INTERNATIONAL JOURNAL OF EDUCATION & TECHNOLOGY (IJE-TECH)
(e-ISSN: 2976-3428) (Vol.01, Issue 02, 24-39)

EXPERIMENTAL STUDY OF MUSIC THERAPY USING PIANO AND CHORUS TEACHING METHOD TO IMPROVE LANGUAGE ABILITY AND SOCIAL BARRIERS OF CHILDREN WITH AUTISM SPECTRUM DISORDERS

Wang Jia[1] and Hanipah Hussin[2]*
[1,2] Faculty of Education and Liberal Studies, City University Malaysia, 46100 Petaling Jaya, Selangor, Malaysia

ABSTRACT – Autism in children is an abnormality of pervasive developmental disorder caused by biological factors, mainly manifested by social disorders, language disorders, and behavioural problems. After years of music therapy research and practical teaching, the author found that piano performance and choral singing can help autistic children improve their language skills and social disorders. This paper uses quantitative research methods. Data sampling and experimental investigation were conducted on 256 teachers at Chengdu Autism Institution who used piano and choral pedagogy in music therapy to improve language ability and treat social disorders in children. By using SPSS and through the comparative analysis of data before and after the experiment, study the intervention effect of using piano and choral pedagogy in music therapy for children with autism on improving language ability and treating social disorders in children with autism. This study found that using this method greatly affects the improvement of language ability and social impairment in children with autism. .

ARTICLE HISTORY
Received: 31/08/2023
Revised: 30/09/2023
Accepted: 15/10//2023

KEYWORDS
Autism Spectrum
Chorus Teaching Method
Music Therapy
Chinese Kids

INTRODUCTION

Autism spectrum disorder is a kind of extensive neurological disorder. Children have defects in behaviour and social communication, leading to their inability to communicate normally. Since the 1960s, the prevalence of autism has been on the rise. According to the US Centres for Disease Control and Prevention data, the prevalence of autism reached 1 69 in 2018. According to the research in the 2015 Report on the Development of China's Autism Education and Rehabilitation Industry, there are over 2 million autistic children aged 0-14, and there are over 10 million autistic families in China. Once diagnosed, autism is often difficult to cure, which brings severe economic and mental burdens to families. After years of practical teaching, the author found that music's melody, rhythm, speed, pitch and intensity can improve autistic children's ability to understand language and accept instructions.

Piano and choral teaching as music therapy interventions have been widely used in treating children with autism. These two methods improve the language ability and social interaction ability of autistic children through various elements of music, such as melody, rhythm, harmony, etc. Piano instruction is an effective music therapy intervention in treating children with autism. Piano instruction, which involves playing and fingering musical notes, can help autistic children improve their hand-eye coordination and spatial perception. Piano instruction can also help autistic children improve their language skills, as learning the piano requires memorising musical notation and understanding the meaning of musical notes. Some studies have shown that piano instruction can improve nonverbal communication and social interaction in children with autism. As a form of music therapy, choral teaching has been shown to positively affect the language and social interaction skills of children with autism. Choral teaching involves singing the voice and controlling the rhythm, which can help autistic children improve their language and musical abilities. In addition, choral teaching can also help autistic children improve their social interaction skills, as it is necessary to cooperate with other chorus singers to listen to each other and adjust their voices.

In summary, piano and choral teaching have been widely used as music therapy interventions in treating children with autism. These methods can help autistic children improve their language and social interaction skills and quality of life.

