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Exploring predictors of adaptive behaviour of children with autism

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Abstract

This research determined the predictors of the adaptive behaviour of children with autism who are enrolled in special education centres using a descriptive correlational design. There were 40 children with autism whose adaptive behaviour was assessed in terms of their communication, daily living, social and motor skills using the modified Vineland Adaptive Behaviour Scales (Vineland-3) together with their profile. Data gathered were treated using descriptive and inferential statistics. The results showed that most of the children were males whose average age was 9.6 years who belonged to low-income families and were enrolled in 2 to 3 years. The children had moderately low adaptive skills in all areas of the adaptive behaviour. Moreover, the profiles of the children were not significant predictors of the four adaptive skills being assessed. Thus, it is recommended that other factors may be considered to identify the predictors of the adaptive behaviour of children with autism.

Keywords: Children with autism, communication, daily living, motor, social

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1. Introduction

Autism is a neurodevelopmental disorder marked by impairments in social interaction, communication, presence of repetitive and restrictive behaviour and adaptive functioning deficiency (Gokaydin, et al., 2020; Liss et. al., 2001; Malhi & Signhi, 2015). Over the years, the prevalence of this mental disorder has continued to rise in different countries around the world. In 2014, the Centre for Disease Control and Prevention in the USA estimated that 1% of the world population today has Autism Spectrum Disorder where in the United States 1 in every 68 births, which means more than 3.5 million Americans, are diagnosed with autism. In the United Kingdom there is 1% of the adult population who has autism. Moreover, according to Autism Speaks Foundation in the Philippines, there are about one million Filipinos who are affected with autism (Gonzales, 2014).

Children who have this mental disorder encounter difficulties in their social, communication, self–help and motor skills in their early childhood (McDougal et al., 2020). Because of these difficulties, most of the time these children need assistance on a daily basis because they have difficulties especially in expressing and taking care of themselves. When these difficulties are not given intervention, these could lead to a more serious problem in their adulthood (Crowell et al., 2019). Hence, early diagnosis and intervention is very important in order to provide care and assistance to children affected with autism by training them to develop adaptive behaviour so that they may live independently at home, in school and in the community (Elder et al., 2017). Developing their adaptive behaviour would help these children be successful in getting along with their environment and with less conflict with others. According to the Autism Society of America, the cost of lifelong care to persons with autism can be reduced by two-thirds when they are diagnosed and provided intervention earlier (Gonzales, 2014).

The development of adaptive behaviour of children may occur at home which will be aided by the caregivers, parents and other members of the family (National Academies of Sciences, Engineering, and Medicine, 2016). This would usually start when interventions are provided to modify the behaviour of these children. However, when these children go to school, Special Education (SPED) teachers are responsible for modifying these behaviours. These teachers are trained to handle children with special needs. Proper coordination between teachers and parents are significant in the development of the adaptive behaviour of the child because there is a need for the intervention to be consistent so that behaviour modification programmes given to the child will be more effective (Sheridan, 2018).

Adaptive behaviour that develops in children with autism varies to a certain extent which is dependent on many factors that may influence this development (Crowell et al., 2019). Such factors could be external which may refer to the family, socio-economic status, school and community, while the internal factor may refer to the severity of the disorder, age, IQ and gender of the child. Hence, relevant information on the connection of these factors towards the development of the adaptive behaviour of children with autism may help in developing strategies towards enhancing their behaviour. However, few have explored these factors that could possibly influence the development of their adaptive behavior.

1.1 Conceptual framework

This section presents the related literature and studies about the adaptive behaviors of children with autism and the predictors of these behaviours that would serve as the bases for the conduct of this study.

Children with autism are characterised by delays or abnormal functioning in at least one of the following areas prior to the age of 3 namely social interaction; social communication delays especially in language use; or symbolic or imaginative play, which could be one of the symptoms that could be used to diagnose the child suspected to have autism (Gaitonde, 2010). Because of the condition of these individuals, there is a need to develop their adaptive behaviour so that they cannot create problems and conflicts with their environment.

