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Is There a Link between Bilingualism and Intelligence?

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Introduction

From the beginning of the 20th century, the area of psycholinguistics has been investigating whether being proficient in dual languages or being bilingual has an advantage on cognitive benefits (Barac et al., 2014). Researchers have fallen into two schools of thought in answering this question. Some researchers claim that bilingualism positively impacts creativity and intelligence (Bialystok et al., 2004; Costa et al., 2008). On the other hand, some researchers claim that bilingualism is a negative phenomenon that has deleterious effects on intelligence (Morton & Harper, 2007; Paap & Greenberg, 2013). It is assumed that language plays a vital role in the development of cognitive processes, at least from the time the child has achieved some language competence as stated by Vygotsky (1962). Language also develops the communication system but becomes an essential device for forming the processes which allow the child to organize thought. Also, the capability of using two languages might reflect the features or processes in the brain underlying the language skills that studying only one language may not disclose. So, it can be presumed that bilingualism affects cognitive strategies or intelligence. However, the controversy in the literature on the effect of bilingualism on intelligence has remained unanswered till now. Therefore, this article discusses bilingualism and intelligence along with historical accounts of various trends concerning them to see whether there is a relation between them or not.

Bilingualism

Generally, bilingualism refers to using two or more languages for regular conversation and understanding. In other words, it is a component of widespread language contact. In fact, instead of not being an innovative linguistic phenomenon, the majority of the people in the world have been speaking in more than one language. According to Bloomfield (1933, as cited in Mackey, 2000), “bilingualism is the native-like control of two languages”. However, bilingualism is quite challenging to define as individuals with varying bilingual features may be categorized as bilingual. Bilingualism ranges from a minimal level of competence to an advanced level of proficiency in two languages. This proficiency level allows the speaker to function as a native speaker of two languages. A person may consider him/herself bilingual, but he/she might be only able to converse and correspond verbally. Conversely, others may be skilled in reading two languages or become bilingual by learning a second language. In addition, bilingualism comprehends a range of proficiency and situations as well. For example, a child entering a school might



be considered bilingual, but he/she uses his/her first language for domestic and familial tasks. In contrast, the second language is used for external purposes. Then again, if a child returns to his/her country from overseas, he/she may have developed a high literacy level in English but may not be able to communicate adequately based on the classroom context. Therefore, it can be said that a bilingual can be either highly proficient in either language or may have limited efficiency in one language and be far more skilled in the other language in terms of competence.

Intelligence

Learning a language is still considered a difficult task for learners due to their discrete differences. Crozier stated (1997, as cited in Salahzade & Lashkarian, 2015) that individual differences may lead towards academic success or failure while learning a foreign or second language. One of these individual differences is intelligence. Gardner (2011) stated that intelligence is a sole difference in manipulating the degree to which a language learner learns a second or foreign language. Thus, it can be assumed that intelligence plays a vital role in learning a language efficiently. As intelligence is considered a prime factor in learning a language, its theory has evolved throughout the years. Initially, it was defined only as the sole property of one's brain and only assessed by IQ tests that concentrated on both linguistic and rational intelligence. Gardner (2011) said this conventional notion of intelligence has limitations. So, he proposed a theory of 'Multiple Intelligences,' and linguistic intelligence was one of them. It is defined as the capability of using language efficiently, either orally or written (Armstrong, 2009). Gardner (2011) also stated, "linguistic intelligence as sensitivity to spoken and written language and the ability to use language to accomplish goals, as well as the ability to learn new languages". Therefore, based on the discussion, it can be said that linguistic intelligence contains the ability to convince others verbally through writing skills and to pick up other languages.

Intelligence without Bilingualism

The study of the relationship between bilingualism and intelligence began in the early 1920s. Initially, it was presumed that bilingualism had a negative effect on intelligence (Romaine, 1989). According to Grosjean (1982), in the earlier part of the century, many researchers agreed with the renowned linguist Otto Jespersen who expressed a negative view about the impact of bilingualism on a child's intelligence as related to learning. Then, some researchers provided opinions against bilingualism based on instinct. For example, Reynold (1928, as cited in Saunders, 1988) stated that bilingualism accelerates language mixing and complicates the language learning process, which results in decreasing intelligence and a reduction in the capability to think.

