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Factors Associated with Speech Delay in a Two-Year-Old Child: A Case Study

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Abstrak

Penelitian ini bertujuan mengidentifikasi faktor lingkungan yang berkaitan dengan keterlambatan bicara pada seorang anak berusia dua tahun serta mendeskripsikan penanganan dan perkembangan anak selama terapi. Penelitian menggunakan pendekatan kualitatif dengan desain studi kasus. Data diperoleh melalui observasi langsung, wawancara dengan terapis okupasi, dan dokumentasi perkembangan terapi. Hasil penelitian mengidentifikasi tiga kondisi lingkungan yang dilaporkan berkaitan dengan kasus tersebut, yaitu paparan layar yang tinggi, penggunaan lebih dari satu bahasa dalam lingkungan anak, dan pola komunikasi keluarga yang kurang konsisten. Terapis menilai paparan layar sebagai faktor yang paling menonjol, tetapi desain penelitian tidak memungkinkan penetapan hubungan sebab-akibat. Penanganan mencakup terapi okupasi dua kali seminggu, terapi wicara sekali seminggu, serta pendampingan keluarga. Catatan evaluasi menunjukkan peningkatan kemampuan mengikuti instruksi, perhatian, partisipasi bermain, dan keterampilan motorik. Sebaliknya, perkembangan bahasa ekspresif, artikulasi, dan komunikasi dua arah belum menunjukkan perubahan bermakna. Studi ini menekankan pentingnya interaksi responsif, pemantauan perkembangan bahasa, dan evaluasi profesional, dengan mempertimbangkan keterbatasan generalisasi dari satu kasus.

Kata kunci: keterlambatan bicara; waktu layar; pemerolehan bahasa; studi kasus; intervensi dini

Abstract

This study investigated environmental conditions associated with speech delay in a two-year-old child and described the interventions and developmental changes documented during therapy. A qualitative case-study design was employed. Data were collected through direct observation, an interview with an occupational therapist, and therapy evaluation records. Three contextual conditions were identified: substantial screen exposure, the use of multiple languages in the child's environment,

and inconsistent family communication practices. The therapist considered screen exposure particularly salient; however, the case-study design did not establish causality. The intervention comprised occupational therapy twice weekly, speech therapy once weekly, and family-supported communication activities. Evaluation records indicated improvements in following simple instructions, attention, participation in shared activities, and gross and fine motor performance. In contrast, expressive language, articulation, and reciprocal communication showed no substantial improvement at the documented evaluation point. The findings illustrate the value of responsive interaction, developmental monitoring, and individualized professional support. They should be interpreted cautiously because the evidence came from one child and did not isolate the effects of individual environmental conditions or therapeutic components.
Keywords: speech delay; screen time; language acquisition; case study; early intervention

INTRODUCTION

Early childhood is a crucial period for language acquisition and communication development, during which children gradually develop the ability to understand and express their thoughts, needs, and emotions through spoken language. Language development is closely connected to children's cognitive, social, and emotional growth, making it an essential aspect of early childhood development. Suryana (2016) explained that the period from birth to eight years is particularly important because children experience significant developmental changes that require appropriate stimulation from their families and surrounding environments. Similarly, Hockenberry and Wilson (2009) emphasized that successful development in later childhood is influenced by the achievement of developmental tasks during earlier stages. Language acquisition generally occurs naturally through children's interactions with their surroundings, supported by cognitive development and social experiences (Yanti, 2016). According to Ariffudin (2010), children typically progress through several stages of language acquisition, beginning with prelinguistic communication, followed by single-word production, two-word combinations, and eventually more complex sentences. However, not all children achieve these developmental milestones at the same pace. Some experience difficulties in producing or understanding spoken language, which may indicate speech and language delay (Susanto, 2011).

Speech delay is a developmental concern that can affect children's ability to

communicate effectively and participate in social interactions. Children experiencing speech delay may demonstrate limited vocabulary, difficulty producing understandable words, or reduced responsiveness to verbal communication. Hurlock (1980) identified several factors associated with children's speech development, including intelligence, socioeconomic conditions, family circumstances, and bilingualism. These factors suggest that speech development is influenced by both individual characteristics and environmental experiences. Furthermore, Hurlock (1978) emphasized the importance of evaluating children's speech development by considering their ability to use words appropriately in relation to their developmental stage. Environmental stimulation, communication practices, and opportunities for verbal interaction are therefore important aspects to consider when examining speech delay. Early identification is also essential because speech and language difficulties may be associated with other developmental conditions requiring professional assessment. Hartanto (2018) explained that children experiencing speech delay may require different forms of intervention depending on their developmental conditions, including speech therapy and behavioral therapy. Understanding the possible contributing factors and identifying appropriate interventions are consequently important for supporting children's communication development.

