

## ORIGINAL ARTICLE

# THE DEVELOPMENT AND FEASIBILITY EVALUATION OF A MODULE IN IMPROVING FUNCTIONING OF CHILDREN WITH AUTISM SPECTRUM DISORDER (ASD)

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### ABSTRACT

Children with Autism Spectrum Disorder (ASD) have significant challenges in their daily life including social communication and interaction, emotional awareness and management, as well as behavioural issues. Many interventions are conducted based on theoretical backgrounds and past literature. There is lack of research study that interview and explore the real psychological needs of children with ASD in Malaysia. It is a significant component as their needs may vary depending on the cultural background, lifestyle, and social norms. Besides, there is a need to develop standardised intervention module to enhance intervention fidelity and replication of future study. The current study aims to scrutinise the psychological needs of children with ASD in Malaysia, develop a standardised group intervention module based on the identified needs, and then examine the feasibility of the developed module. Nine children with moderate to high functioning of ASD (7 to 12 years old) and their parents from Kuala Lumpur and Sarawak participated in the study. Result from the focus group interview suggests that children with ASD have three major psychological needs which are sociocommunication, awareness of danger, and emotions. The group intervention module was designed to fulfil these needs. The feasibility result shows that the designed module is practical, useful, and understandable for the participants. In view of this, future study may explore the effectiveness of the module. Once the module is proven effective, it can be patented and utilised to improve the psychological functioning of children with ASD in Malaysia.

**Keywords:** Autism Spectrum Disorder, children, group intervention, feasibility, psychological needs.

### INTRODUCTION

Autism Spectrum Disorder (ASD) is one of the neurodevelopmental disorders that affect many children's life functioning<sup>1</sup>. The worldwide estimate of ASD prevalence is one in 160 people<sup>2</sup>. There is no official statistics about the prevalence of ASD in Malaysia, but a local survey indicated that the prevalence rate is one in every 625 Malaysian children<sup>3</sup>. Children with ASD have impairment in their social communication and social interaction functioning<sup>1,4-6</sup>. They show lack of ability in maintaining two-way social interaction with others. Besides, they have deficits in recognising and showing non-verbal communicative behaviours<sup>1</sup>. Developing, maintaining, and understanding relationships are challenging for children with ASD compared to normal children. In addition, children with ASD have some restricted, repetitive patterns of behaviour, interests, or activities in their daily lives<sup>1</sup>. There are different types of intervention programmes to fulfil the needs of children with ASD. Younger children with ASD require intervention that focus on minimising the ASD features and maladaptive behaviours, enhancing independent functioning, improving quality of life and social

interaction, facilitate development and learning, as well as providing psychoeducation and support for their families. For those older children, researchers should include interventions that improve their verbal communication skills, emotional and behavioural control, and adaptive behaviours<sup>4</sup>.

Apart from improving general skills, there are intervention programmes that focus on specific skills. Many intervention programmes have been conducted to improve the social functioning of children with ASD. Young children with low functioning ASD often need to learn basic, fundamental social skills such as joint attention, symbolic play, eye contact, social initiation, and synchronous engagement<sup>5-7</sup>, while children with high functioning ASD will be able to learn advanced social skills such as prosocial behaviours, transitions, social awareness, conversational skills, developing friendship, recognition of facial emotions, interpretation of non-literal language, social responses and interaction<sup>6,8-12</sup>. Kamps et al. (2015)<sup>13</sup> examined the effectiveness of peer networks intervention programme to develop social communication, specifically social initiation and responses of children with ASD. Results indicated

that intervention group has more gains in making social initiation as well as verbal communication. Koenig et al. (2010)<sup>11</sup> also found improvements in participants by applying behavioural approach and peer mentors in their preliminary study. Many studies that adopted social skills group intervention have found significant improvements among children with ASD<sup>8-10,12</sup>.

In addition, some researchers explained that children with ASD generally have certain extent of disruptive behaviours which are highly correlated to communication impairments<sup>14-16</sup>. They express themselves to get things they want, avoid or escape from undesirable things by displaying disruptive behaviours. Hence, many studies targeted communication skills in intervention as a way to reduce disruptive behaviours<sup>17,18</sup>.

