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Factors Affecting Parents' At-Home Interactivity with Children with Autism Spectrum Disorder: A Case Study in Hanoi, Vietnam

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Abstract

The research aims to investigate factors affecting parents' at-home interactivity with children with autism spectrum disorder and features the participation of 231 parents from 156 families in Hanoi, Vietnam. In this particular paper, the authors used desk research and in-depth interview with expert to collect necessary data, along with exploratory factor analysis method. The findings reveal that there are various factors impacting parents' at-home interactivity with children with autism spectrum disorder. These factors may either positively or negatively influence the children's growth and behaviors, as well as the at-home interaction between them and their parents. The factors include (1) Parents' knowledge, communication, attitudes and feelings, (2) Home environment, (3) Experts' and the community's support, and (4) Children's development. Generally, to enhance parents' at-home interactivity with children with autism spectrum disorder, support from experts and the community is of great importance. This means organizations and institutions (i.e. universities or research institutions) need to offer guidance and training courses to equip the parents whose children have autism spectrum disorder with proper knowledge, skills and attitudes to coordinate with special education institutions in caring and educating the children.

Keywords: *Children With Autism Spectrum Disorder, Parents, Interactivity, Experts and Community's Support*

Introduction

According to Nguyen Thanh Hoa (2023), autism spectrum disorder (ASD) is a kind of neurodevelopmental disorder characterized by impairments in social communication and restricted, repetitive behaviors. Symptoms of this disorder can be seen in children under three years of age, and early diagnosis and early intervention are considered to help children have a better chance of progress. In the past twenty years, research on ASD has really flourished worldwide. However, most research has focused on children under six years of age and those with high-functioning autism, because these groups of children can be easily assessed with standard assessment tools and also have a better response to intervention programs (Tager-Flusberg & Kasari, 2013). However, ASD is a complex disorder and its manifestations vary widely. Recent studies have shown that, before the age of five, approximately 50% of children with ASD have limited spoken language, and despite access to early intervention programs, approximately 30% of children with ASD remain minimally verbal – that is, with fewer than 20

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meaningful single words – after the age of five (Anderson et al., 2007). Additionally, according to Rose, Trembath, Keen and Paynter (2016), about half of the children with minimal verbal language showed no improvement in language ability after participating in an early intervention program.

Tran Thien Thang (2023) pointed out that since 2013, the DSM-5 criteria for diagnosing children with autism spectrum disorders have undergone many changes, allowing for the expansion of the diagnosis of many previously overlooked subjects. The new criteria do not consider language impairment as a core impairment for diagnosing children, and there is only one diagnosis of "autism spectrum disorder" instead of the terms "autism" and other subtypes of the disorder such as Asperger syndrome and "pervasive developmental disorder not otherwise specified". In addition, in recent years, the rate of children with autism spectrum disorders has increased alarmingly, from 0.67% in 2007 to 2.27% in 2021. Finding the general rate of children with autism spectrum disorders is important to help warn, as well as plan appropriate policies to control this disorder, especially in some high-risk subjects.

According to Holly Hodges (2019), ASD is a neurodevelopmental disorder characterized by deficits in social communication and the presence of restricted interests and repetitive behaviors. There has been recent concern about its increasing prevalence, and this paper seeks to elaborate on factors that may influence its prevalence, including recent changes in diagnostic criteria. The authors review the evidence that ASD is a neurobiological disorder influenced by both genetic and environmental factors that affect brain development and list factors that correlate with ASD risk. Finally, the paper describes how clinical assessment begins with developmental screening, followed by referral for definitive diagnosis, and provides guidance on screening for comorbidities.

Theoretical Basis

Concepts of Children with ASD

According to Pham Minh Muc (2022), in the 1940s, research on autism was first officially published; and since then, the world has witnessed an increase in the number of projects in this subject matter. In the recent 30 years, there has emerged a new trend in research on autism which places the focus on families and communities. To be more specific, various papers in this period featured the involvement of parents in the treatment process, which resulted in children's improved behaviors after intervention at home and in their communities (Lovaas et al, 1973, Marjorie Solomon, 2008).