Language development in early childhood involves the gradual coordination of comprehension, expression, attention, and social interaction. Children acquire words not merely by hearing language but also through repeated opportunities to engage in meaningful exchanges with caregivers. Consequently, concerns about delayed speech require attention to the child's communicative environment as well as individual developmental characteristics.

Speech and language delay may present as limited spoken vocabulary, difficulty imitating words, reduced responsiveness, or challenges in understanding everyday instructions. These manifestations warrant developmental assessment rather than an assumption that a single household practice caused the difficulty. Research has reported associations between screen exposure and language outcomes among young children (Al Hosani et al., 2023; Simonović & Hinić, 2019), while responsive parent–child interaction is an important consideration in language development (Safwat & Sheikhany, 2014; Oktaviani

et al., 2021).

Previous studies have investigated speech delay among children from different age groups and developmental backgrounds. Purnamasari and Nuryani (2017) examined speech delay in a ten-year-old child and identified health-related experiences as contributing factors. Paramitha (2021) investigated speech delay among children aged five to six years and reported several associated environmental conditions, including excessive television viewing, gadget use, limited communication stimulation, and parenting practices. Similarly, Nurfadillah et al. (2022) explored speech delay among elementary school children and highlighted challenges experienced by teachers and parents in supporting children's communication development. Although these studies provide valuable insights into factors associated with speech delay, they primarily focused on preschool-aged or school-aged children. Consequently, the experiences of younger children, particularly those around two years of age who are still developing their earliest spoken vocabulary, require further examination. In addition, understanding how environmental experiences, including prolonged screen exposure, exposure to different languages, and everyday communication practices, are associated with speech delay in an individual child may provide a more detailed perspective on early language development. This research gap provides the basis for investigating speech delay through an in-depth case study of a two-year-old child, with particular attention to the child's language environment, developmental characteristics, and interventions.

The present case concerned a girl, referred to in the study as Arzeta, who received a medical diagnosis of speech and language delay at approximately 26 months. According to the source, she had not yet produced meaningful words and responded inconsistently to spoken directions. Her home environment included extensive audiovisual media exposure beginning around one year of age, input in Indonesian and other languages, and simplified or altered family speech models. These contextual observations motivated a closer examination of the child’s language environment and her response to intervention. In line with Perin, et al, in Sandiarsa & Firman (2025) stated that informal exposure to language, through media or one's surrounding environment, exerts a significant influence on an individual's language acquisition and comprehension.

The relationship between multilingual exposure and language delay must be interpreted carefully. Hearing or learning more than one language does not, by itself, demonstrate a cause of developmental language disorder. In this article, multilingual exposure is treated as a feature reported by the family and therapist, not as a clinically established etiology. Likewise, observations of screen use are insufficient to establish that screen time independently caused the child's delay.

This study addressed two questions: which contextual factors were identified in the case, and what interventions and developmental changes were documented? By examining the original observation, interview, and therapy records together, the article offers a focused account of one child's communication environment and the limits of the available evidence.

METHOD

This study employed a descriptive qualitative method with a case study approach to investigate the factors contributing to speech delay in a two-year-old child and the treatments applied to address the condition. The research focused on a two-year-old girl named Arzeta, who had been diagnosed with speech and language delay. The study was conducted at the child's home and Kids Care Mataram over a period of one month. The research object was the factors contributing to Arzeta's speech delay and the interventions used to support her speech and language development.

Data were collected through interviews, direct observation, and documentation. Interviews were conducted to obtain information about the possible factors contributing to the child's speech delay and the treatments provided. Direct observation was used to examine Arzeta's behavior, daily activities, communication abilities, and responses to her surroundings. The researcher used interview guidelines and observation sheets as research instruments. Supporting documentation, including relevant literature and therapy records, was also used to complement the findings.

The data were analyzed using qualitative descriptive analysis through three stages: data reduction, data display, and conclusion drawing. In the data reduction stage, the researcher selected, summarized, and organized relevant information obtained from interviews, observations, and supporting documents. The reduced data were then presented

in descriptive narratives to identify patterns related to the factors contributing to speech delay and the treatments provided. Finally, conclusions were drawn based on the analyzed data to answer the research questions.

