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Impact of bilingualism on language development in 46 Egyptian children

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Abstract

Purpose Bilingualism is a common practice around the world. It was believed that bilingualism might affect language development. This study aimed to investigate the impact of bilingualism on language development in a group of Egyptian children.

Methods The study included 46 children 5–6 years of age recruited from a single American international school in Egypt to ensure all subjects have same socio-economic standard and the same environment to exclude other factors that may affect language development other than bilingualism. The 46 students are average students as per their school report; all children started learning English at the age of 3 years. At home, parents speak Arabic all the time and just label a few objects in English language. Socio-economic data were collected through parents' interviews; there was no history of delayed language development nor speech and language therapy. Two assessment tools were administered: Preschool Language Scales Fifth Edition (PLS-5) to assess English language and Receptive Expressive Arabic Language Scale (REAL Scale) to assess Arabic language development for the study group, and this tool start age is 5 years.

Results The results of the PLS-5 and REAL Scale indicated normal language development of Arabic and English in all children.

Conclusion Early English language learning does not affect Arabic language development in the study group. Both languages are well developed in these children, provided they use Arabic as the primary communication language at home with parents and siblings.

Keywords Children, Egypt, Bilingualism, Language development, Communication

Background

Language development is a continuous process through which the child increases vocabulary, sentence length, and complexity and expresses ideas through words. It is a dynamic process influenced by the child's age, language exposure, and social interaction. Bilingualism implies the coexistence of two language systems within an individual, as contrasted to monolingualism [1]. Currently, most of the world's population is consistently exposed to

two or more languages and can be considered bilingual [2]. Bilingualism occurs through interest in learning a language that can provide access to communication and global resources, a status that English language holds today.

Increasing research has been done to study bilingualism effects on language and cognition [3–5]. It was believed that bilingualism might put children at risk for language delay or learning difficulties. However, research does not support this notion [3]. On the contrary, many studies have found that bilingualism in school-aged children and adults may surpass monolinguals on cognitive control [6]. Studies in the USA found no significant impact of bilingual education programs on standardized test performance compared to English-only programs [7, 8].

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Children with typical language development (TLD) exposed to two or more languages can be mistakenly diagnosed with language impairments [9, 10]. This misdiagnosis is because these children might experience difficulties that resemble those observed in children with delayed language development [11, 12]. However, growing evidence suggests that children with TLD exposed to two languages exhibit the development of both languages' milestones comparable to those perceived in monolingual peers [13, 14].

Currently, learning English in nurseries and preschool years is a common practice in the Arabic-speaking Egyptian population. There is increasing evidence that academic language and literacy development are established during the preschool years [15]. Nevertheless, literature is scarce to absent in research on the effect of bilingualism in Arabic-speaking countries.

To the best of our knowledge, the current study is the first to investigate the impact of bilingualism on language development in a group of Egyptian children.

Methods

Study sample

The study was conducted in a single American international school in a small city west of Cairo, Egypt, to ensure no factors affect language development other than bilingualism. The school requires a relatively high socio-economic and educational standard of the parents as a prerequisite for accepting the child who has to have a typical cognitive and language development (TLD) with no history of any delayed language development nor speech and language therapy; also, the school reports were checked to ensure all subjects were average students with no academic challenges. The school teaches in English, starting from KG1 class up to grade 12. Therefore, all children were Egyptian Arabic-speaking English language learners (ELL). Since the age of 2 years, all the study group children went to English-instructed nurseries where they started learning English in the form of simple instructions, labeling, coloring, and playing. Then, they started learning English formally in KG1 at age of 4 years. They have Egyptian parents who speak Arabic with the kids at home with few English semantics (labeling objects). The age group was chosen 5–6 years as the Arabic assessment tool REAL Scale starts from age of 5 years and also to ensure that the subjects had enough exposure to English language learning at school and to be able to check their school reports of KG1 to ensure all of them were average students with no academic challenges.

The children can speak both languages: more English at school, but otherwise they communicate correctly in

Arabic. All parents speak very good to fluent English, but they do not communicate in English with their kids. They speak Arabic all the time and just label few objects at home. This is emphasized at inclusion through parents' interviews; the study included 46 children, 5 to 6 years of age: 31 attending KG2, and 15 attending grade 1. Parents signed written informed consent before administrating the assessments.

