improved their English learning as they began to converse in English and were able to speak in full sentences. According to **Table 5**, all respondents notice some improvements in their ASD children when learning using PECS in English. According to Zohoorian et al. (2021), PECS can be a useful tool to teach English vocabulary and basic conversational chunks in the early stage of English language learning. The statement justifies the idea that employing PECS in English improves the learning of ASD children. In addition, according to Zohoorian et al. (2021), PECS could help ASD children enhance their English vocabulary repertoire.

Most of the respondents agree that it is easy to teach their ASD children by using PECS in English since their ASD children are visual learners. From the interview session, R6 mentioned that "As long as it is visual, with the help of picture, everything is easier", R2 "Sometimes, autism children do not care about the instruction given in the PECS. They just focus and look at the picture" and R7 "PECS is very helpful because my son is a visual learner. I do not have to nag at him every time I want him to do something. Just show him the picture. But PECS must be taught repeatedly until he can memorize the steps" R6, R2, and R7 mentioned that their ASD children are visual learners, therefore, they find it is easier to teach their ASD children by using PECS in English as they do not have to give verbal instruction repeatedly. With the help of PECS, it allows their ASD children to be independent in handling daily life skills such as dressing and toileting, as confirmed by R7 "I do not have to nag at him every time I want him to do something. Just show him the picture" which means, ASD children can do activity independently by looking at the PECS without their parents having to remind them repeatedly.

However, teaching PECS in English could be challenging to low-function autism children as the dominant characteristic that appears in low-function autism children are barriers in social skills and lack of attention spent children while high-function autism will use spoken language better than children with low function autism (Junaidi et al., 2020). The best way to teach PECS in English is by teaching it repeatedly in a day. As confirmed by R2 "Use PECS everyday repeatedly and frequently", R5 "Teach PECS repeatedly. If the children can pay a good attention while learning PECS, they can catch up faster. However, if the attention span is poor, it might take a lot of time for the children to catch up new

skill", and R3 "It's normal if the children take about one year to learn new skill. That is why PECS need to be taught repeatedly. At least 5 times a day with the help of parents at home as well". In short, PECS need to be used repeatedly every day and parents need to give cooperation by actively using PECS at home to teach their ASD children.

2) PECS in English improves ASD children's communication skill

As most of the ASD children at the autistic house in Johor Bahru speak English at home, this study uses English as the primary language in PECS. According to Kaduk (2017), this technique can be effective in the early phase of communication in the target language. PECS can help you improve your communication skills as well as your understanding of communication functions (Flippin et al., 2010). In terms of foreign language instruction, however, PECS has been advocated as an intervention for teaching English as a second language (Ganz et al., 2012). According to the interview session, the language of the PECS must follow the language that the ASD children use at home to avoid confusion. R4 mentioned that "To avoid student getting confused, PECS should use the language that the student used at home". Because according to R3, "There are students who can understand English and there are some who cannot. So, we must consider the language that the parents use at home to communicate with their ASD children". This means some students can understand English while some cannot because the Malay language is their main or native language.

However, the respondents believe that PECS could be in bilingual language so ASD children who do not understand English, can learn the language. R1: "I prefer bilingual language. They can learn in Malay and English", and R7: "I prefer PECS to be bilingual because children are good at acquiring new language". According to R7, children are good at acquiring a new language. It is broadly accepted that the earlier a student begins to acquire a second language, the better the learners' outcomes will be. When comparing average long-term outcomes between early bilinguals who began learning the second language in childhood and late bilinguals who began learning the second language in maturity, many data support this idea (Ahn et al., 2017). Learning PECS in English improves communication between ASD children and parents at home. According to an interview session with R7: "He will always show me his PECS when he wanted something. For example, I want cake, he will show me a picture of a cake. Now, he can communicate without PECS". This means that the ASD children can converse in English to show the expression "I want cakes". Through the open-ended survey with R6 via WhatsApp, R6 mentioned that "As a mother, of course, I feel happy. Previously, he would show me things that he wants without speaking. Now, he can converse in complete sentences and tell me what he wants". This means that ASD children may now communicate in full sentences rather than pointing to objects to express what they desire, demonstrating that adopting PECS in English helps improve communication (**Figure 2**).

