Transforming Echolalia Into Functional Communication: A Case Study of Autistic Children in Inclusive Classrooms

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Abstract

This study examines echolalia in two autistic boys (ages 7–8) in inclusive primary school classrooms, focusing on its pragmatic functions and the conditions under which echolalic utterances transform into context-fitting, interpretable responses. Adopting a multiple-case design, interaction episodes were analyzed as the embedded unit (adult trigger→child echolalia→adult response→outcome). Episodes were coded across five dimensions: contextual stability, echolalia form, pragmatic function, adult response type, and interaction outcome. Quantitative findings indicate that transformation occurred more frequently in predictable contexts than in variable contexts for both cases (Case A: 73.2% vs. 41.7%; Case B: 55.0% vs. 22.5%). Qualitative analysis further shows that supportive, semantically contingent adult responses (e.g., recasts, prompts, guided choices) increase the likelihood of transformation, whereas controlling responses tend to sustain echolalia or lead to breakdown. The findings suggest that echolalia transformation is best understood as a context-sensitive and interactionally mediated process, rather than a fixed deficit or developmental stage. The study highlights how contextual conditions and adult mediation jointly shape transformation outcomes and offers an episode-based perspective for analyzing communication in inclusive classroom settings.

Keywords: autism spectrum disorder, echolalia, inclusive education

Introduction

In recent years, the expansion of inclusive education and the advocacy of communication rights under the Convention on the Rights of Persons with Disabilities (CRPD; United Nations, 2006) have positioned equitable communication as a central concern for autistic students'participation. However, pragmatic and language difficulties remain significant challenges in inclusive classrooms (Ryan et al., 2024). In particular, echolalia has not been sufficiently examined through approaches grounded in natural classroom interaction or oriented toward pragmatic transformation (Blackburn et al., 2023; Ryan et al., 2024).

Echolalia has traditionally been viewed as a non-functional or pathological behavior requiring reduction (Prizant & Duchan, 1981). However, earlier work (Prizant, 1983; Prizant & Rydell, 1984) suggested that echolalia may serve communicative and regulatory functions. More recently, NLA/GLP perspectives have been influential in clinical discussion (Blanc, 2012), although their application remains debated (Hutchins et al., 2024). Functional and interactional studies, meanwhile, support the view that echolalia can serve meaningful communicative purposes (Cohn et al., 2022; Xie et al., 2023).

Interdisciplinary research further indicates that echolalia reflects more than rote repetition and may involve communicative, cognitive, and interactional organization (Cohn et al., 2022; Xie et al., 2023). Despite these advances, current research has not sufficiently explained how echolalia transforms into context-fitting communication within interaction.

This study addresses this gap by examining echolalia in naturalistic inclusive classroom settings. Using an episode-based approach, it explores how echolalic utterances function pragmatically and under what conditions they transform into interpretable responses. The study conceptualizes echolalia as a context-sensitive and interactionally mediated process, contributing to both theoretical understanding and inclusive educational practice.

The present study returns to naturally occurring classroom Q–A sequences and proposes an episode-based analytic framework for investigating echolalia as interaction, not merely as form. The study addresses three research questions:

- What pragmatic functions does echolalia serve in classroom interaction?
- How does echolalia transform into context-fitting responses within episodes?
- How do contextual stability and adult response strategies shape transformation outcomes?

Literature Review

Functional Role of Echolalia in Autistic Language Development

Autistic children possess the capacity for language acquisition (Tager-Flusberg, 2006), yet their language production is often misaligned with contextual and interactional demands. Such patterns have been associated with differences in social motivation, theory of mind, imitation, and pragmatic coordination (Baron-Cohen et al., 1985; Baron-Cohen et al., 2000; Paul et al., 2009; Williams et al., 2006). Within this framework, echolalia has historically been interpreted as a non-functional or residual behavior reflecting underlying deficits.

However, this deficit-oriented perspective has been challenged by research highlighting the functional and communicative roles of echolalia. Early work by Prizant and Rydell (1984)

demonstrated that echolalic utterances may serve communicative purposes such as requesting, responding, emotional regulation, and maintaining interaction. Subsequent studies further suggest that echolalia can function as a transitional and strategic linguistic resource, rather than a purely imitative phenomenon (Cohn et al., 2022; Sterponi & Shankey, 2014).

Evidence from naturalistic interaction supports this view, showing that autistic children may selectively use or adapt echolalic utterances according to contextual demands (Sterponi & Shankey, 2014). At the same time, constraints in speech motor planning and execution may limit the production of novel utterances (Shriberg et al., 2001), and neuroimaging findings suggest reduced activation in regions associated with imitation and social understanding (Dapretto et al., 2006). Taken together, these findings indicate that echolalia may function as a compensatory communicative strategy, allowing reliance on familiar utterances when generative language production is constrained.

However, the effectiveness of echolalia appears to vary across contexts. Some instances become pragmatically appropriate, whereas others remain repetitive or mismatched. This suggests that echolalia is not inherently functional, but conditionally functional, depending on interactional factors. In particular, adult mediation and response patterns may play a critical role in shaping whether echolalic speech remains repetitive or develops into contextually appropriate communication.