A study by Nguyen Thi Hoang Yen and her colleagues (2015) which screened and diagnosed 94,186 children in localities, detected 387 children with ASD, accounting for 0.41%. Children diagnosed with ASD in the United States made up for 9.4% of children aged 2-17; the number in 2007 was 5.4 million, increasing to 6.1 million in 2016. Boys are more likely to be diagnosed with ASD than girls (12.9% vs. 5.6%). According to a 2016 national survey of parents, 1 in 10 children with ASD have at least one other mental, emotional, or behavioral disorder: About 5 in 10 children with ASD have behavioral or conduct problems; about 3 in 10 children with ASD have anxiety.

Most of the studies were conducted on preschool children, and only a few on primary-school children. The use of intervention programs and methods has also been adopted in some studies. The programs have made use of psychomotor and speech therapy intervention methods, teaching methods aiming to help children to understand emotions, ways to manage children's behavior,

as well as such methods as Applied Behavior Analysis (ABA), Therapy and education for children with autism who have communication difficulties (TEACCH), Intervention based on development, individual differences and relationships (DIR), Picture Exchange Communication System (PECS) or Montessori (Tran Van Cong & Ngo Xuan Diep, 2017).

Concepts of Early Intervention and Interaction with Children with ASD

In the world, research on early intervention for children with ASD follows two main directions: medical intervention and psychological-educational intervention. The former involves the use treatment measures and effects related to drugs and diets (i.e. forcing children to abstain from certain foods containing substances harmful to their nervous system), and/or chemical-biological technology (detoxifying or adjusting substances that affect the nervous system). These measures come from the viewpoint that ASD originate from physical causes (Rhea Paul, 2008).

Michael Siller (2014) stated that although many children with ASD are currently treated with medical interventions, there is little evidence of benefit for most treatments. Risperidone and aripiprazole have been proved to be effective in treating challenging and repetitive behaviors, but associated side effects limit their use in children with severe ASD or at risk of injury, including serotonin reuptake inhibitors and stimulants. His work has listed several pharmacological interventions such as antipsychotics, various SRIs (including sertraline, citalopram, paroxetine, fluvoxamine), stimulants, and other hyperactivity medications.

On the other hand, early intervention with psycho-educational therapy provides comprehensive services with the aim of maximizing children's developmental potential, helping them live as normal a life as possible and become active members of the community. Early intervention for children with ASD is based on the concept of compensation (developing strengths, overcoming limitations), combining therapy and education. Effective and scientifically evidenced methods and models of early intervention for children with ASD include Applied Behavior Analysis (ABA) (Lovaas, 1987), Therapy and Education for Children with ASD with Communication Difficulties (TEACCH) (Karst, 2012), and Picture Exchange Communication System (PECS) (Kaiser, 2000).

A review article based on the analysis of eleven studies with 344 children with ASD between 1980 and 2009 showed the effectiveness of Early Intensive Behavioral Intervention (EIBI). Experimental groups receiving EIBI outperformed control groups in terms of IQ, nonverbal IQ, expressive language, receptive language, and adaptive behavior (Paul, 2008). On that basis, early intervention programs for children with ASD around the world are built on intervention methods with a strict process including the steps of diagnosis – assessment – early intervention – inclusive education. However, the above early intervention models are all conducted in developed countries (with excellent expert teams, facilities, policy systems and especially the systematic early intervention processes), which means they can hardly be applied in the context of the less developed counterparts (such as Vietnam). Therefore, applied research is an appropriate approach to adapt experiences of advanced countries to the specific context of other countries.

In Vietnam, research on early intervention for children with ASD is also conducted following the basic stages such as screening – diagnosis – assessment – intervention. However, the processes are not highly systematic, clearly shown in the practice of early intervention for children with ASD at present. Some highlights in the current research on early intervention for children with ASD include the use of a number of programs and intervention methods such as psychomotor intervention and speech therapy, teaching methods to help autistic children

