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Bilingualism Impact on Intelligence and its Cognitive Benefits

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ABSTRACT

Researchers throughout the previous studies have tried to overview the relationship between bilingualism and intelligence. They tried to sort out the puzzle that does bilingualism enhance cognitive development or do more intellectually gifted children become highly proficient bilinguals. In order to overcome these flaws in the previous studies, we have reviewed the extensive literature and reached the conclusion that the previous studies showed negative results because of the methodological shortcomings. Despite, these flaws, the positive consequences show what is possible with balanced bilinguals under positive circumstances and this line of research merits further attention.

Keywords: Bilingualism, Intelligence, Cognitive development.

INTRODUCTION

The debate of globalization or modernization has faced a great amount of reaction, both positive and negative as Fornuskova (2011) asserts. One important consequence of globalization that is interesting for linguists is the fact of migration, which leads to developing bilingualism. Cummins (2001) mentions that migration leads to greater cultural, religious, and linguistic varieties over the generations. Scotton (2006) claims that the contact between those People who do not share the same L1 can lead individuals to bilingualism. Immigration, business travels, and education can be grouped as other major forces for people to become bilingual individuals. Scotton (2006) believes that there are two intrinsic values in studying bilingualism. The first one is the human potential ability to speak two or more languages and studying bilingualism can highlight some new information about the genetic potential of human beings. The information obtained from the bilingualism studies gives information about how language is processed in the brain. Furthermore, studying the children who acquire two languages simultaneously provides important insights into how human beings acquire language in general. Scotton believes that studying bilingualism may expand the understanding of human language faculty. Secondly, living in a situation where two or more

languages are used is a part of human experience, while most of the human societies seem to be bilinguals. In the developing condition of the world, maximizing an awareness of the many aspects of human life and their interactions seems to be very demanding. Different scholars have various viewpoints toward the definition of bilingualism.

BILINGUALISM

Classification of bilingual in the research usually acknowledges the complexity of defining bilingualism. In its simplest form, bilingualism is defined as “knowing two languages” (Valdez & Figueora, 1994). However a major difficulty occurs in defining what it means to “know” a language. Some bilinguals are highly proficient in both languages they speak, while other bilinguals clearly have a dominant or preferred language. Therefore, when classifying bilinguals it is important to consider varying degrees of bilingualism. Weinreich (1953) also proposed that there are three types of bilingualism depending in the way in which the languages are learned. These are compound bilingualism, co-ordinate bilingualism and subordinate bilingualism. The compounding bilingualism is the type of bilingualism whose totally integrated arrangement could only arise when equal prominence was given to each language in childhood. In this case, one maintains their first language, adding the second language to their linguistic repertoire. They may become “balanced bilingual” and any two language systems, no matter how different they are, have some features in common. Lambert (1974) says that this is likely to occur when learners have a positive view of their own ethnic identity and of the target language culture. A bilingual person who has acquired another as a second language, adding to their first language, and initially develops one system is called Co-ordinate bilingualism. The person builds up another system and can operate the two in parallel. Changing one language to another, he/she switches from one system to another, rather than switching over within one compound system. If one of the two languages is dominant, we can infer that much of the person’s language processing is affected in the dominant language, and that the other language is used only at a superficial level of production or comprehension. In extreme cases, the use of second language may involve mainly the substitution of second language phonological structures within an otherwise unified system that provides for a suitable correspondence of sound and meaning. In co-ordinate bilingualism, there are parallel sets of word-concept pairs and the second language is connected to a new conceptual structure, even though this overlaps with the first. The situation arises when the learning situation for the second language is less ideal. The case where the second language develops so that it is entirely parasitic on the first language is known as subordinate bilingualism. Co-ordinate and subordinate bilingualism arise when one language is learned before another. However, it is not at all easy to distinguish between these categories in practical, and it is not clear that order of acquisition is so fundamental. One possibility is to assume that compound bilingual person may become a coordinate bilingual person when equal performance was given to each language throughout their experiences. Another possibility is co-ordinate bilingual person gradually changes to compound bilingual person as their environment changes. It seems reasonable to say that compound bilingualism can occur in preschool children, school children and adults. It is also possible to say that bilingualism is influenced in the home as well as by geographical location. Therefore the relative degree of proficiency in two languages has consequences for language and cognitive skills of bilinguals. Bilinguals have certain benefits, but even they have to face some challenges.

