

Non-Linguistic Benefits of Learning a Second Language: Recent Research and Implications for Educators and Governments

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ประโยชน์ที่ไม่ใช่เชิงภาษา ในการเรียนรู้ภาษาที่สอง : งานวิจัยล่าสุดและประโยชน์แก่ปฏิบัติสำหรับนักการศึกษาและรัฐบาล

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Abstract

This academic paper analyzes recent research findings which reveal some non-linguistic benefits children acquire by learning a second language. And, it is argued that such benefits not only benefit children and their families, but contribute to the social wellbeing of communities and nations. The analyses reveal that the topic ‘Non-linguistic benefits’ have already been covered in the opinion sections of some leading international media, including *The New York Times*, *The Atlantic*, *The New Yorker*, and *The BBC*. The titles under ‘Non-linguistic benefits’ were various and designed to attract a broad range of readers. The purpose of the paper is to share relevant findings on this subject with teachers of second languages, parents, and educational policy advisors.

Keywords: Non-linguistic benefits, second language learning, language research implications, educators and governments

บทคัดย่อ

บทความวิชาการฉบับนี้มีจุดประสงค์วิเคราะห์ผลวิจัยในงานวิจัยล่าสุด ซึ่งแสดงให้เห็นว่าเด็กๆและครอบครัวได้รับประโยชน์ที่ไม่ใช่เชิงภาษาในการเรียนรู้ภาษาที่สอง ผลวิจัยได้ชี้ประเด็นว่าประโยชน์ที่ไม่ใช่เชิงภาษานี้ไม่เพียงแต่จะให้ประโยชน์ต่อเด็กๆ และครอบครัวเท่านั้น แต่ยังทำให้เกิดความเป็นอยู่ที่ดีทางสังคมในชุมชนและชาตินั้นๆ ผลจากการวิเคราะห์ผลงานวิจัยต่างๆล่าสุด ได้ทำให้เห็นว่าหัวข้อที่เกี่ยวกับ ประโยชน์ที่ไม่ใช่เชิงภาษานั้นเป็นที่กล่าวถึงในเชิงการแสดงความคิดเห็นในสื่อสาธารณะชั้นนำระดับนานาชาติ ซึ่งรวมถึง *เดอะนิวยอร์กไทมส์* *ดิแอตแลนติก* *เดอะนิวยอร์กเกอร์* และ *เดอะบีบีซี* หัวข้อประโยชน์ที่ไม่ใช่เชิงภาษานั้น ถูกแตกออกเป็นหลากหลาย และถูกออกแบบให้ดึงดูดความสนใจของผู้อ่านในกลุ่มที่กว้างขวาง จุดประสงค์ของบทความนี้จึงต้องการจะแชร์หรือส่งต่อผลวิจัยที่ตรงประเด็นกับหัวข้อดังกล่าวให้แก่ ครูผู้สอนภาษาที่สอง ผู้ปกครอง และที่ปรึกษาด้านนโยบายการศึกษา

คำสำคัญ: ประโยชน์ที่ไม่ใช่เชิงภาษา, การเรียนรู้ภาษาที่สอง, ประโยชน์แง่ปฏิบัติของงานวิจัยด้านภาษาที่สอง, นักศึกษา และรัฐบาล

1. Introduction

Until recent times the argument for second language learning has focused primarily on the benefit which competency in a second language provides to one's career possibilities. And, for a nation, the *raison d'être* has been the benefits that a multilingual workforce can contribute to economic development.

The case for expanding opportunities for children to learn a second (or third) 'foreign' language has caught the attention of some high level so-called "Think Tanks" in countries where English has been the dominant language - countries such as the United Kingdom, for example.

In fact, in a report commissioned by the British Academy, and published in February 2013, there was a warning that modern work forces need to possess competencies in languages *other than English*. That is not to infer that English was no longer important, but skills in other languages are increasingly important due to the internationalization of businesses and industries (British Academy, 2013). The report categorized the problem as a *learning deficit at a time when globally the demand for languages is expanding, and such a lack threatens national security and capacity for global influence*.