Adaptive behaviours refer to social, practical and conceptual skills that happen in natural environment. Practical skills are daily living, self–help and safety skills. Social skills refer to perceptions of social standards, social interaction and social problem-solving skills. Conceptual skills refer to language such as writing and reading, numeracy and chronological skills (Greenspan, 2008). These behaviours incorporate everyday skills that are individually manifested such as interacting with others, getting involved in community activities and establishing a meaningful relationship with others (KIin et al., 2007). Children with autism manifest adaptive behaviour difficulties in all domains when compared to other children without disorders and with developmental disorders (Gulati & Dubey, 2015). Moreover, these deficits in communication and socialisation are manifested poorly by children with autism than their counterparts who are not affected and with other developmental disabilities (Gillham et al., 2000; Klin et al. 2007; Perry et al. 2009).

Developing adaptive behaviour in children at an early age can be crucial for improved long-term effects of child development, especially the prevalence of social and communication deficits among children with autism that are difficult for the caregivers to treat (Crowell et al., 2019). Thus, adaptive behaviour development may be beneficial for children with autism and to their families by increasing the child's independent skills and delegating caregivers as therapists. However, this development might occur at different paces in the child even though interventions are being implemented earlier. It is important that caregivers consider the characteristics of the child with autism that would help predict the development of their adaptive skills.

1.2 Related research

Green and Carter (2011) investigated the predictors of adaptive daily living skills development in 162 young children with autism. The results showed that age, developmental level and autism symptom severity predicted the initial daily living skills and its development. The problem behaviours of children also predict the initial daily living skills. Children with lower IQ and more severe symptoms manifested slower daily living skills improvement.

Anderson et al. (2005) compared the predictors of social connectivity of 182 children with autism and 152 without autism using social network analysis. Gender and classroom size were found to be predictors of social connectivity among children with autism wherein boys who are in larger classroom size exhibit an improved social network in the group but not observed for typically developing boys.

Jasmin et al. (2008) conducted a study on 35 children with autism aging from 3 to 4 years who were subjected to a battery of diagnostic and clinical tests to determine the impact of sensory-motor skills on their performance of daily living skills. The results revealed that these children manifested abnormal sensory responses, very poor motor and daily living skills. Moreover, sensory evading, too much reaction sensory stimuli and fine motor skills were strongly related with daily living skills, even when their cognitive ability was considered. Moreover, Staples and Reid (2010) found that children with autism have significantly lower performance on both locomotor and object control tests than the chronologically matched group and mental age matched group and no differences observed between children with autism and the motor performance matched group. However, Liu et al. (2014) found a

significant difference in the performance on gross motor skills of children with autism and typically developing peers. Hilton et al. (2007) noted that the motor skills were exhibited to be a function of severity within autism.

Puig et al. (2013) analysed the impact of several cognitive variables on adaptive behavior in a sample of 16 children and adolescents with high functioning autism who are 7 to 17 years old who were evaluated using Vineland Adaptive Behaviour Scale, and it was found out that IQ is one of the main predictors of the adaptive behaviour of these children. Moreover, Duncan and Bishop (2013) reported that in the sample comprising individuals with high-functioning autism spectrum disorder, IQ significantly predicted deficits in daily living skills but accounted for only 10% of the variances of the scores together with the symptom severity, maternal education, age and sex.

Lastly, in the study of Mc Donald et al. (2015), which examined the adaptive skills of high-functioning children with autism which used VABS-II in evaluating these skills, they found that adaptive functioning of the children was below their cognitive level. Age was a significant inverse predictor of the communication and socialisation skills, while IQ was a positive predictor of communication and daily living skills. However, the interaction of age and IQ, social and communication symptoms did not predict the adaptive behaviours of these children. In addition, Liss et al. (2001) found that IQ was a good predictor of adaptive behaviour on children with high and low-functioning autism while language and verbal memory were predictive of adaptive behaviour in the high-functioning group.

With all these literatures and studies cited, this study established a framework that would lead to further exploration of the predictors of the adaptive behaviour of children with autism. However, only few studies explored the predictors of adaptive behaviour of children with autism. Information gathered by this study will help unlock some of the unexplored areas concerning the adaptive behaviour of these children and would become the bases of future interventions towards improving the adaptive behaviour of children with autism.

1.3 Purpose of the study

This research was carried out to determine the predictors of the adaptive behaviour of children with autism who are enrolled in SPED centres in order to provide significant information to stakeholders such that issues on improving the adaptive behaviour of children with autism might be addressed. The findings of this study will be the bases for a proposed adaptive behaviour development plan, and so this work of the researchers might contribute to the knowledge of caregivers dealing with children with autism.

2. Methods and materials

This section presents the research method, participants, data collection tools, data collection process, and data analysis.