Although there are many intervention programmes for children with ASD, there is no “one size fit all” programme<sup>19</sup>. With the diverse needs of children with ASD, the choice of intervention programme that suits the individuals are significant. White, Koenig and Scahill (2007)<sup>20</sup> revealed that most of the researchers chose the intervention strategies based on past literature and understanding of their participants in the group. Some studies selected the intervention strategies based on theoretical backgrounds. It was recommended that future studies emphasise on the refinement and evaluation process of intervention programmes<sup>20</sup>. Besides, majority of the reviewed studies in developed countries did not have a standardised module for intervention programmes<sup>20</sup>. Although some studies provided components of intervention programmes, the information was limited and insufficient for implementation of the module<sup>21</sup>. Reviewing research done in Malaysia, there were studies researched on the ways to teach children with ASD in educational settings in Malaysia<sup>22</sup>. They highlighted the importance of Individualised Education Plan (IEP) in helping students with ASD to achieve their learning objectives and helping teacher to manage their teaching process at school. The study was not focusing on improving specific functioning of children with ASD.

Although many ASD intervention centres in Malaysia offer various therapy programmes for children with ASD, there is no published article about the implementation or effectiveness of the standardised intervention module. Hence, there is lack of existing standardised intervention module to improve the psychological functioning of children with ASD in Malaysia.

This study aims to identify the psychological needs of children with ASD in Malaysia, develop a

standardised intervention module that can improve the children’s functioning, and then evaluate the feasibility of the developed module.

## METHODOLOGY

### Study Design

The study was an intervention study that focused on the feasibility of intervention module implementation. In the current study, researchers focused on the initial phase, “can it work” in which the “acceptability” and “practicality” of the developed module were examined<sup>23</sup>. The study adopted mixed method design. Focus group interview (qualitative study) with the parents who have children with ASD was conducted to determine the psychological needs of children with ASD. After analysing the interview data, a module was developed and administered before the completion of feasibility questionnaire.

### Participants

Sample size of the study was not calculated as the rationale of feasibility study was to focus on the practicality and acceptability of the developed intervention module<sup>23-24</sup>. Convenience sampling method was adopted in the current study. Ten participants of both parent and children who fulfilled the inclusion criteria were recruited from the Health Psychology Clinic and the Sibuh Methodist Care Centre records.

Inclusion criterion of participants (parents) was as below:

1) have child who fulfils the inclusion criteria of participants (children) listed below

Inclusion criteria of participants (children) were as below:

- 1) with formal diagnosis of ASD
- 2) within the age range of 7 to 12 years old
- 3) with moderate to high level functioning of ASD

Exclusion criterion of participants (parents) was as below:

1) Parents whose children have ASD comorbid with other disorders and/or are participating in other early intervention programmes

Exclusion criteria of participants (children) are as below:

- 1) Children with ASD comorbid with other disorders
- 2) Children with ASD who are currently participating in other intervention programmes

In total, eleven parents (both parents of one of the children) participated in the focus group interview.

After that, nine children and parents participated in the module administration and completed the feasibility questionnaire respectively.

### Instruments

Gilliam Autism Rating Scale, Second Edition (GARS-2)

GARS-2 consists of 42 items with three subscales, which included stereotyped behaviour, communication, and social interaction<sup>25</sup>. Autism Index (AI) in GARS-2 can identify ASD and its severity level (i.e.,  $\geq 85$  indicates very likely to have ASD; 70-84 indicates possibly of having ASD;  $\leq 69$  indicates very unlikely to have ASD). Hence, the children with AI between 70 to 84 were selected as participants.

Vineland Adaptive Behavior Scales, Second Edition (VABS-II)

VABS-II was used to examine the child's overall level of adaptive functioning. It is a measure with good reliability and validity that examine four major domains which are communication, daily living skills, socialisation, motor skills and an optional domain that examine maladaptive behaviour<sup>26</sup>. Children with moderately low to high level of adaptive functioning were selected to be participants.

### Feasibility Questionnaire

A feasibility questionnaire was developed during the "Development Phase" (second phase) and administered during the "Trial Study Phase" (third phase) to examine the practicability and acceptability of the module. The questionnaire consists of 8 items to measure parental perception of children's understanding and practicality of the module as well as to collect parental opinions about the module.

### Procedures

The study consisted of three major phases. The first phase of the study was "Needs Assessment Phase", which was the troubleshooting process to find out the psychological needs of children with ASD in Malaysia. Parents of children with ASD were assessed with GARS-2 in self-report format and VABS-II in semi-structured interview format to identify ASD and determine the severity of ASD. Then, semi-structured focus group interviews were conducted in English and Chinese language with the parents.