Singapore, in Southeast Asia, with its multi-language policy, has become a model for other countries in the region. Their multi-lingual policies appear to demonstrate a strong link between multilingualism and economic development, for example. (Jackson & Low, 2013)

The foregoing introduction makes the point that many nations would benefit from an expansion of second language learning opportunities for each new generation, not only to increase the competitiveness of their economies, but also national cohesion is strengthened when people understand and respect divergent cultures and life styles. Having a stronger voice in global affairs can be more easily achieved when more citizens have competencies in other languages.

To the author of this paper, Second language learning opportunities should be expanded to include children even in remote areas of the member countries of ASEAN (Association of Southeast Asian Nations). Even a minimal level of competence in either English or Chinese, should be a policy objective of their Ministries of Education. (Konnikova, 2015)

2. Non-linguistic benefits that aid learning in general

A staff writer for *Science*, Bhattacharjee (2012), argues in a *New York Times* article that the benefits of bilingualism are not only quite fundamental, but that there are a number of important concomitant bonuses.

Scientific studies have shown that learning a second language has important benefits to learning in general. This results from the proven fact that learning a second language has a 'profound effect on a child's brain, improving cognitive skills not related to language, and even shielding against dementia in old age' (Bialystok & Craik, 2010; Bhattacharjee, 2012).

Executive functioning. This term refers to the ability to solve a wide range of non-verbal problems that require attention and control. ‘These executive control abilities are at the center of intelligent thought’ (Bialystok, 2017).

According to Bialystok (2017), there is confirmation that bilingual school children have an advantage over monolingual children in non-verbal computational subjects, such as mathematics, chemistry and physics, and in content-based curricula such as social studies. These areas require significant levels of controlled attention and a superior ability in forming conceptual categories. They also have greater abilities at inhibiting attention to ‘misleading aspects that are salient but associated with an incorrect response.’

Memory is another important executive function, not only for school children, but for adults in many occupational areas (Bak, 2014).

Research done at Spain’s Granada University found that children who learn a second language were able to recall memories better than monolinguals or speakers of just one language. (Morales, Calvo & Bialystok, 2013).

The Granada research suggests that bilinguals have to change languages quite often. A child may talk to her father in one language, and her teacher in another language, for example. Costa, a researcher at the University of Pompeu Fabra in Spain, explains, “It requires keeping track of changes around you in the same way that we monitor our surroundings when driving” (Morales, Calvo & Bialystok, 2013).

Bhattacharjee (2012) wrote that “The collective evidence from a number of such studies suggests that the bilingual experience improves the brain’s so-called executive function – a command system that directs the attention processes that we use in planning, solving problems and performing various other mentally demanding tasks . . . like remembering a sequence of directions while driving.” And, as Cherian (2016) hypothesizes, listening skills of bilinguals become sharper.

Improved IQ. Mechelli et al. (2004) published a study that found ‘grey matter’ density of the left brain was greater in bilinguals than in monolinguals. This finding is significant in that the left brain is responsible for processing information and controlling aspects of sensory perception, memory and speech. Other researchers, including Marian & Shook (2012) and Kotulak (1997) concur.

Dr. Mechelli, a neurological scientist at King’s College, London, found this increase was most significant in children who had learned a foreign language before the age of five.

In another landmark study a number of years ago, two Canadian psychologists, Peal and Lambert, at McGill University, showed a general superiority of bilinguals over monolinguals in a wide range of intelligence tests (Peal & Lambert, 1962).

These earlier studies have been confirmed more recently. Centeno (2014: 3) states “Bilinguals score higher on average on tests involving creative thinking or problem-solving. The ability to translate abstract concepts from one language to another also develops the skill to look at tangible problems in more than one abstract way.”

Breadth of vocabulary knowledge and reading skill. A number of studies have shown that vocabulary size is different between monolingual and bilingual children. With respect to the ‘school’ domain vocabulary, bilinguals and monolinguals had similar test scores.