As bilingualism has no commonly accepted definition, we adopted the suggestion of Kohert [16], who views bilinguals as "individuals who receive regular input in two or more languages during the most dynamic period of communication development—somewhere between birth and adolescence." We defined bilingual children with language impairment as those who exhibit impairment (delay or disorder) in both languages they regularly hear [17].

Assessment tools

1. We started with a cross-sectional analysis of information for socio-economic characteristics and parental contributions. Socio-economic factors included the child's age, gender, and birth weight, number of siblings, the mother's age and job, parental education levels and language proficiency, and the region of residence.
2. Assessing language development: two assessment tools were administered to assess English and Arabic language development for the study group. The first tool is the Preschool Language Scales Fifth Edition (PLS-5), and the second tool is the Receptive Expressive Arabic Language Scale (REAL Scale). Both assessments were administered in two different settings, 1 week apart in a supportive and friendly test environment; children were comfortable and relaxed. Both assessments were administrated in as 1:1 setting in a quiet, well-lit, adequately ventilated room away from any distraction or disruption. The assessor is familiar with the study group as the assessor spent two school days with the children before the assessments.
 - PLS-5 [18] is an English standardized language test used for children aged birth through 7years–11months to assess language development and identify children who have a language delay or disorder. The test aims to identify receptive and expressive language skills in the areas of attention, gesture, play, vocal development, social communication, vocabulary, concepts, language structure,

integrative language, and emergent literacy. The PLS-5 helps the clinician determine strengths and weaknesses in these areas to determine the presence and type of language disorder (e.g., receptive, expressive, and mixed) and eligibility for services and to design interventions based on norm-referenced and criterion-referenced scores. The test was applied to each child in one sitting; the administration time varies from 45 min to 1 h. Practice items are included for many items throughout the test and allow the child to rehearse the required item task. Some children needed additional support during some practice items, such as demonstrating or modeling the correct responses and explaining why the answer is correct; no other cues were given to the children. Except for EC56 (repeat nonwords) and EC57 (repeat sentences), some directions and repeated stimuli for some children once were applied during the test.

- REAL Scale [19] is structured to assess the Arabic language. It is a battery of several tests used to evaluate receptive and expressive language skills in Arabic-speaking children aged 5 years through 12 years and 11 months (Table 1). It was administered in one setting for around 90 min. Some children had 10 min break, and others did not need a break. The REAL Scale is a valid Arabic test in which correlation studies were carried out between tested parameters and the participants'

age to indicate the REAL Scale construct validity. As for convergent validity, receptive tasks were correlated together, and similarly, the expressive tasks were also correlated. Additionally, receptive subtests were highly correlated with the expressive ones, to some extent, when they are used to measure the language skills of a typically developing child. Cronbach's alpha of the REAL scale subsets ranged from 0.673 to 0.901. The test–retest stability coefficient ranges from 0.775 to 0.975 for the different subsets. A percentile rank of 70 or more indicates satisfactory Arabic language development.

Scores of both tools are valid as the assessor was adherent to administration procedures, especially rules for prompting the child and repeating test stimuli. Children's behavior was observed during test administration. All scores were recorded correctly, and the assessor followed interpretation guidelines to interpret the scores.

Statistical methods

Statistical analysis was done using IBM® SPSS® Statistics version 22 (IBM® Corp., Armonk, NY, USA). Numerical data were expressed as mean and standard deviation or median and range as appropriate. Qualitative data were expressed as frequency and percentage. Comparison of repeated measures was made using paired *t*-test. A *p*-value < 0.05 was considered significant.