PROBLEM STATEMENT

Children with autism spectrum disorder (ASD) often face challenges with language development and social interaction. These challenges can have a significant impact on their quality of life and ability to perform activities of daily life. While various treatments are available for ASD, more effective and alternative interventions are needed to address complex needs. Nearly 13% of Chinese children have been facing ASD, and the lockdown due to COVID-19 has harmed the children and their families, spending quality time with their kids and providing ASD training courses to them (Joyner, 2019). In the case of ASD, the children cannot express themselves, creating psychological stress. The major problem with ASD is that the children struggle with social interactions and communication. Parents and teachers are unable to understand the children's opinions, needs and expectations, which creates a communication gap. Pan et al. (2019) stated that therapeutic interventions such as creative arts and interactive communication could effectively improve language speaking ability and communication among children with ASD. On another note, the inefficiency of the music teachers in selecting the appropriate music therapies regarding the children's individual requirements has also been found to be a significant problem. Improving skills and knowledge among music teachers dealing with Autism children should be mitigated to recover the situation (Wang et al., 2021). In this way, the social conventions of the children can also be improved, which will help the teachers understand the necessities for the treatment. Moreover, identifying the appropriate teaching method has created barriers for children in learning the language (Joyner, 2019).

Music therapy has become a popular and promising intervention for children with autism spectrum disorder (ASD) due to its non-invasive nature and ability to engage individuals emotionally and socially. Music therapy interventions typically involve using musical elements such as melody, rhythm, and harmony to address the unique needs of children with ASD, such as improving language ability and reducing social barriers. When children with ASD participate in music therapy, they can improve their social and communication skills through music's emotional and emotional expression (Reschke-Hernández et al., 2018). Music therapy can help children with ASD improve their nonverbal communication and social interaction skills and reduce their anxiety and emotional problems (Gebauer & Krieger, 2012). Music therapy can help children with ASD improve their comprehension, memory, and attention and enhance their self-control (Thompson & McFerran, 2015). Music therapy can play an active role in the treatment of children with autism, especially in helping them improve their language skills and social interaction skills (Crawford et al., 2016).

Two specific music therapy interventions that have shown promise in improving language ability and social barriers in children with ASD are piano and choral teaching methods. Piano teaching involves playing and practising musical notes and scales on a keyboard, while choral teaching involves singing in a group setting. Piano instruction and choral instruction can help children with ASD improve their musical skills, language skills, and social skills (Lai & Mostofsky, 2015), and piano instruction and choral instruction can help children with ASD improve their self-awareness and emotional regulation (Geretsegger et al., 2014).

However, despite the positive outcomes of these interventions, there is still limited research on the effectiveness of piano and choral teaching methods in addressing the complex needs of children with ASD. There is a need for more empirical research to examine the effectiveness of these interventions rigorously and to identify the specific factors that contribute to their success. By doing so, researchers and clinicians can develop more effective and individualised music therapy interventions to improve the quality of life for children with ASD.

LITERATURE REVIEW

Cognitive Theory

According to Beauchamp Crawford & Jackson (2019), understanding this theory is most important to know how the minds of ASD have been working and what type of emotions they have been developing for themselves. Further, Sharpening memory skills is the main requirement to cure mental

health problems in children in their early childhood. Cognitive theory (CT) allows musical teachers to detect the psychological problems of Chinese kids.

Social Identity Theory

Social identity theory (SIT) develops a typical mindset among people to develop their societal position. As Scheeper & Ellemers (2019) illustrated, this theory allows individuals to think about how they need to compare and categorise themselves to define their identity. On the contrary, Pan Gruber & Binde (2019) gender issues, social status, and economic status are important factors in denoting social identities. Hence, the upbringing culture of kids has been considered the primary cause that can negatively affect their mindsets.

Critically Analysing the Use of Technology in The Process of Musical Therapy Can Improve The Language Ability of Kids with ASD.

Utilising smart devices can be attractive for children and increase the availability of therapy sessions. As per the view of Agres et al. (2021), prototype software can be created to increase the efficacy of the therapies useful for meeting the specific requirements of ASD children. Moreover, therapists can obtain wider opportunities in treating children that will be constructive as a measurement.

As Whitaker (2020) mentioned, music promotes a better relationship between educators and learners by expressing each other's emotions through lyrics. Hence, the training programs organised by the schools need proper support from the parents of children suffering from mental health problems. As argued by Gillespie (2022), autistic kids suffer from weakness, clumsiness, and insecurity, which require proper care and support to improve mental issues. Hence, sound-based music guides children to improve their listening power, which helps develop brain functioning correctly.