In a study involving Baluchi and Persian languages, bilinguals developed larger vocabularies and superior reading skills when compared to Persian monolinguals. Some

160 male students participated in the study; two groups of 80 students. The students had enrolled in an intensive pre-university English vocabulary learning course (Keikhaie et al., 2015).

The bilinguals outperformed the monolinguals on tests measuring general vocabulary learning and word recognition learning.

Another example of such studies is a study carried out at a secondary school in Iran. The study involved two groups of secondary school female students, each 30 in number, having similar academic achievement levels. One group was monolingual whose members only spoke Laki, the other group was bilingual. Its members spoke both Laki and Persian.

The two groups of students participated in an intensive English reading program consisting of twelve 60-minute sessions over 8 weeks. The program involved extensive, and intensive reading and summarizing work. The test results showed that the skill levels of the bilingual students were statistically higher than their monolingual counterparts (Kassaiian & Esmae'li, 2011).

In the case of young adult learners, the differences are of quantity: bilinguals are able to learn more words in their new language—their 3rd language, than monolinguals—their 2nd language.

As a concluding note, bilinguals, over time, end up having larger *receptive* vocabulary items (words, phrases which they understand) than their monolingual counterparts. As well, bilinguals, over time, end up having larger *productive* vocabulary items (words which they use to speak and to write).

This is logical. Monolinguals acquire words of both types of vocabularies—receptive and productive—in only one language—their home language. But, for bilinguals, they acquire both types of vocabulary (receptive and productive) in each of two (or more) languages - their first language and in their second—and for some, their third.

Total vocabulary size is doubled for many second language learners. They acquired their doubled-sized vocabulary in the same or nearly the same amount of time as monolinguals acquire vocabulary in their one and only language.

Bilinguals are more creative. Studies have shown that learning a foreign language improves not only children's ability to solve problems and think more logically, but it can also increase students' creativity (Bamford & Mizokawa, 2006).

The Directorate General Education and Culture of the European Commission undertook a study of the contribution of multilingualism to creativity. The report concluded that the positive effect of bilingualism on creative abilities is likely linked to unconscious automatic cognitive processing. This lays the foundation of more sophisticated processing during which creative ideas may be generated (European Commission, 2009).

Smith (2008: 525) described creativity as the ability of the brain “to simultaneously activate and process multiple unrelated categories.” Creativity, he hypothesized, is more likely to occur in people who can draw upon more than one language.

Further work was carried out by Ghonsooly & Showqi (2012: 164). They postulated that creativity is heavily dependent on the strength and power of cognitive functions such as planning, cognitive flexibility and working memory. And, there is considerable evidence that these functions are enhanced in the brain of a second-language

learner. Thus, they contend, “the more vastly the cognitive functions are improved, the greater the level of creativity becomes possible.”

The potential for bilinguals to become architects, artists, composers, dancers, novelists, and scientist would seem to be greater than for monolinguals.

Memory retrieval skills will improve. Research that is at the intersection between the cognitive sciences and education has revealed that memory retrieval is important for learning. The term ‘meaningful learning’ is used to refer both to the fact that retrieval processes contribute greatly to learning and also to activities and instructional approaches. “Engaging in retrieval is a powerful way to promote learning” (Karpicke, 2015).

Second-language learning requires constant practice in memory retrieval. Children in second-language programs are challenged every day to recall, from memory, text-based and auditory-based foreign words and expressions. They are definitely engaged in retrieval, which, in turn, gives them even greater skill in the retrieval process.

Alban (2015), in a Swedish study of military recruits, points out that understanding language is one of the hardest things the brain does. Her examination of neurological research provided evidence that learning a foreign language can increase the size of the brain’s language center and the *hippocampus*, the area of the brain responsible for forming, storing, and retrieving memories.

The young recruits were taught new languages. By measuring their brains before and after the language training, researchers were able to observe what happens to the brain when learning a second language. MRI brain scans showed that the participants in the study had increased the size of their hippocampus (Alban, 2015).

