

An analysis by comparing monolingual and multilingual environment to study children's first language acquisition

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Abstract. The process of children language acquisition and relevant influence factors has attracted researchers and academician's attention due to its implications for speech therapy and neurolinguistics. The process of children's first language acquisition is a dynamic and complicated experience that involves multiple stages. This review examines these stages while considering the impact of language environment. Furthermore, it compares and contrasts research findings on children raised in monolingual and multilingual environments to analyze key influencing factors. The findings suggest that the multilingual environment is shaping the better cognitive and social-interactional development for kids, which make their language performance outstanding compared with monolingual kids. For filling the research gap in this region, the discussion part of this review explored the relationship between linguistic learning and Socioeconomic Status (SES). This paper also underscores a high SES background is having a positive impact on kid's language development. This study focused on the background and psychological factors during language acquisition, which provide meaningful reference for further research in this field.

Keywords: first language acquisition, behaviourist theory, monolingual, multilingual, cognitive development

1. Introduction

Current research on children's first language acquisition covers a wide range of aspects. For instance, a case study by Hutaurok explored the issues children might occur during the learning process such as grammar error, phonological issues and other issues children might face [1].

According to Varshney, the process of language acquisition, adopting and understanding the languages are highly depended on the gene that they carried, and the particular languages will be transmitted by cultural and environment [2]. However, Chomsky argues that the language acquisition is nurture which means that the innate knowledge is good enough to gain the languages [3].

Given this research background, this paper examines the developmental trajectory of first language acquisition to understand the underlying causes of language learning challenges. It then discusses the key influencing factors, followed by recommendations and limitations. This research applies behaviorist theory with secondary researches to support the argument.

Despite extensive research on first language acquisition, certain areas remain underexplored. The children who are born in multiple languages environment is still emerging. Recent studies lack discussion based on the multilingualism [4]. In addition, discussions on the socioeconomic influences on language development remain unclear, with intervention-based studies in this field being particularly limited [5].

To bridge these gaps, this research explores the impact of multilingualism and socioeconomic status on language acquisition. By providing an in-depth analysis of primary language users' acquisition processes, this study aims to expand the understanding of language development based on previous research.

2. Development path

2.1. Pre-linguistic stage

The pre-linguistic stage is a crucial fundamental stage for infants, especially for the kids in multilingual environments. One of the most remarkable abilities of infants during this stage is phonetic discrimination—the ability to distinguish a wide range of phonetic contrasts. This ability could help them to distinguish sounds from different languages then provide a foundation for the following

language learning [6]. Research indicates that this sensitivity will decrease after 1 year because infants will change the perception to the specific sounds of the language [6]. This suggests that the pre-linguistic stage serves as a critical period for language perception.

In the exposure to multi-language environment, infants are exposed to multiple phonetic systems simultaneously. According to the research, this exposure could help the children develop flexible ability of speech categorization. Additionally, these infants' adaptability to speech perception is stronger compared with the kids in monolingual environment [7]. Therefore, language environment could be challenging and having positive result for infant's speech perception in primary language learning stage. Some researchers argue that early speech perception plays a significant role in determining future language proficiency, as infants who excel at distinguishing different phonetic elements tend to develop stronger language abilities later in life [6]. Therefore, the pre-linguistic stage is considered as the influencing factor for setting the language learning trajectory.

2.2. Holophrastic stage

The holophrastic stage is a pivotal and developing stage for children's language learning. This stage often occurring between 12-18 months. Research highlights the advantages of multilingual settings in this stage. A study conducted in Indonesia on a multilingual infant found that exposure to abundant and diverse linguistic input contributes to a richer vocabulary base [8]. In the holophrastic stage, children's speech perception is continuously refined for them to categorize the distinction of different languages. Existing research indicate that children develop robust phonological awareness which assist the management of multi-phonetic systems [9]. Understanding the dynamics of this stage allows for the development of effective strategies to support language acquisition in multilingual contexts.

2.3. Two-word stage

The two-word stage marks a milestone in children's linguistic development. In this stage, children begin to produce simple and concise speech, often omitting non-essential words. A key characteristic of this stage is the Mean Length of Utterance (MLU), which generally consists of two phonetic elements [10]. A study on Sylheti-English sequential bilingual children found that the impact of early linguistic environments on speech perception and production is essential. Some researchers argue that, this stage is also suffered from the cognitive limitations such as limitations on memories [11]. However, others suggest that cognitive system is affected by linguistic constraints inherent by language structure [10]. This debate highlights the complex interplay between cognition and language acquisition, explaining the emergence of two-word utterances during this phase.