As Riley & Smothers (2019) mentioned, the musical notes and sounds of the piano allow the mind to be set free from stress and bad experiences and show the individuals to express themselves. Hence, strong connectivity can be produced with pleasurable musical lyrics that help the kids set themselves free and match their mentality by sharing their feelings with others in the group. As argued by Tuomi (2022), any type of poor or negative music has a bad impact on the mindsets of kids that make them feel isolated from the social world. The programs conducted by musical therapists show ways to reduce insecurities among autistic kids. Chorus can be effective for children with ASD as it can make a strong bond among them and expand their social network. The behavioural approaches of the children can be observed in this case that is effective for acknowledging the impact of community in larger groups of singing. As mentioned by Müller & Lindenberger (2019), communication and expression of emotions have been noted to be significant constructs of music therapy. These two constructs can be improved rapidly through potent training for the children, and their language ability can be increased. In this way, the children's experience can be made positive, which helps overcome the issues with their diseases.

Discussing The Effect of Musical Therapy by Chorus Can Improve the Social Communication and Speaking Skills of Asd Children

Music therapy can give several advantages to kids with ASD to improve their mental issues. As argued by Tuomi (2022), any type of poor or negative music has a bad impact on the mindsets of kids that make them feel isolated from the social world. The programs conducted by musical therapists show ways to reduce insecurities among autistic kids.

Chorus Teaching Method

Chorus teaching allows a teacher to develop the knowledge of a group of students simultaneously. This method supports everyone in taking part in a particular action. According to Lei (2020), different teaching methods, including chorus, support the development of the student's mental health. Doing work with others supports the development of the psychological aspects of the children. In addition, this kind of teaching method supports reducing the level of anxiety. Chorus teaching also assists the children in

developing trust between them. In addition, Zhao (2021) stated that gathering at a palace supports the students in exchanging their culture, which supports the development of the participants' personalities. After that, chorus teaching methods support the development of the overall growth character of a student. This also helps in different music therapy by developing the mental enjoyment of the participants. The chorus teaching greatly helps in the development of the personal skills that significantly help in the development of the children at a greater level.

Piano Music Education

Different music education, including piano music, supports the development of the function of the brain cells. In addition, the rhythm of the music, especially the piano, allows for the development of a new connection between different brain cells. As per the view of Shahab et al. (2022), making rapid activity in the brain cells according to the rhythm supports the development of the facial expression of ASD-affected children. Verbal and self-care expression can be developed through piano music education. During music listening, the memory cells show more engagement, which supports improving the problems, including identifying the taste of different foods.

Autistic Children (Autism Spectrum Disorder (ASD))

Children who face communication difficulties and have narrow interests are affected by autistic disease. This disease mainly affects the mental stage of the patients and causes them to lose interest in other people. This disease mainly affects children and affects their mental development. These children face different kinds of symptoms, including trying to avoid eye contact, doing several repeated movements and not getting a proper taste of different kinds of food (Nhs. UK, 2022). Different kinds of music therapy can treat this kind of disease. According to Bharathi et al. (2019), communicating more with others supports overcoming the negative impact of autism. Children who have ASD can be treated with music therapy. The rhythm and melody support develop the focus of these children. Boosting organisational skills supports improving the negative impact of ASD.

Literature Gap

The experiences of the educators and family responsibilities while conducting programs of musical therapy for ASD kids help to inspire the development of the brain (Tuomi, 2022). Previous studies have failed to provide quantitative data regarding the importance of music therapy for ASD children, which has been mitigated through this study.

METHODOLOGY

Quantitative research refers to scientific investigative methods involving collecting and analysing numerical data. This type of research typically consists of using structured data collection tools, such as surveys or questionnaires, and statistical analysis methods to analyse the data. The main goal of quantitative research is to establish relationships and patterns between variables through statistical techniques. This type of research is often used to test hypotheses, determine causality, and predict future trends. Quantitative research has several advantages, including its ability to provide precise and objective measurements, generalise research findings to a larger population, and test hypotheses using statistical methods.

