



Bilingual and monolingual students' out-of-school learning environment in Turkey: A comparative study based on PISA 2018 data

Cenan Isci Karamese 

Dokuz Eylul University, Turkey.

Email: iscicenan@gmail.com



Abstract

Students' out-of-school learning environment is one of the most prominent factors affecting their school success, which is mostly a source of inequity unfavorably affecting disadvantaged groups. In some countries including Turkey, bilingual students are among disadvantaged groups because most of them are from immigrant families with low socioeconomic status. PISA provides extensive data about students' out-of-school learning environment to be analyzed. In this context, the purpose of this study is to compare monolingual and bilingual students' out-of-school learning environment based on PISA 2018 data. The participants of this study are the PISA 2018 sample of Turkey including 6890 15-year-old students selected from 186 schools through stratified random sampling. PISA 2018 data were collected by PISA Student Questionnaire, which is an online data collection instrument. Results showed that there are meaningful differences between monolingual and bilingual students with respect to all variables representing their out-of-school learning environment with medium effect sizes. These findings indicate a possible inequity problem in the Turkish Education System with respect to out-of-school learning environments unfavorably affecting bilingual students. To achieve a permanent solution, socio-economic inequities need system-wide reforms that are often difficult to execute. However, it is possible to reduce the negative effects of this problem by means of some precautions. In this regard, providing training for parents and increasing the accessibility of schools' educational sources and technologies for disadvantaged students were suggested in this study.

Keywords: Bilingualism, Inequity, Out-of-school learning environment, PISA 2018, Socioeconomic status.

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Contribution of this paper to the literature

PISA data contain important information about bilingual students' problems in education system. In the literature, there are not sufficient studies analyzing PISA data of Turkey with respect to bilingualism. This study especially contributes this dimension of the related literature.

1. Introduction

1.1. Problem

It is known that one of the factors that most affect a student's school success is the general quality of the teaching environment in the school. This has many sub-dimensions, such as the number of teachers per student, the quality of teachers, and the adequacy of the instructional resources in the school. On the other hand, the other important factors that affect students' school success as much as school-related factors are out-of-school factors, such as educational resources at home and parents' academic support (Şeker, 2013). Out of school factors constitute critical educational disadvantages for students belonging to low socio-economic status groups in society. Elimination of the disadvantages arising from non-school factors is very difficult and time-consuming, because they are related to the entrenched economic problems of the segments of the society that make up a significant part of the population, and often require reform-level measures for the solution. On the other hand, identifying the problems of students belonging to disadvantaged groups arising from out-of-school learning environments guide to develop the measures to be taken at school. One of the disadvantaged groups in the society may be bilingual individuals due to the problems brought about by the immigration phenomenon. Some of the problems that bilingual students encounter in the teaching process, such as the low level of success, arise from their out-of-school learning environments. In this context, this study focuses on revealing the differences between the out-of-school learning environments of bilingual students and monolingual students, and in this way, diagnosing the problems caused by the inadequacies of bilingual students in out-of-school learning environments.

1.2. Bilingualism in Education

Today, with the increasing migration movements, international marriages, and the spread of information and communication technologies, bilingualism is encountered in almost every country. In the 21st century, where communication between countries is increasingly widespread and easy, nearly two-thirds of millions of people living in almost all parts of the world speak more than one language (Bhatia & Ritchie, 2014; Grosjean, 2008; Potowski & Gorman, 2011; Rothman, Alonso, & Puig-Mayenco, 2019); It is seen that intercultural marriages are increasing and mixed language marriages are emerging. After mixed marriages around the world, bilingualism has increased significantly in society. According to the report of the U.S. Census Bureau (2015), approximately 350 different languages are spoken in the American society, more than 20% of the population speaks a different language at home, in addition a significant portion of the European population is at least bilingual (Marian & Shook, 2012); It is also seen that many different languages (Arabic, Kurdish, Laz, Zazaki) are spoken in Turkey besides Turkish (ERG, 2009).

