

Critical questioning skills of bilingual children

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Abstract

This study reports the critical questioning skills of monolingual and bilingual children aged between 5 and 6. By examining their questions, this research employs Bloom's critical questioning paradigm to explore whether monolinguals or bilinguals are better at generating critical thinking questions on two stories, one of which is about the forgetful girl and the other is about the snail yearning for the things he does not possess. The findings have implications for teacher educators working with pre-school monolinguals and bilinguals, since bilinguals outperform monolinguals in the story of the forgetful girl whereas monolinguals outperform bilinguals about the story of a snail, which leads to the idea that monolinguals are better at abstract thinking and bilinguals are better at overall higher critical questioning.

Keywords: bilingualism, young learners, critical questioning

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Habilidad de cuestionamiento crítico en niños bilingües

Resumen

La presente investigación reporta la habilidad de realizar cuestionamientos críticos de niños monolingües y bilingües de 5 a 6 años. Esta investigación emplea el paradigma de cuestionamiento crítico de Bloom para explorar si los niños monolingües o los bilingües son más eficaces para generar preguntas de pensamiento crítico en dos historias. Una de las historias es sobre una niña olvidadiza y la otra sobre un caracol que anhela lo que no posee. Los hallazgos tienen implicancias para los docentes que trabajan con preescolares monolingües y bilingües. Los niños bilingües superaron a los monolingües en la historia sobre la niña olvidadiza y los niños monolingües superaron a los bilingües en la historia del caracol. Los resultados indicarían que los niños monolingües son mejores en el pensamiento abstracto y que los niños bilingües son mejores en cuanto al cuestionamiento crítico.

Palabras clave: bilingüismo, jóvenes aprendices, cuestionamiento crítico

Introduction

Till 1960s, there was a tendency to believe that bilingualism had a detrimental impact on children (Ausubel, Ives, & O'Sullivan, 1980). Most early studies in this area, however, suffer from a wide range of methodological problems; currently, most investigators in the field including Cummins (1976) regard the findings of early studies as totally unreliable. Many early studies, for example, failed to control for group differences in socioeconomic status between bilingual and monolingual samples. In 1930s,

McCarthy pointed out that bilingualism in the United States was seriously confounded with low socioeconomic status. She found that more than half the occurrences of bilingualism in school children could be classified as belonging to families from the unskilled labor occupational group. Along the same lines, Fukuda (1925) alerted researchers to the fact that high-scoring, English-speaking subjects were mostly in the occupational and executive classes; he reported a correlation of .53 between the Whittier (socioeconomic) Scale and the Binet IQ for this population. Nevertheless, prior to the early 1960s, most studies investigating the effects of bilingualism on children's intelligence did not account for group differences in socioeconomic status. (cited in Diaz, 1983, p. 25)

The study by Peal and Lambert (1962) which led bilingualism to be considered as having a cognitive advantage was a turning point in the research on bilingualism. In their study, three tests were used to determine whether ten-year old children were "balanced" bilinguals, that is, equally skilled in French and English, or whether they were monolingual. Children's self-ratings of their ability in the second language were taken into account also. The final sample was composed of 164 subjects: 75 monolinguals and 89 (genuine or balanced) bilinguals. Children in the sample were administered a modified version of the Lavoie-Laurendau (1960) Group Test of General Intelligence, the Raven's Coloured Progressive Matrices, and a French version of selected subtests of the Thurstone and Thurstone (1954) Primary Mental Abilities Test. In addition, several measures of attitudes toward English Canadians, French Canadians, and the self were administered to the subjects. Contrary to the findings of earlier studies, the results of the Peal and

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Lambert study showcased that bilinguals performed significantly better than monolinguals in most of the cognitive tests and subtests, even when group differences in sex, age, and socioeconomic status were appropriately controlled. Similarly, when the tests of both verbal and nonverbal abilities were conducted, it was found out that bilingual children performed significantly higher than monolinguals; the bilinguals' superiority in nonverbal tests was more clearly evident in those subtests that required mental manipulation and reorganization of visual stimuli, rather than mere perceptual abilities (Bialystok, Luk, Peets, & Yang, 2010; Oller, Pearson, & Cobo-Lewis, 2007). A factor analysis of test scores also indicated that bilinguals were superior to monolinguals in concept formation and in tasks that required a certain mental or symbolic flexibility. Overall, bilinguals were found to have a more diversified pattern of abilities than their monolingual peers.