2.1 Research method

This research utilised the descriptive-correlational research design which determined which among the profile of the children with autism are predictors of their adaptive behaviour. A correlational research is a type of research which aims to find out if the characteristics of a population differ when its subjects are exposed or not to certain events in the natural environment (Lau, 2017). It investigates the relationship of two variables without the intent of manipulating them (Bhandari, 2021).

2.2 Participants

The teachers handling children with autism who are enrolled in the identified SPED centres in Cebu City, Philippines, provided the assessment of their learners using a survey questionnaire while the parents provided the demographics of the children. There were 40 parents who agreed that their children become part of the study. On the other hand, the teachers provided significant information on the status of the adaptive behaviour of the children with autism in their care. Universal sampling technique was used to determine the number of participants due to the small population of the children with autism. All teacher participants were SPED teachers who cater to learners with special needs. One of the groups of learners with special needs that the SPED centres caters to is the children with autism.

2.3 Data collection tools

There were two sets of survey questionnaires used to gather the information on the profile and the level of adaptive behaviour of the children with autism. The first part of the questionnaire is intended for the demographic profile of the subjects such their age, gender, combined family monthly income and the number of years in school, which were answered by their parents. The second part contains statements related to the children's adaptive behaviour in terms of their communication skills, daily living skills, social skills, and motor skills which is adapted and modified from the Vineland Adaptive Behaviour Scales (Vineland-3) by Sparrow et al. (2016). The respective teachers were asked to rate the adaptive skills' manifestation of the children using a 5-point Likert Scale rated as 5 = high, 4 = moderately high, 3 = adequate, 2 = moderately low and 1 = low. Vineland-3 is a standardised assessment tool used to assess the adaptive behaviour of individuals with disabilities including autism.

2.4 Data collection process

The researchers observed protocols during the data gathering. Teachers and parents were oriented on the objectives of the study before they were asked to sign an informed consent so that they can proceed to answer their respective questionnaires. Instructions were given to the teachers on how are they going to rate the adaptive behaviour of their children objectively. Teachers were given enough time to answer the questionnaires. The researchers retrieved the questionnaires once the teachers were done answering the survey questionnaire. On the other hand, the parents were asked to fill in the information on the demographic profile of their children. Observation of classes was conducted to validate the information provided by the teachers. Moreover, interviews with the selected parents were also conducted to verify the skills of their child.

2.5 Data analysis

The data gathered were organised, tallied, summarised, tabulated and treated statistically with the aid of the statistician. Frequency count was used to determine the number of children who fell into the same category of a certain variable related to their profile. Percentage was used to describe the proportion of children with similar characteristics in reference to their total number. Weighted mean was utilised to determine the level of adaptive skills of the children in different domains, such as communication skills, daily living skills, social skills and motor skills while standard deviation was used to describe the variations on the level of the children's adaptive skills. Multiple Regression analysis was used to determine which of the children's profile is a good predictor of their adaptive behaviour.

3. Results

This section presents the results of the data gathered in terms of the profile and adaptive behaviour of the children with autism. This also presents the multiple regression analysis for the profile and the children's adaptive behaviour.

Table 1. Profile of the children with autism

Profile	f	%
Gender		
Male	31	77.50
Female	9	22.50
Total	**40**	**100.00**
Age (in years)		
13 and above	9	22.50
10 – 12	7	17.50
7 – 9	12	30.00
4 – 6	12	30.00
Total	**40**	**100.00**
Combined Family Monthly Income		
Php 24, 001 and above	9	22.50
Php 12, 001 –24, 000	13	32.50
Php 12, 000 and below	18	45.00
Total	**40**	**100.00**
Number of years in school		
6 and above	2	5.00
4 – 5	9	22.50
2 – 3	17	42.50
1 and below	12	30.00
Total	**40**	**100.00**

Table 1 presents the results of the data gathered based on the age, gender, combined family monthly income, and number years in school of the children with autism. As seen in the table, out of 40 children with autism, 31 (77.50%) were male and 9 (22.50%) were female. As regards the age of the children, most of them fall into the primary level of schooling age which is ranges from 4 to 9 years. Moreover, there were 18 (45.00%) children belonging to families whose maximum monthly income was Php 12, 000. There were 17 (42.50%) children who spent 2 – 3 years in school.