RESULT AND DISCUSSION

The interview and observation records converged on three contextual themes. The therapist highlighted screen exposure, multilingual input, and family speech models, while the observation checklist recorded these same conditions in the child's daily environment. These findings describe circumstances accompanying the child's speech delay; they do not establish that each condition was a causal factor.

Interview Findings: Internal and External Factors

The therapist interview was organized around the categories in the theoretical framework. Five internal factors were not identified, whereas three external factors were reported as contributing.

Table 1. Factors Found in Interview Based on Theory

NO.	FACTOR	CONTRIBUTING
1	Intellectual disability (original: mental retardation)	Not identified
2	Hearing loss	Not identified
3	Autism	Not identified
4	Cerebral palsy	Not identified
5	Speech organ problem	Not identified
6	Bilingualism	Yes
7	Screen time	Yes
8	Wrong teaching techniques	Yes

The interview particularly emphasized excessive screen time as the therapist's leading concern. The therapist also described what calls "language confusion" in relation to

Indonesian and English communication at home and foreign-language videos. Finally, the interview drew attention to the way adults modeled words in conversations with the child. Taken together, these findings depict a language-learning context in which direct, responsive interaction may have been displaced or complicated by competing sources of input.

The distinction between association and causation matters. The case documents exposures that coincided with delayed speech, but does not compare Arzeta with children receiving different levels of exposure or provide a longitudinal baseline sufficient to isolate individual causal effects. Consequently, the three categories are best presented as factors identified by the researcher and therapist within this particular case.

Tabel 2. Contextual conditions recorded in the case

Condition	Evidence	Interpretation
Screen exposure	More than one hour of screen use; videos frequently used during meals and dressing	Salient exposure reported by therapist; causation not tested
Multilingual input	Indonesian and English used by family; videos in additional languages	Environmental characteristic; not proof of language confusion
Family speech models	Some relatives used modified child-directed words such as “mam”	Inconsistent speech models reported in observation

Screen exposure was described as a long-standing routine beginning when the child was approximately one year old. It is reported that audiovisual content was used to keep the child occupied during routine caregiving. The therapist regarded this exposure as the principal concern. This interpretation is consistent with literature investigating associations between prolonged screen use and early language difficulties (Al Hosani et al., 2023; Simonović & Hinić, 2019). Nevertheless, the case provided neither standardized exposure measures nor a comparison condition. The more defensible interpretation is that screen exposure potentially displaced opportunities for reciprocal interaction, rather than that it

definitively produced the delay.

The child also heard more than one language. Family members reportedly used Indonesian and English, and digital content introduced further language varieties. The therapist interpreted this pattern as possible language confusion. However, the evidence did not include a systematic assessment of proficiency across the languages heard by the child. Therefore, the observation cannot distinguish a language disorder from the normal variability associated with different patterns of language exposure. Family guidance should prioritize rich, responsive communication in languages caregivers can use naturally and confidently, rather than attributing delay to bilingualism itself.

Another theme involved modified words used by family members when addressing the child. Examples included “mam” for makan and “lutuna” for lucunya. Such examples document the speech models available in the household but do not establish that affectionate or simplified child-directed speech causes language delay. The practical implication is to provide clear, responsive models, expand the child’s communicative attempts, and create frequent opportunities for turn-taking. Studies on parental stimulation and interaction provide a relevant basis for emphasizing the quality of communication (Oktaviani et al., 2021; Safwat & Sheikhany, 2014).

Following medical consultation, the child participated in occupational therapy twice weekly to support attention, motor performance, and participation in activities. Speech therapy was subsequently introduced once weekly, while occupational therapy continued. The family was advised to reduce screen exposure and increase direct communication. These activities were delivered as a combined response, making it impossible to attribute later changes to a single component.

Tabel 2.Developmental changes documented in the therapy evaluation

Domain	Before intervention	Documented follow-up
Receptive language / cognition	Difficulty following simple directions	Followed several familiar commands and routines
Attention / social participation	Short attention; limited joint play and response to name	Greater engagement and occasional spontaneous response

Gross and fine motor	Passive movement and limited hand-task participation	More participation in walking and object-manipulation tasks
Expressive language / articulation	Unable to imitate or name objects reliably	No substantial change documented
Reciprocal communication	Limited two-way communication	No substantial change documented

The evaluation indicated progress in receptive functioning and task engagement. The child began following familiar instructions, participating in therapist-directed play, and manipulating objects with her hands. Reports also described improved gross motor participation and occasional responses when called. These improvements are clinically and educationally relevant because participation and comprehension support future opportunities for communication.

