

The Effect of Bilingualism on Children Cognitive Development

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1. Abstract

Bilingualism has become an increasingly common phenomenon in today's globalized world, with many children growing up exposed to two or more languages. As a result, there has been growing interest among researchers in understanding the impact of bilingualism on thinking development in young and children. Some studies have confirmed that bilingualism can have a positive effect on children's perception cognitive development, particularly in the zones of attention control, operational memory, and cognitive flexibility. Dual-language learners may also have better planning and organization skills, such as task-switching and inhibitory control, compared to monolingual children. These cognitive advantages may be due to the cognitive demands of managing two languages, which can lead to increased cognitive flexibility and problem-solving skills. Research also has indicated that bilinguals may experience interference or facilitation effects in lexical access, depending on the degree of overlap between the two languages. However, other studies have failed to find a significant effect of bilingualism on cognitive development. Some researchers have suggested that there is a strong relationship between bilingual individuals and their cognitive development. They may depend on a variety of factors, such as the age at which a child begins to learn a second language and the amount he learns from each language, socio-economic background of the child and, level of proficiency that a person has in each language can affect their cognitive and linguistic abilities. Despite mixed guidance, potential benefits of bilingualism on cognitive development have important implications for both policy and education. Those in charge should consider designing specific educational programs for children from linguistically diverse backgrounds to help enhance their cognitive development.

Keywords: Bilingualism, Children, Cognitive Development, Cognitive skills, Monolingualism, Multilingualism, Young.

تأثير ثنائية اللغة على التنمية المعرفية لدى الأطفال

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المخلص:

أصبحت ثنائية اللغة ظاهرة شائعة بشكل متزايد اليوم في عالم العولمة، حيث أصبح العديد من الأطفال معرضين للغتين أو أكثر، ونتيجة لذلك، تزايد اهتمام الباحثين بفهم أثر ثنائية اللغة على تنمية التفكير لدى الشباب والأطفال. أكدت بعض الدراسات أن ثنائية اللغة يمكن أن يكون لها أثر إيجابي على النمو الإدراكي لدى الأطفال، لا سيما في مناطق التحكم في الإدراك، والذاكرة التشغيلية، والمرونة المعرفية. ويمتلك المتعلمون ثنائيو اللغة مهارات تخطيط وتنظيم أفضل، مثل تبديل المهام والتحكم المثبط، مقارنة بالأطفال الأحادي اللغة. وتُعزى هذه المزايا المعرفية إلى المتطلبات المعرفية لإدارة اللغتين، الأمر الذي يمكن أن يؤدي إلى زيادة المرونة المعرفية ومهارات حل المشاكل. تشير الابحاث إلى أن ثنائية اللغة قد تتعرض لتأثيرات التدخل أو التيسير في الوصول إلى القواعد القانونية، تبعاً لدرجة التداخل بين اللغتين. اذا ان الدراسات الأخرى لم تتمكن من العثور على تأثير كبير على التطور المعرفي للغة. يقترح بعض الباحثين إلى ان هناك علاقة قوية بين الأفراد ثنائيي اللغة ونموهم المعرفي والتي تعتمد على مجموعة متنوعة من العوامل، مثل العمر الذي يبدأ فيه الطفل في تعلم لغة ثانية، وكيفية تعلمها، والخلفية الاجتماعية - الاقتصادية للطفل، ومستوى المهارة التي يتمتع بها الشخص في كل لغة والتي يمكن ان تؤثر على قدراته المعرفية واللغوية. وعلى الرغم من التوجيه المختلط، فإن الفوائد المحتملة لثنائية اللغة على النمو المعرفي لها آثار مهمة على كل من السياسات والتعليم. وينبغي للمسؤولين النظر في وضع برامج تعليمية محددة للأطفال من خلفيات متنوعة لغوياً للمساعدة في تعزيز نموهم المعرفي.

الكلمات المفتاحية: ثنائية اللغة، التعددية اللغوية، تعدد اللغات، المهارات المعرفية، البالغين والأطفال، التنمية الفكرية.