understand emotions, ways to respond to the behaviors of children with ASD, and some other specific methods such as TEACCH, ABA, PECS. However, studies applying these methods are mainly used only in the initial testing stage. Early intervention for children with ASD has been implementing, in which screening and diagnosis are the key stages. Some intervention programs have been implemented, but they are mainly short-term ones, not really aimed at offering school skills and inclusive education for children. Some scientific reports have mentioned the issue of early intervention for children with ASD; however, the issues raised regarding early intervention process or early intervention programs are still general. In particular, there are very few studies showing coordination between the stakeholders (including healthcare, education, departments and family) in organizing early intervention for children with ASD. The study by Nguyen Thi Hoang Yen and her colleagues (2014) on early intervention and inclusive education for children with autism recorded the coordination between the Ministries of Education and Training – Health – Labor, War Invalids and Social Affairs. The study clearly stated that "To ensure the success of early intervention for children with ASD, the coordination of the stakeholders in the intervention is a key factor, including the impact and coordination between family, school, society with key members, taking on certain roles". This is also the first large-scale study with coordination between departments and is also one of the few research projects in ASD to do this.

According to Pham Minh Muc (2022), it is necessary to focus on developing social skills for autistic children through changing the environment, teaching additional skills, teaching social skills directly, or using peer intervention. For the children to progress in communication, it is necessary to teach them in the natural environment, both at home and at school, taking advantage of their natural interests in games to develop and expand their communication skills.

Some previous studies featuring the intervention in language behavior for children with ASD include "Research on language behavior of autistic children aged 5-6" (Thuy, 2012) and "Adjusting language behavior for autistic children aged 3-6 based on functional exercises" (Thuy, 2014). The studies aim to develop a process of adjusting language behavior for children with ASD with the view to helping them express their needs and desires to others so that they can integrate into the community (Nguyen Thi Diem Hang & Nguyen Thi Thuy Van, 2023).

In the paper "Methods to develop 3- to 4-year-old autistic children's communication skills" by Nguyen Thi Thanh (2014), she has presented the literature review on communication skills development for children with ASD and assessed the real situation of the 3- to 4-year-old autistic children's communication skills including their states and teachers' methods at kindergartens. The study has pointed out factors affecting the communication skills of children with ASD, which serves as the basis for recommendations of methods to develop such skills for children aged 3-4 and feasibility study of the methods.

Families and Parents with Children with ASD

According to Nguyen Thi Xuan Huong and Nguyen Thi Thuy Van (2024), early intervention and education for children with disability in general, and those with ASD in particular, have long become a major social focus in Vietnam and worldwide. Early intervention and education is a prolonged and complicated process with various obstacles, requiring the participation of different educational stakeholders for success. Among the stakeholders, the most important to children with ASD is their families because they serve as the initial and closest educational environment of the children. The parents' and other family members' care and love are considered a precious medicine to heal and compensate for the children's disability. Parents are the ones that understand the children's growth and development the most, can easily realize their

needs, interest and capabilities, and are able to give appropriate educational methods. Families play a vital role in the intervention, care and treatment for autistic children. As a prolonged and challenging process, early intervention and education requires all stakeholders to have a specific role and act to their full potential to achieve success.

According to Pham Minh Muc (2022), the family-centered intervention program for children with ASD encourages the involvement of parents and family members in all aspects. This philosophy has led to an evolution in the role of the family, where service providers involved in the child's support process are no longer the sole decision makers for the child's development. Instead, the family works with a team of professionals to determine what is best for the child.

Many longitudinal studies (Prelocket, 2003) have shown that the family is the core member who can help determine the service options and development goals of the child; therefore, active support at home brings positive results for the overall development of children with ASD. However, researchers believe that, for the success of supporting children with ASD at home, parents and family members need to be provided with in-depth knowledge and skills about child intervention methods that have been proven to have positive effects on children's development. From there, parents can master teaching and intervention strategies for their children, helping the children form new behaviors as expected. In addition, parents and their families need to be introduced to special education laws and regulations, the services needed and available, and how to make decisions about how to support their child at different stages of development. By using daily schedules and activities, parents can use intervention strategies during the day to promote engagement and learning in a real-life setting. Some researchers also suggest that integration with typically developing peers is also important (Nguyen Tan Duc, 2022).