It can be said that interdisciplinary studies have been carried out with different disciplines (psychology, sociology, anthropology, education, linguistics, neurolinguistics) related to bilingualism, which can be seen in every layer of society after the mixed language marriages that emerged with the migration movements, and bilingualism has been discussed in different aspects. After these interdisciplinary studies, it is seen that many definitions of bilingualism have been made. For example, it can generally be defined as the active use of two different language systems (Bialystok, 1995; Schumann, 1997; Swain, 1981). Hockett (1958) talked about semi-bilingualism by approaching bilingualism as bilingual individuals can understand expressions in a language even if they do not have generative control over a language. While defining bilingualism, Valdés (2001) pointed out that the language learning skills of bilingual individuals have dynamic structures that change depending on time, place, contact person, working and living conditions. Grosjean (2010), on the other hand, while defining bilingualism, emphasized that bilingual individuals fulfill their functional duties in both languages in daily events according to certain needs. Wei (2000) emphasized functional bilingualism by drawing attention to the situation of "using two languages in a completely fluent or non-fluent way in order to perform the task at hand" while discussing the definitions of bilingualism. In addition, Wei (2000) made classifications of bilingualism such as "receptive, sequential, additive, coordinated, simultaneous, balanced, ascending bilingualism"; a person who knew two languages as a child; one who combines two languages in a complementary and enriching way; It included definitions of bilingualism in the form of a person who not only understands the language, but also speaks and most likely writes in that language. In bilingualism, there is simultaneous exposure or sequential exposure to both languages. In this bilingualism, which is also called sequential/consecutive/diachronic bilingualism, the second language is learned immediately after the first language (Baker, 2011; Saville-Troike, 2006; Selinker & Gass, 2008). The critical age period in this type of bilingualism is three years, and three years are important in the life of an individual with this type of bilingualism; because the bilingual individual acquires his second language after the third age, when the acquisition process of the first language reaches a certain level (Yilmaz, 2014). In simultaneous bilingualism, the first and second languages are acquired simultaneously (Baker, 2011). This type of bilingualism, which has two different linguistic codes depending on a single meaning system (Uyar, 2012), generally refers to individuals who have learned two different languages simultaneously, in a natural environment, in a common environment since the individual's birth (Saville-Troike, 2006).

When we look at the definitions of bilingualism, it is seen that it is not possible to make a clear definition of bilingualism. When we look at the opinions of the field experts working on this term, it is noteworthy that there is no common definition and view on bilingualism (Baker, 2011). Bilingualism generally refers to the knowledge and competence of individuals in two or more languages. Although there are many different views on the definition of bilingualism, to make a rough definition of bilingualism, in summary, bilingualism; We can say that the individual acquires both languages in critical age ranges (infancy and second childhood), uses these languages as a means of communication, masters the languages he has, is fluent in both languages without any language limit, and can continue his life in both languages. In bilingualism, it is desirable for individuals to have the same fluency in both

languages, but bilingual individuals in this situation are a minority group (Baker, 2011). The group that does not have equal fluency, language skill level and language use in both languages is more. For this reason, it is difficult to expect equal fluency, language skill level and language use in both languages from bilingual individuals. Because for the bilingual individual, each language has different purposes, different functions and different uses. Bilingual individuals can generally use the languages they have in different places, at different times, with different people. At another important point, a bilingual individual may not be able to receive education in both languages and may not have equal language and vocabulary in both languages. Therefore, they may not have equal proficiency and use in language skill levels, and they may not be able to make healthy transitions in both languages. For this reason, a bilingual individual may prefer to use one language more dominantly than the other.

Another point that draws attention in bilingualism is that even if the bilingual individual has equal proficiency in both languages (in comprehension and expression skills), he may prefer to use a language he has more than the other language depending on his usage situation (Baker, 2011). At this point, the bilingual individual's need for the languages he/she has, his/her individual attitude towards those languages and his/her attitude towards the languages of the society he/she lives in, his individual self-efficacy regarding the languages he/she has, whether the emotional support provided by the individual's family to the bilingual individual is at the desired level in both languages. Factors such as the ability to reach information and technology equally in language can also come into play. These elements have an important place in the development of bilingual individuals' linguistic skills in both languages. In particular, the educational status of the parents and their professional status are important. Because parents with a high level of education will be more conscious of the language strategies they will use and will be able to produce alternative language strategies at the points where the bilingual individual is blocked. Conscious parents with a high level of education help their children to have a healthy bilingual process by consciously observing the family structure, social effects, mass media and education system of the child. Parents of individuals born after mixed language marriages help their children consciously choose bilingualism. It helps their children to realize bilingualism in a healthy way through education. In particular, the privilege of the middle and upper class, well-educated members of most societies (Paulston, 1975 as cited in Harding and Riley (1986)) direct the society in terms of social, cultural and economic aspects and help to form a bilingualism that we call elite in society. Thus, elite bilinguals use the education system that enables them to be bilingual more consciously and become more successful academically.