The second phase of the study was "Development Phase". The content of focus group interview was transcribed and thematically analysed to identify the psychological needs of children with ASD. Combining the information from standardised measures (i.e., GARS-II and VABS-II), focus group interview, and past literature, a standardised module of group intervention for children with ASD

(i.e., a therapist module and a children workbook) and feasibility questionnaire were developed.

In the final stage of "Trial Study Phase", the developed module was implemented in group format at Sibuh Methodist Care Centre and at Health Psychology Clinic. As current study focused on practicality and acceptability of the module, the implementation of module was conducted in an intensive format. It was conducted in English and Chinese language for 2 sessions with 4 hours each session. There were 3 facilitators helping in this stage. There were only nine children participants and ten parents included in the feasibility result as one of the participants was absent on the second day of the module implementation due to logistic issues. By the end of intervention programme, parents were briefed about the module before answering the feasibility questionnaire. Then, the feasibility data was analysed.

### Ethical Approval

This study was approved by the Universiti Kebangsaan Malaysia Research Ethics Committee. The approval code number is PPI/111/8/JEP-2016-533.

### Data Analysis

According to Tickle-Degnen (2013: 172)<sup>27</sup>, "the outcomes of most feasibility and pilot studies should be measured with descriptive statistics, qualitative analysis, and the compilation of basic data related to administrative and physical infrastructure". For the qualitative data, thematic analysis was conducted after the focus group interview to determine the psychological needs of children with ASD. Six major phases of thematic analysis were conducted, including transcribed interview data, generated initial codes, searched themes from the codes, reviewed themes, refined themes, and wrote up<sup>28</sup>. For the quantitative data from feasibility questionnaire, descriptive statistics summarised and described the practicality and acceptability of developed module.

## RESULTS

The participants of this study consisted of children with ASD (N= 10) and their caregivers (N= 11). Regarding caregivers, there were four fathers, six mothers, and a paternal grandmother (total of 11 participants because both parents of one of the child participated in the focus group interview). There were nine children participants (90%) were male and a participant (10%) was female with the mean age of 9 years old. In terms of ethnicity, nine Chinese participants (90%) and a Malay participant (10%) joined the study.

All participants (100%) obtained the Autism Index score of 70 to 84 indicates that the individual is possibly of having ASD. The overall adaptive behaviour skills of eight participants (80%) were at the moderately low level of functioning while two participants (20%) were at the adequate level of functioning.

Figure 1 is a thematic map that summarised the emergence of themes from initial codes and subthemes. Initial codes were generated from the transcription of the focus group interview that discussed about the psychological needs of children with ASD. After that, three sub-themes (i.e., awareness of danger, sociocommunication, and emotion) emerged. Socioemotional wellbeing was the primary theme that could include the three sub-themes and portray the psychological needs of children with ASD.

### **Thematic Analysis**

Table 1 summarised the percentage of initial codes and sub-themes that were discussed by parents during the focus group interview. There were 63.6% of caregivers discussed about the importance of awareness of danger. Caregivers revealed their concerns that their children have lack of awareness of danger towards strangers (18.2%) and surroundings (27.3%) as well as their worries that their children may be the target of bully (27.3%). Besides, 81.8% of caregivers reported that sociocommunication was the psychological needs of

children with ASD that should be intervened. This sub-theme consisted of verbal and non-verbal sociocommunication, as well as children's manner. There were 63.6% of caregivers and 45.5% of caregivers expressed their concern that children have difficulties in verbal and non-verbal sociocommunication respectively. There was a participant (9.1%) discussed about manner issue of her child. Another psychological need of children with ASD was the emotion need. More than half of caregivers (54.4%) reported the needs of intervention on expressive and management of emotion.

### **Module Development**

The therapist module and children's workbook of module were developed based on the psychological needs of children with ASD that was derived from the focus group interview with their parents. Table 2 summarised the six sessions of the module content while Figure 2 presented the relevance of the psychological needs of children and the module outline. The initial three sessions of the programme focus on social skills such as self-introduction, social initiation, social response, and dangers in social situation (i.e., strangers and bully). The last three sessions of the module discuss about emotions, such as recognition of different emotions, management and expression of emotions appropriately. Sessions should preferably be scheduled weekly, with an hour thirty minutes to two hours per session.