2.4. Later multi-word stage

The later multi-word stage represents a significant leap in children's language development. During this period, children start to comprehend more complex language components, such as syntax and grammar. They start to form some complex sentence structure including negation, questions and conjunctions [12].

In multilanguage environment, children often engage in code-switching process which means integrate different elements from different languages in a single utterance [13]. This phenomenon reflects their evolving ability to navigate multiple language and it is considered as a natural aspect of multilingual language acquisition. Research suggests that bilingual or multilingual children will demonstrate a strong sense of phonological awareness [11]. Therefore, multilingual exposure shapes children's linguistic systems, influencing their speech perception and overall language development.

3. Influence factors

3.1. Neurological factors

Research in neurological field suggest that the brain plasticity plays an essential role in first language learning process. During the infancy period, the kids' brains get strong ability to adopt the languages and process multiple phonetic systems [14]. Additionally, Patricia K. Kuhl proposed Native Language Neural Commitment (NLNC) hypothesis to argue the early and specific languages exposed to children will shape the neural networks to deal with language patterns [14]. This study aims at explaining the mechanisms of efficient language acquisition process.

Additionally, Lenneberg's Critical Period Hypothesis emphasizes the importance of timing in language learning, asserting that language acquisition is most efficient within a biologically determined window, which typically closes before adolescence [15]. According to Petitto in 2001, the multilingual kids such as bilingualisms will develop different but connecting neural network for each language acquired [16]. Based on these findings, it is evident that the neural networks of humans' brain is a key element for infants to deal with languages. Additionally, the multi-language users will develop a more complex and exact neural networks.

3.2. Cognitive factors

The cognitive factors could also be worthy to discussed because the literature suggested that the cognitive factors will affect the language acquisition outcomes. The multilingual children are tested that they developed a stronger cognitive control mechanism during the exchanging of different language systems [17]. The additional research related to code switching argued that non-monolingual kids is demonstrating the long-term advantages in overall conceptual knowledges [18] and advantages in tasks needing attention and memory. As this result, the multilingual environment will challenge the cognitive factors on perceptual scope and memory. The cognitive processing determined the executive functions such as language delivery and vocabulary memorize. For example, the bilingual kids are exhibiting the temporary "bilingual delay" [20]. Therefore, cognitive factors are considered that could influence and varies the behaviors of children's first language acquisition.

Cognitive factors also play a significant role in language acquisition, as research suggests they influence linguistic outcomes. Studies indicate that multilingual children develop stronger cognitive control mechanisms when switching between different language systems [17]. Additionally, research on code-switching suggests that non-monolingual children exhibit long-term cognitive advantages, including enhanced conceptual knowledge [18] and improved performance in tasks requiring attention and memory.

As a result, multilingual environments challenge cognitive processes, particularly in areas related to perception and memory. Cognitive processing influences executive functions such as language production and vocabulary retention. However, some studies have observed a temporary phenomenon known as the "bilingual delay," in which bilingual children initially exhibit slightly slower vocabulary development compared to their monolingual peers [18]. Despite this temporary delay, multilingual children ultimately demonstrate cognitive advantages that contribute to more efficient language processing.

3.3. Phonological factors

The phonological factors could also be worthy to discussed because the previous literature suggested the phenomenon of perceptual narrowing, phonotactic probability and word segmentation. Werker and Tees believed that infants are natively adopting the discrimination of all phonemes among world languages [19]. As they grow up, they will tune into the phonemes of their dominant languages and lost the ability to distinguish the irrelevant contents. Therefore, compared with multilingual infants, the research supported that bilingual infants retain broader phonemic distinguish abilities longer than monolinguals [20]. This phenomenon is called perceptual narrowing which is affecting the phonemic discrimination. Additionally, phonotactic probability and word segmentation are occurred. Infants tend to use phonotactic cues to segment words from the linking sounds and continuous speech. This is considered as the fundamental skills for kids to learn words [21]. This ability is also affected in multi-language environment. multilingual kids are required to learn varies phonotactic rules, which helps them to develop a more flexible segmentation strategy [22]. For example, the preferential looking paradigms showed that the bilingual infants depend on the stress patters and phonotactics during learning which enhance their adoptability of speech processing [23]. Therefore, phonological is considered as affecting the speech perception and word acquisition during language acquisition process.