INTELLIGENCE

Individuals differ from one another in their ability to understand complicated ideas, to adapt efficiently to new situations, to learn from experience, to deal in different forms of analyzing and reasoning, and to find solutions to overcome obstacles; Individuals are never consistent; in other words no single individual behave the same all the time, as mentioned by Neisser, Boodoo, Bouchard, Boykin, Brody, Ceci, Halpern, Loehlin, Perloff, Sternberg, and Urbina (1996). They believe that the attempt to define and clarify the notion of intelligence is actually the result of organizing these complex and amazing sets of phenomena. In 1921, when the editors of the Journal of Education Psychology asked fourteen famous psychologists the question

that what is intelligence, the responses varied but generally embraced two themes. First, intelligence involves capacity to learn from experience. Second, it involves the ability to adapt to the surrounding environment. Sixty five years later, twenty four cognitive psychologists with expertise in intelligence research were asked the same question (Sternberg & Detterman,1986). They too underscored the importance of learning from experience and adapting to the environment. They also broadened the definition to emphasize the importance of metacognition-people's understanding and control of their own thinking processes.

Contemporary experts also more heavily emphasized the role of culture. They pointed out that what is considered intelligent in one culture may be considered stupid in another culture (Serpell ,2000). To summarize, intelligence is the capacity to learn from experience, using metacognitive processes to enhance learning and the ability to adapt to the surrounding environment. It may require different adaptations within different social and cultural context. Different authors have conceptualized intelligence in different ways. For example, Francis Galton (1822-1911) believed that intelligence is a function of psycho-physical abilities. Binet &Simon (1916) described that described intelligence as a function of the ability to learn within an academic setting. In Binet's view, judgement is the key to intelligence. The key is not psycho-physical acuity, strength or skill. William Stern (1912) suggested instead that we evaluate people's intelligence by using an intelligence quotient (IQ): a ratio of mental age (MA) divided by chronological age (CA), multiplied by 100.

Weschler (1944) operationally defines intelligence as the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment. He refers to intelligence as an aggregate capacity emphasizing the components as qualitatively undifferentiable but not entirely independent elements or abilities. Peal and Lambert (1962), the two famous authors in the reviewed literature have done an extensive work on the intelligence and lingualism and they were the one who found out that the bilinguals showed superior performance on the verbal and non verbal measures of intelligence. Following this study, many authors establish a significant relationship of intelligence and lingualism.

CONTRADICTIONS IN THE PREVIOUS STUDIES

In examining the earlier studies of bilingualism and cognitive development, educators first need to consider the social concerns of the United States during the turn of the century. The influx of immigrants to America, particularly from southern and eastern Europe, called attention to the concern over the new arrivers' poor adaptation to American society. This was evidenced in their poor performances on intelligence tests. Immediately, psychologists representing two theoretical camps came to the forefront offering explanations for these immigrants performance levels. The hereditarians such as Lewis Terman (1919,1975) and Florence Goodenough (1934), argued that intelligence was innately based, and that these immigrants were therefore descended from intellectually, genetically inferior people. Psychologists and educators representing this line of thought did not consider bilingualism to be a relevant factor. In contrast, the environmentalists such as Stoddard Wellman (1934) proposed that proficiency in two languages retarded cognitive growth and only led to mental confusion.