2. Introduction:

Speaking two or more languages has become more common because of globalization. Scientists have studied how this affects children's thinking and learning. Bilingualism is now very common because many people move to different countries, travel, and work with people from different places. Scientists also need a common language to share their discoveries with each other. The awareness that bilingualism is not at all exceptional anymore and may not have been so for a long time has recently led to a renewed interest in the benefits of

being bilingual. Researchers are now studying the cognitive advantages of bilingualism and how it can have positive effects on the brain. (Bialystok,2017) There has been a significant increase in the amount of research focused on how speaking two languages affects language skills and thinking abilities. Bilingualism is not only typical of those born in bilingual or multilingual regions, but there are many factors that influence it. Born and raised in a multilingual circumstance does not ensure native-level attainment, and formal education does not prevent reaching a native-like level. Language teaching plays an important role in bilingualism, and different methods help learners develop certain language skills based on their individual needs and goals. Some techniques have focused on specific linguistic competencies, while others emphasize communicative skills. Research on the effect of bilingualism on cognitive development in children has showed varied findings. While some studies have suggested that bilingualism can have positive effects on cognitive development, such as enhanced attention control, better working memory, and improved problem-solving skills, others report no significant differences between bilingual and monolingual children. Moreover, the cognitive advantages have been associated with bilingualism may extend beyond childhood and into adulthood, potentially reducing the risk of age-related cognitive decline. Factors such as the timeframe and extent of linguistic exposure, the specific languages being acquired, and the cognitive demands of managing two languages may all play a role in determining the effect of bilingualism on cognitive development in children. Additionally, bilingualism may present unique challenges for children, such as confusion and interference between languages or difficulty in academic settings where only one language is used. Therefore, it is crucial for teachers and leaders to know how bilingualism affects the Children thinking skills. They can help children get the advantages of knowing two languages while avoiding any problems. Reading about what experts have found out so far can show us how complicated this subject is and guide future studies. (Kovács,2009)

3. Origins of Bilingualism:

Before starting the research on bilingualism, it is important to understand the background and beginnings of this phenomenon. The theories and explanations that we will explore later in this research have been based on historical facts and various causes, which I will explain now. According to François Grosjean's work *"Life with Two Languages: An Introduction to Bilingualism"* (1982), there are various variables that can lead to a bilingual capability. These variables include migration for political, social, or economic reasons, political-ideological circumstances such as nationalisms or federalisms, and cultural and educational causes. Grosjean provides historical examples to explain each of these factors. The first factor that can lead to bilingualism is departure for political, social, and economic causes with military conquests and colonization, being the most common triggers for bilingual situations in past centuries. In order for a language to spread

effectively, certain conditions must be met, such as the conquerors after settling in the target country for an extended period of time, the conquered land has become multilingual, and the language of the invader is used as a common language to strengthen social, political, educational, or commercial opportunities for the locals. (Adesope,O.,2010) The roman engagement of great Britain is a good example of this language spread source, where Latin is not enforced on Britons as a language, but rather it has been the sole means for them to integrate into the empire and acquire specific benefits, particularly for merchants and city dwellers. Therefore, retailers and urban inhabitants have been the ones who generally became bilingual due to their close contact with the invaders. Bilingualism can also arise from political and ideological reasons, such as persecutions and exoduses, which are closely related to invasions and conquests. Examples include the exodus of Russians after the 1917 revolution and the exodus of Cubans during Fidel Castro's rise to power. Nationalism and federalism are also factors that can lead to bilingualism. Nationalistic ideology often promotes the idea of a national language that prevails over Indigenous languages, leading to bilingualism among portions of the individuals who use their Indigenous or local language. along with the imposed national language. Language has great power from a nationalistic point of view, as exemplified by the quotation: "A people without a language of its own is only half a nation. A nation should guard its language more than its territories." Bilingualism has also resulted from the dominance. of certain languages in educational and cultural aspects throughout history, such as French during the crusades and the reign of Louis XIV, Italian during the renaissance, and currently English as the most commonly used international language in science, business, and mass media. Bilingualism can result from political and ideological factors, whether imposed by law or, as the integration of the invaded or dominated population into a new society becomes a mandatory reality. It can also arise as an accidental consequence for conquerors in contact with the native populace. Social or economic migration has historically led to bilingualism, as immigrants. Acquire and utilize the language spoken in the destination country. while maintaining their mother tongue with people from their own country. This leads to bilingualism in a brief period of time. An example of social resettlement is the potato famine in Ireland, which led to Irish migration and bilingualism. In addition, the result is the potato famine in Ireland led to mass migration, including Gaelic speakers who had to acquire English language skills to integrate into English-speaking society. The economic crisis of 2008 also caused a wave of migration and intermarriage, increasing the likelihood of bilingualism. Bilingualism is necessary for individuals to adjust to the destination country, and education plays an important role in spreading it. John Edwards supports these ideas, stating that bilingualism arises in various ways, including through immigration. Throughout history, bilingualism has emerged from specific situations and was once a privilege for a few people to achieve