Despite Peal and Lambert's study, there were some tightly held views against bilingualism even in 1970s. Tucker and D'Anglejan (1971) outlined four commonly held beliefs regarding the effects of bilingualism:

- (1) Children who are instructed bilingually from an early age will suffer cognitive or intellectual retardation in comparison with their monolingually instructed counterparts.
- (2) They will not achieve the same level of content mastery as their monolingually instructed counterparts.
- (3) They will not achieve acceptable native language or target language skills.
- (4) The majority will become anomic individuals without affiliation to either ethnolinguistic group. (as cited in Cummins & Gulutsan, 1974, p. 259)

The path to bilingualism was arduously paved with more studies conducted in favour of bilingual children's outperforming their peers (Balkan, 1970; Ben-Zeev, 1977).

Today one of the most central issues in relation to language learning is the increasing number of bilingual children (Siegal & Surian, 2007). Hence, there is an exponential number of studies highlighting that the use of two languages increases cognitive elaboration, including the ability to adopt better learning strategies and

that there is a positive transfer across languages which increases the bilingual's vocabulary and language understanding (Andreou & Karapetsas, 2004; Ganschow & Sparks, 1991, 1995; Sparks & Ganschow, 1991, 1993; Sparks, Ganschow, & Pohlman, 1989). Bilinguals are in a position to profit from the richness of their linguistic environment and thus acquire the ability to metaprocess language and think about potential relations between the two languages. Bilinguals may possess unique features in terms of linguistic organization. Apart from the increase in vocabulary and cognitive development, the following benefits are shown below (Andreou & Karapetsas, 2004):

- Bilinguals manage to express the same thought in different languages which in return helps bilinguals to acquire greater cognitive control in information processing and provides them with the necessary foundation for greater mental flexibility (Diaz, 1985; Hakuta, Friedman, & Diaz, 1987).
- They also have better performance in concept formation with a more diversified set of mental abilities which can be attributed to the fact that they are able to manipulate two symbol systems and thus analyse underlying semantic features in greater detail. This accounts for their superiority in a variety of verbal tasks which require analytic processing of verbal creativity, verbal input, understanding complex instructions, problem solving, divergent thinking, grammatical awareness and practical reasoning (Hamers & Blanc, 1989).

There are also notions that bilingualism has a deep impact on nonverbal cognitive development. These outcomes, however, are different. Linguistic tasks might often be performed more poorly by bilingual children than monolinguals, especially assessments of vocabulary (Bialystok et al., 2010; Oller et al., 2007), although tests of metalinguistic awareness are generally performed better by bilingual children (Bialystok, 1986; Cromdal, 1999; Ricciardelli, 1992). Hence, the overwhelming number of studies on biligual children showcase the higher cognitive and linguistic development of these children (Curtin, Byers-Heinlein, & Werker, 2011). In order to validate this case of whether bilingualism truly has an impact

on the cognitive development of children who are exposed to two languages by birth, the researchers have designed this study with a particular emphasis on the critical thinking questioning of bilingual and monolingual kids to explore whether monolinguals or bilinguals are better at utilizing critical questioning unlike the other studies which are oriented towards cognitive and language development (Bialystok, 1986; Bialystok et al., 2010; Hakuta et al., 1987).

Methodology

Participants

Children at 5 and 6 in the various kindergartens situated on the western coast of Turkey participated in the study after the informed consent forms had been obtained from their parents. There were 11 five-year old children; 6 of them were monolinguals and 5 of them were bilinguals (3 Turkish-Russian, 1 Turkish-English, 1 Turkish-French). 18 six-year children joined the study, 9 of them were monolinguals, 9 of them were bilinguals (1 Turkish-Russian, 2 Turkish-Romanian, 3 Turkish-Kirghiz, 1 Turkish-Persian, 1 Turkish-Canadian, 1 English-Turkish). The researchers held one-to-one talks with each of these children in schools and it took 30 minutes for each child for the one-to-one study. The stories were told in Turkish as the bilingual children do not have the same language background. One parent was a Turk but the other parent had one of the English, Canadian, Persian, Russian and Romanian lineage.

Table 1. Languages of the Parents of Children

Family background	Monolinguals	Bilinguals
Turkish-Turkish	15	
Turkish-Russian		4
Turkish-Romanian		2
Turkish-English		2
Turkish-Kirghiz		3
Turkish Canadian		1
Turkish- Persian		1
Turkish-French		1
Total	15	14

As to the professions of the parents of the children in the study group are that their fathers are Turkish and they have their own businesses and mothers are from the foreign nationals listed above and half are homemakers while half work either as teachers or as the translators in the private companies.