Among aging people, cognitive control persists for a longer period of time among bilinguals when compared to monolinguals. This was a conclusion reached by neurologists Gold and colleagues in an article published in the *Journal of Neuroscience*. (Gold et al., 2013).

Better decision-making skills. According to a recent study, multilingual speakers are more resistant to conditioning and ‘framing techniques’, and thus “less likely to be swayed by such language in advertisements or political campaign speeches. It seems that foreign language speakers are more sensitive and observant when it comes to the words they hear and read” (Czekala, 2015).

A year earlier, Costa (2014), carried out a study in Catalonia (Spain). Volunteers in the study were native Spanish and English adult speakers, with English and Spanish as their respective foreign languages. They were presented with a moral problem in a language that they had learned as a ‘foreign language’.

Briefly, most agreed to take an action in which one person was sacrificed in order save the lives of five people. (The particular ‘dilemma’ is known as the “trolley problem.”) About 50% made the logical (sensible) decision, however reluctantly, when using the foreign language as compared to fewer than 20% working in their native language.

These results were the same for both groups which showed that the effect was about using a foreign language, and not about *which* particular language – English or Spanish – was used.

The interpretations of such findings in this and in other like studies, is complex. It is argued that one’s memory is intertwined with the experiences and interactions through which one’s home language was learned. For example, people who are bilingual are more

likely to recall an experience or an emotion, if prompted in the language in which that experience or emotion occurred.

Costa (2014) explains that childhood languages are often learned ‘in the throes of passionate emotions... most people’s childhood is not streaked through with an abundance of love, rage, wonder, and punishment.’ Childhood languages, for most people, are infused with deep feelings. By comparison, Costa believes that languages acquired later in life, especially when learned in a classroom and blandly delivered over computer screens, sometimes even using headphones or smart phones, enter into learners’ minds *devoid* of emotionality.

Costa (2014: 5) concludes, “If language can serve as a container for potent memories of earlier transgressions and punishments, then it is not surprising that such emotional associations might [even] color moral judgments made in one’s native language.”

These recent studies suggest that second-language learners could become ‘better decision-makers’—if ‘better’ is interpreted to mean ‘logical’ or ‘practical’.

Bilinguals’ brains will grow. In a study of the brains of people who are specialists in simultaneous translation services – translators who work for international organizations and conferences, for example, Martensson et al., (2012) discovered that their brains grew in four places: the hippocampus, middle frontal gyrus, inferior frontal gyrus, and superior temporal gyrus (*gyri* are ridges on the cerebral cortex). Other scientific reports show similar findings. See, for example, Li et al., (2014).

Such findings suggest that the human brain can expand in size *when there is a need*. This fact can be an encouragement for young second language learners in that their learning a second language is not all that is happening: their brain (and, thus, their capacity to learn is in a growth mode. Perhaps, too, more educators need to understand that all students have the brain power to be successful learners in two or more languages. And, of course, in today’s world, knowing more than two languages is a distinct asset.

3. Non-linguistic benefits that aid the well-being of communities and nations

Empathy. Because bilinguals always need to match their language to the language of others (interlocutors) for successful communication, so they better understand the others’ mental states. Bilinguals have learned that an object can be represented in more than one way linguistically.

Javor (2016) reported a study that involved 240 European adults, ages between 18 and 26 years. They were divided into 2 groups: 120 monolinguals and 120 bilinguals. Two tests were administered: Adult Mindreading Ability Test and the Davis Interpersonal Reactivity Index.

With respect to empathy, the data were divided into two types: cold and hot. Cold empathy helps individuals recognize the emotional state of other people. This ability is also known as perspective-taking. The second type (hot) means that the observed emotional state induces a similar condition in the observer. The results showed that bilinguals had a higher level of empathy (both types) than the monolinguals.

These studies suggest that bilingualism expands an individual’s level of social intelligence. Wikipedia defines social intelligence as the ability to ‘navigate and negotiate complex social relationships and environments’. Thus, it can be argued that bilinguals have the potential to be more skilled than monolinguals (Kinzler, 2016).