During the interview session, when the researchers ask about any improvement seen when using PECS in English, R7 mentioned "He can speak in complete

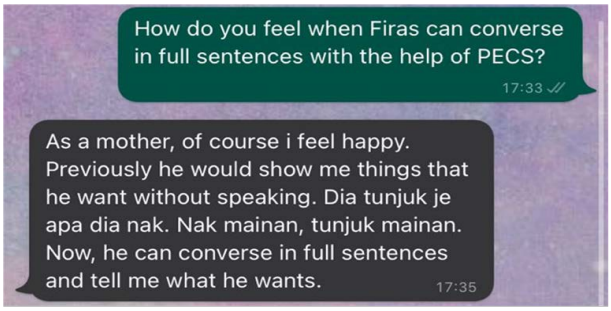

Figure 2. E Chat with R6 via WhatsApp.

sentences. For example, if he wants to go to the toilet, he will mention the word toilet in English instead of Malay. He will show us the toilet picture", R9: "Yes there are improvements, it takes time a bit", and R8: "Yes, he can speak English fluently". This means that PECS helps ASD children to communicate in English. PECS is a system for teaching English as a second language that has been suggested. PECS can improve functional communication abilities by reinforcing verbal speech in the first language (Bondy, 2001). As a result, in the future, an autism therapy center may use PECS in English to improve ASD children's communication skills.

3) PECS in English promotes bilingualism for ASD children

The most widely spoken language in Malaysia is the Malay language. Some families, however, converse in English at home. Some parents of ASD children in the Johor Bahru autistic house prefer to communicate with their ASD children in English. During the interview with the respondents, the majority of them stated that they speak English at home. R7: "Most therapists use English as the main language to teach PECS to ASD children. Thus, I speak in English with my son at home. But, when he started to enter primary school, I started to speak the Malay language with him since the school is using the Malay language to converse", R8: "My son can speak English fluently. He only speaks the Malay language at school although at first, it was hard for him. He needs someone to translate the Malay language to English for him and when he is at home, he will automatically switch from the Malay language to English", R9: "My son is fluent in English. So, I mix up both languages at home to allow him to understand both languages better". It shows that most of the parents use English to speak at home and thus, they prefer to use English instead of the Malay language. Although R6 mentioned that the spoken language at home is the Malay language, R6 agrees that the English syllable is simpler than the Malay language. That is why R6 mentioned, "But he recognizes color in English. For example, he will say black instead of 'hitam' and car instead of 'kereta'. He prefers to acknowledge numbers in English". This suggests that ASD children prefer to communicate in English for a variety of items or objects because English has fewer syllables than the Malay language.

Since using PECS in English, some parents claimed that their ASD children recognize foods in English rather than the Malay language. From the

open-ended survey via WhatsApp, R6 mentioned "He will ask me for food in English. For example, "I want banana" instead of "saya nak pisang". He rarely asks for anything in the Malay language. He recognizes most foods in English". This indicates that ASD children rarely recognize foods in the Malay language (**Figure 3**).

Even though English is not the native language of Malaysia, some parents should not be concerned about using it at home as the main language to communicate with their ASD children. Bilingualism, according to Archila-Suerte et al. (2018), can provide certain benefits in terms of thinking skills and learning to read in English, as well as open doors to educational and employment prospects in the long term. As supported by R7: "*PECS's language should be bilingual because the English words are much easier to utter than the Malay language. However, parents should consider the language used at school*". This means that parents who use English at home must teach their ASD children the Malay language as well so that they can communicate in both languages when entering school. Bilingual children have higher focus and develop their concentration skills to a greater extent than their monolingual peers, according to brain-based studies (Bialystok, Craik, & Luk, 2012). Hence, parents with ASD children are comfortable using English to communicate at home as it could promote bilingualism.

4.3.2. Negative Perceptions

The answers to this research question are grouped into two sub-categories 1) PECS in English is not suitable for children of all ages, and 2) PECS in English is not ideal for collaborative learning for low-function ASD children.

1) PECS in English is not suitable for all ages of children

PECS comprises of 6 instructional stages that target communication initiation utilizing basic concepts of applied behavioral analysis (e.g., structuring, rewards and punishment). Children are taught to make requests for items in Phases I and II by exchanging pictures with a person speaking for the relevant object. Children learn to distinguish between chosen and non-chosen things in Phase III. Children learn to ask for things in full words in Phase IV. Children are taught to answer questions in Phase V. Finally, children learn how to comment in a number of ways throughout Phase VI (Bondy, 2001). Thus, according to R3, PECS is