Research Design

A descriptive research design has been chosen for the collection of true data from the respondents who have been randomly selected. This design helps to interpret complex data easily, and it is a costly method for application (Flick, 2020). Thus, this research design has been chosen to understand the main issues of the investigation process. Moreover, this design gives the researchers a scope to get the answers of "what, how, when, and where".

Population and Sampling

Among the target population of China, only 256 respondents have been selected for this investigation procedure. Thirty-two close-ended questions have been formed for this investigation process to execute surveys. Surveys allow the researchers to obtain correct and upgraded data by questioning the selected participants who guide for analysis to get consequences (Kothari, 2017).

Data Collection

Real replies have been received from 256 respondents from China who are mainly musical therapists working in various ASD schools. Data collection has been taken as the most vital task for the investigators to acquire authentic and primary data for analysis to gain true findings (Kumar, 2018). A questionnaire of 32 close-ended questions has been formed to collect data, which has been distributed among the participants via email. The questionnaire has three demographic questions; the rest of the 29 questions are based on the IV and DV of the study. [Refer to Appendix 2]

Measurement

SPSS software has been used to analyse data after gathering authentic data, and regression, correlation, ANOVA, descriptive statistics, and T-tests have been computed.

RESULTS

Descriptive Statistics

The description of the variables and their correlation can be known in a dignified manner by performing a descriptive test. This test has shown that there have been 59.4% of male respondents, along with 40.6% of female participants in this study.

Chart 1

Statistics

		Gender	Age	Country
N	Valid	256	256	256
	Missing	0	0	0
Mean		1.41	1.59	1.00
Median		1.00	1.00	1.00
Mode		1	1	1
Std. Deviation		.492	.663	.000
Variance		.242	.242	.000

Chart 2

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent

Valid	Male	152	59.4	59.4	59.4
	Female	104	40.6	40.6	100.0
	Total	256	100.0	100.0	

Chart 3

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-25	130	50.8	50.8	50.8
	26-30	101	39.5	39.5	90.2
	More than 30	25	9.8	9.8	100.0
	Total	256	100.0	100.0	

Chart 4

Country

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	China	256	100.0	100.0	100.0

Hypothesis 1(H1): There is a positive relationship between the experience of autistic children and learning music in China.

Regression

The test has found that the R-square value is 0.284, which shows a moderate relationship that the chosen components hold among them. Moreover, the sig value holds the most importance, and its value can prove the hypothesis in the context of a study (Astivia & Zumbo, 2019). The sig value for this study has been observed to be 0.000, and it has accepted the alternative hypothesis.

Chart 5

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.533[a]	.284	.279	.778

a. Predictors: (Constant), Experience2, Experience1

Chart 6

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.806	2	30.403	50.222	.000[b]
	Residual	151.159	253	.605		
	Total	213.965	255			

a. Dependent Variable: Music Therapy

b. Predictors: (Constant), experience2, experience1

Chart 7

Coefficients

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.858	.175		4.913	.000
	Experience1	1.042	.107	.557	9.776	.000
	Experience2	-.633	.114	-.318	-5.573	.000

a. Dependent Variable: Music Therapy

Correlation

This test has observed that the value of Pearson's correlation is 0.815 in the context of experience gathered by the children and the outcome of music therapy. It has demonstrated a strong relationship between the two constructs of music therapy and children's experience.

Chart 8

Correlations

		Music Therapy	Experience1	Experience2	Experience3
Music Therapy	Pearson Correlation	1	.443**	-.117	.815**
	Sig. (2-tailed)		.000	.061	.000
	N	256	256	256	256
Experience1	Pearson Correlation	.443**	1	.359**	.610**
	Sig. (2-tailed)	.000		.000	.000
	N	256	256	256	256

Experience2	Pearson Correlation	-.117	.359**	1	.214**
	Sig. (2-tailed)	.061	.000		.001
	N	256	256	256	256
Experience3	Pearson Correlation	.815**	.610**	.214**	1
	Sig. (2-tailed)	.000	.000	.001	
	N	256	256	256	256

**. Correlation is significant at the 0.01 level (2-tailed).

T-test

The statistical data has observed that the T-value is 45.563 in terms of the positive experience of the students suffering from the syndrome, along with the value of 45.294 in the case of the experience of listening to various genres of music.