something. However, in modern times, being bilingual is almost a Basic requirement for Individuals and an unavoidable reality. (Bialystok, 2017)

4. Concepts of Bilingualism, Monolingualism and Multilingualism Bilingualism.

4.1. Bilingualism

Is the capability to use two languages, which can be learned at an early age, particularly in areas where elderly people speak multiple Linguistics, such as French and Regional German in Alsace? Youngsters can become bilinguals by acquired languages in varied social environment, such as British youngsters in British India who learned the Indian language from interacting with health provider and Servants. Additionally, a second language can be obtained in school. The term "bilingualism" also includes the use of two languages in learning to enhance the learning process for students trying to acquired new languages. Champion of bilingual learning in the U.S. discuss that it accelerates learning in all fields for children who speak an exogenous language at home and stop them from being isolated in English-language schools. However, opponents argue that it can hinder such children from perfecting the language of the larger community and limit their engagement and opportunities for higher education. (Carlson,2008)

4.1.1. Types of Bilingualism:

Bilingualism is classified into three various types of bilingualism include harmonized bilingualism, double bilingualism, and delayed bilingualism. Harmonized and double bilingualism are considered as forms of early bilingualism since they develop during early childhood. In contrast, late bilingualism occurs when an individual learns an additional language after reaching 12 years of age. Harmonized bilingualism refers to the development of two parallel language systems in children, where each word has two signifies. This type of bilingualism can occur when parents speak various mother tongues and only converse in their own language to their child, resulting in the child constructing two unique linguistic systems that they can easily manage. Another condition is when young children, who have already learned their mother language, are adopted by parents who use a variable language, leading to a various perception between the two languages for the child. Double bilingualism this type of bilingualism happens when both parents are coherent in two languages and speak with their child using both languages interchangeably, resulting in the child having only two signifiers represent a single signified. and being unable to detect conceptual differences between the two languages. Although the child will effortlessly speak both languages without pronunciation, they will not fully master the subtleties of either language, meaning they will not have a true native language. The third type is late bilingualism, late bilingualism can be more challenging than early bilingualism due to the critical period for language learning having passed. However, research shows that with enough exposure and practice, individuals who learn an additional language delayed in life can still achieve a high level of proficiency. Implicit

memory plays a more significant role when learning a second language through immersion involves being part of a community that speaks the language, which allows for a more natural and immersive language learning experience, while explicit memorization is more involved in formal classroom studies. Late bilingualism can provide benefits such as improved cognitive function, increased job opportunities, and exposure to new experiences and perspectives. Despite its challenges, achieving a high level of proficiency in late bilingualism is possible with persistence, exposure, and practice. (Paap,2015)

4.2. Monolingualism

Before discussing the concept of monolingualism, it is necessary to address this concept. "language ideology" language ideology is a concept in sociolinguistics that questions how lexical forms and alternatives are interpreted by society members and their symbolic relationship to speakers. The European nation-state formation at the end of the 19th century and its. The dominant belief in the value of a single language, known as monolingual language ideology, has a significant impact on societal attitudes towards language use and language learning. has had a profound impact on perception about bilingual speakers and multilingual communities. This ideology exists that there are fixed links between speaking one common language and a national identity sharing stable cultural and linguistic norms and values. This has led to the invention of new standard languages and the forced adoption of monolingual ideologies in colonial contexts. Multilingualism was a common phenomenon before the European nation-state formation, with people speaking local dialects, Latin, and French for different purposes. Now we can define monolingualism as that is refers to the ability to speak and understand only one language. A monolingual person is someone who speaks and understands only one language and is unable to communicate in any other language. Monolingualism can be a result of various factors such as geography, culture, education, and socialization. It is the opposite of bilingualism, which is the capability to use and understand two or additional languages. (Hernandez,2005)