Phonological factors are also essential in language acquisition, as previous research highlights the phenomena of perceptual narrowing, phonotactic probability, and word segmentation. Werker and Tees argue that infants are naturally equipped to discriminate all phonemes across world languages at birth [19]. However, as they grow, they gradually attune to the phonemes of their dominant language(s) while losing the ability to distinguish irrelevant sounds. Research suggests that, compared to monolingual infants, bilingual infants retain broader phonemic discrimination abilities for a longer period [20]. This phenomenon, known as perceptual narrowing, significantly affects phonemic recognition.

Additionally, phonotactic probability and word segmentation play a vital role in early language learning. Infants rely on phonotactic cues to segment words from continuous speech, a fundamental skill in vocabulary acquisition [21]. In multilingual environments, children must learn multiple phonotactic rules, which strengthens their ability to develop flexible segmentation strategies [22]. For example, preferential looking paradigm studies indicate that bilingual infants rely on stress patterns and phonotactic cues during word learning, enhancing their adaptability in speech processing [23]. Therefore, phonological factors significantly influence speech perception and word acquisition in the language learning process.

3.4. Social-interactional factors

The social interactional factors are obviously applied in language acquisition especially for multilingual adopters. Firstly, the Theory of Mind (ToM) advantages could be seen by comparison of monolingual and bilingual in the research. Because of exposing to different linguistic perspectives, bilingual children are more likely to adopt better mental linguistic awareness [24]. Additionally, the studies explained that bilingual children demonstrated remarkable performance in false-belief tasks compared with monolingual peers [25]. Therefore, the social interactional factors such as distinguish of right or wrong and perspectives learning are the intelligence could be built in language learning process and interact with language acquisition. Second, the pragmatic sensitivity is also an aspect included in social interactional factors. The multilinguals acquire competence by distinguish language use from the interlocutor identity [26]. Expect for the language differentiation, the eye-tracking studies claimed that bilinguals

have better abilities on dealing with context language clues than monolingual kids [27]. This evidence enhanced the statement that social interact factors are influencing children's language acquisition. Meanwhile, children grow in multi-language environment is having better social-cognitive skills.

Social-interactional factors play a crucial role in language acquisition, particularly for multilingual learners. One key aspect is the Theory of Mind (ToM), which refers to an individual's ability to understand others' perspectives. Studies comparing monolingual and bilingual children suggest that bilingual exposure enhances mental linguistic awareness, as bilingual children develop a deeper understanding of different linguistic perspectives [24]. Furthermore, research indicates that bilingual children perform significantly better than monolingual peers in false-belief tasks, demonstrating an advanced ability to distinguish between subjective and objective viewpoints [25]. This suggests that social-interactional factors, such as perspective-taking and moral reasoning, are closely intertwined with language learning. Another critical social-interactional factor is pragmatic sensitivity, which refers to the ability to adapt language use based on social context. Multilingual children develop pragmatic competence by distinguishing language use according to their interlocutor's identity [26]. Beyond language differentiation, eye-tracking studies show that bilingual children are more adept at processing contextual language cues than monolingual children [27]. This evidence reinforces the argument that social-interactional factors significantly influence children's language acquisition. Additionally, growing up in a multilingual environment enhances children's social-cognitive skills, further shaping their linguistic development.

4. Socioeconomic factors

The socioeconomic status could influence children's language development, as supported by behaviorist theory. The founder of this theory proposed that the language acquisition is highly relevant to the environment, including reinforcement and imitation. Additionally, children interact with the circumstance to learn the languages [28]. Behaviourist theory could connect with Socioeconomic Status (SES) is because the environmental stimuli is shaping their linguistic outcomes, particularly in both monolingual and multilingual contexts. For example, the research found that the kids from higher SES families are acquired and accessed thousands more words compared with kids in low SES families [29]. Therefore, the frequency and quality of communications is the key element of boosting language development. As for the imitation, the higher SES families provided better opportunities of complex imitating behaviour and richer verbal exchanges [30]. As a result, SES influences the diversity and complexity of language exposure, ultimately affecting language acquisition outcomes.

5. Conclusion

In conclusion, this research mainly analyzes the develop path and influence factors of children's first language acquisition form both perspective of monolingual and multilingual kids. The four development stages, categorized by age, are identified as equally important in shaping linguistic abilities. Furthermore, the cognitive, phonological, neural and social related factors are considered as the main factors for influencing kids in both two kinds of environments.

This review fills up the research gaps in the language acquisition filed. However, there are also several limitations of this research. One notable limitation is the exclusion of the creative and generative nature of language learning, which is not fully explained by behaviorist theory. Moreover, the study relies primarily on a literature review methodology, lacking empirical research. Future studies could expand on these findings by conducting empirical investigations into children's first language acquisition in both monolingual and multilingual settings.

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