Chart 9

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Experience1	45.563	255	.000	1.395	1.33	1.45
Experience2	45.294	255	.000	1.301	1.24	1.36
Experience3	48.147	255	.000	1.195	1.15	1.24
Music Therapy	25.996	255	.000	1.488	1.38	1.60

H2: There is a significant correlation between communication with children with Autism and their music learning.

Regression

Conducting this test has been proven to be useful for the research project as the R-square value has been known to be 0.888, which is closer to 1. On the other hand, the sig value is 0.000, and it depicts the rejection of the null hypothesis.

Chart 10

Model Summary

Model	R	R Square	Adjusted R Square	Std. The error in the Estimate
1	.942[a]	.888	.887	.308

a. Predictors: (Constant), Communication2, Communication1

Chart 11

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	189.939	2	94.969	1000.037	.000[b]
	Residual	24.026	253	.095		
	Total	213.965	255			

a. Dependent Variable: Music Therapy

b. Predictors: (Constant), Communication2, Communication1

Chart 12

Coefficients[a]

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.120	.059		2.023	.044
	Communication 1	.242	.050	.129	4.814	.000
	Communication 2	.546	.017	.856	31.839	.000

a. Dependent Variable: Music Therapy

Correlation

This test has noted that the P-value is 0.937 in the case of communication among children suffering from Autism and the effectiveness of music therapy in overcoming their barriers. In this case, it has been mentioned that the sig value is 0.000, which has accepted the alternative proposition made during the project completion.

Chart 13

Correlations

	Music Therapy	Communication 1	Communication 2	Communication 3

	Pearson Correlation	1	.662**	.937**	.177**.
Music Therapy	Sig. (2-tailed)		.000	.000	.004
	N	256	256	256	256
	Pearson Correlation	.662**	1	.662**	.268**
Communication 1	Sig. (2-tailed)	.000		.000	.000
	N	256	256	256	256
	Pearson Correlation	.937**	.622**	1	.362**
Communication 2	Sig. (2-tailed)	.061	.000		.001
	N	256	256	256	256
	Pearson Correlation	.177**	.268**	.362**	1
Communication 3	Sig. (2-tailed)	.000	.000	.000	
	N	256	256	256	256

**. Correlation is significant at the 0.01 level (2-tailed).

T-test

The test has been enlightened on the T-values, which are 45.563 and 29.971 in the respective cases of communication and music therapy for children with Autism. The standard error in this study has also been found to be negligible, which has proven the data distribution and its efficiency (Okagbue et al., 2021). Consequently, the provided evidence has been justified during the process of the study.

Chart 14

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Music Therapy	25.996	255	.000	1.488	1.38	1.60
Communication1	45.563	255	.000	1.395	1.33	1.45
Communication2	- 21.024	255	.000	1.887	1.71	2.06

Communication2	29.971	255	.000	1.699	1.59	1.81

H3: There is a strong interconnection between the understanding level of autistic children and music therapy.

Regression

As Ahamad & Bharti (2021) commented, the R-square value should be closer to 1 in terms of proving a strong dependency between the changeable factors. The sig value has come out to be 0.000, which is forecasted for accepting the alternative proposition made for this section of the study.

Chart 15

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error in the Estimate
1	.620[a]	.384	.379	.722

a. Predictors: (Constant), Understanding2, Understanding1

Chart 16

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	82.154	2	41.077	78.843	.000[b]
	Residual	131.811	253	.521		
	Total	213.965	255			

a. Dependent Variable: Music Therapy

b. Predictors: (Constant), Understanding2, Understanding1

Chart 17

Coefficients[a]

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.342	.152		2.255	0.25
	Understanding1	1.471	.119	.804	12.317	.000
	Understanding2	-.813	.131	-.406	-6.220	.000

a. Dependent Variable: Music Therapy

Correlation

This study has obtained the value of Pearson's correlation as 0.814 regarding the understanding level and the helpful approach of music therapy on autistic children. The value is closer to 1, proving a strong dependency between these chosen variables. The sig value has been noted as 0.000, which has suggested denying the null hypothesis for the study procedure.