At the same time, the records explicitly indicated that expressive language, articulation, and reciprocal communication had not improved substantially. This distinction is important: better attention and task completion should not be described as recovery from speech delay. The evaluation did not provide standardized language scores, an exact duration of intervention, or a controlled baseline. Accordingly, it supports a descriptive account of observed changes, not an effectiveness claim.

The findings align with broader concerns about screen exposure and early language experiences, while emphasizing the centrality of caregiver interaction (Al Hosani et al., 2023; Mostafa & Ahmed, 2018; Safwat & Sheikhany, 2014). The case also illustrates the importance of separating professional hypotheses about possible influences from demonstrated etiological findings. Continued assessment, including hearing and developmental evaluation when indicated, remains essential. Its single-case design, reliance on interview and observational reporting, and lack of standardized pre–post measurements limit transferability.

Factors Associated with Speech Delay

Excessive Screen Time and Reduced Reciprocal Interaction

Excessive screen time was the most strongly emphasized factor. The child had

watched videos frequently since approximately twelve months of age, and screen use became incorporated into daily routines such as eating and dressing. Family members reportedly provided television or YouTube videos to keep her calm during these activities. Over time, the researcher described difficulty interrupting this habit and observed that Arzeta showed limited interest in toys, short attention spans, and inconsistent responses when called.

Piaget's cognitive perspective, places language within broader development involving sensory experience, activity, and symbolic understanding. Arzeta's observed preference for watching videos rather than interacting with objects can be discussed in this context: opportunities to explore and manipulate real objects provide situations in which words can acquire shared meaning. This is a theoretical interpretation of the observations, not a measured demonstration of altered cognition.

It describes screen time as the primary cause according to the therapist. A more precise scholarly formulation is that it was the most prominent modifiable environmental concern reported in this case. The available evidence does not quantify daily screen exposure beyond the observation checklist's "more than one hour," nor does it demonstrate that reducing screen time alone would restore speech. The importance of this finding lies in its practical implication: families and therapists identified a routine that could be changed while encouraging more interactive activities.

Exposure to Multiple Languages

The second identified factor was multilingual exposure. According to the case account, Arzeta heard Indonesian from her parent and English from her sisters. Her video content also included additional languages; refers to English, Indonesian, Spanish and Malay in the discussion, while its introductory account mentions English, French and Malay. These differing lists should be treated as descriptions of varied media exposure rather than a verified inventory of languages or their frequencies.

Nevertheless, the observations do not establish that bilingualism itself causes speech delay. The study contains no systematic assessment of comprehension or vocabulary across all languages heard, and it does not isolate language mixing from screen habits and limited reciprocal interaction. A child may understand words in one language

without producing them in another, so interpreting language development from one language alone can be misleading. The original claim should therefore be presented as the therapist's case-specific assessment rather than a general conclusion about bilingual households.

Chaer (2003), defines first-language acquisition as the process by which children acquire language through exposure and development. The case can be interpreted through this account by asking whether the input Arzeta received was meaningful, consistent and supported by interaction. From this perspective, the central concern is the quality and accessibility of language experiences, not merely the number of languages present. The therapist recommended prioritizing the mother tongue during the intervention, and that recommendation is accurately reported here as a decision made for this child rather than a universal rule.

Inconsistent Speech Models and Teaching Techniques

The third factor involved the language models offered by adults. The researcher recorded family use of altered or baby-style words, including "lutuna" for "lucunya" ("so cute") and "mam" for "makan" ("eat"). It classifies these examples as wrong teaching techniques because the child was not consistently hearing the standard form of the intended word.

This theme is closely connected with the behaviorist perspective described by Skinner (1969). If children imitate expressions from people around them, the speech forms they hear repeatedly may influence their attempts to communicate. It also relates to the speech-production account in Chapter II, which emphasizes the relationship between sound patterns, articulation and meaning. In Arzeta's case, the therapist recommended that relatives use clear and recognizable words during everyday interaction.

It is important not to infer that every affectionate shortened word causes a delay. The source does not provide recordings of how often such words were used, how the child responded, or whether this practice preceded the delay. The case supports a narrower conclusion: the therapist and researcher identified inconsistent models as one potentially relevant aspect of the home language environment and recommended more consistent verbal input.