Table 2. Communication skills of the children with autism

S/N	Indicators	WM	SD	Verbal description
1	Says his own first name or nickname	2.58	1.615	Moderately low
2	Names at least three actions	2.53	1.519	Moderately low
3	Says his age when asked	2.28	1.585	Moderately low
4	Responds to questions that use the word "who"	2.05	1.260	Moderately low
5	Identifies one or more alphabet letters	2.60	1.676	Moderately low
6	Understands at least three more advanced gestures	2.53	1.396	Moderately low

7	Follows instructions with two related actions	2.33	1.347	Moderately low
8	Responds to questions that use the word "why"	1.80	0.966	Low
9	Follows instructions with one and two steps	2.30	1.285	Moderately low
10	Copies his own first name correctly	2.53	1.739	Moderately low
11	Follows instructions involving right and left	2.13	1.244	Moderately low
12	Writes both his first and last name from memory	2.25	1.691	Moderately low
13	Reads sentences of three or more words out loud	1.58	1.238	Low
14	Understands sarcastic words	1.48	0.933	Low
15	Remembers to do something up to an hour later	1.60	1.194	Low
	Overall Weighted Mean	**2.17**		**Moderately low**
	Overall Standard Deviation		**1.379**	

4.21 – 5.00, High; 3.41 – 4.20, Moderately high; 2.61 – 3.40, Adequate; 1.81 – 2.60, Moderately low; and 1.00 – 1.80, Low.

Table 2 presents the statements describing the communication skills of the children. The overall weighted mean of 2.17 and an overall standard deviation of 1.379 indicate that the children had moderately low communication skills.

Table 3. Daily living skills of the children with autism

S/N	Indicators	WM	SD	Verbal description
1	Uses the toilet when needed without help	3.28	1.467	Adequate
2	Washes and dries his hands	3.48	1.467	Moderately high
3	Finds and uses a restroom when away from home	3.08	1.492	Adequate
4	Counts at least 10 objects, one by one	2.65	1.718	Adequate
5	Wipes/blows his nose using tissue, napkin, etc.	2.43	1.430	Moderately low
6	Stays on task for 5 min. without teacher attention	2.33	1.309	Moderately low
7	Understands that a clock is used to tell time	1.90	1.297	Moderately low
8	Takes care of personal possessions at school	2.08	1.185	Moderately low
9	Respects the right to privacy for self and others	1.80	0.992	Low
10	Identifies written numbers 1 through 9	2.63	1.750	Adequate
11	Covers mouth and nose when coughing or sneezing	2.08	1.185	Moderately low
12	Cleans up desk/play area at the end of an activity	1.90	1.172	Moderately low
13	Asks for help to understand something	2.08	1.269	Moderately low
14	Stays alert and focused while teacher is talking	1.93	0.971	Moderately low
15	Checks his works for mistakes or errors	1.38	0.705	Low
	Overall Weighted Mean	**2.33**		**Moderately low**
	Overall Standard Deviation		**1.294**	

Table 3 presents those statements describing the daily living skills of the children. Daily living skills are the basic skills that the children with autism need to develop so that they can perform basic skills alone. It can be gleaned from the table that the overall weighted mean of 2.33 and an overall standard deviation of 1.294 indicate that the children had moderately low daily living skills.

Table 4. Social skills of the children with autism

S/N	Indicators	WM	SD	Verbal description
1	Recognises the gender of himself and others	2.05	1.339	Moderately low
2	Plays with peer(s) for 5 minutes under supervision	2.45	1.239	Moderately low
3	Says the relationship of familiar others to self	1.74	1.019	Low
4	Helps others when asked	2.18	1.394	Moderately low
5	Shares toys/possessions when told to do so	2.36	1.135	Moderately low
6	Plays with others at outdoor games with no score	2.13	1.128	Moderately low
7	Plays with peer(s) for 20 minutes under supervision	2.30	1.137	Moderately low
8	Responds politely when given something	2.13	1.343	Moderately low
9	Moves away from aggressive children nearby	2.40	1.336	Moderately low
10	Uses words or gestures to express distress	2.13	1.343	Moderately low
11	Accepts helpful suggestions/solutions from others	1.60	0.982	Low
12	Shows happiness, sympathy, or concern for others	2.03	1.291	Moderately low
13	Asks others to play or spend time together	1.80	0.853	Low
14	Controls anger when unexpected events disrupt plans	1.73	0.933	Low
15	Modifies his voice level for the location/situation	1.60	0.955	Low
	Overall Weighted Mean	**2.04**		**Moderately low**
	Overall Standard Deviation		**1.162**	

Table 4 presents the results on the data gathered on the social skills of the children. The overall weighted mean of 2.04 and an overall standard deviation of 1.162 indicate that the respondents had moderately low social skills.