Theoretical Debate: Structural and Pragmatic Perspectives

Two complementary perspectives are commonly used to interpret echolalia in autism: a structural view of language and a pragmatic-interactional view. From a structural perspective, language development is understood in terms of formal linguistic systems, including vocabulary, syntax, and representational abilities. Research has shown that language profiles in autism are highly heterogeneous, with some individuals demonstrating relatively intact structural language alongside persistent pragmatic difficulties (Tager-Flusberg, 2006). Within this framework, echolalia is often interpreted as reflecting limitations in generative language, such as reliance on stored or formulaic expressions when flexible production is constrained (Paul et al., 2009).

In contrast, a pragmatic-interactional perspective emphasizes that the communicative value of an utterance must be interpreted in relation to context, communicative intent, and listener response, rather than linguistic form alone (Gee, 2004; Gumperz, 1982). From this view, echolalia functions as an interactional resource that supports participation, response alignment, and conversational continuity. Empirical studies have shown that echolalic utterances can serve meaningful communicative functions when interpreted contingently within interaction (Cohn et al., 2022; Sterponi & Shankey, 2014).

Recent research further suggests that echolalia is not a static or purely imitative phenomenon, but may involve flexible use of prior linguistic material to support meaning construction. For example, Xie et al. (2023) demonstrated that echolalic expressions can integrate previously heard utterances with current contextual demands, indicating their role as communicative strategies rather than mere repetition.

Within clinical discourse, Natural Language Acquisition (NLA) and gestalt language processing (GLP) frameworks propose that some autistic individuals acquire language through larger memorized chunks that are gradually reorganized into smaller units (Blanc,

2012). However, recent analyses caution that the empirical basis for these stage-based accounts remains limited, suggesting that NLA/GLP may be better understood as clinical interpretive frameworks rather than established developmental models (Hutchins et al., 2024).

Taken together, these perspectives highlight a key limitation of purely structural accounts: they cannot fully explain why echolalic utterances vary across contexts or change within interaction. At the same time, reliance on a single clinical framework without sufficient empirical support risks overgeneralization. Therefore, the present study adopts a pragmatic-interactional orientation, conceptualizing echolalia as a context-sensitive communicative phenomenon whose function and transformation depend on the interaction between contextual conditions and adult response.

Echolalia in Natural Contexts and Pragmatic Transformation

Recent research has increasingly emphasized that echolalia should be understood within naturalistic interaction, rather than as isolated linguistic output. Observational studies indicate that echolalia frequently occurs in structured activities, instructional exchanges, and routine-based contexts, where it may support participation, regulation, and response alignment (Cohn et al., 2022; Sterponi & Shankey, 2014). Within these contexts, the communicative value of echolalia depends on its interactional positioning. Echolalic utterances may function as meaningful responses when they align with the sequential structure of discourse, even if they retain formal features of repetition (Cohn et al., 2022). This highlights the importance of interpreting echolalia in relation to communicative intent and interactional organization, rather than linguistic form alone (Gumperz, 1982).

Emerging evidence further suggests that echolalia may exhibit varying degrees of pragmatic transformation. Rather than remaining fixed repetitions, some utterances show partial modification, semantic adaptation, or contextual alignment, indicating that previously heard language can be flexibly reorganized in response to situational demands (Xie et al., 2023). These findings support the view of echolalia as a transitional communicative resource under conditions of linguistic or cognitive constraint.

However, such transformation is not consistently observed. Variability has been linked to differences in contextual predictability and task demands. In more predictable, routine-based contexts, reduced cognitive and pragmatic load may facilitate participation, whereas unfamiliar or rapidly changing contexts may limit contextually appropriate responses (Andrés-Roqueta & Katsos, 2020; Ryan et al., 2024). In addition to contextual factors, adult responses play a critical role in shaping the trajectory of echolalic utterances. Semantically contingent responses—such as recasts, prompts, and guided choices—can support the reorganization of echolalic speech into contextually appropriate forms, whereas corrective or suppressive responses may disrupt interactional flow and reduce opportunities for development (Cohn et al., 2022; Stiegler, 2015).

Despite these insights, existing research has rarely examined how contextual conditions and adult responses jointly operate in real-time interaction. Most studies have focused either on functional classification or intervention outcomes, without systematically analyzing the interactional mechanisms underlying transformation. To address this gap, the present study adopts an episode-based analytic approach to examine how contextual stability and adult

response orientation jointly influence the likelihood of transformation into context-fitting communication.

Interactional Challenges in Inclusive Classrooms and Research Gap

Despite increased recognition of its functional potential, echolalia remains poorly understood in inclusive educational contexts (Ryan et al., 2024). Autistic students often experience difficulties in turn-taking, topic maintenance, and interpreting implicit social cues, which can disrupt participation in classroom interaction (Andrés-Roqueta & Katsos, 2020). When echolalic utterances are misinterpreted as non-functional, opportunities for communication may be reduced rather than supported.

Recent studies highlight that echolalia varies across contexts such as classroom routines, instructional exchanges, and peer interaction (Cohn et al., 2022; Ryan et al., 2024). However, there remains a lack of systematic investigation into how specific interactional conditions shape the transformation of echolalia into meaningful communication.