4.3. Multilingualism

Multilingualism refers to the use of more than one language, either by individuals or groups. Multilingual speakers have typically acquired at least one language during childhood, known as the "first language" or "mother tongue". Children who acquire two languages natively from an early age are called simultaneous bilinguals. People who speak multiple languages are called polyglots and are reported to be better at language learning than monolinguals. In computing, multilingualism is part of a continuum between internationalization and localization, with English being the primary language used in software development, multilingualism is not limited to spoken languages. It can be a reference to use of sign languages, which are distinct languages with their own grammar and vocabulary. There are different types of multilingualism, such as passive or active multilingualism. Passive multilingualism is when someone

understands more than one language but only actively uses one of them, while active multilingualism is when someone actively uses more than one language in their daily life. The researchers address the issue of terminology when discussing bilingualism and multilingualism, proposing the use of the term plurilingualism to refer to both. They argue that plurilingualism that is a significant reality in the world today, with more bilingual/multilingual speakers than monolinguals. The ethnologue estimates that over 7,000 languages are spoken in the world, with many people living with plurilingualism, particularly in countries where multiple languages are spoken. According to David Crystal, approximately two-thirds of the world's children are estimated to grow up in a plurilingual environment, and globalization is only increasing the extent and character of plurilingualism. Therefore, plurilingualism is currently the norm worldwide and is expected to continue to grow in prevalence in the future. (Bialystok,2001)

5. What Is The Meaning of Bilingual Brain?

As researchers continue to uncover the intricacies of the bilingual brain, they are discovering that speaking multiple languages can have cognitive advantages that persist from early childhood to late adulthood. The scientists used brain imaging to examine the gray-matter mass in the inferior parietal cortex, a language-related zone in the left hemisphere of the brain, in people who speak two languages. The researchers found that bilingual people had greater gray-matter mass in this area, with the impact being most marked in those who were highly proficient in an additional language and those who began learning an additional language before five years old. These findings suggest that bilingualism may have cognitive benefits and that early exposure to multiple languages may have a lasting impact on brain structure. The Bilingualism is a prevalent phenomenon in the United States, with around 21% of American people are Non-English language spoken at home. (Pandey,2013) The majority of these individuals also analyze their proficiency in English, indicating that they are bilingual. This suggests that bilingualism is a common and important aspect of American society, with potential implications for language education and policy. Exposing children to an additional language at an early age doesn't appear to have a negative impact on their language development or cognitive abilities. In fact, studies have shown that bilingual youngsters reach language milestones at a similar pace to children are monolingual speakers, at the same age as children who are exposed to and use only one language and do not show signs of confusion between languages. Being bilingual may even provide a feature in school, with bilingual young children better able to concentrate on tasks and he ignores distractions compared to their monolingual peers. Bilingual adults also have an enhanced ability to concentrate, which may be due to managing two languages and sharpening the brain's ability to focus while disregarding irrelevant information. Bilingualism may be linked to delaying the onset of age-associated cognitive deterioration, including Alzheimer's disease, up to a four-year extension.

One theory suggests that using two languages may enhance blood circulation and oxygenation process in the brain, which in turn helps to maintain the health of nerve connections. and creating a "cognitive reserve." Additionally, recent studies have found that bilingual adults are believed to have greater gray matter density in the left hemisphere of the brain, which is responsible for language and communication skills. This effect appears to be most pronounced in individuals who learned an additional language under five year-old and those who are highly proficient in their additional language. These results imply that bilingualism from an early age can have a significant impact on the brain's structure. We can We explain how the brain organize language in individuals who speak two languages and recent discoveries made possible by advances in brain imaging. Processing various languages occurs in much of the same brain tissue, but when bilinguals individual are rapidly changing between languages, they exhibit greater activity in the right hemisphere than speakers of one language, particularly in a zone that controls attention. This enhanced neural activity is so distinctive and expected that it fulfills as a "neurological signature" for bilingual ability. Finally, the bilingual brain is a fascinating area of research that is still being explored. (Zelasko,2000)