The three environmental factors identified in this case are best understood together rather than as isolated explanations. Screen-based activities may have occupied time that could otherwise have involved interaction; different languages were heard from family members and videos; and some spoken models used altered forms. The therapist interpreted this combination as relevant to Arzeta's developmental difficulties. It does not provide sufficient evidence to rank their independent effects statistically, although it repeatedly identifies screen time as the leading concern.

Interventions and Developmental Progress

Following medical assessment, the child underwent occupational therapy twice a week to develop attention, motor coordination, cognitive abilities, and participation in structured activities. Speech therapy was subsequently introduced once a week after progress had been observed during occupational therapy. Both interventions continued as part of the child's developmental support.

The intervention approach was consistent with Astati (2013), whose explanation of occupational therapy, emphasized improving functional abilities according to individual needs. Speech therapy was also related to the treatment approach described by Sidharta (1984), which focused on speech production, vocabulary, language comprehension, and communication development.

The therapy evaluation revealed improvements in several developmental areas, particularly cognitive abilities, behavior, motor skills, and receptive language. Before therapy, the child had difficulty following simple instructions, participating in activities, and responding when called. After receiving therapy, she became more responsive to familiar commands, participated in structured play, and demonstrated better attention during activities. Improvements were also observed in gross and fine motor skills, including walking through structured activities, manipulating small objects, and completing tasks involving hand and finger movements.

However, progress in expressive language, articulation, and two-way communication remained limited. The child had not yet demonstrated significant improvement in producing words or communicating verbally. This distinction is important because improvements in attention and language comprehension did not necessarily indicate equivalent progress in

speech production. The findings therefore suggest that continued intervention and developmental monitoring were still necessary.

Family involvement was another important component of the intervention. Parents and other family members were encouraged to limit screen exposure, communicate more frequently with the child, and use clear and consistent verbal models. This approach corresponded with Safwat and Sheikhany (2014), who examined the relationship between parental interaction and language development among children with speech delay. It was also supported by Oktaviani et al. (2021), who emphasized the role of parents in providing language stimulation.

Skinner's behaviorist view highlights models, imitation and feedback; Piaget's cognitive view emphasizes the relationship between active experience and language development; Chaer's account of acquisition emphasizes the process of learning the first language; and the factor framework attributed to Leung et al. draws attention to environmental conditions. These perspectives help organize the observations but do not replace clinical assessment or demonstrate a definitive cause.

Comparison with Paramitha (2021) is particularly useful because both case accounts describe extensive screen exposure and concerns about interaction. The contrast with Purnamasari and Nuryani (2017) shows that the label "speech delay" may encompass different histories and possible contributing conditions. The discussion of Nurfadillah et al. (2022) adds a practical emphasis on the adults who support children across home and educational settings. Taken together, the earlier studies support careful contextual investigation rather than a one-size-fits-all explanation.

The intervention findings further demonstrate why progress should be reported by domain. The child improved in following directions, activity participation, selected motor tasks and brief attention. At the same time, it shown there was no significant improvement in two-way communication and expressive language, and continuing difficulty with articulation. Presenting both the progress and the remaining limitations gives a more accurate account of the intervention period.

As a single qualitative case study, the research offers detailed contextual evidence but limited generalizability. It does not establish whether the same factors would explain

other children's delays, nor does it include the measurements needed to attribute improvements to one therapy or one home intervention. Its main contribution is to illustrate how interviews, direct observation and therapist evaluation can be brought together to identify potentially modifiable features of a child's language environment and describe changes during treatment.

CONCLUSION

Based on the research findings and discussion, this study concludes that Arzeta's speech delay is associated with three main external factors: excessive screen time, exposure to multiple languages, and inappropriate language teaching techniques. Among these factors, excessive screen time is identified as the most dominant factor because it reduces opportunities for direct communication, verbal interaction, and language stimulation. Exposure to different languages and inconsistent teaching techniques are also identified as contributing factors that may affect Arzeta's language acquisition process.

Regarding the solutions implemented, the study finds that therapeutic intervention, including activities to improve attention, fine motor skills, language comprehension, and responsiveness, contributes to positive developmental changes. Following therapy, Arzeta demonstrates improvements in concentration, understanding simple instructions, and responding to verbal communication. However, her expressive language abilities remain limited, indicating that further intervention and consistent language stimulation are still necessary.

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