

Imitation Studies Among Autism Spectrum Disorder Children

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Abstract: Numerous studies have indicated that imitation difficulties are apparent when comparing autistic children to typical development children or children with various disorders who are of the same mental age. Autistic children with imitation problems can be discriminated against by other children as early as age two. Children's skills development in language, social, and capacity for play depends on their ability to imitate. However, there is a shortage of information regarding imitation studies among children with autism. Thus, this study examines recent research on children with autism spectrum disorders and their imitation skills.

Keywords: Autism spectrum disorder, autistic, imitation skill

1. Introduction

Autism is classified as a "Pervasive Developmental Disorder" by the American Psychiatric Association (2000). Most Autism spectrum disorder children have verbal and nonverbal communication difficulties, social interaction, and reciprocal behaviour. Imitation is a crucial component of human development. According to Meltzoff & Moore (1989), infants imitate others at a young age. This behaviour serves two essential purposes: first, as a means of learning new skills and knowledge; second, as a means of interacting with others and developing social and emotional intelligence. By altering the shared environment, imitation is an effective way to transmit knowledge from expert agents (the instructor) to unskilled agents (the observer) (Hoffman et al., 2006). Autism is a disorder of neurodevelopmental that leads to difficulties in social interaction, restricted speech, and repetitive actions. The diagnosis rate of Autism Spectrum Disorder (ASD) continues to grow, becoming essential for a parent to understand this disorder. However, currently, there is no reliable statistic on ASD in Malaysia. Approximately 47,000 Malaysians between the ages of six months and twenty were diagnosed with autism in 2014, and this number climbed by 3 percent annually (Zakaria, 2016). Previous research indicates that imitation learning methodologies can improve daily activities such as playing, relaxing and sleeping, activities of daily living, education, and social involvement. It demonstrates that imitation abilities are necessary for a child's language development, particularly social interaction and play skills. There is a substantial lack of information about imitation skills that should be taught and ways to improve these skills in children with ASD.

Imitation learning refers to learning new skills and knowledge through observing and copying the actions demonstrated by the model (Schlag, 2012). Imitation is a social learning mechanism that allows individuals to develop new skills or knowledge more rapidly than individual learning (Schlag, 2012; Wilks et al., 2019). Children can learn imitation skills by observing, recognizing, and understanding others' actions (Reynolds et al., 2019). The observed stimuli

are then transformed into motor commands to repeat the steps and learn the skills (Reynolds et al., 2019). Numerous studies have related autism spectrum disorder (ASD) to issues with imitation (Nadel, 2014; Vivanti & Hamilton, 2014). However, there is no agreement over the nature of this impairment or if the inability to imitate is a general trait of ASD (Vanvuchelen et al., 2013). Children with ASD imitate less consistently and accurately than children with Typical Development (TD), and they appear to struggle more early in development than later.

2. Method

The purpose of this review paper was to compile studies from 2017 to 2022 on imitation in autistic children. The process is a manual search using the Web of Science, Scopus, and Science Direct database. The search was restricted to English-language publications published between January 2017 and September 2022 that contained the complete text. Keywords applied in this search are "imitation and autism" and "imitation or autism." The researcher develops inclusion and exclusion criteria to select relevant and targeted studies to answer the research questions. It established the parameters for systematic review, preventing bias in selecting papers (Trickey et al., 2012). The Inclusion Criteria (IC) and Excluding articles Criteria (EC) were used to determine which publications would be included in the review and which would be excluded:

IC1: All studies published from 2017 to 2022

IC2: All studies published in the journal

IC3: All studies are written in the English language

EC1: Studies contents were a book or systematic review

EC2: Studies content was comments, letters, or chapters of a book.

EC3: Studies language other than the English language

3. Result

Table 1 shows the studies done in imitation among autism spectrum disorder children.