Concerning that point, many studies have claimed that bilingualism harms the development of intellectual ability, making a child doubtful (McLaughlin, 1978). Sear (1924) conducted a study on 1400 Welsh and English bilingual children. He selected the children from five countryside areas and two metropolitan areas of Wales. Based on the study, he concluded that bilingualism resulted in lower intelligence due to lower marks obtained by the bilingual children of the countryside areas. Moreover, Darcy (1946, as cited in Grosjean, 1982) found in a study that bilingual Italian-American children were less intelligent than English-speaking children. Furthermore, Smith (1949 as cited in Romaine, 1989) did a test on Hawaiian children of Chinese descent in both Chinese and English. The test result showed that the scores of bilingual children on vocabulary development were lower than those of monolingual children. In research by Jones and Stewart (1951), it was seen that monolingual children were better than bilingual children in both verbal and non-verbal intelligence tests.

Moving on to other studies, Tireman (1955, as cited in Grosjean, 1982) did research on a number of Spanish-English bilinguals. He concluded that bilinguals had been able to master only 54 per cent of the

words they needed in their reading vocabulary. Additionally, Carrow (1957, as cited in Appel & Muysken, 1987) tested bilingual Spanish-English and monolingual English-speaking children and measured the children based on their silent reading, verbal reading, comprehension, spelling, listening skills, pronunciation, lexis and mathematical reasoning. The test results showed that monolingual children did better than bilingual children. Then again, many researchers claimed that bilingualism hinders a child's learning progress. According to Jensen (1962), bilingualism hinders the learning procedure of specific subjects like vocabulary, spelling, grammar etc. In addition, Macnamara (1966, as cited in Grosjean, 1982) studied English-Irish speaking bilingual children and found bilingual children were around 17 months behind the monolingual children who only spoke Irish. Appel and Muysken (1987) argued that the negative impact of bilingualism on intelligence was articulated due to an assumption that every human has some probable capacity for language learning. Nevertheless, one language might restrict the potential of learning another language. Consequently, they concluded that those who focus on learning only one language are more skilled than the bilinguals.

Hence, it can be seen that the majority of the studies till the 1960s showed that bilingualism had a negative impact on intelligence. Though one study had been conducted by Malherbe (1946) that showed bilingualism had a positive effect on intelligence. It was done in a bilingual school with English-African speaking students and a monolingual school with English-speaking students in South Africa. Malherbe compared the literary and linguistic accomplishments in both schools and found that bilingual students did better than monolingual students.

Intelligence with Bilingualism

In recent studies, many researchers in their works found the bilingualism is helpful for developing intelligence. They acknowledged that bilingualism has a positive impact that simplifies learning a new language; develops enthusiasm along with intellectual capability (Grosjean, 1982). One of the most significant Canadian studies on the positive impact of bilingualism was done by Peal and Lambert (1962). Unlike the earlier studies, the methodology was carefully designed by the researchers. They were also cautious with variables either ignored or not systematically organized in previous studies. First, they selected the participants who were ten-year-old monolingual and bilingual children of the same French school. The parents of the children had the same social class background, middle class. Then they made a distinction between "true, balanced bilinguals", who were skillful in both languages and "pseudo bilinguals", who did not learn the second language. They only selected the bilingual students who had equal proficiency in both languages, and the assessment was made through various tasks and the participants' self-ratings. Finally, they depended on a broader view of cognitive abilities than the views on the concept of IQ.

The results of the study showed that the performance of the bilingual participants was more satisfactory than the monolingual participants on both verbal and non-verbal intelligence. The bilinguals were particularly very good on subjects requiring mental exploitation and reformation of visual patterns. They also performed better in what the researchers called "concept formation tasks" (Peal & Lambert, 1962). After conducting the research, Peal and Lambert (1962) concluded that intellectuality with two language systems seems to have left the bilinguals with cognitive flexibility, supremacy in forming concepts and a more diversified set of intellectual capabilities. They thought the patterns of the abilities developed by bilinguals are more heterogeneous than the monolinguals. At the same time, they believed it was impossible to state from the present study whether the more intelligent child became bilingual or bilingualism aided his/her cognitive development. In contrast, the monolingual appears to have a more unitary structure of intelligence, which he/she might use for all intellectual types. To simplify, it seems that a bilingual child is more aware of his/her linguistics competence than a monolingual child.