It is a process that takes a long time for the individual to make sense of what is going on around him, to realize himself and to develop his linguistic skills. In this process, the individual is faced with many stimuli around him. Emotional support of parents, information-communication technologies and educational resources are at the forefront of these stimuli. Developments in information and communication technologies have increased the freedom of movement of individuals in their linguistic development; have caused them to be exposed to different languages simultaneously or diachronically. In this process where they meet different languages, they become able to use their language effectively with the support of their families and information and communication technologies. Today, when digitalization is so important, bilingual individuals who can actively use information and communication technologies can effectively improve their comprehension (listening and reading) and expression (speaking and writing) skills in both languages. With the development of information and communication technologies, parents and schools can improve the language practices of bilingual individuals by taking into account their language dominance in both languages while constructing language equations of bilingual individuals. Bilingual individuals can easily access educational resources, especially with the widespread use of the internet. With the widespread use of the Internet and the transition of schools, libraries and various information institutions to online status, their local pages often appear as bilingual (Baker, 2011). This situation can help bilingual individuals to reinforce their language practices by easily using the languages they have on the internet (Baker, 2011). Bilingual individuals at school age can easily reach their peers who speak the same language and share educational resources in the languages they have, thanks to the internet.

1.3. Purpose of the Study

As mentioned above, revealing the differences between the out-of-school learning environments of bilingual students and monolingual students may contribute to diagnosing the problems caused by the inadequacies of bilingual students in out-of-school learning environments. To make such a comparison, PISA, an international survey implemented by the Organization for Economic Cooperation and Development (OECD), serves significant amount of data. In this context, this study aims to compare the out-of-school learning environment of monolingual and bilingual students based on PISA 2018 Turkey data. For this purpose, related variables in PISA 2018 Turkey data were determined and analyzed. The participants of the study, data collection tools, variables and statistical analyzes are presented in detail in the method section.

2. Method

This study is a quantitative causal comparative study aiming to compare the out-of-school learning environments of monolingual and bilingual students. The causal comparative method is a correlational research method that quantitatively compares the measured characteristics of existing groups in society (Fraenkel, Wallen, & Hyun, 2012). In the following sections, the participants of the study, data collection tools, variables and statistical analysis are explained.

2.1. Participants

The participants of this study are the sample of Turkey in the PISA 2018 survey. PISA 2018 Turkey sample consists of 6890 students, all of whom are 15 years old, selected by stratified random sampling method from 186 schools (MEB, 2019). Table 1 shows the gender, language and grade level statistics in the PISA 2018 Turkey sample.

Table 1. Sample of Turkey in PISA 2018.

Gender		Language		Grade Level					
F	M	Test language (Turkish)	Other languages	7.	8.	9.	10.	11.	12.
3396	3494	6339	512	3	19	1295	5360	207	6

As shown in Table 1, the gender distribution in the sample is balanced. On the other hand, an unbalanced distribution observed at the grade level is due to the fact that PISA collects data from 15-year-old children and that 15-year-olds in Turkey are mostly at the 9th and 10th grade levels. The frequencies presented in the language section in Table 1 were measured by the item in the PISA questionnaire asking which language is spoken most often at home. In this item, there are two options: "test language" and "other languages". Test language refers to the language of the PISA tests administered to the student in the countries participating in PISA. In Turkey, PISA measurement tools were applied only in Turkish. However, in some countries, PISA measurement tools can be implemented in more than one language. Other languages refer to any language other than the test language. According to Table 1, the number of students stating that Turkish is spoken most frequently at home is 6339, and the number of students reporting that they speak a language other than Turkish is 512.

2.2. Data Collection Instruments

In PISA surveys, which are repeated every three years, students' demographic and affective characteristics as well as reading skills, science literacy and mathematical literacy are regularly measured with separate data collection tools (OECD, 2019). In this study, only the data obtained from the PISA student questionnaire, which aims to measure the demographic and affective characteristics of the students, was used. The data obtained from the reading literacy, science literacy and mathematical literacy tests are out of the scope of this study. The PISA student questionnaire is a comprehensive data collection tool that includes items related to students' gender, grade level, cultural characteristics, socio-economic status, out-of-school learning environment, opinions and attitudes about teachers and school, and other affective characteristics of students. The variables of this study, which were defined based on the data obtained from the items in the PISA student questionnaire regarding the students' opinions about the school, are described in detail in the next section.