Table 1: Imitation Among Autism Spectrum Disorder Children

Study	Study Objective	Sample	Results
Ishizuka & Yamamoto (2021)	Identifying Contingent Imitation	Six ASD children	Contingent Imitation intervention may be a practical method for enhancing the accuracy of various imitation categories. Even without prompting, a CI intervention that increased social eye gazing through CI and prolonged imitation interactions through modelling and conditioned responses could improve the accuracy of different forms of imitation in children with ASD-ID.
Mussey & Klinger (2020)	To investigate the individual imitation components based on chronological age and receptive language proficiency.	Twenty-five children with an ASD diagnosis	As evidenced by studies of goal emulation of activities on objects when there is a definite intent or when actions are meaningful, there are no differences in imitation between individuals with ASD and typically developing individuals.
Espanola Aguirre & Gutierrez (2019)	To identify the differences in imitation between individuals with ASD and typically developing individuals.	Thirty ASD children and thirty TD children aged between 15 and 48 months	There is no substantial difference between ASD and TD in imitation skills. Patterns of performance on multiple imitation tasks demonstrated a hierarchy of imitation skills, ranging from simple to

Study	Study Objective	Sample	Results
			complex and comprising object, body, speech, and face imitation.
Chetcuti et al. (2019)	To identify social motivation role and motor execution factors in object-directed imitation difficulties associated with autism spectrum disease.	Thirty-five autistic children -20 typical developing (TD) children (24–71 months)	Only in high motor demand tasks did ASD children perform significantly differently than TD children.
Mussey et al. (2017)	To identify imitation activities between ASD children and typically developing children and	Twenty-five ASD children (25–68 months) - 41 typical developing (TD) children (21–67 months)	ASD does imitate. However, their imitations differ from those of TD. In precise replication, ASD and TD exhibit similar path and goal imitation proportions.
Dadgar et al. (2017)	Examining the relationship between motor skills and the potential to copy essential social communication skills in autism spectrum disorder children	25 ASD children between the ages of 3 and 5	There was a substantial and high correlation between the total TGMD score and the total score of imitation, suggesting that imitation abilities and motor function are related to each other and early social communication skills. MIS and TGMD scores on the ESCS subscales of typical attention and reaction to joint attention are also significantly related (P0.025). There was no link, however, between MIS and TGMD scores and social interaction and reactivity to the behavioural demands subscale.
Wadsworth et al. (2018)	Investigating the involvement of the Action Imitation network (AIN) in motor imitation toward high-functioning children	Fourteen ASD children and adolescents with high levels of functioning	ASD patients in the AIN demonstrated considerable activity in response to action imitation research. Participants with ASD showed lower brain activation during imitation.

As shown in Table 1, most studies implemented in these studies vary across disciplines (language, psychology, and medical). This study generally compared the various methods of treatment and intervention for imitation skills in ASD children in communication, social, gross, and fine motor skills.

4. Discussion

This study evaluates recent research on imitation skills in children with an autism spectrum disorder. This study chose seven studies from 2017 to 2022 based on the research completed and the inclusion and exclusion criteria. This research was organised from most recent to most ancient. Most research was conducted using qualitative methods, including video recording, observation, and clinical measurement instruments. Unlike generally developing children and children with other disorders, autistic youngsters exhibited obvious imitative deficiencies. Various imitation training methods and their effects on communication and social skills have indeed been the subject of research. Ishizuka & Yamamoto (2016) found that the randomised imitation method significantly impacts communication skills more than the random response method. Natural behavioural intervention techniques can increase imitation ability and influence the game, in addition to typical attention and language acquisition (Dadgar et al., 2017).

5. Conclusion

In conclusion, this paper evaluates recent studies in imitation skills among children with autism spectrum disorders. This study focused on the current objective in imitation learning, the instruments used to measure imitation learning, and the effectiveness of the intervention for children with an autism spectrum disorder.