The early studies conducted during the first half of the century grew out of this social context, with such studies showing bilinguals' academic retardation and lower IQ scores in which support was provided for the negative effects of bilingualism on cognitive development. Darcy (1953) concluded from a review of relevant research that "the general trend in the literature relating to the effect of bilingualism upon the measure of intelligence, has been towards the conclusion that bilingualism suffer from a language handicap when measured by verbal tests of intelligence". This language handicap was construed as representing the linguistic and mental confusion that retards intelligence through the college years (Saer,1923). Furthermore, Macnamara (1966) claimed that bilingual children's lower verbal intelligence was a result of a "balance effect" whereby proficiency in a second language necessitated a loss in proficiency in one's first language.

Thus, it was proposed that bilinguals never reached comparable levels of linguistic proficiency as did monolinguals. Studies illustrated that bilingual children, in comparison to monolinguals, demonstrated weaker verbal abilities, including poor vocabularies (Barke & Perry-Williams, 1938), deficient articulation (Carrow, 1957), lower standards on written composition and more grammatical errors (Harris, 1948). Moreover, studies also indicated deficiencies in bilinguals' development on non-verbal abilities such as mathematical competency (Carrow, 1957) and dexterity (Saer, 1931).

In contrast to these findings, linguistics during the same period continued to provide accounts of children displaying mental advantages from simultaneous exposure to two languages. The most notable case study from Werner Leopold (1949) who claimed that exposing his daughter Hildegard to two languages enhanced her mental development. He theorized that bilingual children are able to focus on the content of words rather than their forms because bilinguals learn early on the abstractness and symbolism of words and are forced to separate two different words for each referent. One needs to consider why empirical findings and case studies such as Leopold's seem to contradict one another with respect to how bilinguals develop cognitively. The explanation may lie in the poor methodological approaches of the empirical studies, which have in fact led to claim by current investigators such as Cummins (1976) that these early studies are completely unreliable. One major limitation was that the studies did not control for the socio-economic status between the bilingual and monolingual subjects. As McCarthy (1930) argued bilingualism in America was confounded with socio-economic status since more than half of the children classified as bilinguals in early studies belonged to families from the unskilled labour group.

Another problematic area of the research methodology of early studies was the failure to adequately assess and consider differences in degree of bilingualism. This is certainly seen in how researchers defined and evaluated the bilingual or monolingual status of their subjects. Brunner (1929) for example, determined degree of bilingual proficiency according to place of birth of subject parents. Furthermore, Hakuta et al (1986) claim that early psychologists used a societal definition of bilingualism in determining language proficiency as they classified subjects as bilingual according to foreign last name, particularly if a name represented a group that had recently immigrated to America. Obviously, such methods would not hold up under scrutiny today for it is clear that such techniques cannot ensure that the subjects investigated are indeed bilingual or "just monolingual of a minority language who barely spoke the language of the cognitive tests they were given" (Diaz, 1985a). Elizabeth Peal and Wallace.

Lambert (1962) set new methodological standards (of their time) in the research on bilinguals which required measuring language proficiency in both first and second language. They noted the importance of controls for both socio-economic status and for language proficiency of bilinguals in research. They set methodological standards which required sampling only among "balanced bilinguals" with proficiency in both their first and second language and contrasted them with monolingual students from the same school. Both groups were middle class students. In the Peal and Lambert study (1962) the bilinguals outperformed the monolinguals on verbal and non verbal measures particularly in the tasks that required mental or symbolic flexibility. This was the first study to demonstrate the advantages of bilinguals in terms of "cognitive flexibility" (Hakuta, 1986). In the tradition of basic research many studies followed, building on the methodological standards and the theory of cognitive advantages to bilingualism developed by Peal and Lambert (1974). Just as negative associations between bilingualism and cognition are based on faulty methodological practice, the research on cognitive advantages has been criticized for its methodological shortcomings (Reynolds, 1991). The use of "balanced" bilingualism randomness of the sample is another methodological flaw that is hard to overcome (Reynolds, 1991). The cognitive advantages shown by balanced bilinguals may indicate a bias caused by such factors as parental attitudes, experiences and motivation (Baker, 1993). The cause and effect relationship is hard to determine. Are the cognitive advantages due to bilingualism or is the balanced bilingualism a result of cognitive advantages? Hakuta (1986) also questions how much the researcher's motivation may determine the result of the research.