5.1. The cognitive differences between bilingual and monolingual children:

A comparative research study between monolingual and bilingual children had been initiated in 2013. The research aims to uncover differences between these two groups in terms of their relationships with each other and the outside world. Additionally, the study will analyze and discuss the controversial proposition of the "bilingual advantage." The research will control for alternatives, with the Predictor variables being defined as monolingualistic and bilingualistic children. The definition of bilingualism varies among researchers. Some define it as having equal proficiency in both languages, while others view it as alternating between the two languages or completing meaningful discourse in both languages. The study acknowledges these differing perceives and characterizes bilingualism as an individual who frequently obtains inputs in two languages during the most active period of verbal development, from infancy to adolescence. The study's response variables were active working memory, cognitive function, and non-cognitive function. Specifically, the article will focus on cognitive ability, which encompasses skills such as reading capability, information processing ability, and time management skills. (Bialystok, 1999) ^[1]Reading Ability Bilingual children have been found bilingual children to have better flexibility in making connections between words and their meanings than monolingual children, showing more exemplar association and there are benefits or strengths in the ability to make connections between different words and their meanings. Studies on adults also suggest that bilingual individuals have better metalanguage cognitive ability than monolingual individuals. Experience of growing up bilingual can have a notable and positive effect on a child's cognitive ability related to language., with school-age children in a bilingual environment showing phonological awareness

advantages after three years of experience. Additionally, bilingual individuals tend to have more accurate self-evaluations of their reading ability compared to monolingual individuals. (Bialystok, 2007) ^[2]Working Memory bilingual individuals have been found to have greater working memory than monolingual individuals do, as shown in studies carried out by Morales, Calvo, and Bialystok in 2013 and a 2017 meta-analysis. Bilinguals have benefits or strengths in performing or conducting experiments in challenging or inconsistent conditions. The studies used various tasks to measure working memory, including the a set of tests that were administered or conducted, namely the peabody picture vocabulary test, Kaufman Brief Intelligence test, and frogs matrices task as an example of cognitive assessment tools. While these findings are mutually confirmed, they can also be contradictory. ^[3]Cognitive Ability research on the relationship between bilingualism and cognitive ability, specifically in regards to language cognition. Studies have shown that being bilingual can enhance a child's ability to understand and use language, which is known as "metalanguage cognition. ^[4]Time Management Ability experts and scholars have conducted experiments that were conducted to compare and investigate differences between two or more variables or groups. the periodic time reasoning abilities of Chinese and English speakers. The research suggests that individuals who use one language primarily reason about time according to numbers, while bilingual individuals incorporate using spatial imagination to visualize or mentally manipulate numbers in order to determine a specific time period. ^[5]Communication Skills Bilingualism and monolingualism differ in terms of communication abilities. Bilingual individuals have the capability to communicate efficiently in two or more languages, while monolingual individuals are limited to communicating in one language. Bilingualism allows individuals to communicate with a wider range of people and in different contexts, which can be helpful in social and professional situations, as well as when traveling. (Smith,2021) On the other hand, monolingual individuals may face communication barriers when interacting with people who speak different languages, which can limit their ability to form relationships, do business with people from different cultures, and access information from different sources. Bilingualism can also promote social and cultural awareness, as individuals gain exposure to different cultures, ways of thinking, and perspectives, facilitating communication and collaboration across different groups. ^[6]Cultural Awareness bilingual individuals often have a greater awareness and understanding of cultural differences than monolingual individuals. Bilingualism can promote cultural awareness by exposing individuals to different languages and cultures, facilitating communication and interaction between different cultural groups, and promoting cross-cultural understanding and empathy. While monolingual individuals may have more limited exposure to different cultures, it is possible for them to develop cultural awareness through education, exposure to different cultures, and engagement with diverse communities. There are many differences between

bilinguals and monolinguals and these differences are proven by research on bilingual individuals. (Goetz,2000)