Also, it can be concluded that not only family relationships and community harmony can benefit when there are more people having high levels of social awareness. And nations, too, can be the beneficiaries when more and more citizens possess bilingual competencies.

When more and more people have competencies in one of two second languages, a country has the potential to become more competitive. Associated with second language learning are the companion benefits such as greater analytical ability, organizational skills, and executive functioning.

Family bonds. Migration for reasons of securing better employment opportunities, for example, is becoming more of a reality for more and more people. And, for families whose heritage ('first' or 'home') language is different from the language used in the new community (dominant language), it is important that their children learn the language of the new community. But, it is important, too, that the children have an opportunity to learn to read and write their 'home' language. In the case of a Japanese family living and working in Thailand, for example, it would be important for their child also to receive instruction in Japanese.

This means finding a tutor, or, a bilingual school near to the family's home. Such a child will then be able to communicate with extended family members with great ease but also on a more sophisticated level that would include Japanese culture. Another benefit accrues to the family itself. Learning the parents' heritage language will ensure that children and their parents will be able to interact and communicate easily. Parents will be able to take active roles in the lives of their growing children. Parents benefit emotionally, too, from being able to express their most intimate feeling toward their children by using their home language – the language most familiar to them.

A child's first language is intrinsically linked to self-image and is the foundation upon which family bonds are formed (Chang, 2019).

However, sectarian violence and economic inequalities have led to an increase in the number of families migrating to nearby countries. For families whose first or home language is different from the language used in their new community (dominant language), it is important that their children learn the language of the new community as a native speaker. It is also important that the children have an opportunity to learn to read and write their 'home' language. In educational systems which do not provide support for home language learning, it falls upon the family to provide such education themselves. Support of children's home language is crucial to their self-image and emotional resilience (Chang, 2019).

Another benefit accrues to the family itself. Learning the parents' heritage language will ensure that children and their parents will be able to interact and communicate easily. Parents will be able to take active roles in the lives of their growing children. And, parents benefit emotionally from being able to express their most intimate feeling toward their children by using their home language—the language most familiar to them.

Gateway to other cultures. Learning a second language can become a gateway to other cultures. (Fan and others, 2015) Being fluent in a second language or third language also allows for a more immersive experience when travelling. Being bilingual makes it possible to 'sing along to songs and actually understand the lyrics, and watch foreign films without the need for subtitles' (Cherian, 2016).

Cherian (2016), a digital content specialist with *Global Citizen*, identifies other benefits including:

- Travelling is more fun and easier when there isn't a language barrier
- It is easier to learn yet another language if it belongs to the same 'family' of languages. For example, one who has learned French will find understanding Italian easier
- Learning a different language can give insight into the people who speak it, and, perhaps, develop respect for those people.

4. Concluding comment

The centrality of the brain in human development is indisputable. And nowhere is this truer than in the brain of young language learners. Brain research data show that newborns in the first month develop new synaptic connections at the rate of up to three trillion per second. "Everything that a baby hears, sees, feels, tastes is absorbed by the brain and stored in its memory cells" (Kotulak, 1997; Benasich, et al., 2012).

According to Kotulak (1997), prior to age 12, the human brain has been like a sponge. The foundations for cognitive processes have been set: thinking, language, vision, attitudes, aptitudes and other characteristics. Thus, the early years are an ideal time to introduce one or more foreign languages to children and thus encourage cross-linguistic learning.

The evidence from recent research in the neurosciences and human development, however, shows that in learning another language more is happening in the brain than just language learning. In the learning of another language the young brain appears to produce a number of non-linguistic by-products both psychological and behavioral in nature. Research shows that these by-products clearly benefit language learners and their families. And, it can be argued that they can benefit communities and nations, too.

To the extent that second (and third) language learning can support greater family cohesion, delay the onset of dementia among the elderly, and, at the same time, promote understanding and respect among diverse cultures, governments are well advised to be proactive in supporting the learning of additional languages through their educational institutions, while, at the same time maintaining support for first language literacy.

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