Table 1 The subsets composing the receptive expressive arabic language scale and their raw scores

	Question grading	No. of questions	Min. score	Max. score
Receptive subtests:				
Receptive Vocabulary (RV)	0–1	36	0	36
Sentence Comprehension (SC)	0–1	56	0	56
Understanding Oral Instructions (UOI)	0–1	62	0	62
Comprehending Orally Presented Paragraphs (COPP)	0–1	15	0	15
Receptive + expressive components:				
Verbal Categorization Receptive 1 (VC1)	0–1	23	0	23
Verbal Categorization Receptive 2 (VC2)	0–1	28	0	28
Expressive subtests include:				
Expressive Vocabulary (EV)	0–2	56	0	112
Forming Sentences 1 (FS1)	0–2	7	0	14
Forming Sentences 2 (FS2)	0–2	27	0	54
Sentence Repetition (SR)	0–4	31	0	124
Morpho-syntax (MS)	0–1	63	0	63
Receptive + expressive components				
Verbal Categorization Expressive 1 (VC1)	0–1	23	0	23
Verbal Categorization Expressive 2 (VC2)	0–1	28	0	28

Table 2 Baseline characteristics of the whole studied group ($n = 46$)

	Value
Child age (years)	5.5 ± 0.3
Sex (male/female)	24/22
Mothers' age (years)	31.7 ± 3.5
Number of siblings, median (range)	1 (0–3)
English proficiency of mother	
Very good	15 (32.6%)
Excellent	14 (30.4%)
Fluent	17 (37.0%)
English proficiency of father	
Very good	19 (41.3%)
Excellent	12 (26.1%)
Fluent	15 (32.6%)
Residency city (Zayed/6th of October)	42/4

Table 3 English language assessment with preschool language scales

	Mean ± SD	Range
Standard scores		
Auditory comprehension	99 ± 2	96–102
Expressive communication	100 ± 2	97–103
Total language	101 ± 6	96–119
Estimated age (months)		
Auditory comprehension	67 ± 3	60–74
Expressive communication	66 ± 4	60–72
Total language	66 ± 3	60–72

Table 4 Arabic language assessment with receptive expressive arabic language scale

	Mean ± SD	Range
Receptive language score		
Raw score	159 ± 6	139–163
Total scaled	125 ± 5	109–129
Percentile rank	90 ± 5	75–95
Expressive language score		
Raw score	210 ± 7	192–223
Total scaled	119 ± 3	111–124
Percentile rank	89 ± 5	70–95
Total language score		
Total scaled	369 ± 12	331–386
Percentile rank	123 ± 4	111–128
Percentile rank	89 ± 6	70–95

Results

The age of the studied group was 5.5 ± 0.3 years, ranging from 5 to 6 years. Table 2 shows the baseline

Table 5 Difference between chronological age and language ages estimated with PLS-5 components

	Paired difference			P-value
	Mean	95% CI		
Chronological age vs				
AC language age	−0.65	−1.17	−0.14	0.014
EC language age	0.02	−0.45	0.50	0.927
Total language age	−0.33	−0.78	0.13	0.157

AC Auditory comprehension, EC Expressive communication

characteristics of the studied children and their parents. The results of assessing English and Arabic language development are shown in Tables 3 and 4. These results indicated normal language development of Arabic and English in all children.

The language age estimated by the auditory comprehension score was significantly lower than the chronological age ($p = 0.014$). However, the paired difference is limited to only 1 month, which is not clinically significant. On the other hand, the language age estimated by expressive communication and total scores were comparable to the chronological age (Table 5).

Discussion

Globally, the early start of foreign language learning in schools is a favored trend assuming that the age of acquisition is a strong predictor of successful foreign language learning [20]. English is frequently this foreign language as it is the dominating “*lingua franca*” worldwide [21]. In Egypt, public schools used to introduce English as a mandatory subject from grade 7. Recently, education reform teaches English at grade 1. On the other hand, private schools introduce foreign language instruction as early as preschool. Bilingual Egyptian parents are keen to raise proficient, dynamic bilingual children. They always prefer private and international schools to satisfy this need.

To the best of our knowledge, the current study is the first to investigate the impact of bilingualism on language development in a group of Egyptian children born to college-graduate parents with a good command of English. All children were from a typically developing population. They started English learning at the nursery and then in an American international school from the age of 4 (KG 1). The study clearly demonstrated well-developed English as well as Arabic languages in all children.

In the present study, socio-economic confounders were controlled because all children were recruited

from a single international school that requires a high-level educational and economic standard of the parents as a prerequisite for children's acceptance. Besides, they all live in the same city with quite similar cultural and social levels. The parents' relatively high socio-economic standard in the current study is considered a motivating factor for their children to learn English. Such parents presumably tend to offer their children opportunities to practice the language in more authentic settings [22, 23].