In particular, the roles of contextual predictability and adult response orientation have not been sufficiently examined through fine-grained, episode-based analysis in natural settings. Given the context-sensitive and interactional nature of echolalia, case study approaches offer a valuable method for capturing these dynamics. Therefore, this study adopts an explanatory case study design to investigate how echolalia functions and transforms within real-time classroom interaction, addressing both theoretical and practical gaps in the literature.

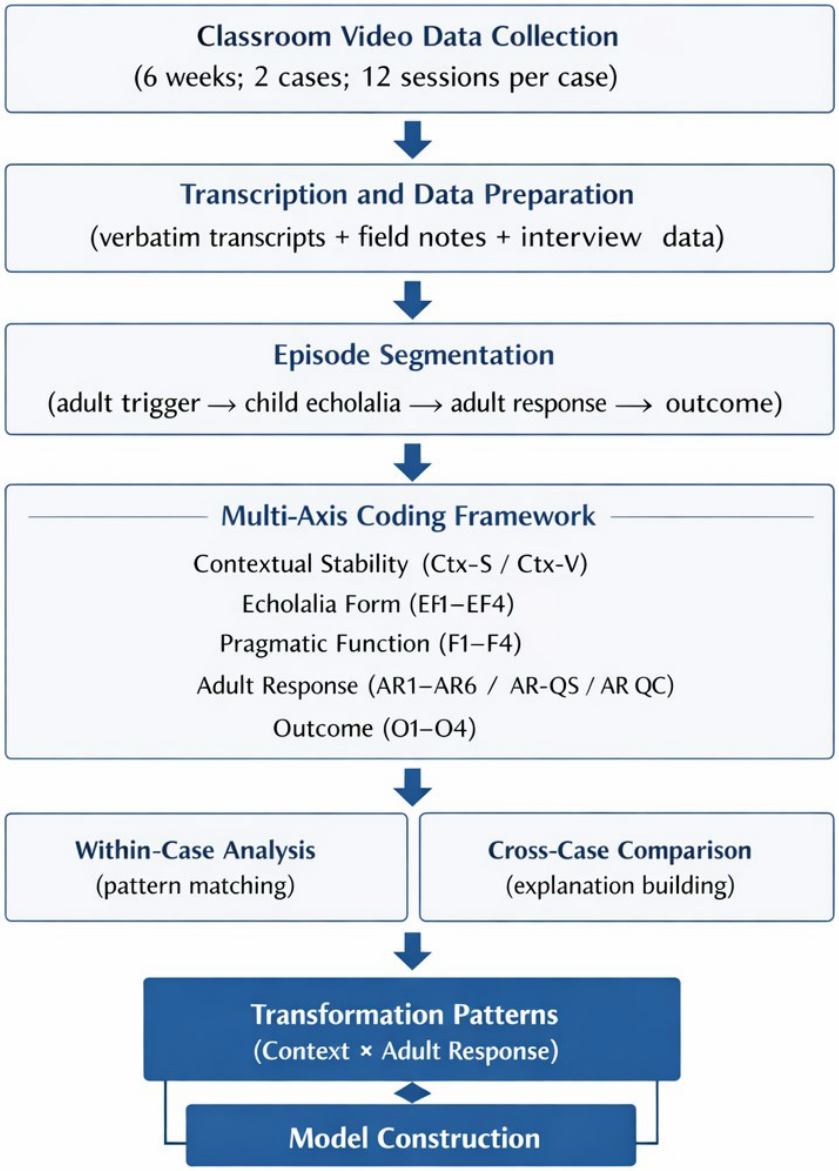
Methods

Design and Analytic Unit

This study adopted an explanatory multiple-case design following Yin (2018), emphasizing explanation building through within-case pattern matching and cross-case comparison. An explanatory approach was selected because the purpose of the study was not merely to describe echolalic patterns, but to examine how structural conditions interact to influence communicative outcomes. An episode was defined as a contiguous sequence from (a) adult trigger (question, instruction, or contextual change) to (b) child echolalic response, (c) adult response, and (d) outcome. This episode structure supports within-case pattern matching and cross-case explanation building.

Figure 1

Research Workflow and Analytic Pipeline (Episode-Based Coding)



Note. This figure presents the analytic workflow of the study, beginning with classroom video data collection, followed by transcription and episode segmentation. Each episode is defined as a sequence of adult trigger, child echolalic response, adult response, and interactional outcome. Episodes are subsequently analyzed through a multi-axis coding framework, including contextual stability, echolalia form, pragmatic function, adult response, and outcome. The analytic process integrates within-case pattern matching and cross-case comparison, leading to explanation building and model construction.

Participants and Setting

Participants were two boys (Case A; Case B), aged 7–8, placed in an inclusive arrangement combining half-day general education and half-day special education services. Both had multiple years of language intervention. Guardian written consent was obtained, and the researcher observed without intervening in instruction.