Figure 1: Thematic map that shows the psychological needs of children with ASD

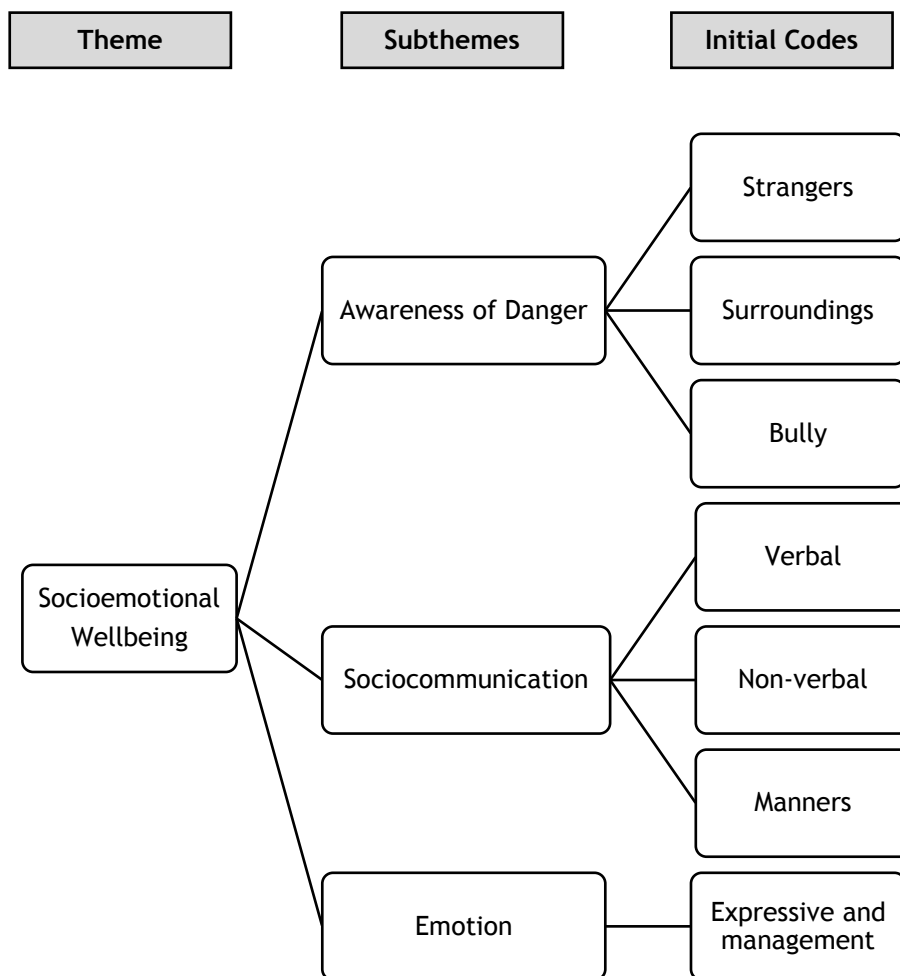


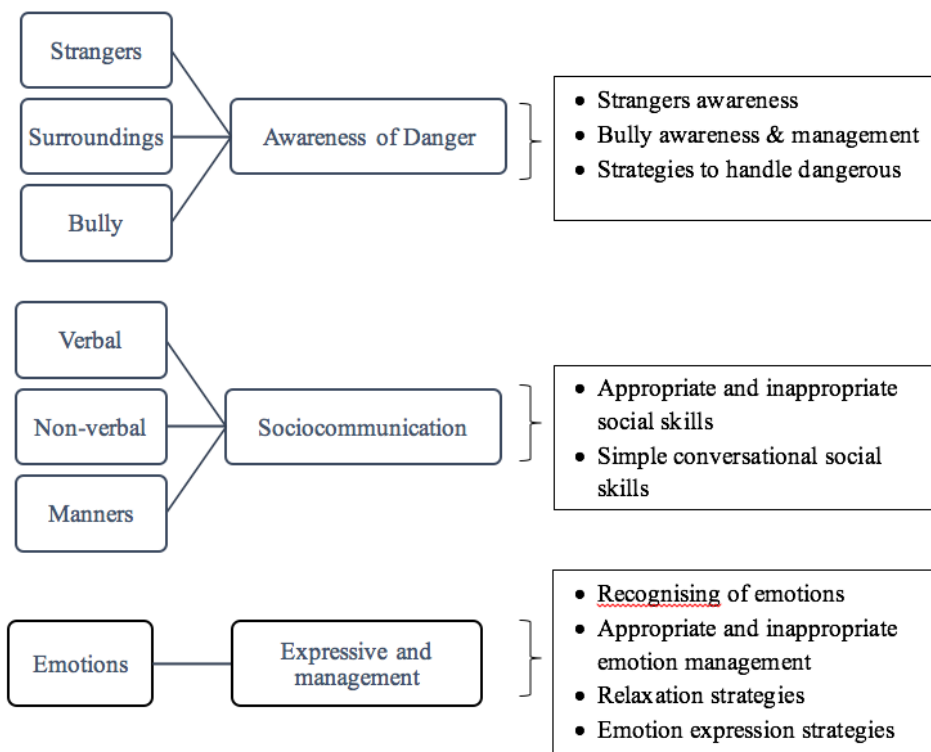
Table 1: Percentage of codes and sub-themes emerged from the transcription.