Table 5. Motor skills of the children with autism

S/N	Indicators	WM	SD	Verbal description
1	Throws a ball of any size in a specific direction	2.53	1.414	Moderately low
2	Jumps off the ground with both feet without falling	2.90	1.411	Adequate
3	Stands on one foot for at least 2 seconds	2.53	1.485	Moderately low
4	Runs smoothly, changing speed and direction	2.70	1.363	Adequate
5	Walks carefully on a slippery or uneven walkway	2.70	1.418	Adequate
6	Holds a crayon/pen/pencil properly for drawing, etc.	3.20	1.400	Adequate
7	Presses buttons accurately on a keyboard or screen	2.70	1.556	Adequate
8	Catches a baseball-sized ball from 2 or 3 feet away	2.23	1.180	Moderately low
9	Uses scissors to cut paper along a straight line	2.30	1.324	Moderately low
10	Draws more than one recognisable form	2.25	1.446	Moderately low
11	Cuts out simple shapes	2.40	1.446	Moderately low
12	Uses an eraser without tearing the paper	2.73	1.601	Adequate
13	Assembles/creates complex toy structures, crafts, etc.	2.43	1.357	Moderately low
14	Draws a straight line using a ruler or straightedge	2.08	1.365	Moderately low
15	Ties a knot	1.49	0.854	Low
	Overall Weighted Mean	**2.48**		**Moderately low**
	Overall Standard Deviation		**1.375**	

Table 5 presents the statements describing the motor skills of the children. Considering the overall weighted mean of 2.48 and an overall standard deviation of 1.375, the motor skills of the children are moderately low.

Table 6. Test of multicollinearity

Variables	VIF
Age	1.394
Gender	1.112
Income	1.045
Years in school	1.284

Table 6 presents the test of multicollinearity of the independent variables. The variance inflationary factor (VIF) for each independent variable is checked to avoid the problem with high correlations among the predictor variables. In this case, high correlation among the predictor variables is not a problem because all the VIFs are greater than 0 but less than 5, which is a requirement in conducting multiple regression analysis (Mutodi & Ngirande, 2014).

The multiple regression analysis was used to determine if the profiles of the children are significant predictors of their adaptive skills. The data on the test are presented in Tables 7 – 10.

Table 7. Regression analysis results for predicting communication skills of children with autism

	R square	df	*F*	Standard coefficients (β)	*t* -Stat	*p*-value
Regression	0.144	4	1.477			0.230
Residual		35				
Total		39				
Constant					2.156	0.038
Age				0.119	0.655	0.517
Gender				0.263	1.649	0.108
Income				0.179	1.112	0.274
Years in school				-0.012	-0.068	0.946

Table 7 shows that 14.4% of the variation in the communication skills is explained by the profile of the children. The computed $F(4,35) = 1.477$ and $p > 0.05$ shows that the model is not a significant predictor of the communication skills of the children. The beta value describes the strength of influence of each profile to the communication skills of the children. The higher the value of beta, the greater is the influence of the profile on the communication skills of the children. Among the profile of the children, age ($\beta = 0.119$, $t = 0.655$, $p = 0.517$), gender ($\beta = 0.263$, $t = 1.649$, $p = 0.108$), income ($\beta = 0.179$, $t = 1.112$, $p = 0.274$), and number of years in school ($\beta = -.012$, $t = -.068$, $p = 0.946$) were not significant predictors of the communication skills of the children. Gender has the highest influence on the communication skills of the children.

Table 8. Regression analysis results for predicting daily living skills of children with autism

	R square	df	*F*	Standard coefficients (β)	*t* -Stat	*p*-value
Regression	0.164	4	1.711			0.170
Residual		35				
Total		39				
Constant					2.651	0.012
Age				0.273	1.523	0.137
Gender				0.133	0.847	0.403
Income				0.103	0.647	0.522
Years in school				0.098	0.556	0.581

It can be gleaned from Table 8 that the profile of the children explains 16.4 % of the variation in their daily living skills. The computed $F(4,35) = 1.711$ and $p > 0.05$ denote that the model is not a significant predictor of the daily living skills of the children. Age has the highest influence on the daily living skills with a beta value of 0.273 followed by male ($\beta = 0.133$), income ($\beta = 0.103$) and number of years in school ($\beta = 0.098$). The test on the significance of the regression coefficients of age ($t = 1.523$, $p = 0.137$), gender ($t = 0.847$, $p = 0.403$), income ($t = 0.647$, $p = 0.522$) and number of years in school ($t = 0.556$, $p = 0.581$) implies that these profiles are not significant predictors of the daily living skills of the children.

