



## The Role of Delayed Echolalia Produced by Children with Autism Spectrum Disorder

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### ABSTRACT

Background: Echolalia is typically defined as a contextually inappropriate verbatim repetition of all or part of a previously spoken utterance. Delayed echolalia is the repetition of previously heard verbal messages after a time delay of a few minutes to years. The functions of delayed echolalia are separated into non-interactive and interactive delayed echolalia.

Aim of the study: This study examines and describes the range of functions served by delayed echolalia produced by children with Autism Spectrum Disorder (ASD).

Study Design: Quantitative study Place and Duration of Study: Center for Rehabilitation of Pathology of Verbal Communication – Skopje, between February 2023 and May 2023.

Methodology: We surveyed 47 patients (34 boys, 13 girls; age range 3 – 6 years) with ASD in whom delayed echolalia was present as speech pattern. The research method used was qualitative description. Content analysis and documentation analysis were used as research tools. Behavior Observation Protocol was used as an instrument.

Results: The results of our study have shown that 7 children (15%) used only the interactive type of echolalia, 15 participants (32%) used only non-interactive categories of echolalia, whereas more than a half of all children used both types of echolalia. All participants with observed interactive delayed echolalia used it for its imperative function, whereas only five participants also used it for its declarative function. Regarding the non-interactive delayed echolalia, nearly all participants used it predominantly for play, calming, self-regulation, and self-stimulation.

Conclusion: Delayed echolalia enables children with ASD to establish interaction with the environment, communicate with others and self-regulate. Functional analysis of such speech patterns in autistic children provides a better understanding of child's communicative functions and serves for proper designing of specific intervention approaches. The findings of this study are expected to give a positive impact on both therapists who are dealing with children with autism and caregivers.

Keywords: Delayed Echolalia, Autism Spectrum Disorder, Interactive Echolalia, Non-interactive Echolalia.

### 1. Introduction

Communication is the foundation of human existence. Through the verbal interactions, humans not only learn about reality and experience the world, but they also influence, transform, and enrich it. Social functioning of individual is strongly associated to the communication process.

Autism Spectrum Disorder (ASD) is widely described in literature as a deficit in social interaction and social communication. In the latest edition of the International Classification of Diseases, 11th Revision (ICD-11), ASD is defined as a disorder "characterized by persistent deficits in the ability to initiate and to sustain reciprocal social interaction and social communication, and by a range of restricted, repetitive, and inflexible patterns of behavior, interests or activities that are clearly atypical or excessive for the individual's age and sociocultural context" (ICD-11, 2022).

Delayed or impaired speech and language development or its absence is often the first sign noticed in children with ASD. It is assumed that children with ASD do not have the desire to communicate or share, which in turn leads to a lack of social interaction, and the social interaction itself is actually a precondition for proper speech and language development. It been estimated that between one-third and one-half of children and adults with autism have no speech (Thunber, 2013). However, each child with ASD lacks the ability to engage in two-way communication (Vlašić-Cicvarić & Modrušan-Mozetič, 2005).

Children with ASD are prone to simple repetition of other people's words (echolalia) and tend to pronoun reversal (I = you), use of neologisms, and extreme literalness. Children with ASD often speak with different rhythm, intonation, volume and/or accent than typical peers. Speech comprehension is often impaired as well, ranging from complete "word deafness" (verbal auditory agnosia) to varying degrees of language comprehension disorder (Vlašić-Cicvarić & Modrušan-Mozetič, 2005).

Additionally, research has shown that apraxia is significantly more prevalent among children with ASD than other children, with 64% of children with ASD experiencing apraxia (Tierney et al., 2015). These children have difficulty coordinating the use of their tongue, lips, mouth, and jaw to produce speech sounds, so that each time they say the same word, it comes out differently. On the other hand, it was found that 36.8% of the children diagnosed with [apraxia of speech](#) also had [autism](#) (Diament, 2015).

It should be emphasized that there is a diversity of speech and language profiles in individuals with autism, and it depends on the child's functioning level in different areas and the cognitive abilities in particular (Kopańska, 2014). Due to the aforementioned problems that affect a large number of children with ASD, communication disorders are criterial features for this group of conditions.