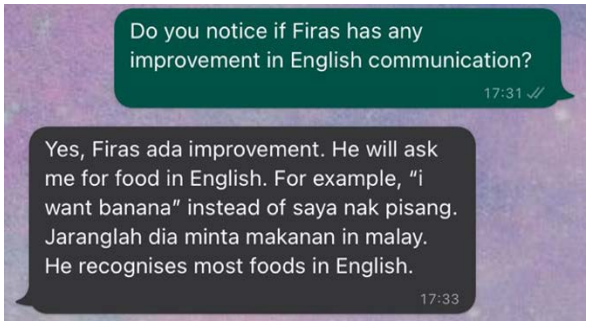

Figure 3. E Chat with R6 via WhatsApp.

not suitable for all ages, "No, depends on the students and their function", R4, "Students less than 6 years old are lack of attention. They cannot focus much. PECS is more suitable for 6 years old and above. But it is also applicable for adults". This means that occupational therapists think that PECS is not suitable for all ages of ASD children since they are indifferent in terms of function. Low-functioning ASD children have poor attention spans while high-functioning ASD children have a better attention span (Reinders et al., 2019).

However, R5 believes that PECS could be used for all ages of children and adults. "PECS is suitable for all ages of children and adults. Adults with dementia will need to use PECS as well". Chang and Bourgeois (2020) proposed using a suitable visual aid such as picture cues enables persons with dementia to keep their language skills (i.e., speaking, grammar, and conversation creation) until the latter stages of dementia. As a result, PECS is not appropriate for all ages of ASD children, as it is dependent on their function, and PECS could also be used by adults with dementia.

2) PECS in English is not ideal for collaborative learning for Low-Function ASD children

Most ASD children, according to Novack et al. (2019), require in-person treatment (one-on-one sessions), which allows occupational therapists to focus on one skill at a time. Furthermore, the authors state that parents and occupational therapists can maximize every available hour by having ASD children or students learn new skills more effectively. Thus, R3 mentioned "Low-function ASD children need one-to-one learning which uses his or her own's PECS" which believes that PECS should be designed according to each ASD children's preferences. As mentioned by R3 again "If the student love cartoon, then use the cartoon as the model of the PECS to attract their attention to learning a new skill by using PECS in English". All of the therapists agree that high-function ASD children learn faster than low-function ASD children. As confirmed by R2 "High-function ASD children can learn very fast so high-function ASD children can learn in the group". This indicates that high-function ASD children can cooperate with collaborative learning while low-function ASD children are unable to do so.

Although collaborative learning can help to build up ASD children's social skills, most of them have social impairments which could be the reason why low-function ASD children cannot cooperate in collaborative learning (Schul, 2011). R5 mentioned "We need to determine the ASD children's function first to make sure if they could learn with their friends or not, although collaborative learning is good for their social skill", and R1, "Depends on the function. Low-function better uses one-to-one learning and high-function better learn in the group". This means collaborative learning is not suitable for low-function ASD children since they need some time to learn new skills by using PECS in English. Based on the findings, researchers may conclude that collaborative English learning is beneficial to high-functioning ASD children but not to

low-functioning ASD children, as R4 suggests. "A friend can serve as an example for them. They will follow their friends if they observe them doing anything. Partners can assist each other, but it is not a good idea for children with ASD who have low function".

5. Conclusion

According to the study, utilizing PECS in English can help ASD children learn better, communicate better, and develop bilingualism. Although Malay is Malaysia's primary language, PECS in English can be a useful tool for teaching ASD children new skills. Bilingualism for ASD children is aided by the frequent use of English at home while speaking with family members, which is beneficial because they must attend a primary school that uses both languages in class. Therefore, the researchers identified ASD children and occupational therapists at an autistic house in Johor Bahru, as well as the parents, to be a part of this study. Researchers found positive perceptions of ASD children learning, communication skill, and language acquisition, as well as negative perceptions of collaborative learning and the appropriate age for ASD children to learn new skills by using PECS in English, which could help other parents with ASD children benefit from PECS in English to teach their ASD children's new skills.

This study could help occupational therapists and parents work collaboratively to teach new skills to ASD children using PECS in English. PECS is a simple tool that parents can make at home without spending a lot of money. Since this study only focused on one autistic house in Johor Bahru, a future study might compare two groups of ASD children from two other autistic houses in terms of their usage of PECS in English. PECS in English should be relevant to occupational therapists and parents of children with ASD in Malaysia, as the findings suggest that positive impressions outnumber negative perceptions.

However, as the number of participants is limited due to their voluntariness in this study, thus, the findings of this study could not be generalized to the bigger population. Therefore, the researchers suggest that a quantitative study be conducted in order to obtain findings that could be used to generalize to general population.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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