Table 1
Participant Profiles

Profile domain	Case A	Case B
Sex	Male	Male
Family context (summary)	Mother primary caregiver; father works away; one younger sibling	Mother primary caregiver; only child; three-person household
Age at autism diagnosis	4 years	3 years 4 months
Age at first spoken words	3 years	2 years 6 months
Years of language intervention	4 years 7 months	4 years 1 month
Learning profile (summary)	Age-appropriate basic literacy; weaker mathematics; low interest in fine-motor crafts	Age-appropriate learning; strong memory for events; attention drifts during class
Communication profile (summary)	Understands common directives; uses full sentences; clear articulation	Understands complex directives; prefers shorter sentences; expresses needs/opinions
Parent stance toward echolalia	Often reminds child "do not echolalia"	Less concerned; does not over-focus on echolalia
Cognitive test (Wechsler; reported)	Approx. 93	Approx. 89

Note. Demographic, family, and communication profiles of Case A and Case B to document comparability and potential sources of difference.

Data Collection and Timeline

Data collection consisted of six consecutive weeks of classroom video recording and transcription; each case was recorded for 12 sessions (4 per context type across three context types), 30 minutes per session. Supplementary data included semi-structured adult interviews and field notes to support triangulation and an auditable evidence chain.

Assumption retained: total minutes are treated as 360 minutes per case (720 total), because the source abstract and methods differ.

Episode Segmentation and Coding Procedure

To increase coding consistency and replicability, the source manuscript specifies decision rules for episode segmentation, including (a) task-goal continuity, (b) re-triggering, and (c) an interruption threshold: if interaction is interrupted for ≥ 10 seconds and the child's attention/activity context shifts, the prior episode is coded as ended and a new episode begins.

Each episode was coded in a fixed order: (1) contextual stability (Ctx), (2) echolalia form (EF), (3) pragmatic function (F), (4) adult response (AR), and (5) outcome (O). Adult responses were also aggregated into supportive vs. controlling orientations (AR-QS vs. AR-QC).

Reliability procedures include 20% double-coding by a second coder and consensus discussion; however, no numerical agreement statistic is reported in the source, so none is added here.

Coding Framework

Table 2
Episode Coding Framework (Ctx / EF / F / AR / Outcome): Operational Definitions and Examples

Axis	Code	Label	Operational definition (source-based)	Example (source-based; translated where needed)
Context	Ctx-S	Stable / familiar context	Fixed teacher, fixed activity routine, high proportion of fixed scripts	Daily roll-call Q&A; routine clean-up sequence
Context	Ctx-V	Variable / unfamiliar context	New person, new dialogue type, new rules, or altered activity structure	Unfamiliar visitor asking questions; sudden rule change in an activity
Echolalia form	EF1	Immediate echolalia	Repeats key components of adult utterance within ~3 seconds	Adult: “Put the book away.” → Child: “Put the book away.”
Echolalia form	EF2	Delayed echolalia	Reproduces a previously heard utterance non-immediately	During transition repeats “Hurry up, hurry up”
Echolalia form	EF3	Partially transformed echolalia	Retains sentence frame but substitutes/adds/removes key words	Adult: “Which one do you want?” → Child: “I want the red one.”
Echolalia form	EF4	Functional echolalia	Utterance has clear pragmatic intent and fits the context	Adult: “When it rains we use an umbrella.” → Child: “He doesn’t have an umbrella—he’ll get wet. I want an umbrella.”
Pragmatic function	F1-SR	Self-regulation / self-guidance	Echo immediately accompanies self-instruction that initiates or stabilizes	Child: “Line up, line up” → moves into line; body becomes

Axis	Code	Label	Operational definition (source-based)	Example (source-based; translated where needed)
			action	calmer
Pragmatic function	F2-IR	Interactional responding	Content aligns with question/interaction demand though echoes remain	Asked color → answers "red" with copied intonation/frame
Pragmatic function	F3-CM	Context maintenance / transition support	Uses repetition to maintain pacing or avoid interruption	Repeats teacher's routine command during transitions
Pragmatic function	F4-AV	Avoidance / delay	Repeats instead of answering, delaying/avoiding a response	Asked "why" → repeats the question or teacher's prior clause
Adult response	AR1	Expansion / recast	Uptakes child meaning and grammaticalizes/extends it	Child: "Red, red" → Adult: "You want the red one."
Adult response	AR2	Prompt / guided choice	Provides options or cues to elicit response	"Do you want red or blue?"
Adult response	AR3	Direct answer / speaking for child	Adult completes the answer for the child	"He wants red."
Adult response	AR4	Clarification request	Adult requests elaboration or reformulation	"Red—red what?"
Adult response	AR5	Ignore / shift	Does not respond to echolalia content; moves on	No uptake; proceeds to next activity step
Adult response	AR6	Behavioral correction / suppression	Focuses on rule/policing speech form	"Don't copy me—answer properly!"
Adult response (aggregate)	AR-QS	Supportive-contingent	Meaning-oriented, contingent uptake	Comprised primarily of AR1–AR4 when semantically contingent
Adult response (aggregate)	AR-QC	Controlling-corrective	Form-correcting or suppressive orientation	Typically AR6-based; may include coercive forms

Axis	Code	Label	Operational definition (source-based)	Example (source-based; translated where needed)
				of AR5
Outcome	O1	Task/response completed	Child completes target response/task	Completes requested step with appropriate response
Outcome	O2	Transformation observed	Within-episode shift to higher pragmatic appropriateness (e.g., EF1→EF3)	Echo shifts into context-fitting answer/request
Outcome	O3	Breakdown / escalation	Interaction breaks; avoidance; affect escalates; off-task	Leaves activity; distress escalates
Outcome	O4	Echolalia maintained	Episode ends with echolalia without transformation	Repetition continues; no context-fitting response

Note. Translated codebook used for multi-axis episode coding.