Materials

Two stories were selected to narrate the children on the basis of two criteria: one about animals and the other about the child at their age level. The first story was written by the researchers and the second story was adapted from Irina Stukova (2017) and children were asked to form questions orally, which were recorded and transcribed.

Story 1

When Pelin enters the class, all students start to stare at her because that day there is some oddness about her. All sorts of threads seem to be hanging with the slips of paper attached. There is something scribbled on these slips. Her friends begin to inquire

“what are these slips for?”. Pelin calmly sits down and reflect that she has not forgotten anything as she has written everything she might forget on these slips of paper. The slips have such sentences as what her name is, what her parents’ names are, what she loves to play, that Sunday is after Saturday but before Monday, that she has to blink her eyes while looking at the sun, and that she should thank when she is handed something. Pelin is not sure whether these slips she has tagged on her have everything in them or not. Do you think she has forgotten something?

Story 2

Slimy is a young snail. Slimy is sick of staying in its old home. So, one day, Slimy decides to look for a new home. Slimy travels for a long time, slowly crawling and searching. To Slimy it feels like a very long and tiring journey but he is determined. The little Snail is worried about that he cannot fly like a Butterfly, a Dragonfly, or a Ladybird and cannot run fast like a Centipede or even like an Ant. He is sad that he is so slow. He leaves home but when it rains, he hides himself in his home and learns to be pleased with what he has (Stukova, 2017).

Rubric

The questions were analysed through the following taxonomy based on critical questioning skills. Barden (1995) defined higher order questions as “those that require more than simple recall to produce an answer” (p. 423) and lower order questions as “those that require responses either recalled directly from memory or cited explicitly in text” (p. 423). Lower level thinking questions were constructed using the first three levels of Bloom’s Taxonomy (remembering, understanding, and applying). The higher order thinking questions were based on the strategies from Frank E. Williams’s (1972) Total Creativity Program for Individualizing and Humanizing the Learning Process.

Level of Questioning	Type of Questioning Technique
Lower level	Remembering—Exhibit memory of previously learned materials by recalling facts, terms, basic concepts and answers
	Understanding—Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas
	Applying—Solve problems, apply to new situations by applying acquired knowledge, facts, techniques and rules in a different way
Higher order	Analogy—Situations of likeness; similarities between two things
	Provocative Question—Inquiry to bring forth meaning; summons to discovering new knowledge
	Paradox—A situation opposed to common sense, self-contradictory statement, or observation
	Attribute Listing—Inherent properties, ascribing qualities
	Tolerance for Ambiguity—Pose open-ended situations which do not force closure

Questioning techniques reprinted from Walsh and Kemp (2013, p. 114)

Procedure

Philosophy with Children (PwC) was first developed in the USA by Matthew Lipman (2003). Building on the work of C. S. Peirce and his friends, PwC asserted the need for a community of inquiry approach in the classroom where children collaborate in their search for meaning and understanding. Lipman “took this further, however, and developed the Philosophy for Children (P4C) programme where children are encouraged to philosophise (Pardales & Girod, 2006). P4C is perhaps the most widely known PwC programme; however, “there is a range of approaches that promote philosophy and philosophical approaches in the classroom” (Casidy & Christie, 2013, p. 2). PwC is a generic title to cover the range of philosophical practices employed.

This study used McCall’s *Community of Philosophical Inquiry*

(CoPI) (Cassidy, 2007; McCall, 2009) which has a structure of its own but was created by McCall as a result of her experiences as a philosophy student and later in relation to her work with Lipman in the 1980s. It is used in the same format with children as with adults. CoPI is built upon four underlying assumptions:

- as humans we all have the capacity to reason;
- as humans we are all fallible;
- as humans we are all creative as we have to create meaning when we communicate and
- there is an external reality into and about which we can inquire, and, as a consequence of assumptions one through to four, everything is open to question.

15 monolingual and 14 bilingual children were interviewed on two stories in Turkish, being the language of the Turkish fathers as the mothers all have different languages and nationalities. They were asked to pose questions about two stories they had listened to in Turkish. These two stories were on the snail who is envious of the other animals such as butterflies but could not realize her own merits and Pelin who forgets the things quickly and has to hang a list around her neck to remember the daily responsibilities. The researchers made sure that

- participants do not need to give their own opinions;
- technical language or jargon is not permitted, only every-day language is used;
- participants may not refer to authorities, such as television programmes, books,
- grandparents and so on as a reason for agreeing or disagreeing and
- no consensus or shared conclusion is sought (Cassidy, 2007; McCall, 2009).