Chart 18

Correlations

		Music Therapy	Understanding 1	Understanding 2	Understanding 3
Music Therapy	Pearson Correlation	1	.538**	.121	.662**
	Sig. (2-tailed)		.000	.054	.004
	N	256	256	256	256
Understanding 1	Pearson Correlation	.538**	1	.655**	.814**
	Sig. (2-tailed)	.000		.000	.000
	N	256	256	256	256
Understanding 2	Pearson Correlation	.121	.655**	1	.350**
	Sig. (2-tailed)	.054	.000		.001
	N	256	256	256	256
Understanding 3	Pearson Correlation	.662**	.814**	. 350**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	256	256	256	256

**. Correlation is significant at the 0.01 level (2-tailed).

T-test

Moreover, the incorporation of the unknown variables can also be included through this test, which helps enhance the study's validity. This test found that the T-value is 47.783 and 45.328 for different constructs of the variable termed an understanding of the children.

Chart 19

One-Sample Test

	Test Value = 0

	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Music Therapy	25.996	255	.000	1.488	1.38	1.60
Understanding1	47.783	255	.000	1.496	1.43	1.56
Understanding2	45.328	255	.000	1.297	1.24	1.35
Understanding3	45.563	255	.000	1.395	1.33	1.45

H4: There is interdependency between expressing emotions of Children with Autism and music therapy.

Regression

The test has provided the adjusted R-square value to be 0.004, along with the sig value of 0.224. As per VanWeelden et al. (2020) view, the sig value must be less than 0.05 to prove the selected proposition or hypothesis in the study.

Chart 20

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error in the Estimate
1	.108[a]	.012	.004	.914

a. Predictors: (Constant), Express_emotions 2, Express_emotions 1

Chart 21

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.513	2	1.257	1.503	.224[b]
	Residual	211.452	253	.836		
	Total	213.965	255			

a. Dependent Variable: Music Therapy

b. Predictors: (Constant), Express_emotions2, Express_emotions1

Chart 22

Coefficients[a]

Model		Unstandardized Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.620	.197		8.235	.000
	Express_emotions 1	-.066	.038	-.109	-1.734	.084
	Express_emotions 2	-.015	.143	-.007	-.106	.915

a. Dependent Variable: Music Therapy

Correlation

The correlation has been established where several insights have been justified, along with providing evidence to prove (Joyner, 2019). The P-value is 0.001 in terms of expressing emotions and the importance of music therapy for that. Additionally, the sig value has been noted to be 0.987, which is greater than 0.05 and proves the null hypothesis in this research project. On the other hand, the P-value is 0.660 regarding the enthusiasm of students in the music therapy classes.

Chart 23

Correlations

		Music Therapy	Express_emotions1	Express_emotions2	Express_emotions 3
Music Therapy	Pearson Correlation	1	-.108	.001	.184**
	Sig. (2-tailed)		.084	.987	.003
	N	256	256	256	256
Express_emotions 1	Pearson Correlation	-.108	1	-.071	.065
	Sig. (2-tailed)	.084		.258	.298
	N	256	256	256	256
Express_emotions 2	Pearson Correlation	.001	-.071	1	.660**
	Sig. (2-tailed)	.987	.258		.000
	N	256	256	256	256
	Pearson Correlation	.184**	.065	.660**	1
	Sig. (2-tailed)	.003	.298	.000	

N	256	256	256	256

Express_emotions
3

**. Correlation is significant at the 0.01 level (2-tailed).

T-test

The calculation of the error contributing to the study has been measured, showing that the values are 25.996 and 18.172 in the respective cases of the variables.