Table 9. Regression analysis results for predicting social skills of children with autism

	R square	df	*F*	Standard coefficients (β)	*t* -Stat	*p*-value
Regression	0.034	4	0.312			0.868
Residual		35				
Total		39				
Constant					4.009	0.000
Age				-0.088	-0.457	0.651
Gender				-0.052	-0.307	0.761
Income				0.087	0.505	0.616
Years in school				0.192	1.013	0.318

It can be seen in Table 9 that the profile accounts the 3.4% of the variation in the social skills of the children. The computed $F(4,35) = 0.312$ and $p > 0.05$ show that the model is not a significant predictor of the social skills of the children. It can be seen that the profile had very little influence on the social skills such as age ($\beta = -0.088$), gender ($\beta = -0.052$), income ($\beta = 0.087$) and number of years in school ($\beta = 0.192$). The test on the significance of the regression coefficients of age ($t = -0.457$, $p = 0.651$), male ($t = -0.307$, $p = 0.0.761$), income ($t = 0.505$, $p = 0.616$) and number of years in school ($t = 1.013$, $p = 0.318$) implies that these profiles are not significant predictors of the social skills of the children.

Table 10. Regression analysis results for predicting motor skills of children with autism

	R square	df	*F*	Standard coefficients (*β*)	*t* -Stat	*p*-value
Regression	0.120	4	1.194			0.331
Residual		35				
Total		39				
Constant					2.556	0.015
Age				0.017	0.092	0.927
Gender				0.150	0.931	0.358
income				0.160	0.978	0.335
Years in school				0.230	1.272	0.212

Table 10 illustrates that the profile accounts for 12.0 % of the variation in the motor skills of the children. With the computed $F(4,35) = 1.194$ and $p > 0.05$, the model is not a significant predictor of the motor skills of the children. Among the profile of the children, the number of years in school is the strongest predictor of the motor skills with a standardized beta of 0.230 which is followed by income ($\beta = 0.160$), male ($\beta = 0.150$) and age ($\beta = 0.017$). The test on the significance of the regression coefficients of age ($t = 0.092$, $p = 0.927$), gender ($t = 0.931$, $p= 0.358$), income ($t = 0.978$, $p = 0.335$) and number of years in school ($t = 1.272$, $p = 0.212$) implies that these profile are not significant predictors of the motor skills of the children.

4. Discussion

The data suggest that the children were identified to have autism at an early age. It is important that children who are suspected to be suffering from autism might be assessed by the experts in order that parents and teachers can provide early intervention towards the child. Otherwise, children who are mainstreamed in regular classes but have autism will oftentimes be misunderstood by the teachers and students.

Once a child is diagnosed to have autism, they should be given appropriate behaviour intervention immediately. This can be done when these children are enrolled in appropriate learning centres that could be costly. In the Philippines, families having an income in the range of Php 12, 000 and below belong to low-income families because this is below the average monthly income of about Php 22, 000 for lower middle-class families in the country (Adrian, 2021). The family monthly income is an important aspect in rearing a child with autism because a child with autism most of the time needs assistance because they are deficient in most of the adaptive skills. In the absence of the parents, because they need to work or have other things to attend to, they need to hire caregivers to monitor their child and provide appropriate intervention. However, if parents do not have the capability to hire such caregivers, the child will be left in the care of anyone who would not provide appropriate intervention to the child. Consequently, the development of the child's adaptive skills may be slower than what is expected.

The child's exposure to intervention that will enhance their adaptive skills can be obtained in school. Developing the adaptive skills of children with autism would take a long period of time. With the given data, most of them were just enrolled in 2–3 years in school which indicates that they were just

provided with interventions that would aid in the development of the adaptive skills. Learners with special needs should be mainstreamed in the society that could start at home and in school so that their interaction with other people can help in their personality development (Tenerife, et al., 2021). In school, teachers provide children with autism with different teaching approaches and interventions appropriate to their deficiencies. One of these teaching approaches that will increase the child's motivation during the teaching process is the technology -based teaching approaches (Gokaydin, et al., 2020). Enhancing a child's motivation to interact will be helpful in developing their deficiencies.