Despite these flaws, the positive consequences show what is “possible” with balanced bilinguals under positive circumstances and this line of research merits further attention.

RELATIONSHIP BETWEEN BILINGUALISM AND INTELLIGENCE

In contrast to the earlier studies, the researchers proposed that bilingualism is related to intelligence. Baker (1988) stated that “Bilingualism is to intelligence as food is to human fitness”. A simple statement about bilingualism and intelligence is as impossible as processing one simple food for human survival. For thirty years experts have had ongoing discussion concerning the bilingual child and his mental abilities relating to intelligence and education. Originally they believed that bilingual person cannot be an intellectual since he/she was carrying two or more languages in their head, but consensus has proved that children with bilingual ability offer an opportunity to explore connections between language and thought (Bialystok, 2002). Bilingual children have advantages in education, due to cognitive development divergent thought, and mental flexibility.

The effect of bilingualism on intelligence and school adjustment was studied by Pinker and Arsenian (1937) and found to be of little or no significance. The same problem was studied by Mitchell and Arsenian (1937). The present study conducted by Marshall and Phillips (1942) was not concerned with bilingualism on intelligence per se, but with its effect on college grades. Forty college students, drawn from all four classes, who were capable of speaking and understanding another language in addition to English, were paired with forty students who possessed facility in English only. Pairing was done on the basis of college class, score in the American council psychological examination given at entrance to the college, and score on the shepherd English test given at entrance to college. All students were men. Eleven different languages were represented by the bilingual group. The record of all grades of all eighty students was then obtained and the means and standard deviation for both groups were computed. The obvious conclusion is that bilingualism does not affect success in college. It may be objected, of course, that by pairing on the basis of intelligence and English the significant effect of bilingualism had been ruled out. This is partly answered by referring to the of Pinter and Arsenian which showed that the correlation between bilingualism and intelligence is practically zero. Moreover, the results do, within the limited scope of the study, give a factual answer, to the plausible explanation for poor college work that a certain students is really a bright boy but has a longer handicap because of his bilingualism.

Wechsler (1944) operationally defines intelligence as the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment. He refers to intelligence as an aggregate capacity emphasizing the components as qualitatively undifferentiable but not entirely independent elements or abilities. Werner Leopold (1949) claimed that exposing his daughter Hildegard to two languages enhanced her mental development. He theorized that bilingual children are able to focus on the content of words rather than their forms because bilinguals learn early on the abstractness and symbolism of words and are forced to separate two different words for each referent.

In 1962, Peal and Lambert of McGill University published a monograph entitled, “The relation of bilingualism to intelligence.” The research conducted in Montreal with ten year old children, compared the performance of monolinguals to that of bilingual French or English speaking subjects on a variety of standard tests of intelligence. In contrast to previous research on bilingualism and intelligence, they discovered that their bilingual sample showed superior performance on measures of verbal intelligence and on nonverbal tests, involving concept formation or symbolic flexibility. Their work with French-Canadian children, state that bilingualism affects intelligence favorably, pointing out that bilingual children do better than monolinguals on both verbal and nonverbal tests. These authors argue that bilinguals have a language asset, and more facile in concept formation and have greater mental flexibility.

Macnamara (1966), on the other hand, insists that bilinguals are weaker than monolinguals in language abilities, criticizing Peal and Lambert study for its bias in selecting a group of bilingual subjects who were seemingly brighter than monolingual subjects. Macnamara suggests that the most effective way to control for intelligence in a study of bilingualism is through the employment of nonverbal intelligence measures.

Lambert and Anisfed (1969) have argued for a positive relationship between bilingualism and intelligence using the data obtained in an earlier study conducted in 1962, they point out that the more diversified socio-linguistic background of bilinguals favors the development of amore complex structure of mental abilities for them than for monolinguals. Bilinguals were additionally found superior on both verbal and nonverbal intelligence tests when socioeconomic status was controlled.