2.3. Analysis

Within the scope of the study, at first, PISA 2018 Turkey data published by the OECD was obtained and the variables to be included in the analysis were determined. The independent variable of the study is the language status of the students, which is a nominal variable with two-categories. This variable was measured by the item (ST022Q01TA) in the PISA student questionnaire asking which language the student mostly speaks at home. This item has two options: "test language" and "another language". Since PISA tests and questionnaires are administered in Turkish in Turkey, the "test language" is Turkish, and the "another language" option refers to any language other than Turkish. Students who chose "another language" in the PISA student questionnaire were not asked what language they speak at home. However, since the study did not focus on the bilingual status of a specific language, but only covers the bilingualism of all other languages in Turkey, this item was accepted as appropriate to determine the bilingual status of the students. In addition, measuring bilingualism with the item in question asking which language is spoken most often at home is in line with the definitions of bilingualism in the literature presented in the introduction to this study.

The dependent variables of the study are;

- Parents emotional support (EMOSUPS).
- Information-communication technologies at home (ICTHOME).
- Educational resources at home (HEDRES).
- Parents' highest education (PARED).
- Parents' highest occupational status (HISEI).
- Family wealth (WEALTH).

The dependent variables above are interval scaled variables derived by the PISA team using the several statistical methods (ie. weighted likelihood estimation) based on the data obtained from the PISA student questionnaire.

In this study, monolingual and bilingual students were compared statistically according to the dependent variables defined above. Before making a statistical comparison, whether the data were normally distributed in these dependent variables was determined by the Kolmogorov-Smirnov test. In this study, statistical group comparison was performed with the Mann-Whitney U-test, since the independent variable was nominal, the dependent variables were interval scaled and the dependent variables were not normally distributed.

3. Results

As mentioned in the previous section, this study made statistical comparisons between monolingual and bilingual students with respect to out-of-school variables in PISA 2018 data. Before reporting the inferential statistics comparing monolingual and bilingual students, descriptive statistics of dependent variables were demonstrated in order to describe the characteristics of the sample with respect to out-of-school variables in PISA 2018 data. Table 2 shows descriptive statistics of dependent variables.

As shown in Table 2, monolingual students have greater scores than bilingual students in all of the dependent variables. However, simple mathematical comparisons based on the descriptives are not sufficient to make inferences about the difference between these two groups. To do this, statistical comparisons should be performed for these dependent variables. In this study, Mann-Whitney U-test was performed to compare monolingual and bilingual students with regard to dependent variables, because all of the dependent variables were distributed with non-normal shapes. Table 3 shows the findings of statistical comparison for the dependent variables between monolingual and bilingual students in the PISA 2018 sample.

Table 2. Descriptive statistics of dependent variables.

Variable	Group*	N	Mean	St. dev.
EMOSUPS	1	6187	0.0381	1.060
	2	482	-0.284	1.11
ICTHOME	1	6278	6.3436	2.558
	2	503	4.626	3.37
HEDRES	1	6307	-0.4201	1.021
	2	506	-1.236	1.09
PARED	1	6336	11.0276	4.224
	2	512	8.861	4.57
HISEI	1	6245	38.0583	22.597
	2	508	29.458	19.25
WEALTH	1	6334	-1.3003	0.927
	2	512	-2.040	1.18

Note: * 1: Monolingual, 2: Bilingual.

Table 3. Mann-Whitney U-test results.

Variables	U	df	p	Cohen's d
EMOSUPS	1.24e+6	6667	< 0.001	0.303
ICTHOME	1.07e+6	6779	<0 .001	0.654
HEDRES	885599	6811	< 0.001	0.795
PARED	1.19e+6	6846	< 0.001	0.510
HISEI	1.21e+6	6751	<0 .001	0.385
WEALTH	945015	6844	< 0.001	0.780

As demonstrated in Table 3, there are significant differences between monolingual and bilingual students in all of the dependent variables. In addition to statistical significance, Cohen's d values indicated that, among these dependent variables, home educational resources (HEDRES) and family wealth (WEALTH) have the largest effect sizes, indicating possible systemic problems about these two variables.