Parents, caregivers and teachers should provide appropriate intervention to develop these skills in the children because the data indicate that the communication skills of the children need to be improved. Young children with autism manifest delays in their receptive and expressive language although these delays vary among individuals (Gernsbacher et al., 2016). They usually do not comprehend that communication is a two-way process with the use of eye contact and bodily expressions. Even though some children with autism have developed speech skills, they still have trouble in determining when are these skills are appropriate to use in communicating with people because usually they use this to ask for favours or protest about something rather than for social interactions.

Daily living skills are very important in the life of the person because the mastery of these skills make one an independent person. However, in the case of children with autism, they usually have inadequate skills in this area. In most cases, they need assistance to perform the daily tasks. Based on the data, respondents still need to enhance their skills. They should be exposed to activities that would develop their skills so that they will not need assistance anymore when performing simple daily activities when they grow older. Daily living skills have become essential in predicting independence and quality of living. When children with autism continued into adulthood, their daily living skills will come into a plateau (Smith et al., 2012). This suggests that it would be difficult for them to develop further their daily living skills when they are already in their late 20s.

Children with autism have difficulty in relating themselves to others. Oftentimes they are misunderstood by their peers. Their difficulty in expressing themselves contributes to their low social skills. It is imperative that children with autism possess social skills in order to establish a smooth relationship with their peers. Hence, social skills must be developed among these children in order to avoid conflict with others. In addition, they are poor in balancing and coordinating their hand and body movements. With these, they will have a hard time participating with physical activities. Thus, it is necessary that they master these skills so that they can perform physical activities in school and at home with mastery. In children with autism, motor development is delayed, which becomes a problem for them. This problem can be manifested in many ways. Gross motor skills can be impaired in these children like the difficulty balancing and awareness of their bodily movements which may be due to neurological problems and sensory processing. Similarly, fine motor difficulties would lead to challenges in writing, drawing, picking and dressing, which are necessary life skills.

One of the important aspects in developing the adaptive behaviour of children with autism is to be able to predict the development of this behaviour. The results suggest that none of the children's profile such as their age, gender, income and years in school, is a significant predictor of the adaptive behaviour. Similarly, Kenworthy et al. (2010) found that age is not a predictor of the adaptive behaviour in children with autism. However, this finding is inconsistent with the findings of Pugliese et al. (2014) who found that age strongly predicts the communication and social skills of children with autism and a weak predictor on their daily living skills, which exhibited a negative relationship on these skills. Moreover, Duncan and Bishop (2013) reported that age and gender significantly predicted deficits in daily living skills. Most research studies found that motor skills serve as the predictors of

other deficiencies of children and no research was found that determined the predictors of motor skills of children with autism. However, Lee and Bo (2015) found that the motor deficiencies of children are linked to the symptoms of autism. But they were not certain which of these variables influence the other. Additionally, adaptive skills relatively decline with the increase in these children's age (Kanne et al., 2011). Age and adaptive behaviour of children with autism have a negative relationship which suggests that these children did not develop their adaptive behaviour over time in reference to the typically developing peers (Klin et al., 2007).

5. Conclusion

Based on the findings of the study, it can be concluded that the children with autism had the least exposure to the interventions at school because they were just newly introduced into school. Consequently, their adaptive behaviour was moderately low in all areas, which imply that these need to be improved. However, none of the profiles is significant predictors of their adaptive behaviour. Although adaptive behaviour is important in understanding individuals with autism, it is a complex process to predict such behaviours because of other variables that could possibly affect how these individuals develop their skills. A variety of approaches of behaviour measurement could also be used to validate the consistency of results when these individuals are exposed to different environments. The study did not provide results that can be used to establish a more direct approach in enhancing the adaptive behaviour of individuals with autism. None of the profiles yielded promising results to predict adaptive behaviour. This could mean that the development of the adaptive behaviour of the children depends on other factors that are not considered here. Notwithstanding, it cannot be discounted that some of these profiles could have an impact on the child's development. Moreover, other external factors may be considered to identify the predictors of the adaptive behaviour of the children with autism.

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