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References

- American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* (4th Editio). American Psychiatric Association. <https://books.google.com.my/books?id=3SQrtpnHb9MC>
- Chetcuti, L., Hudry, K., Grant, M., & Vivanti, G. (2019). Object-directed imitation in autism spectrum disorder is differentially influenced by motoric task complexity, but not social contextual cues. *Autism*, 23(1), 199–211. <https://doi.org/10.1177/1362361317734063>
- Dadgar, H., Rad, J. A., Soleymani, Z., Khorammi, A., McCleery, J., & Maroufizadeh, S. (2017). The relationship between motor, imitation, and early social communication skills in children with autism. *Iranian Journal of Psychiatry*, 12(4), 236–240.
- Espanola Aguirre, E., & Gutierrez, A. (2019). An Assessment and Instructional Guide for Motor and Vocal Imitation. *Journal of Autism and Developmental Disorders*, 49(6), 2545–2558. <https://doi.org/10.1007/s10803-019-04008-x>
- Hoffman, M. W., Grimes, D. B., Shon, A. P., & Rao, R. P. N. (2006). A probabilistic model of gaze imitation and shared attention. *Neural Networks*, 19(3), 299–310. <https://doi.org/10.1016/j.neunet.2006.02.008>
- Ishizuka, Y., & Yamamoto, J. (2016). Contingent imitation increases verbal interaction in children with autism spectrum disorders. *Autism*, 20(8), 1011–1020. <https://doi.org/10.1177/1362361315622856>
- Ishizuka, Y., & Yamamoto, J. (2021). The effect of contingent imitation intervention on children with autism spectrum disorder and co-occurring intellectual disabilities. *Research in Autism Spectrum Disorders*, 85(August 2020), 101783. <https://doi.org/10.1016/j.rasd.2021.101783>
- Meltzoff, A. N., & Moore, M. K. (1989). Imitation in newborn infants: Exploring the range of gestures imitated and the underlying mechanisms. *Developmental Psychology*, 25(6), 954–962. <https://doi.org/10.1037/0012-1649.25.6.954>
- Mussey, J. L., Ginn, N. C., & Klinger, L. G. (2017). Are males and females with autism spectrum disorder more similar than we thought? *Autism*, 21(6), 733–737. <https://doi.org/10.1177/1362361316682621>
- Mussey, J. L., & Klinger, L. G. (2020). Imitation in ASD: Performance on an imitation choice task. *Research in Autism Spectrum Disorders*, 73(February), 101530. <https://doi.org/10.1016/j.rasd.2020.101530>
- Nadel, J. (2014). *How imitation boosts development: In infancy and autism spectrum disorder* (1st Editio). Oxford University Press.
- Reynolds, J. E., Billington, J., Kerrigan, S., Williams, J., Elliott, C., Winsor, A. M., Codd, L., Bynevelt, M., & Licari, M. K. (2019). Mirror neuron system activation in children with developmental coordination disorder: A replication functional MRI study. *Research in Developmental Disabilities*, 84(November 2017), 16–27.

- <https://doi.org/10.1016/j.ridd.2017.11.012>
- Schlag, K. H. (2012). Imitation and Social Learning. In N. M. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 1489–1493). Springer. <https://doi.org/10.1007/978-1-4419-1428-6>
- Trickey, D., Siddaway, A. P., Meiser-Stedman, R., Serpell, L., & Field, A. P. (2012). A meta-analysis of risk factors for post-traumatic stress disorder in children and adolescents. *Clinical Psychology Review, 32*(2), 122–138. <https://doi.org/10.1016/j.cpr.2011.12.001>
- Vanvuchelen, M., Van Schuerbeeck, L., Roeyers, H., & De Weerd, W. (2013). Understanding the mechanisms behind deficits in imitation: Do individuals with autism know ‘what’ to imitate and do they know ‘how’ to imitate? *Research in Developmental Disabilities, 34*(1), 538–545. <https://doi.org/10.1016/j.ridd.2012.09.016>
- Vivanti, G., & Hamilton, A. (2014). Imitation in autism spectrum disorders. In F. R. Volkmar, S. J. Rogers, R. Paul, & K. A. Pelphrey (Eds.), *Handbook of Autism and Pervasive Developmental Disorders* (4th Edition, Issue February, pp. 278–302). John Wiley & Sons, Inc. <https://doi.org/10.1002/9781118911389>
- Wadsworth, H. M., Maximo, J. O., Donnelly, R. J., & Kana, R. K. (2018). Action simulation and mirroring in children with autism spectrum disorders. *Behavioural Brain Research, 341*(November 2017), 1–8. <https://doi.org/10.1016/j.bbr.2017.12.012>
- Wilks, M., Kirby, J., & Nielsen, M. (2019). Developmental changes in young children’s willingness to copy the antisocial actions of ingroup members in a minimal group context. *Developmental Psychology, 55*(4), 709–721. <https://doi.org/10.1037/dev0000667>
- Zakaria, M. Q. (2016, September 1). Bantu kanak-kanak autisme berjaya. *Utusan Malaysia, 26*. <http://www.autismmalaysia.com/eap-in-the-media/feature-article-utusan-malaysia-bantu-kanak-kanak-autisme-berjaya>