### ***Echolalia in children with autism spectrum disorder***

Echolalia is typically defined as contextually inappropriate repetition of part or all of a previously spoken utterance (Karmali et al., 2005; Stribling et al., 2007; Valentino et al., 2012). When observed in autism, echolalia is commonly divided into two categories: immediate and delayed echolalia ([Hetzroni & Tannous, 2004](#); [Foxy et al., 2004](#); [Neely et al., 2016](#); [Prizant & Duchan, 1981](#); [Prizant & Rydell, 1984](#); [Rydell & Mirenda, 1994](#)). Immediate echolalia results from quick recall of information from the [short-term memory](#) and "superficial linguistic processing" (Rydell & Mirenda, 1994). In the case of delayed echolalia, information is retrieved from long-term memory (Foxy et al., 2004; Hetzroni & Tannous, 2004). Regarding its purpose, there are two forms of delayed echolalia: unintentional (self-echolalia) and intentional (directed towards others) (Sterponi & Shankey, 2014). Regarding the function, delayed echolalia can be categorized as communicative and non-communicative echolalia (Golysheva, 2019).

Historically, researchers estimated that echolalia occurred in up to 85% of all individuals with Autism Spectrum Disorders (ASD) who develop speech ([Rutter et al., 1967](#); [Rydell & Prizant, 1995](#)). The frequency of echolalic speech largely depends on the language context. Children produce lower rates of repetitive speech during the storytelling context than the play-based context (Gladfelter, VanZuiden, 2020).

#### ***1.1. Research Objective***

Echolalia can be disruptive as it interferes with educational programming, distracts others' attention and leads to social stigmatizing (Ahearn et al., 2007; Haley et al., 2010). Some authors see echolalia in children with ASD as "parroting of the speech of others" and seek effective strategies to reduce or eliminate it (Schreibman & Carr, 1978), whereas others emphasize that echolalia reflects the strong child's desire to establish social contact in situations where they face difficulties in language comprehension (Fay, 1969). Fay (1969) also highlights that echolalia should be viewed as a way for individuals to engage in the verbal world. Prizant and Duchan (1981) and Prizant and Rydell (1984) give new insights into the communicative function of echolalia in children with ASD. They state that most of them demonstrate some comprehension of an utterance that are echoing. Seven functional categories of immediate echolalia (Prizant and Duchan, 1981) and fourteen functional categories of delayed echolalia were discovered (Prizant and Rydell, 1984). The most common communicative function of immediate echolalia is the role reversal imitation (Prizant and Duchan, 1981). When it comes to delayed echolalia, Kanner hypothesize that delayed echolalia represent an intermediate stage in movement from immediate echolalia to more flexible and creative language (Kanner, 1973).

The purpose of the research was to examine the characteristics of delayed echolalia and its function in communication process in children with ASD. It being a frequent behavior in the construction of the child's speech with ASD, their presence can contribute to the therapeutic approach of the speech and behavioral therapist in order to use it in improving the language and behavioral skills of the subject.

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## **2. Methodology**

### ***2.1. Study Population***

The research was conducted on a sample of 47 children with ASD receiving services in the Department for intensive treatment of children with severe developmental and pervasive disorders of verbal communication in PHI Center for Rehabilitation of Pathology of Verbal Communication - Skopje. All the participants included in the sample met all the diagnostic criteria for ASD according to DSM-5 and had relevant diagnosis documentation issued by a doctor (i.e. child psychiatrist). This, altogether with the presence of delayed echolalia, proved by speech and language pathologist, were the inclusion criteria. The study excluded children with ASD and delayed echolalia. Of the total number of participants, 34 (72%) were boys and 13 (28%) were girls. The age range of participants was 3 to 6 years. Most participants were at the age of four years (49%), 13 participants (28%) were at the age of three, 8 (17%) were at the age of five and 3 were at the age of six years. Regarding the ethnicity of study participants, 39 (83%) were Macedonians, 3 (6,4%) Albanians, 3 (6,4%) Bosniaks, 1 (2,1%) Turk and 1 (2,1%) Serbian.