Ianco-Warral (1972) examined the relationship between object-naming ability and bilingualism by applying Vygotsky's (1962) approach in her study; four and five year old bilingual children were tested. Fifty-Four percent of these children consistently chose to interpret words in semantic dimensions only two children among the monolingual group showed similar choice behavior. A higher percentage of the bilinguals perceived a relationship between words in their symbolic meaning rather than their sounds. The conclusions of these findings suggested that bilinguals reached a stage in semantic development two to three years earlier than monolinguals. Finally, Cummins and Gulustan (1974) examined some cognitive aspects, in particular divergent thinking, among bilingual and monolingual children. The results of their study showed that a French bilingual group performed as well or better than English group on spatial ability and general reasoning measures.

Alan D. Bound (1974) conducted a study in order to examine the relationship between linguistic background and nonverbal intelligence, two groups of Canadian native children, one bilingual and the other monolingual were administered tests of verbal ability and nonverbal intelligence. The bilingual group was found superior on a test of nonverbal intelligence; however no difference was obtained between the groups with respect to English vocabulary level. The results were interpreted as showing general support for a transfer-accretion model for the development of intelligence and abilities.

Some researchers try to find out that does bilingualism enhance cognitive development or do more intellectually gifted children become highly proficient bilinguals?. In order to examine the issue of cause and affect it is imperative to conduct longitudinal studies as opposed to collecting co relational data form cross sectional studies. Relevant longitudinal findings are also presented by Diaz (1985) who studied five old Spanish-English bilingual children enrolled in bilingual education programs. Assessing performance on cognitive tasks had two points in time (6 months apart), Diaz found that L2 (English) proficiency was a strong predictor of various cognitive measures, including metalinguistic awareness and performance on non verbal abilities measured by Raven's. Thus, there is a need to infer the causal directions in such a relationship when conducting the study in future. Many scientists believe that general intelligence and linguistic knowledge have a positive correlation (Oller and Perkins, 1978). Genesee (1976) found that intelligence has a high correlation with reading, vocabulary and grammar of French language; other researchers also confirmed the relationship between comprehension through reading, dictation and composition.

Oller (1981) stated that knowledge of language has been considered as the principle basis of intelligence. Also intelligence has been considered as one of the important factors affecting learning in general, and learning of language in particular. Brown (1994) says, "It seems that success in education and in life on the whole correlates directly with the level of individual's intelligence." In connection with learning a second language, intelligence has been mentioned as an effective factor (Stern, 1984), and it can be claimed that an intelligent person due to his or her talent learns a second language with more success (Brown, 1994).

Some researchers have begun to examine the intelligence of bilinguals from a within group, within bilingual framework. Such a perspective allows for an examination of how differing degrees of bilingualism may be related to cognitive abilities. Duncan & DeAvila (1979) performed one of the earliest of such studies when they analyzed the tests of cognitive ability for Hispanic children who differed in their proficiency in English and Spanish. The researchers classified the children into five groups according to bilingual proficiency: proficient bilinguals, partial bilinguals, monolinguals, limited bilingual and late language learners. The most proficient subjects that is the proficient bilinguals performed significantly highest on all the measures of cognitive ability, with no differences among the partial bilinguals, monolinguals, and limited bilinguals. Bilinguality in such studies is typically concerned not merely with the impact of high degrees of bilingualism (that is high levels of proficiency in L1 & L2 skills) on cognitive functioning but equally important, with the impact of dominant bilinguality (that is greater proficiency in one language over another), on these processes (Hamers & Blanc; 1989). Duncan and DeAvila's results are suspected, however, because differences may have been attributable to basic intellectual abilities or IQ since such factors were not controlled. To overcome this limitation, researchers have utilized multiple regression techniques where the effects of bilingualism on cognitive ability could be assessed by estimating the variance explained by second-language proficiency, once the variance explained by first-language ability and other relevant variables (such as socio economic status) is partial out from the analysis (Hakuta, 1986).