Narzisi and his colleagues (2014) reviewed 59 studies on non-pharmacological early intervention measures for preschool children with ASD (24 - 71 months) and found that effective and scientifically evidenced early intervention methods and programs include: SCERTS, PRT, TEACCH, PECS, ESI, AUTISM 1-2-3, DIR/FloorTime, ABA, ESDM, PACT. The focus of early intervention is directed towards the development of skills considered "key" such as attention, sharing, imitation, communication, symbolic play, cognitive abilities, and compliance with rules. The authors also came to a number of conclusions in treatment including: (1) start as early as possible, (2) minimize the gap between diagnosis and treatment, (3) provide no less than 3-4 hours of treatment per day, (4) focus on family involvement, (5) provide six-month developmental assessments and update treatment goals, (6) choose from developmental/behavioral treatments according to the child's response, (7) encourage spontaneous communication, (8) promote skills through play with peers, (9) refine new skill acquisition, generalization, and maintenance in natural settings, and (10) support positive behaviors rather than addressing challenging behaviors.

Research Methodology

In this research project, the authors have made use of the following methods:

Desk research to get an overview of ASD, early intervention and education and parents-children with ASD interactivity enhancement at home.

Expert method to design a questionnaire to investigate factors affecting the parents' at-home interactivity with their children with ASD.

Exploratory factor analysis (EFA) to determine observed variables in each factor affecting the parents' at-home interactivity with their children with ASD.

Sampling method of stratified random sampling. The study was conducted on 231 parents of 156 families in Hanoi, Vietnam. The survey was sent to 250 parents. The number of valid returned questionnaires for quantitative analysis was 231/250, accounting for 92.4%. According to many authors, the number of samples needed to be 5-10 times larger to be reliable enough for quantitative analysis. In this study, the number of questionnaires, 231 (13 times larger than the 17 observed variables in the survey), met the requirements for quantitative analysis and ensured the reliability of the scales.

No.	**Types**	**Number**	**Percentage (%)**
1	Gender		
	Male	104	45.02
	Female	127	54.98
2	Age		
	25-30	20	8.65
	30-40	92	39.82
	40-45	88	38.09
	Above 50	31	13.44
3	Level of education		
	Undergraduate	145	62.78
	Graduate	57	24.67
	Post-graduate	29	12.55

Table 1. Statistics of the Sample

(Source: SPSS)

Findings and Discussion

Research Model

According to the findings by Pham Minh Muc (2022), Nguyen Thanh Hoa (2023), Tran Thien Thang (2023), Holly Hodges (2019), Foster, Dunn & Lawson (2013), and Ruppert (2016), the factors affecting the parents' at-home interactivity with their children with ASD as as follows:

No.	**Factors of independent variables**	**Number of variables in a factor**	**Coding variables**
1	Parents' knowledge, skills, attitudes and emotions	5	KNKTTDCX including from KNKTTDCX1 to KNKTTDCX5
2	Experts' and community's supprt	4	SHTCGCD including from SHTCGCD to SHTCGCD4
3	Home environment	4	MTGD including from MTGD1 to MTGD4

4	Children's development	4	SPTCT including from SPTCT1 to SPTCT4
Total		**17 observed variables**	

Table 2. Coding Independent Variables

According to the previous studies by Pham Minh Muc (2022), Nguyen Thanh Hoa (2023) and Tran Thien Thang (2023), parents' at-home interactivity with children with ASD include the ability to draw their attention, to provoke their needs to communicate, to play with them, to provide instructions, to adjust their behaviors, to help them develop their languages and to use PECS (Picture Exchange Communication System – an alternative communication system using pictures exclusively designed to assist individuals with difficulties in verbal communication, especially autistic children and those with developmental language disorders).

No.	**Factors of dependent variables**	**Number of variables in a factor**	**Coding variables**
1	Ability to draw attention	3	KNTSCY including from KNTSCY1 to KNTSCY3
2	Ability to provoke the child's needs to communicate	3	KNTSNC including from KNTSNC1 to KNTSNC3
3	Ability to play with the child	3	KNCVT including from KNTCVT1 to KNCVT3
4	Ability to provide instructions	3	KNHD including from KNHD1 to KNHD3
5	Ability to adjust the child's behaviors	3	KNDCHV including from KNDCHV1 to KNDCHV3
6	Ability to develop the child's language	3	KNPTNN including from KNPTNN1 to PTNN3
7	Ability to use PECs	3	KNPECS including from KNPECS1 to KNPECS3
Total		**21 observed variables**	