## 2.2 Methods, Techniques and Instruments

The research methods used are behavior observation and qualitative description. Content analysis and documentation analysis were adopted as research tools. The instrument used was the Behavior Observation Protocol.

Behavior observations were conducted in spontaneous and structured interactions between the child and the speech therapist during 30-minute speech therapy sessions. The observations were conducted by four experienced speech therapists. During the observations therapists were filling out a protocol, consisting of questions referring to the type of delayed echolalia and the functions of delayed echolalia. When determining the type of delayed echolalia (interactive or non-interactive), the following factors were also taken into account: body posture (whether the child is facing the interlocutor), eye contact, repetitions of utterances without interlocutor reactions, gestures, and focus on a specific situation. When determining the function of delayed echolalia, it was taken into consideration whether echolalia served a communicative or non-communicative function, as well as the intention behind the echolalia.

## 2.3 Data Analysis

Obtained quantitative data were presented using tables and/or graphs. The type of applied descriptive statistics is frequency distribution and the data are summarized in numbers and percentages.

## 3. Results and Discussion

The results obtained with analysis of behavior observation protocols are shown below.

### 3.1. Type of Observed Delayed Echolalia

It is evident from Table 1 that in the majority of examined autistic children with observed delayed echolalia (25 participants or 53,2%), both types of delayed echolalia (interactive and non-interactive) were present. Seven participants (14,9%) exhibited only interactive echolalia, out of which 5 at the age of four and 2 at the age of three years. Non-interactive type of echolalia alone was observed in 15 (31,9%) out of the total number of participants, more than a half of them at the age of four years (Table 1). These results suggest one issue for further investigation, namely the possible reasons for greater frequency of interactive delayed echolalia in younger autistic children.

**Table 1. Type of Observed Delayed Echolalia by Participants' Ages**

Age of the participant	Type of Observed Delayed Echolalia		
	Interactive	Non-interactive	Both types
3 years	2	3	8
4 years	5	8	10
5 years	0	3	5
6 years	0	1	2
Total	7	15	25

### 3.2. Functions of Observed Delayed Echolalia

#### 3.2.1. Functions of Interactive Delayed Echolalia

Table 2 shows the obtained results referring to the type of the present interactive delayed echolalia. All participants with observed interactive delayed echolalia (32) used it for its imperative function, i.e. to request objects, to protest or prohibit actions of others, to direct actions of others, to call attention to self or to establish/maintain interaction, etc. Only five participants (15,6%) out of those with observed interactive delayed echolalia, besides for its imperative, also used it for its declarative function, i.e. labeling objects or actions in environment, completing familiar verbal routines initiated by others, offering new information not apparent from situational context, etc.

**Table 2. Type of Functions of Interactive Delayed Echolalia in children with ASD**

Function of Interactive Delayed Echolalia	No. of Participants
Imperative	32
Declarative	5

#### 3.2.2. Functions of Non-Interactive Delayed Echolalia

As shown in Table 3, children with ASD used non-interactive delayed echolalia for different and multiple purposes. Non-interactive delayed echolalia in children with ASD was predominantly used for play, calming down, self-regulation and self-stimulation. This functions were observed in all children

which have manifested non-functional delayed echolalia (40 participants in total). It was noticed that it also served for enjoyment (in 27,5% of total number of participants with observed non-interactive type of delayed echolalia), situation associations (in 17,5%) and for focusing (in 15%).

**Table 3. Type of Function of Non-Interactive Delayed Echolalia in Children with ASD**

<b>Function of Non-Interactive Delayed Echolalia</b>	<b>No. of Participants</b>
Play	40
Enjoyment	11
Calming Down	40
Self-Stimulation	40
Self-Regulation	40
Focusing	6
Situation Association	7

Our findings regarding the functions of delayed echolalia in children with ASD are generally consistent with prior research in this field. Similar results regarding delayed echolalia were obtained by Sterponi & Shankey. They examined the different forms of echoic utterances produced by a six years old child with autism and the interactional trajectories in which they were embedded. Delayed echoes were divided into three types based on the utterance's ownership: self-echoes, other-echoes, and impersonal echoes. All delayed echoes were highly formulaic, reoccurring with minimal variation across different instances. The child used delayed echolalia as a way to position himself in relation to others and as an emotional or gestural appeal to the situation they were facing. Sterponi Sterponi & Shankey consider echolalia as a significant and flexible means of communication and interaction, rather than just a pathological manifestation (Sterponi & Shankey, 2014).