Participants	Socioemotional Wellbeing						
	Awareness of Danger			Sociocommunication			Emotion
	Strangers	Surroundings	Bully	Verbal	Nonverbal	Manners	Expressive and management
P1							/
P2					/		/
P3				/			/
P4			/				
P5			/	/			
P6	/			/			/
P7		/			/		
P8			/	/	/		/
P9				/			
Puan A		/		/	/	/	/
Puan B	/	/		/	/		
	18.2%	27.3%	27.3%	63.6%	45.5%	9.1%	54.5%
	63.6%			81.8%			54.4%

Table 2: Outline of module content.

Session	Outline	Approach	Estimated duration of time (mins)
1	Registration & take attendance		15
	Introduction		10
	Deep Breathing Technique	- Modelling - Visual prompt - Physical prompt	15
	Break Time		15
	Self-introduction	- Social story - Drawing activity - Game	25
	Summary and briefing	- Parental involvement - Home task	5
	Take attendance & revision	- Discussion	20
2	Appropriate & inappropriate social skills	- Visual prompt - Game - Modelling	15
	Break Time		15
	Simple conversational social skills	- Social story - Role play	35
	Summary & briefing	- Parental involvement - Home task	5
	Take attendance & revision	- Discussion	20
	Strangers awareness	- Visual prompt - Discussion	10
	Bully	- Visual prompt - Discussion	10
3	Break Time		15
	Strategies to handle dangerous situations	- Discussion	10
	Strangers & bully	- Role play	20
	Summary & briefing	- Parental involvement - Home task	5
	Take attendance & revision	- Discussion	20
	Recognising of emotions	- Drawing - Visual prompt - Discussion - Role play	30
	Break Time		15
4	Bodily sensation of emotions	- Drawing - Discussion - Game	20
	Summary & briefing	- Parental involvement - Home task	5
	Take attendance & revision	- Discussion	20
	Emotion management strategies	- Visual prompt - Game - Discussion	20
	Break Time		15
	Appropriate & inappropriate emotion management	- Visual prompt - Discussion	10
	Relaxation strategies	- Modelling - Singing	20
5	Summary & briefing	- Parental involvement - Home task	5
	Take attendance & revision	- Discussion	20
	Emotion expression strategies	- Visual prompt - Workbook activity	15
	Break Time		15
	Review all skills	- Role play	20
	Summary, briefing, party	- Parental involvement	10

Figure 2: Module that fulfils the psychological needs of children with ASD

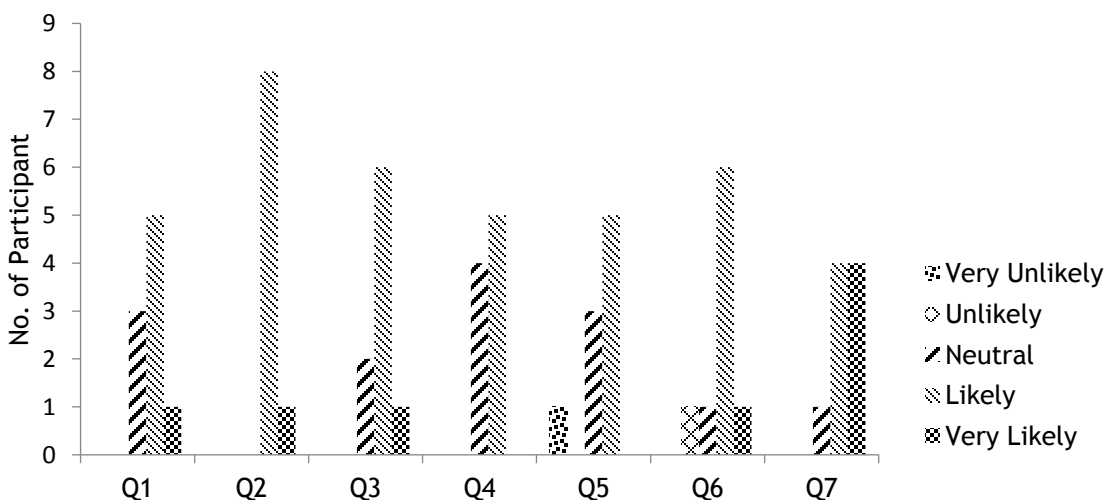


**Feasibility Result**

Nine parents of children with ASD answered the feasibility questionnaire that was developed to