Table 3. Coding Dependent Variables

Based on the aforementioned research findings, the authors have developed the following research model:

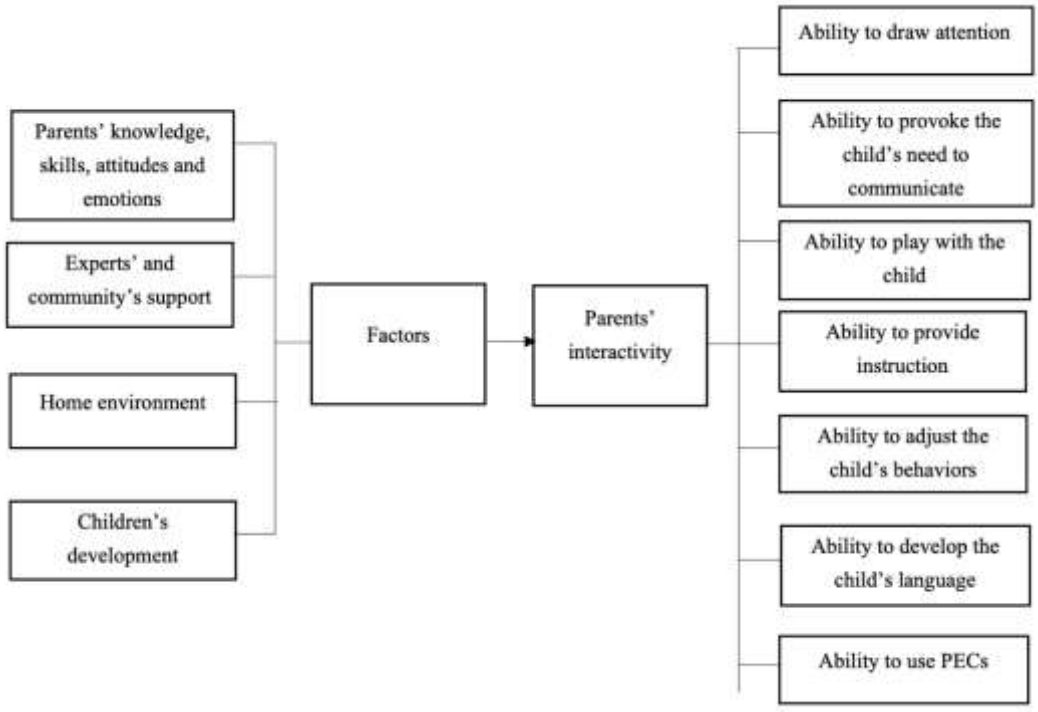

Figure 1. Research model

The research model can be interpreted as follows:

Four independent variables: Parents' knowledge, skills, attitudes and emotions, experts' and community's support, home environment and children's development. Parents whose children have ASD need to combine specialized knowledge, communication and child support skills with optimism and emotional management to facilitate the best environment for children's growth. Especially, the parents' patience, creativity and commitment are the key to the prolonged intervention and support. The independent variables include 17 observed variables.

Seven dependent variables: The ability to draw the child's attention, to provoke their needs to communicate, to play with them, to provide instructions, to adjust their behaviors, to help them develop their languages and to use PECS. There are 21 observed variables.

Scale Testing Results

No.	Variables	Variable codes	Cronbach's Alpha
1	Parents' knowledge, skills, attitudes and emotions	KNKTTDCX	0.723
2	Experts' and community's support,	SHTCGCD	0.672
3	Home environment	MTGD	0.719

4	Children's development	SPTCT	0.835
5	Interactivity	KNTSCY, KNTSNC, KNCVT, KNHD, KNDCHV, KNPTNN, KNPECS	0.742

The Cronbach's Alpha analysis results of the observed variables in Table 2 show that the Cronbach's Alpha coefficient was ≥ 0.6, the corrected item-total correlation coefficients of all scales were above 0.3, which means all scales were satisfied. In general, regarding scale credibility testing, all 38 observed variables in the five factors were satisfied and could be used officially in the research model for exploratory factor analysis in the next step.