Following Peal and Lambert's lead, many other studies appeared that supported them and agreed that children's cognitive abilities were positively influenced by bilingualism. Ianco-Worrall (1972) researched

African-English bilingual children aged between 4-9 years old in South Africa. He claimed that in terms of analyzing the language as a theoretical method, the performance of bilingual children was much better than that of monolinguals. Based on the study, he concluded that bilingual children could separate word meanings based on their sounds at a much earlier age than monolingual students. Next, Scott (1973) observed a group of bilingual children who spoke English and French in Canada. He found bilinguals' performance was much better in divergent intellectual activities that demanded cognitive flexibility.

Next, Kessler and Quinn (1968) did an experimental study on the impact of bilingualism on children. They found it has a progressive influence on the cognitive creativity of children. Similarly, a study by Carringer (1974) reflects the same result. He studied Spanish/English bilingual children aged 15 years and concluded that bilingualism promoted inventive capacity in aspects like fluency and flexibility. Moreover, Zeev (1977) found in a study that bilingual children can be easily modified and guided compared to monolingual children. Furthermore, Bain and Yu (1980) studied the cognitive outcomes of raising a bilingual child. They selected German-French, English-French and Chinese-French bilinguals from three different areas. They also chose monolingual speakers of these languages to participate in their study. They wanted to see the ability of the participant to find complicated directions to hide and seek contexts. They hypothesized that bilingualism could influence the language to work as a directive tool in cognitive assignments. The results showed that most bilingual children could use their language as a tool and control their cognitive functioning. The data was also in favor of young bilingual children. Interestingly, the findings were consistent across different places and groups.

Further, in order to prove that bilingual children are more cognitively advanced than monolingual children, a study was conducted by Bialystock (1987). Based on the study, she concluded that bilingual children were more advanced than the monolingual children in terms of separating individual lexical items from sentences. She also claimed that they could even rename different objects. At the same time, the participants had to pay attention to the words or the characteristics of the isolated components, like counting how many words there are in a sentence.

Additionally, some researchers have done studies that indicate bilingualism accelerates cognitive development (Farhadian et al., 2010; Diaz & Farrar, 2017). For instance, Kovacs (2009) researched an unforeseen transfer test of intelligence between 2 to 3-year-old Hungarian-Romanian bilingual children and Hungarian-Romanian monolingual children. The results showed that the first group of children passed the test quickly compared to the latter. He concluded that there are three reasons why bilingual children passed the test. The first one is called executive functioning, the processes involved with cognitive control and self-regulation to achieve a goal. Besides, this function enhances bilinguals' controlling facilities that can control their beliefs and knowledge while up-regulating someone else's mental condition (Devine & Hughes, 2014). The second reason is called metalinguistic awareness. This kind of awareness leads to superior skills in symbolic thinking, which may contribute to their ability to perform well in tasks in which symbolic distancing aids self-consciousness. Therefore, someone else's mental state can differ from another. The third reason is "socio-pragmatic," which means bilinguals determine that some people speak only one of their languages and some people use both languages. This information can be shifted to the more general understanding that two people can have a different or similar mental state. Therefore, all three of these reasons forecast a bilingual advantage in cognitive development (Kovacs, 2009; Farhadian et al., 2010).

Conclusion

In conclusion, some researchers have stated that bilingualism has been harmful throughout the years, whereas others have reflected its positivity through their studies. Numerous cognitive procedures have implied the differences between bilingual and monolingual beings. Although the research has not been able to view a whole image of the cognitive features that might have an advantage from the experience of bilingualism, it can be said that the cognitive tasks that rely on language may get some benefits from the

experience. It may be possible that a bilingual child builds up a theory to analyze the linguistic input that leads him or her to overcome the intervention. Besides, these studies have also shown that bilingual children lead when given verbal and non-verbal tasks. They had more remarkable metalinguistic ability, especially in controlling language processing. Also, cognitive and metalinguistic awareness can be seen in situations where bilinguals have to use both languages. Therefore, based on the discussion, it can be said that there are shreds of evidence to suggest that there is a link between bilingualism and intelligence. Although some negative impacts exist, recent studies have clearly shown that intelligence is positively and highly influenced by bilingualism.

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