5.2. The Benefits of Being Bilingual:

Cognitive Development ^[1] children raised in a bilingual environment are better at focusing on a task while ability to ignore or block out distractions or interruptions, and their ability to We focus is stronger than monolingual children. The advantage is strongest for those who acquired an additional language under five years-old and who are extremely skilled in their additional language. This indicates that speaking two languages from an early age can substantially alter the brain's anatomy. However, cognitive advantages may also apply to below-average ability children. Bilingualism also makes cognitive mechanisms more flexible, which extends to cognitive control processes in social situations^[2]. (Dewaele,2012) **Social Emotional Benefits** bilingual children have in forming new friendships and connections. Being able to speak more than one language is considered a valuable skill in our increasingly globalized world, and can help children learn about and appreciate new cultures. Bilingualism can promote a positive attitude towards other cultures and groups, which can lead to making friends from different language and culture backgrounds, both within and outside of school programs. As a result, bilingual children tend to be more open-minded, multicultural, and respectful of diverse people and beliefs.^[3] **Learning bilingual and multilingual children benefit academically** in many ways, including developing more flexible approaches to problem-solving and promoting higher levels of abstract thought. Additionally, research has found that individuals who use more than one language have an advantage in filtering out irrelevant information, which may start developing as early as seven months of age. Additionally, children who study to read in their native language have a solid foundation that can assist them in learning an additional language, as they can apply their reading skills to the new language.^[4] **Long-Term Success** there is a significant proportion of adults worldwide speak at least two languages and highlights the advantages of being bilingual or biliterate in today's global society. around the world, adults who are able to speak and read in two or more languages have greater employment prospects. compared to monolingual adults. people who can speak and read in two or more languages have the ability to engage more broadly with the global community, access information from diverse sources, and gain greater knowledge and understanding of different cultures and peoples.^[5] **Attention Control** there's evidence that suggests bilingual speakers have better attention control than monolingual learners. This advantage may stem from the fact that bilinguals need to consistently manage and select between two languages during everyday communication. Some researchers propose that bilinguals' capacity to maintain and selectively focus on different languages in their mind could be responsible for their greater control over attention. This ability may assist bilingual learners in preventing interference from one language while using the other. ^[6] "Abstract and Symbolic Reasoning along with Creative and

Divergent Thinking" bilingualism is associated with enhanced creative thinking as well as abstract or symbolic reasoning. Studies have shown that bilinguals outperform monolinguals in these cognitive skills. Bilingual children develop greater thinking, perception flexibility and creativity by changing between two languages and viewpoints. Bilingualism also stimulates the development of abstract and symbolic reasoning by having two different words for most definitions, leading to a good understanding of the arbitrary and abstract relationship between words and their referents. ^[7]Tasks on syntactic awareness the ability to detect and correct grammatical errors, known as syntactic awareness, is a skill that bilingual children excel at according to research by Cromdal and Bialystok. bilingual children are better at focusing on the grammatical structure of a language and disregarding its meaning, as they learn to suppress one of their languages. Grammaticality judgment tasks are used to assess syntactic awareness, and studies have shown that bilingual children outshine monolingual children in identifying and correcting ungrammatical and meaningless sentences. Additionally, bilingual children show greater levels of syntactic analysis, and they are able to reconstruct linguistic knowledge earlier than monolinguals. These findings suggest that bilingualism can have a positive effect on language development and cognitive function abilities. ^[8]Tasks on word awareness bilingual children show higher levels of word awareness and metalinguistic skills compared to monolingual children. (Ojemann, 1978) Studies have used various tasks, such as word substitution tests and tasks assessing understanding of the arbitrariness of language, to evaluate the language abilities of bilingual and monolingual children. Bilingual children have shown superior performance in tasks requiring control of processing, such as switching names and ignoring usual experiences with concrete words. They are also more aware of the arbitrariness of language, as they have two labels for most words in their lexicon. Bilingualism may have a positive effect on language development and abilities of perception. ^[9]Tasks on phonological awareness phonological awareness it's meaning the ability to segment and control speech sounds, which is important for learning to read. Studies show that there is a correlation between phonological awareness and reading acquisition. However, few studies have assessed phonological awareness in bilingual children, especially balanced bilinguals. Two studies on French-English bilinguals found no differences in phoneme substitution tasks between bilinguals and monolinguals. Another study on Spanish-English and Chinese-English bilinguals found that only the Spanish-English group showed an advantage in the segmentation task, suggesting that bilingual children may have some advantage in studying about the sound structure of language, but this benefit is only apparent on small tasks and for children whose two languages are similar. (Astonington,1991)