In a study of low-SES Hispanic elementary school children enrolled in bilingual education programs, it was found that those children who displayed greater proficiencies in L1 and L2 performed significantly better on measures of metalinguistic awareness and non-verbal intelligence (Hakuta, 1985). Research has shown metalinguistic awareness to be an important element in intellectual development, including the development of reading skills (Hakuta, 1986), and in school participation, including language uses that are typically required in the classroom- thinking about language forms, defining words, categorizing words by parts of speech, breaking words into component syllables, identifying sounds, and identifying written sentences for punctuation (Lindfors, 1991).

Hoffman (1991) argued that the "Bilinguals had a more diversified structure of intelligence and greater mental flexibility, and therefore the cognitive functioning of bilinguals benefited from their bicultural experience, and from positive transfer between languages." Hamers and Blanc (1989) cited in Bialystok (1992) compiled evidence that demonstrates how bilinguals outperform monolinguals in reconstructing perceptual situation, verbal and nonverbal intelligence, verbal originality, symbol substitutions, piagetian concept formation, among others. Bialystok (2004) suggests that a general bilingual advantage is seen in tasks that have misleading information and the necessity of choosing between competing responses. Therefore requiring selection for example Bialystok, showed that bilinguals performed better than monolinguals at grammatical judgment tasks where the sentences contained semantic anomalies. These sentences were grammatically correct and required children to avoid paying attention to the meaning of the sentences and rather control their attention towards the grammaticality.

Kalyani K. Sampath (2005) proposed a study to find out if there is a relationship between EFL (English as a foreign language) learner's proficiency, intelligence, and creativity as a personality trait. To achieve this goal, first, intelligence and English language proficiency of the EFL learners were correlated. Results showed that these two factors correlated significantly. Therefore, the positive relationship stated that more intelligent students learn a foreign language with more success than their less intelligent peers.

The study conducted by Kalyani K. Sampath (2005) reports the effect of learning through second language as medium of instruction on intelligence of ten year old children in a monocultural environment of Chennai, India. 30 boys and 30 girls of monolingual and bilingual group in each category with low, average and above average proficiency in Tamil were randomly selected. Monolingual children spoke Tamil at home and studied in school through Tamil and bilingual children spoke with average proficiency in Telugu or Kannada at home only and studied through Tamil medium at school from first grade. Both the linguistic

groups were tested in Tamil version of Wechsler's Intelligence scale for children. Results indicated that the levels of second language proficiency do not mediate global intelligence and non verbal intelligence. The fact on the components of non verbal intelligence indicated that levels of second level proficiency and ability of perceptual analysis in scanning essentials from non essentials and perceptual organizations are interdependent. Levels of second language proficiency and verbal intelligence are interdependent. When children have a higher level of second language proficiency, they perform better on verbal intelligence. Levels of second level proficiency and range of information possessed by bilingual children, the ability to solve arithmetic problems, vocabulary are interdependent. The degree of proficiency in second language does not affect comprehension of social judgment and verbal concept formation. In another study done by Cenoz and Valencia (2008), the influence of bilingualism on third language learning in a bilingual community, the Basque country was studied. The results revealed that bilingualism and other variables such as intelligence were much related with English language achievement of the participants. Abolaji Samuel Mustapha (2012) studied bilinguals and monolinguals' performance in English language learning in Nigeria the study investigated the performance of both bilingual and monolingual learners' of English Language in a second language situation in Nigeria. Terminal results in English Language tests of 108 Yoruba/English bilinguals and 108 Nigerian English monolinguals at the Senior Secondary School level were compared. Findings revealed that, on the one hand, more bilinguals are found in the pass region than monolinguals; on the other hand, more monolinguals were found in the fail region than bilinguals. These results confirm the position that bilingualism plays supportive role in second language learning, especially in second language situation. Consequently, stakeholders in second language learning might need to strengthen the learning and use of bilinguals' first language in order to enhance effective second language learning.