Then two researchers had an appointment with the students after getting the consent forms from their parents, met the kindergarten students individually, told the story in Turkish and gave an example for a question and requested the students to pose as many questions as possible.

Data Analysis

After recording them, the researchers transcribed, coded, item analysed and catalogued the questions of children in terms of Bloom's lower and higher thinking skills paradigm shown in terms of Figure 1 and they checked their inter-rater reliability, which was .92.

Data Results

To find out six-year old kids' questioning skills, their questions were item analysed and found that bilinguals used higher questioning skills in terms of analysis and ambiguity tolerance questions (42%+ 12%) especially in the story of Pelin who keeps forgetting the things in Table 2. The percentage of analysis declines to 2% when the story is an animal, which leads the researchers to think that kids can relate to Pelin more than the snail. Table 2 shows the questions of monolinguals and bilinguals and the red ones are about higher critical questioning categories. Some questions of the bilingual kids are listed below:

- What does the word "Pelin" mean?
- Where does she live?
- Does Pelin love her parents? Maybe that is why she cannot recall her tasks.
- If you meet her, what would you say to her? How would you help her?
- How did Pelin find out the paper and string?

On the other hand, monolinguals did not have such a huge gap in terms of analysis as in the case of bilinguals. Their analysis questioning of the snail story was 13% and Pelin was 27 %. Some examples posed by the monolinguals are highlighted below:

- Does Pelin's mother forget to buy her toys?
- Why is it the paper that she writes the reminders on?
- Why does Pelin think that she should not forget the things?
- Does Pelin think that such things are important?
- Why does she constantly forget?
- Why does she not ask the others the things she has forgotten?

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Table 2. Six-year old kids' questioning skills

	monolinguals (snail)		bilinguals (snail)		monolinguals (Pelin)		bilinguals (Pelin)	
	n	%	n	%	n	%	n	%
Knowledge	7	9.5	5	11.1	1	1.3	2	4
Understanding	21	28.7	13	28.8	19	26.0	12	24
Application	15	20.5	20	44.4	10	13.7	3	6
Analogy	1	1.3	-	-	--	-	-	-
Provocative questioning	11	15	-	-	10	13.7	3	6
Paradox	--	-	4	8.8	3	4.1	3	6
Analysis, attributing	13	17.8	1	2.2	27	36.9	21	42
Ambiguity tolerance	5	6.8	2	4.4	3	4.1	6	12
Total	73	100	45	100	73	100	50	100

As Table 3 highlights, the lower critical questioning skills of five-year old kids were not so sophisticated as those of six-year old kids. More importantly, monolinguals outperformed bilinguals in terms of the percentage (71.3 versus 68% in the story of snails) but bilinguals asked more questions in numbers (17 versus 10). In terms of Pelin's story bilinguals were better (31.4 versus 28.5). Monolinguals asked more questions on "snail" but not on "Pelin". Overall, it can be stated that five-year old kids did not show diversity and different ranging and most of them were based on lower thinking skills such as knowledge and application such as:

- Does the snail have colors on his home?
- Is his home square?
- What does the snail do when it rains?
- In terms of higher thinking skills (analysis), bilinguals are outdistanced by the monolinguals in the snail's story (28.4 versus 20 %).

Table 3. Five-year old kids' questioning skills

	monolinguals (the snail)		bilinguals (the snail)		monolinguals (Pelın)		bilinguals (Pelın)	
	n	%	n	%	n	%	n	%
Knowledge	2	14.2	10	40	2	7.1	2	10.5
Understanding	--		6	24	4	14.2	1	5.2
Application	8	57.1	1	4	2	7.1	3	15.7
Analogy	--		--		-		-	
Provocative questioning	--		2	8	-		-	
Paradox	--		--		-		-	
Analysis, attributing	4	28.4	5	20	20	71.4	13	68.4
Ambiguity tolerance	--		--		--		--	
Total	14	100	25	100	28	100	19	100

When we look at the overall results in Table 4, six-year old bilinguals (58%) excel monolinguals (50%) in lower thinking questioning skills. In higher thinking questioning skills bilinguals have 42 % and monolinguals 50%. Monolinguals use the lower and higher questioning skills in the same rate. In terms of the number of questions, monolinguals pose more questions (146) than bilinguals (94).