5.3. Challenges faced by bilingual students:

^[1]Language proficiency the levels of language proficiency in bilingual individuals. Contrary to common belief, bilinguals may not have equal proficiency levels in

both languages. Language proficiency should be measured in all four modalities of language: reading, writing, speaking, and listening. However, proficiency levels in these modalities may not always be the same. the environment and extent of exposure to a second language play a significant role in shaping the development of bilingualism. The level of proficiency in a language can be influenced by the amount of exposure to the second language. In a particular study, researchers used primary school grades and self-assessment scales to account for language proficiency. Children were asked to rate their proficiency levels in speaking, writing, listening, and reading in both of their languages.^[2] Social and financial position the impact of social and economic status (SES) on bilingualism. It suggests that lower SES is often linked to poorer vocabulary size in children, which can impact language proficiency. Lower SES is also associated with poorer academic success and underdeveloped literacy skills. However, bilingual children from medium and high SES backgrounds have been shown to outperform those from low SES backgrounds in memorization, attentional control, and executive functioning. The paragraph also highlights the importance of parental education in influencing vocabulary size and second-language proficiency. The studies included in this thesis controlled for SES by selecting groups of bilingual and monolingual children from different geographical districts and types of schools.^[3] Language favoritism bilingualistic children may have a preference for speaking one language over the other, often favoring the mother tongue that they are most commonly faced with. This inclination can create tension in their parent-child relationship who speaks the regional language, especially if the child refuses to communicate in that language.^[4] Reading and Writing Skills while learning to use a language comes naturally to children, the process of learning to read and write requires more effort. Unless a child is homeschooled or enrolled in a dual-language education program, they will typically receive education in one language only. Additionally, some bilingualistic children may not achieve equal proficiency in both languages, with one language often being stronger, usually the language they are faced to at school. As a result, parents may have to take responsibility for teaching their children how to write and read in the regional language, but many families may not have the time to do so.^[5] You Receptive bilingual a person who comprehends a additional language but Not able to converse in it is referred to as a receptive bilingual. Children may not be able to speak a language due to insufficient exposure, limited vocabulary, or not feeling a necessity to use the language. (Bialystok E, 2007) This can be a common familial circumstance where one parent understands the additional language. Consistently using the language can be exhausting and challenging. The author shares their experience with their toddler who is more proficient in Italian than English, and sometimes they unintentionally switch between both languages during conversations without correcting the child. However, the author reminds themselves to correct their child and encourage them to speak more in English.^[6] Engagement with both languages children who learn

one language exclusively at home and the other solely in a classroom will not be equally engaged with each language, and that it is important for children to appreciate the relevance of both languages to their daily lives. The author emphasizes that bilingualism is a family commitment and that it takes a community to raise a bilingual child. Children who hear both languages spoken by a variety of people fare better than those who only speak their mother tongue with one person. Strong family and community engagement in both languages support bilingualism. (Collier,1992)

5.4. Factors that affect the effect of bilingualism on cognitive functions in children: Language Factors written materials, including children's books and public media, can provide linguistic input that may not be widely spoken in the community. Reading such materials can help improve language skills, leading to Higher proficiency and retention of the language, even in limited number of speakers. Research evidence shows that reading ability transform from one of the languages to another, and bilingual children who learn to read in both languages score significantly higher in reading in both languages. While literacy is not essential for language proficiency, literature and common culture can enhance the value of a language and increase the child's desire for more language input through that medium, there are some factors related to language such as Language similarity: The similarity between the two languages being learned can affect the and Language use and exposure: ^[1]The amount and quality of exposure to each language can impact cognitive development cognitive benefits of bilingualism. ^[2] Family Factors, the family has a crucial role in bilingualism. The language use patterns, exposure, and support from the family influence children's acquisition of a second language. Parents who speak both languages fluently and consistently at home are more likely to help their children develop strong skills in both languages, while those who mostly speak one language at home may lead to the child being more proficient in that language. The family's attitude towards bilingualism and their support for the child's language development can also affect the child's motivation to learn and maintain both languages. Therefore, the family plays a critical role in the success of bilingualism.^[3] Society Factors the importance of a Integrated community of native language speakers in maintaining the language and culture. Establishing a formal plan, such as the welsh language board, can aid in preserving heritage language-based national identity. In addition, a local community church or social agency can create an ethnic enclave that offers services in the less widely spoken language and preserve the culture of the homeland vital. Such enclaves can help sustain life in the minority language, but they may also act as a gateway to assimilation. Education can be a crucial factor in supporting the minority language, and language instruction in schools can help offset the impact of less exposure to the language at home. ^[4] There are other factors affecting the Bilingualism such as, Age of the child when beginning second language acquisition: Some experts believe that early second language acquisition may be