Mahnaz Saeidi and, Nastran Mazoochi (2013) in a comparative study on bilingual and monolingual Iranian EFL Learners' Linguistic Intelligence across Genders. study aimed at comparing linguistic intelligence of Iranian bilinguals and monolinguals regarding their gender. The participants were chosen from the university students, between the ages of 20 up to 30 years old, male and female. There were 100 monolingual (Persian) and bilingual (Persian and Turkish) EFL learners participating in the study. They were administered MIDAS test, and the results were analyzed through SPSS computer program. The findings reveal that there is a significant difference between female bilinguals and monolinguals linguistic intelligence. However the male participants revealed no difference regarding their linguistic intelligence. The results are interpreted to have implications for language class methodologies and syllabus designers, and can be considered as a support to the idea of promoting bilingual education. In a study to access the possible effect of bilingualism on creativity in non-mathematical and mathematical problem solving among very young bilingual and monolingual pre-schoolers and concluded that both early bilingualism and some form of bilingual or formal education seem to influence the child's general and mathematical creativity (Sehic, 2016). Researchers investigated that second learners skills are virtually related to all the measures of creativity and they also show that bilinguals are significant in cultural diversity and travelling experiences (Frustr and Grin, 2017). A study conducted by Strome, Celik, Camagro, Forthman, Holling and Lubart (2017) showed that the impact of forced language switching on originality of producing ideas during divergent thinking task, the subjects who switched language and those who were one language speakers were randomly assigned to perform alternate uses task and it was found that subjects who switched languages generate more original and novel ideas in comparison to subjects who cannot switch between two languages. Hernandez et al. (2018) also found that bilinguals were better at solving math problems that required complex problem-solving skills compared to monolinguals. . Kroll, Takahesu Tabori, and Navarro-Torres (2021) identified and viewed bilingualism as a skill with good impact on cognition and problem solving abilities. Most studies investigating the cognitive benefits of multilingualism have focused on children or young adults (Bialystok, 2017). However, it is suggested that the cognitive advantages of multilingualism persist throughout the lifespan, with older adults also demonstrating enhanced cognitive flexibility and executive function. Moreover, recent studies have shown that multilingualism may even delay the onset of age-related cognitive decline and dementia (Bialystok & Poarch, 2014). Yang et al.

(2022) explored bilinguals who show improved executive function and cognition which play an important role for problem-solving.

CONCLUSION

The early studies conducted during the first half of the century grew out of this social context, with such studies showing bilinguals' academic retardation and lower IQ scores in which support was provided for the negative effects of bilingualism on cognitive development. Darcy (1953) concluded from a review of relevant research that "the general trend in the literature relating to the effect of bilingualism upon the measure of intelligence, has been towards the conclusion that bilingualism suffer from a language handicap when measured by verbal tests of intelligence". In contrast to these findings, linguistics during the same period continued to provide accounts of children displaying mental advantages from simultaneous exposure to two languages. The explanation may lie in the poor methodological approaches of the empirical studies, which have in fact led to claim by current investigators such as Cummins (1976) that these early studies are completely unreliable. One major limitation was that the studies did not control for the socio-economic status between the bilingual and monolingual subjects. Another problematic area of the research methodology of early studies was the failure to adequately assess and consider differences in degree of bilingualism. This is certainly seen in how researchers defined and evaluated the bilingual or monolingual status of their subjects. Lambert (1962) set new methodological standards (of their time) in the research on bilinguals which required measuring language proficiency in both first and second language. They noted the importance of controls for both socio-economic status and for language proficiency of bilinguals in research. Therefore, though this relationship is hard to determine but the researchers motivation may determine the results of the research and despite these flaws, the positive consequences show what is "possible" with balanced bilinguals under positive circumstances and this line of research merits further attention.

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