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Table 4. Six-year old kids' questioning skills

	six-year old monolinguals		six-year old bilinguals	
	n	%	N	%
Knowledge	8	5.4	7	7.4
Understanding	40	27.9	25	26.6
Application	25	17.1	23	24.4
Analogy	1	0.6	-	-
Provocative questioning	21	14.3	3	3.1
Paradox	3	2.0	7	7.4
Analysis, attributing	40	27.9	22	23.4
Ambiguity tolerance	8	5.4	8	8.5
Total	146	100	94	100

As Table 5 shows, five-year old kid monolinguals ask almost the same number of questions as bilinguals. Monolinguals pose 42 and bilinguals 43 questions. Monolinguals have a lower rate of lower critical questioning skills around 42.8 whereas bilinguals have 53.2. When it comes to higher questioning skills, bilinguals have 46.5 % whereas monolinguals have a higher percentage (57 %). However, all the questions fall into the type of 'analysis, attributing' and bilinguals have more diversity.

Table 5. Five-year old kids' questioning skills

	monolinguals		bilinguals	
	n	%	n	%
Knowledge	4	9.5	12	27.9
Understanding	4	9.5	7	16.2
Application	10	23.8	4	9.3
Analogy	--		--	
Provocative questioning	--		2	4.6
Paradox	--		--	
Analysis, attributing	24	57.1	18	41.8
Ambiguity tolerance	--		--	
Total	42	100	43	100

Discussion and Conclusion

When the related literature is analysed, comparing monolingual and bilingual children's skills has reported mixed results. Barac, Bilaystok, Castro and Sanchez (2014) maintain that

Specifically, there is evidence for a bilingual advantage in Russian-Hebrew bilinguals relative to Hebrew monolinguals (Eviatar & Ibrahim, 2000; Ibrahim, Eviatar, & Aharon-Peretz, 2007), Korean-English bilinguals relative to Korean monolinguals (Kang, 2012), English-Greek bilinguals relative to English monolinguals (Loizou & Stuart, 2003) and Putonghua-Cantonese bilinguals relative to speakers of Putonghua and Cantonese (Dodd et al., 2008). Similarly, Chen and colleagues showed that English instruction enhanced the development of phonological awareness skills in Chinese revealed by performance of Chinese speakers who received English instruction or not (Chen, Xu, Nguyen, Hong, & Wang, 2010). However,

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there is also evidence for equivalent performance on phonological awareness tasks in Greek-English bilinguals and Greek monolinguals (Loizou & Stuart, 2003), in Russian-Finnish bilinguals and Finnish monolinguals (Silvén & Rubinov, 2010), and in Cantonese-English bilinguals and Cantonese monolinguals (Dodd et al., 2008). (p. 710)

Since two stories on the animals and human beings are given to children, the responses differ. When the story is about a child who forgets quickly, 66% of the questions of six-year old bilinguals show higher thinking skills but the same cannot be said for the snail story. The similar situation takes place with five-year old kids as well, their overall understanding and cognition levels are higher with the story of a forgetful girl. As Tables 2 and 3 indicate that bilingual kids are better at higher thinking skills and question the story of the forgetful girl better than the story of the snail, which showcases that their empathy skills with human beings are more developed than monolinguals. The findings of this study redefine the understanding of bilingualism and are consistent with the findings of previous researchers who claim better native and foreign language skills and superior cognitive abilities on the part of highly proficient bilingual subjects (Karapetsas & Andreou, 1999, 2001; Ricciardelli, 1992; Sparks et al., 1989).

It is counterintuitive that when the story of the snail was told to the bilingual children, they could not show the same scores as in the story of the forgetful girl. An overall bilingual superiority on the cognitive measures assessed in this study was found for the story where there is a child character not the animal character.

During the last four decades, many studies (Bialystok, 2009, 2010; Blom, Küntay, Messer, Verhagen, & Leseman, 2014; Lucasik et al., 2018) have presented evidence showing a positive influence of bilingualism on children's cognitive and linguistic abilities. When compared to monolinguals, balanced bilingual children show definite advantages on measures of metalinguistic abilities, concept formation, field independence, and divergent thinking skills. Although the cognitive advantages of bilingual children have been explained in several ways, the empirical literature gives most support that bilingualism accelerates cognitive development by fostering

an early awareness of the objective and structural properties of language. Indeed, as several studies (Byers-Heinlein, Burns, & Werker, 2010; Curtin et al., 2011; Werker & Byers-Heinlein, 2008) have shown, bilingual children demonstrate a keen awareness of the arbitrariness of language, as well as an early capacity to focus on linguistic structure and detail. To sum up, it can be stated that native and foreign language learning are interrelated and they reflect basic language functions. It can be held that bilinguals might be superior in many cognitive measures which require more analysis, synthesis, provocative questioning and ambiguity tolerance.

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