more effective in its impact on cognitive development. Individual differences: Some children may be more predisposed to the cognitive benefits of bilingualism based on their individual cognitive abilities and learning styles. (Kovelman I,2008)

6. Bilingual Research Methods:

Observational and Experimental Studies research with bilingual individuals often involves observing their cognitive, linguistic, and behavioral performance in natural settings to gain insights into their bilingualism. Naturalistic observation or descriptive research is a common method used, where researchers describe naturally occurring phenomena instead of manipulating them. Correlational research can be applied to establish links between variables, such as the link between vocabulary size and intelligence. Experimental research involves manipulating variables to draw etiologic inferences, but it may not always be ethical. Both methods can be used to study bilingualism ^[1], and the method chosen is determined by the research question and available resources. ^[2]Longitudinal and Cross-sectional Research longitudinal researches follow participants over time and compare their performance at different points in time, while cross-sectional studies compare different groups at the same point in time. Longitudinal studies have the pros of following the same group over time, but they may have higher attrition rates and take longer to complete. Cross-sectional studies are more practical, but there may be more differences between the groups being compared. Intervention studies typically use longitudinal designs to compare performance before and after treatment. Both approaches have their advantages and disadvantages, and they can be combined if the research question warrants it and sufficient resources are available. ^[3]Cortical Organization of Languages the field of neurolinguistics research, which focuses on studying the hemispheric organization of languages in the bilingual brain. Techniques such as Functional brain imaging based on MRI, PET-based brain activity mapping, and Electro Encephalo Grams (EEG) are used to measure cortical activity while the brain is engaged in language tasks. However, studies have produced conflicting results regarding whether the same cortical zones are activated for Two linguistic systems or if different zones are related with each language. These differences in findings are attributed to variations in methodologies, participant populations, language proficiency, and age of acquisition. Moreover, the issue of whether the similar or dissimilar brain activation occurs in bilingual people is considered to be basically flawed and requires reframing with more appropriate terms. ^[4] Language Development in Bilingual Children the effect of bilingualism research on various aspects of society, from education to government policies. While some studies suggest that bilingualism has cognitive benefits, others suggest that bilingualism negatively impacts language development. The differing results can be attributed to methodological differences, and it is important to note that Bilingual children are able to reach the same level of language proficiency as monolingual children over

time in verbal ability by middle school. However, bilingual children are often disadvantaged in language assessments, as vocabulary size is counted based on conceptual representations, resulting in an inaccurate assessment of their level of linguistic and cognitive development. Most studies assess bilingual children in only one language, but when “best performance” across both languages is considered, bilinguals do not appear to be at a cons and may even show some Pros. (Bhatia, 2006)

7. Conclusion:

This review article aims to clarify the effect of bilingualism on cognitive development in children, including better attentional control, cognitive flexibility, and metalinguistic awareness, as demonstrated by studies on the impact of bilingualism on intelligence, which have produced conflicting results. For example, some studies suggest that bilingualism can improve overall intelligence in children, while others may not find a significant effect. (However, recent research suggests that bilingualism can enhance executive function skills and aid in learning new languages. Accurately assessing the language abilities of bilingual children can be challenging, and understanding the context in which they are learning the languages is important in evaluating their language development. While research has generally found positive effects of bilingualism on cognitive development, the benefits may depend on the context in which the child is learning the languages. Overall, the article highlights the importance of considering bilingualism as a potential factor in cognitive development and the need for further research to fully understand its impact. Bilingualism can have cognitive advantages for children, but accurate assessment and understanding of context are important factors to consider.

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