Results

Quantitative Findings: Transformation Matrix and Rates

Based on the coded dataset derived from the collected interactional episodes, a cross-case transformation matrix was constructed, crossing contextual stability (Ctx-S vs. Ctx-V) with transformation outcomes (O2 vs. non-O2). The analysis indicates that transformation occurred more frequently in predictable contexts for both cases.

Table 3
Transformation Matrix by Contextual Stability (Reported Counts; Rates Computed)

Case	Context	Transformed (O2)	Not transformed (non-O2)	Total	Transformation rate
A	Ctx-S (predictable)	30	11	41	73.2% (30/41)
A	Ctx-V (variable)	20	28	48	41.7% (20/48)
B	Ctx-S (predictable)	22	18	40	55.0% (22/40)
B	Ctx-V (variable)	9	31	40	22.5% (9/40)

Note. Episode counts with/without transformation (O2) by context stability for Case A and Case B; rates computed from the reported matrix.

A derived descriptive comparison highlights the contextual effect size in percentage points: Case A shows a stable–variable gap of 31.5 points (73.2%–41.7%); Case B shows a gap of 32.5 points (55.0%–22.5%). This supports the source interpretation that reduced contextual predictability raises the threshold for pragmatic transformation.

Qualitative Findings: Pragmatic Functions and Transformation Pathways

Across cases, echolalia served multiple pragmatic functions consistent with the source coding framework (F1 – F4): (a) self-regulation/self-guidance, (b) interactional responding, (c) context maintenance/transition support, and (d) avoidance/delay. These functions are interpreted as interactional resources whose meaning depends on sequential position and the adult's subsequent uptake.

Table 4
Case A and Case B Exemplar Episodes

Case	Context	Excerpt (adult → child; translated)	Adult response orientation/type	Outcome	Source-noted "threshold" reading
A	Ctx-V	Teacher: "What are you doing?" Child: "Yes!" / "Yes, mom!" → (after reframed question) "I'm sunbathing."	Supportive / semantic reframing (AR-QS; AR2/AR4-like)	Transformation	Pragmatic alignment difficulty; meaning-oriented reframe "pulls" response into fit
A	Ctx-V	"Dinosaur/police rule extension" (rule talk loops; adult does not clarify immediately)	Uptake insufficient	No transformation	Pragmatic alignment bottleneck; rule/self-narration loops maintain
B	Ctx-S	Teacher: "No splashing the cup—drink water." Child: "No splash, drink water" (repeats twice, then drinks)	Rule prompt; supportive but task-focused	Compliance; template maintained	High behavioral compliance; utterance remains templated (structural stagnation)
B	Ctx-V	Assistant: "Do you want to leave, or cover your ears?" Child: "It's too noisy… cover my ears." (covers ears)	Supportive choice prompt (AR-QS; AR2)	Transformation	Needs external frame/options to cross into action-utterance
B	Ctx-V	Injury episode:	Supportive	Transformation	Transformation

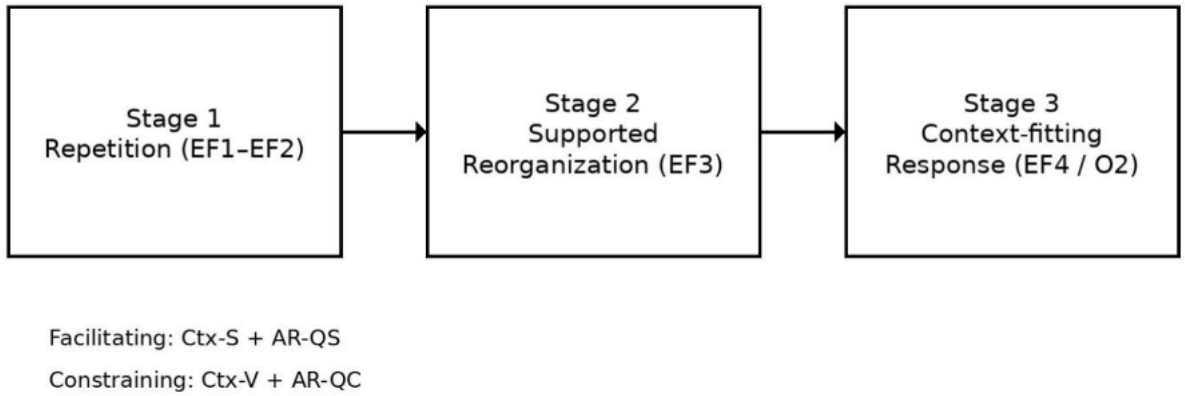
Case	Context	Excerpt (adult → child; translated)	Adult response orientation/type	Outcome	Source-noted "threshold" reading
		Child: "I'm hurt." Adult: "What to do?" Child: "You can put medicine." Adult: "Does it still hurt?" Child: "It hurts—blow on it."	contingent prompts and co-construction (AR-QS; AR2/AR4)	(scripted chain)	via learned frame; relies on adult structure for generativity

Note. Representative episodes showing (i) prior non-fitting echo/response, (ii) adult supportive uptake, and (iii) transformed, context-fitting response (or non-transformation), with code annotations.