Grossi et al. (Grossi, Marcone, Cinquegrana, & Gallucci, 2012) studied the occurrence of echolalia under experimental conditions (with induced and incidental procedure) in order to investigate the nature of the phenomenon and its relationship with the severity of autism in eighteen participants with ASD aged 17-36 years. Participants were administered the Vineland scale, the Observational Rating Scale of Basic Functions and the Echolalia Questionnaire. The results showed that echolalia occurred in both experimental situations. Echolalia was statistically higher in the induced procedure as compared with the incidental one only for subjects with low score on Vineland, but in the incidental procedure, the presence of echolalia appeared to be uninfluenced by the functional capacity of subjects.

Prizant and Rydell conducted a study to determine how spontaneously produced delayed echolalia was used by autistic individuals, with the purpose to delineate and describe the range of functions of delayed echolalia in individuals with autism. The study included three boys diagnosed with autism, and with at least 20% delayed echolalia of all utterances produced. Prizant and Rydell identified nine functional categories of interactive delayed echolalia and five functional categories of non-interactive delayed echolalia. All three subject produced a substantially greater proportion of interactive delayed echoes versus non-interactive delayed echoes. One of the subjects produced smaller proportion of delayed echolalia with evidence of comprehension than without evidence of comprehension, whereas the other two subject produced a greater proportion of delayed echoes with evidence of comprehension than without evidence of comprehension. Prizant and Rydell summarized that delayed echoes varied as to the extent of their conventionality, which may vary with different listeners and different contexts. The study demonstrated that communicative intent may or may not underline the production of delayed echolalia. Many delayed echoic utterances did not meet the criterion of use in a variety of contexts and could not be called symbolic (Prizant & Rydell, 1984).

#### 4. Conclusion

Most prior studies focused on immediate echolalia, which is easier to identify and interpret. Given the specificity of repetitive speech in ASD, research on delayed echolalia consists predominantly of qualitative analysis of spontaneous speech in naturalistic settings (e.g., [Dobinson et al., 2003](#); [Stribling et al., 2007](#); [Santen et al., 2013](#)).

Our study has shown that both types of delayed echolalia (interactive and non-interactive) are present in children with ASD. In terms of the function of delayed echolalia, the use of imperative functions prevails, whereas declarative functions are mostly absent. Delayed echolalia allows autistic children to establish interaction with the environment, convey information, request or label something, etc. The functions of delayed echolalia that are not related to the communication process but rather to the functioning of children with ASD in different areas, such as self-regulation and self-stimulation, are also significant.

Echolalia is a coping mechanism for children with autism to communicate when they cannot produce spontaneous speech. The use of echolalia can be considered an important and positive step in the language acquisition process, and its reduction will occur as increasing the language skills of the children. Echolalia represents an important foundation for the development of appropriate verbal behavior, especially when its use is associated with communicative intent.

Echolalia can be confusing. But by understanding why children use it and how it serves as a bridge to more flexible language, we will be better equipped to help a child who uses echolalia.

It should be emphasized that the limitation of the conducted research is the small group of participants and the limited number of situations in which echolalia was observed, which may lead to an incomplete picture of the communicative functions of echolalia in children with ASD. Therefore, this topic requires further research. However, the findings of this study are expected to give a positive impact on readers who are dealing with children with autism who have echolalia. It will provide information on their language development in order to later determine the ideal method to handle them with care. It may inform therapeutic interventions to help children with ASD handle or improve their communicative practices, which should also help caregivers learn how to best interact with them. Echolalia is undoubtedly a symptom of autism, but it may also be the key to effective intervention.

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