assess the practicality and acceptability of the intervention module. Parental responses on every questions were plotted in the Figure 3.

Figure 3: Descriptive Analysis of The Module Feasibility



**Notes:**

- Q1 From my observation, my child enjoys the group
- Q2 I think the group is helpful for my child
- Q3 I think the information provided to parents helpful
- Q4 I think the intervention module has appropriately addressed my child's needs
- Q5 I think my child understand the skills being taught
- Q6 I think the skills my child has learnt are practical in his/her daily life
- Q7 I think the intervention module is beneficial to children with ASD

## DISCUSSION

This study was conducted to develop and evaluate the feasibility of a standardised intervention module that can improve the functioning of children with ASD in Malaysia. Before developing the module, their psychological needs were identified. Result of current study was well in line with the finding of past studies that social impairment is the major deficit among children with ASD<sup>9,29-30</sup>. In addition, more than half of the parents revealed their children have emotional needs. Researchers also emphasised on the needs of emotional awareness training and emotion management skills among children with ASD for their psychological wellbeing and social interaction<sup>31-33,12</sup>. Parents of current study revealed that their children have lack of danger awareness towards strangers and surroundings and they are concerned about bully issue that may happen at school.

The intervention module was designed based on the good components that have been proved to be effective by past studies. Firstly, reinforcement system was integrated in the module to promote inner motivation of children with ASD to engage in social interaction and targeted social skills<sup>7</sup>. The module was designed as a Journey of Treasure Hunt. Participants were motivated by the rewards and actively participated in the programme. Besides, various types of prompts were used to enhance the social skills learning<sup>13</sup>. All targeted skills were also introduced in a progressive way (i.e., basic to complex social skills) throughout the session as suggested by past literature<sup>7,34</sup>. The module was designed to cater children from moderate to high functioning of ASD. Hence, requirements from participants in the intervention module were varied and subject to change according to their level of functioning. In addition, parental involvement can optimise the treatment outcome as parents spend more time with their children compared to facilitator<sup>35</sup>. Social story was another component that was included in the module as it has been shown to be effective in educating children with ASD about social situations, perspective taking, initiating interactions, and maintaining interactions with others<sup>36</sup>. Besides, discussion component in the module created an interactive learning process. Discussion questions can be modified depending on the children's cognitive and verbal level.

Overall, the feasibility result showed that more than half of the participants (55%-90%) rated "Likely" or "Very Likely" responses for all of the questions. The result supported the research hypothesis that the intervention module would be feasible for children with ASD in Malaysia in improving their

psychological functioning. It is also potential to be implemented for effectiveness study.

Apart from the promising results of the present study, there are limitations that should be acknowledged. Firstly, younger age (i.e., 7 years old) or moderate functioning participants have difficulties in understanding role playing component. Hence, it is recommended that video modelling can be added in the module as past study showed its effectiveness in promoting skill acquisition<sup>37</sup>. Participants may begin with watching video and then imitate the behaviours of the person in the video. After practising, participants can role play with peers or facilitators in the session. Secondly, generalisability of skills learned from the intervention module was not examined. Although majority of the participants were able to understand the skills being taught based on the facilitators' observation and feasibility result, it is unknown that whether the skills that children learnt from the module were generalisable into their daily life. Hence, future research study may need to examine the generalisability of the skills in children's daily life.

## CONCLUSIONS

In conclusion, current study aimed to identify the psychological needs of children with ASD in Malaysia, develop an intervention module that can fulfil their needs, and examine the feasibility of the module. Results indicated that sociocommunication, emotion, and awareness of danger are three major psychological needs of children with ASD. The initial three sessions of module focused on social skills and awareness of danger while the final three sessions focused on emotions. The feasibility finding suggested that the intervention module was acceptable and practical. In view of this, it seems a fruitful direction for future study to focus on the effectiveness of the intervention module by carrying out a pilot study.

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