Chart 24

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Music_Therapy	25.996	255	.000	1.488	1.38	1.60
Express_emotions1	18.172	255	.000	1.703	1.52	1.89
Express_emotions2	47.945	255	.000	1.199	1.15	1.25
Express_emotions3	59.047	255	.000	1.098	1.06	1.13

Reliability Test

In this context, it can be said that the research has found that the value of Cronbach's alpha is 0.900, which is fundamental in proving the level of reliability in a quantitative approach. Hence, it has been depicted that the study is reliable as it has been proved by numerical evidence.

Reliability Test

Cronbach's Alpha	N of Items
.900	32

DISCUSSION

Communication with such children must be done carefully so that it can be fruitful for them in overcoming such complex situations. Consequently, the analysis has been made stronger with the evidence and analytical perspectives in the study. As suggested by Menachemi et al. (2020), there are different aspects of music therapy that should be maintained for the best treatment provided for children with ASD. These factors have been discussed with an in-depth analysis during the course of the study to determine their contribution to the study procedure.

CONCLUSION AND IMPLICATION

From the above study, it has been summarised that this research is analysing the importance of music therapy in the improvement of the language abilities of children. This research focuses on the aspect of music therapy by using piano and chorus teaching methods for improving the language ability and social barriers of children with autism spectrum disorders. Proper research objectives and study questions have been constructed in this study for the direct enhancement of research visibility. Specific theories have been used in this study, which is relevant based on the research topic.

REFERENCES

Pienaar, D. (2012). Music Therapy for Children with Down Syndrome: Perceptions of Caregivers in a Special School Setting. Kairaranga, 13(1), 36-43.

Agres, K. R., Foubert, K., & Sridhar, S. (2021). Music therapy during COVID-19: Changes to the practice, use of technology, and what to carry forward in the future. *Frontiers in Psychology*, *12*, 1317.

Ahamad, M. K., & Bharti, A. K. (2021). Analysis of the cluster performance of real dataset usithe ng SPSS tool with k-means approach via PCA. *Advances in Mathematics: Scientific Journal (AMSJ)*, *10*(1), 535-542.

Astivia, O. L. O., &Zumbo, B. D. (2019). Heteroskedasticity in Multiple Regression Analysis: What it is, How to Detect it and How to Solve it with Applications in R and SPSS. *Practical Assessment, Research, and Evaluation*, *24*(1), 1.

Flick, U. (2020). Introducing research methodology: thinking your way through your research project.Sage.

Joyner, N. (2019). *Teaching Students with Dyslexia in the Choral Classroom.A Case Study*.Texas Woman's University.

Kothari, C., (2017). research methodology methods and techniques by CR Kothari. Published by New Age International (P) Ltd., Publishers, 91.

Kumar, R. (2018). Research methodology: A step-by-step guide for beginners. Sage.

Menachemi, N., Yiannoutsos, C. T., Dixon, B. E., Duszynski, T. J., Fadel, W. F., Wools-Kaloustian, K. K., ... & Halverson, P. K. (2020). Population point prevalence of SARS-CoV-2 infection based on a statewide random sample—Indiana, April 25–29, 2020. *Morbidity and Mortality Weekly Report*, *69*(29), 960.

Okagbue, H. I., Oguntunde, P. E., Obasi, E. C., &Akhmetshin, E. M. (2021). Trends and usage pattern of SPSS and Minitab Software in Scientific research. In *Journal of Physics: Conference Series* (Vol. 1734, No. 1, p. 012017). IOP Publishing.

Pan, N. D., Gruber, M., & Binder, J. (2019). Painting with all the colors: The value of social identity theory for understanding social entrepreneurship. Academy of Management Review, 44(1), 213215.

Tuomi, K. (2022). Possibilities of music therapy with children and families. *JYU dissertations*. 55(4), 651-747

VanWeelden, K., Gooding, L., &Dumlavwalla, D. (2020). The Gap between Special Music Education and Music Therapy: A Philosophical Discussion. In *Special Music Education and Music Therapy Online Pre-Conference Seminar* (p. 34).