Three-Stage Transformation Diagram

To further clarify the within-episode transformation process, the analysis identifies a recurring trajectory from non-fitting echolalia to context-fitting response. This trajectory is represented as a three-stage model aligned with the coding framework (EF/F/O), capturing how echolalia may reorganize into meaningful participation within interaction.

Figure 2
Three-Stage Echolalia Transformation Model



Note. This figure illustrates the within-episode transformation process of echolalic utterances, progressing from non-context-fitting echolalia (EF1–EF2) to context-fitting responses (EF4/O2), mediated by supportive and semantically contingent adult responses (AR-QS). The model represents interactional progression within individual episodes and is not intended to imply a fixed developmental sequence. It serves as a process-oriented analytic framework for interpreting how echolalia reorganizes into meaningful participation under specific interactional conditions.

Transformation-Conditions Model (Context × Adult Uptake × Individual Threshold)

Across both cases, a consistent interactional pattern emerged: transformation is not an automatic outcome of echolalia, but a conditional process shaped by the interaction between contextual stability and adult response orientation. Specifically, transformation was more likely to occur in predictable contexts (Ctx-S) and under supportive, semantically contingent adult responses (AR-QS), whereas variable contexts (Ctx-V) combined with controlling or

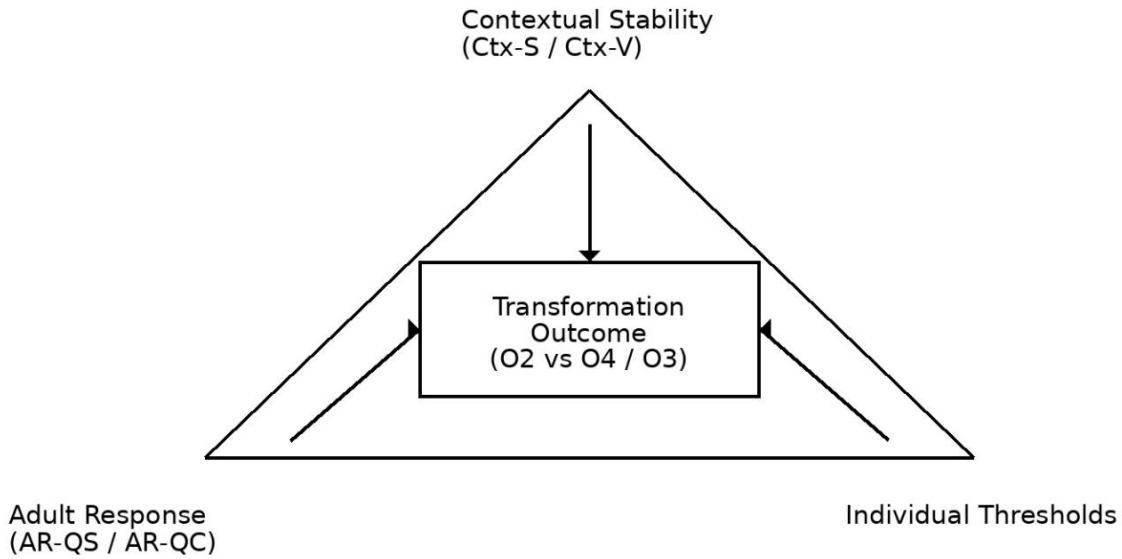
corrective responses (AR-QC) were more likely to result in maintenance of echolalia or interactional breakdown.

While both cases share this conditional structure, the location of the primary transformation constraint differs. For Case A, transformation is primarily limited by difficulties in pragmatic alignment under variable contexts, where supportive semantic reframing is required to re-establish interactional coherence. In contrast, Case B demonstrates relatively stable pragmatic compliance but shows constraints in generative flexibility, with transformation more likely to occur when externally provided linguistic scaffolds (e.g., options, prompts) reduce the generative demand.

Based on these cross-case patterns, transformation can be conceptualized as a conditional interaction process rather than a linear progression. This process is summarized as a transformation-conditions model, in which contextual stability (Ctx-S vs. Ctx-V) and adult response orientation (AR-QS vs. AR-QC) jointly influence the likelihood of transformation (O2), moderated by child-specific thresholds.

Figure 3

Conditional Interaction Model of Echolalia Transformation



Note. The model shows how contextual stability (Ctx-S vs. Ctx-V) and adult response orientation (AR-QS vs. AR-QC) jointly influence transformation outcomes, moderated by individual thresholds.

It represents transformation as an emergent outcome of interactional conditions rather than an inherent property of the child's language ability. Importantly, the model does not assume a fixed developmental sequence, but instead emphasizes the dynamic interplay between environmental structure, adult mediation, and individual constraints.

Taken together, these findings suggest that echolalia transformation is best understood as a context-sensitive and interactionally mediated process. Rather than being treated as a deficit requiring reduction, echolalia can function as a transitional communicative resource, whose transformation depends on the extent to which the interactional environment supports meaning-making and participation.