4. Discussion and Conclusion

In some countries, bilingualism is an advantage in educational and professional life because of the positive effects of having the cultural heritage of both languages (Latham, 1998). However, in some other countries including Turkey, potential advantages of bilingualism do not surface for academic and professional benefit, simply because bilingual individuals, in most cases, are the members of socially and economically disadvantaged communities in the society. In Turkey, most of the bilingual students are from the families displaced due to internal and external migrations, therefore most of them may be accepted as disadvantaged students (Ertek & Süverdem, 2020). Within this context, in this study, it was found that there are meaningful differences in all dependent variables about students' out-of-school learning environments favoring monolingual students with medium effect sizes. These findings may be the indicators of the potential problems that bilingual students face related to their out-of-school learning environments in Turkey. Problems about students' out-of-school learning environment is closely related to inequities in their socio-economic status, which mostly result from deep-rooted serious social and economical problems and most of them need nation-wide social and economic reforms in order to be solved. In other words, small-scale modifications in the education system cannot provide permanent and sustainable solutions for these deep socioeconomic problems. Nevertheless, several educational solutions may help reduce some destructive effects of socioeconomic inequities.

Based on PISA 2018 data, the difference between monolingual and bilingual students in educational resources and information-communication technologies at home are two of the largest among the other out-of-school variables, which is indicating a serious problem of inequity in educational possessions at home. This is basically an economical problem; therefore, it needs economical precautions for a permanent solution. In Turkey, textbooks are provided for all students free of charge by the Ministry of National Education. However, it is apparently not sufficient to reduce inequities. Inequities sometimes need positive discrimination to be solved (Silliman, 2017). In this context, the budget of the Ministry of National Education reserved for disadvantaged students should be increased to be able to provide instructional technologies (eg. tablet and educational software) for disadvantaged students including bilingual ones. In addition, social media have also a great potential to help reduce inequities related to monolingual and bilingual students' out-of-school learning environments. Because, social media are easily accessible platforms with a variety of instructional features that can be used for enhancing bilingual students' out-of-school learning environments.

In addition to economic inequities, there may be some cultural reasons for the difference in educational resources and information-communication technologies at home. According to Baker (2011), bilingual individuals learn the informal hierarchy between languages over time, and this situation is reinforced with information-communication technologies. Because, information-communication technologies mostly support formal majority language. Therefore, parents of bilingual students may resist having these resources and technologies at home in order to prevent the decline of language skills in their minority language. To overcome this problem, the Ministry of National Education may provide educational resources and information-communication technologies in several minority languages as well as formal language (İnce, 2009). In this regard, Haznedar (2017) emphasizes that material selection has a critical importance in the education of bilinguals. In order for bilingual students to achieve balanced bilingualism, it is important to use materials suitable for the nature of bilinguals (Ince & Topal, 2021). In addition, interfaces of instructional technologies (eg. instructional software menus) are often only in the formal language, which is apparently another equity problem for bilinguals. In this context, to help build a balanced bilingualism, interfaces of instructional software may be developed with support for the other languages as well as formal language. Besides, parents of bilingual students have difficulties finding high quality instructional resources in minority

languages to support their children build a balanced bilingualism (Aytan, Başkapan, & Uysal, 2018). In this regard, instructional technologies for the needs of bilingual students should be designed and developed based on scientific literature on bilingualism in order to ensure validity and reliability of these technologies.

As mentioned in the previous section, meaningful differences favoring monolingual students with respect to parents' educational level and parents' emotional support in PISA 2018 were found in this study. These findings indicate a potential problem about parents' academic and affective contribution to bilingual students. A long-term lack of parents' support to their children may result in a low success at school (Wentzel, Russell, & Baker, 2016). In order to solve this problem or to reduce its negative effects, schools may train parents of disadvantaged students about how to support their children's academic success and emotional well-being by schools' counseling departments through seminars. The content of these trainings may be designed and standardized by the Ministry of National Education.

In this study, among the other out-of-school variables, family wealth is one of the variables with the highest effect size. In other words, the difference in family wealth between monolingual and bilingual students is one of the highest favoring monolingual students. In PISA 2018, family wealth is a measure of economic power of students' families calculated through household possessions. In Turkey, a difference between these two groups with a high effect size is unintended but somehow expected, because most of the bilingual students are from immigrant families who have left their assets behind and started a new life from scratch (Ertek & Süverdem, 2020). This problem definitely does not have a simple solution, it rather needs extensive social and economic revisions and reforms.

Based on PISA 2018 data, this study concluded that bilingual students are one of the disadvantaged groups in Turkey with respect to out-of-school learning environment. Simple measures in the education system are not permanent solutions for this problem, rather they are short-term precautions for reducing the surface symptoms. PISA data are especially useful for detecting and diagnosing the problems in the education system. However, achieving effective solutions to these problems need further research and research-based solutions should be performed by decision makers.

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