According to the age of acquisition of the English language, the included children can be classified as sequential learners [24]. The children acquire the second language by age three after having obtained the primary language. Bilingual infants show that their language growth is directly related to the quality and quantity of speech they hear in each language [25]. The children became familiar with Arabic at home as emphasized by the parents, and then they started English learning in preschool nurseries. Therefore, they can be classified as informal sequential learners [24]. Using Arabic at home is confirmed through parents' interview despite being—at least—very good in English proficiency.

We believe that this study contributes to ending the myth that bilingualism will constrain the child's language acquisition. Older studies claimed harmful effects of bilingual education on the development of both native and second language. Suggested problems of bilingualism include interference or transfer from their first language (L1) to English (L2) [26, 27], silent period [28], code-switching [29], and language loss [13]. Karim and Nassaji found that L1 affects L2 writing [30]. Fatemi et al. reported that learners have difficulty in L2 pronunciation when the structures of L1 and L2 are different. They explained this by facing unfamiliar phonological rules [31].

On the contrary, we believe that bilingualism enriches rather than impedes language development. This positive effect is probably more pronounced if second language learning is established in early childhood. Naturally, a child exposed to two or more languages from early life will have a different linguistic development profile from that of monolingual children [32, 33]. A multilingual child keeps fewer vocabularies in each language compared to monolingual peers [12, 34]. This difference in the vocabulary will vanish, considering the conceptual or total vocabulary [35]. Nevertheless, he/she will recognize the interaction between the simultaneously acquired linguistic systems. This way, bilingual children do not show transfer, acceleration, or delay in developing both languages [36]. Even if a delay in acquisition appears early, it is apt to fade by late primary school age [13]. It was found that multilingual children may achieve equivalently [37]

and sometimes even better than monolingual peers on pragmatic conversational ability [38]. Also, multilingualism has beneficial effects in the area of nonlinguistic cognitive functioning [6] as executive control [39] and theory-of-mind tasks [40].

Few previous studies reached similar conclusions in Arabic-speaking children learning English as a second language. A study was conducted in Saudi Arabia, with 46 Arabic-speaking female students from grade 2. One group ($n=16$) learned English from grade 1. The authors reported a conclusion like the current study. They did not find any negative impact on the reading and writing skills of Arabic in those children exposed to English from the beginning of formal education [41]. An Egyptian study investigated the effect of learning English as a second language on learning to read and spell in Arabic. The author conducted their research on students in the fourth grade. The authors found that learning English had a positive effect on the Arabic reading and spelling accuracy of these students [42].

These two studies investigated children acquiring English at an older age than the current study. The lack of a negative effect on language development in the present study supports our view of the early start of a second language. We believe that this practice is appropriate and can boost the chances for better language development. Early exposure to the second language entails more time spent learning the language, and it diminishes the effect of age on foreign language learning [43]. The children's brain is flexible to enable them to learn, grasp, and remember much information. Thus, they can pick up languages more efficiently [44]. Many factors may affect second language learning as age, motivation, attitude, and intelligence are among determinative factors in this area [45, 46], with age representing the strongest predictor of success [47]. A recent study from China showed that children who received early English education (at the age of 3) have significantly higher chances of obtaining the highest scores in both English and Chinese examinations [48].

Conclusion

English language learning as early as preschool nurseries' age does not affect Arabic language development in young Egyptian children. Both languages are well developed in these children, provided they use Arabic as the primary communication language at home with parents and siblings. Therefore, early education in English should not be a fear for parents or policymakers in Arabic-speaking countries. The results of this study support the concept of early bilingualism as a boost and not a burden to the younger generations.

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Authors' contributions

R.S is the sole author; she collected all the data and applied both assessments then compared the results.

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Availability of data and materials

The datasets during and/or analyzed during the current study available from the corresponding author on reasonable request.

Declarations**Ethics approval and consent to participate**

The National Research Center Medical Research Ethics Committee has approved this study (uploaded as a supplementary material); 46 consent forms have been signed by the legal guardians whose kids were in this study (2 consents with hidden names were uploaded as supplementary materials; if the rest are needed, they will be submitted).

Consent for publication

Not applicable.

Competing interests

The author declares no competing interests.

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