Discussion

Taken together, the findings of this study suggest that echolalia transformation should not be interpreted as a binary indicator of communicative ability, but as a dynamically regulated process shaped by conditional interaction. Rather than reflecting the presence or absence of pragmatic competence, transformation emerges through fluctuations in what may be conceptualized as a generative gap—the distance that must be bridged for an utterance to become context-fitting under specific interactional conditions.

This generative gap is not fixed, but expands or contracts depending on the interactional environment. When contextual uncertainty increases, task demands intensify, or interactional pace accelerates, the generative gap widens, and echolalic utterances are more likely to remain at the level of template maintenance or self-regulation. Conversely, when contextual predictability is enhanced and semantic frames are made explicit through supportive adult uptake, the generative gap narrows, allowing utterances to reorganize and move toward context-fitting participation.

Within this framework, adult uptake functions as a threshold-modulating mechanism rather than a direct teaching strategy. Semantically contingent responses do not simply correct language form; they alter the conditions under which transformation becomes possible by reducing semantic risk and restructuring the interactional frame. However, this catalytic function is neither independent nor sufficient in itself. Its effectiveness is mediated by contextual stability and by child-specific constraints in generative flexibility or pragmatic alignment.

Importantly, cross-case analysis indicates that individual differences are not indicative of separate models, but rather reflect different locations of constraint within the same conditional structure. In this sense, variability in echolalia should not be interpreted as categorical differences in ability, but as differences in where and how the generative gap is most likely to expand under varying conditions.

From a broader perspective, the inclusive classroom can be conceptualized as a dynamic threshold field, in which contextual demands, adult mediation, and individual constraints continuously interact to shape the trajectory of echolalic utterances. Within this field, transformation, partial alignment, and stagnation are not fixed states, but emergent outcomes of shifting interactional conditions.

This perspective carries important implications. It suggests that echolalia should be understood not as a stable deficit or a developmental stage, but as a context-sensitive communicative phenomenon. Accordingly, evaluation should not rely on isolated utterances, but on the interactional conditions under which those utterances are produced. More importantly, future research may build on this framework by operationalizing generative gap, threshold variation, and interactional load, thereby enabling more precise, testable models of echolalia transformation across contexts and individuals.

Conclusion

This study examined echolalia in naturalistic inclusive classroom settings and explored the conditions under which echolalic utterances transform into context-fitting, interpretable responses. Drawing on episode-based analysis of two autistic students, the findings suggest

that echolalia transformation should not be understood as a reflection of fixed communicative ability, but as a dynamically regulated process shaped by interacting conditions.

The results indicate that the progression or stagnation of echolalic utterances is not directly determined by the presence or absence of pragmatic competence. Instead, it reflects fluctuations in what may be conceptualized as a generative gap—the distance required for an utterance to become contextually appropriate under specific interactional conditions. When contextual uncertainty increases, interactional demands intensify, or response timing becomes more constrained, this generative gap tends to widen, and utterances are more likely to remain at the level of repetition or self-regulation. Conversely, when contextual predictability is enhanced and semantic frames are clarified through supportive adult uptake, the generative gap narrows, allowing utterances to reorganize and move toward context-fitting participation.

Within this process, adult uptake functions as a condition-modulating mechanism rather than a unidirectional instructional strategy. Supportive, semantically contingent responses do not simply correct language form; they reshape the interactional conditions under which transformation becomes possible by reducing semantic uncertainty and providing usable linguistic scaffolds. However, this effect is neither independent nor sufficient in itself. The likelihood of transformation depends on the interaction between contextual stability, adult response orientation, and child-specific constraints.

Cross-case comparison further indicates that individual differences are embedded within the same conditional structure rather than representing distinct models of functioning. While both cases follow similar interactional patterns, they differ in where transformation is most constrained. For one case, the primary difficulty lies in pragmatic alignment under variable conditions; for the other, it lies in generative flexibility and the ability to move beyond templated expressions. These findings suggest that variation in echolalia should be understood as differences in how and where the generative gap expands, rather than as categorical differences in communicative ability.

Taken together, the findings support a view of echolalia as a context-sensitive and interactionally mediated phenomenon, rather than a stable deficit or a fixed developmental stage. In inclusive classroom settings, echolalic utterances emerge within a dynamic interactional field in which contextual demands, adult mediation, and individual constraints continuously shape communicative trajectories. Within this field, transformation, partial alignment, and stagnation represent different possible outcomes of the same underlying process.

This study contributes to the literature in three ways. First, it adopts an episode-based analytic approach, allowing echolalia to be examined as an interactional process rather than as isolated linguistic form. Second, it proposes a conditional interaction perspective, highlighting how contextual and relational factors jointly shape transformation. Third, it introduces the concept of a generative gap as a way of understanding how interactional conditions influence the movement from repetition to meaningful participation. These contributions provide a basis for future research to further examine and refine the mechanisms underlying echolalia transformation.