Exploratory Factor Analysis (EFA)

In this particular paper, EFA helps to review the 38 observed variables and confirm whether it is possible to narrow them down, contributing to a more specific reflection of the factors' impacts. The EFA results were presented in the following sections.

KMO Testing

To conduct EFA, the collected data must pass the KMO and Bartlett's tests. To be more specific, Bartlett's test is used to test the hypothesis H0 referring to variables with no correlation when considered as a whole; or in other words, the general correlation matrix was a unit matrix. The KMO coefficient was used to check whether the sample size is in line with EFA or not. According to Hoang Trong and Chu Nguyen Mong Ngoc (2008), if Sig. value of the Bartlett's test is below 0.05, the hypothesis H0 will be rejected, and if the KMO is within 0.5-1, EFA is suitable.

As illustrated in Table 4, KMO is 0.715 which is within 0.5-1 and the Sig. value of the Bartlett's test is 0.0000, below 0.05, which indicates that all 38 observed variables are correlated and suitable for EFA. The total variance explained = 62.415% > 50%. Generally, EFA reveals that all independent and dependent variables meet the standards.

KMO testing		,715
Bartlett's test	Chi-square	14872,239
	df	1587
	Level of significance	,000

Table 4. KMO Testing

Rotated Component Matrix

Scales	Factors										
	1	2	3	4	5	6	7	8	9	10	11
KNKTTDCX4	,867										
KNKTTDCX1	,822										
KNKTTDCX5	,815										
KNKTTDCX3	,811										
KNKTTDCX2	,801	,808									
SHTCGCD2		,775									

Scales	Factors										
	1	2	3	4	5	6	7	8	9	10	11
SHTCGCD1		,770									
SHTCGCD3		,663									
SHTCGCD4		,699									
MTGD1			,816								
MTGD2			,755								
MTGD3			,727								
MTGD4			,696								
DLBT4			,652								
SPTCT4				,845							
SPTCT3				,832							
SPTCT2				,722							
SPTCT1				,798							
KNTSCY1					,875						
KNTSCY2					,819						
KNTSCY3					,797						
KNTSNC2						,785					
KNTSNC1						,744					
KNTSNC3						,715					
KNCVT1							,817				
KNCVT2							,809				
KNCVT3							,801				
KNHD2								,886			
KNHD1								,875			
KNHD3								,789			
KNDCHV3									,811		
KNDCHV1									,787		
KNDCHV2									,764		
KNPTNN1										,745	
KNPTNN3										,719	
KNPTNN2										,701	
KNPECS1											,685
KNPECS3											,0679
KNPECS2											,0617

Table 5. Rotated Component Matrix

Table 4 reveals that after rotating the components, the 38 observed variables constitutes 11 groups of factors of independent and dependent variables.

Conclusion

Using desk research method, the authors were able to come up with the following 4 groups of factors affecting the the parents' at-home interactivity with children with ASD: Parents' knowledge, communication, attitudes and emotions, Home environment, Experts' and the

community's support, and Children's development. Using the in-depth interview method with experts, the authors have identified 17 observed variables belonging to the above 4 factors to include in the survey. The results of factor analysis and the rotated component matrix show that the 17 observed variables are classified into the 4 initial factor groups and there is no need to adjust the variables or the research model. At the same time, the authors also pointed out that the components of parents' at-home interactivity with children with ASD include 7 components, which are: Ability to draw the child's attention, Ability to provoke the child's communication needs, Ability to play with the child, Ability to provide instructions, Ability to adjust the child's behaviors, Ability to develop the child's language, and Ability to use PECS. The authors believe that to develop parents' at-home interactivity with children with ASD, the support from experts and the community is very important. Organizations and institutions (universities, research facilities, etc.) can organize courses to train and guide parents with children with ASD at home with appropriate knowledge, skills, and attitudes to coordinate with specialized schools to care for and educate children with ASD.

However, the survey in this study has only involved 231 parents with children with ASD in Hanoi. This number is still small compared to the number of children with ASD in Vietnam. Therefore, more in-depth and broader studies are needed to draw more meaningful scientific conclusions.

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