Several limitations should be noted. The study is based on a small number of cases and cannot be generalized statistically. The data were collected in natural inclusive classroom settings, and the findings may not directly apply to clinical or highly structured instructional

contexts. In addition, the analysis relied on observational data and episode-based coding without standardized language or cognitive measures, and inter-rater reliability was not quantified. Future research may expand sample size and contextual diversity, adopt longitudinal designs to examine changes in transformation thresholds over time, and develop operational measures of adult uptake quality to enhance empirical testability.

Despite these limitations, the study offers a structural perspective for understanding echolalia transformation in inclusive educational contexts. By situating echolalia within the interaction of contextual load, adult mediation, and individual generative constraints, it provides a foundation for both more precise interpretation and further theoretical development.

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that AI-assisted technologies (e.g., ChatGPT) were used in the writing process to support language refinement, structural organization, and clarity of expression. The use of AI was limited to editing, rephrasing, and improving readability of the manuscript. All conceptualization, research design, data collection, analysis, and interpretation were conducted by the author. The author takes full responsibility for the integrity and originality of the work.

References

Andrés-Roqueta, C., & Katsos, N. (2020). A distinction between linguistic and social pragmatics helps the precise characterization of pragmatic challenges in children with autism spectrum disorders and developmental language disorder. *Journal of Speech, Language, and Hearing Research, 63*(5), 1494–1508. https://doi.org/10.1044/2020_JSLHR-19-00263

Blackburn, C., Tueres, M., Sandanayake, N., Roberts, J., & Sutherland, R. (2023). A systematic review of interventions for echolalia in autistic children. *International Journal of Language & Communication Disorders, 58*(6), 1977–1993. https://doi.org/10.1111/1460-6984.12931

Blanc, M. (2012). *Natural language acquisition on the autism spectrum: The journey from echolalia to self-generated language*. Communication Development Center.

Cohn, E. G., McVilly, K. R., Harrison, M. J., & Stiegler, L. N. (2022). Repeating purposefully: Empowering educators with functional communication models of echolalia in autism. *Autism & Developmental Language Impairments, 7*. https://doi.org/10.1177/23969415221091928

Dapretto, M., Davies, M. S., Pfeifer, J. H., Scott, A. A., Sigman, M., Bookheimer, S. Y., & Iacoboni, M. (2006). Understanding emotions in others: Mirror neuron dysfunction in children with autism spectrum disorders. *Nature Neuroscience, 9*(1), 28–30. https://doi.org/10.1038/nn1611

Gee, J. P. (2004). *An introduction to discourse analysis: Theory and method* (2nd ed.). Routledge.

Gumperz, J. J. (1982). *Discourse strategies*. Cambridge University Press.

Hutchins, T. L., Knox, S. E., & Fletcher, E. C. (2024). Natural language acquisition and gestalt language processing: A critical analysis of their application to autism and speech language therapy. *Autism & Developmental Language Impairments, 9*. https://doi.org/10.1177/23969415241249944

Paul, R., Orlovski, S. M., Marchinko, H. C., & Volkmar, F. (2009). Conversational behaviors in youth with high-functioning ASD and Asperger syndrome. *Journal of Autism and Developmental Disorders, 39*(1), 115–125. https://doi.org/10.1007/s10803-008-0607-1

Prizant, B. M. (1983). Language acquisition and communicative behavior in autism: Toward an understanding of the "whole" of it. *Journal of Speech and Hearing Disorders, 48*(3), 296–307. https://doi.org/10.1044/jshd.4803.296

Prizant, B. M., & Duchan, J. F. (1981). The functions of immediate echolalia in autistic children. *Journal of Speech and Hearing Disorders, 46*(3), 241–249. https://doi.org/10.1044/jshd.4603.241

Prizant, B. M., & Rydell, P. J. (1984). Analysis of functions of delayed echolalia in autistic children. *Journal of Speech and Hearing Research, 27*(2), 183–192. https://doi.org/10.1044/jshr.2702.183

Ryan, S., Roberts, J., & Beamish, W. (2024). Echolalia in autism: A scoping review. *International Journal of Disability, Development and Education, 71*(5), 831–846. https://doi.org/10.1080/1034912X.2022.2154324

Shriberg, L. D., Paul, R., McSweeny, J. L., Klin, A., Cohen, D. J., & Volkmar, F. R. (2001). Speech and prosody characteristics of adolescents and adults with high-functioning autism and Asperger syndrome. *Journal of Speech, Language, and Hearing Research, 44*(5), 1097–1115. https://doi.org/10.1044/1092-4388(2001/087)

Sterponi, L., & Shankey, J. (2014). Rethinking echolalia: Repetition as interactional resource. *Journal of Child Language, 41*(2), 275–304. https://doi.org/10.1017/S0305000912000752

Tager-Flusberg, H. (2006). Defining language phenotypes in autism. *Clinical Neuroscience Research, 6*(3–4), 219–224. https://doi.org/10.1016/j.cnr.2006.06.007

United Nations. (2006). *Convention on the Rights of Persons with Disabilities*. https://www.un.org/disabilities/documents/convention/convention_accessible_pdf.pdf

Xie, F., Pascual, E., & Oakley, T. (2023). Functional echolalia in autism speech: Verbal formulae and repeated prior utterances as communicative and cognitive strategies. *Frontiers in Psychology, 14*. https://doi.org/10.3389/fpsyg.2023.1010615

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