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The impact of socioeconomic versus linguistic factors on achievement gaps between Hebrew-speaking and Arabic-speaking students in Israel in reading literacy and in mathematics and science achievements

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ABSTRACT

The study intends to choose between two alternative explanations for the low attainment of Arabic-speaking students in reading literacy who participated in the PIRLS (2006), i.e., one that relates to lower socioeconomic conditions in the Arabic-speaking sector, and another that relates to the diglossic situation in Arabic.

After controlling for the effect of socioeconomic factors using Ancova, the achievement gaps in reading literacy between Arabic-speaking and Hebrew-speaking students in favor of the former, although decreased, remained large, while in mathematics and science, considered to be less affected by diglossia, the achievement gaps in favor of Hebrew-speaking students disappeared and even reversed.

These findings supported the explanation that the Arabic diglossia is probably the main cause of the low reading attainment.

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Introduction

The educational system in Israel consists of two separate subsystems, each catering for the needs of a distinct ethnic subpopulation: the Hebrew-speaking majority (about 80%) and the Arabic-speaking citizens (about 20%).

In 2006/2007 almost 25% of the primary and secondary students in Israel studied in schools where students, teachers and principals are all Arab citizens of Israel and the language of instruction is Arabic.

The separation between the two educational systems that was meant primarily to enable the two so called "sectors" to shape their education in accordance with their culture and heritage, led in retrospect, although unintentionally, to inequality between the

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two systems and to the deprivation of the Arabic-speaking population. This has been criticized from the 1970s when implementation of reforms in the Israeli education system that aimed to eliminate inequalities, turned out to lag behind in the Arab system (Mari, 1978; Mari & Dahir, 1978; Peled, 1976). With time, this critique (Al Haj, 1995; Eisikovits, 1997; Kahan & Yelnik, 2000; Shavit, 1990; Zarzure, 1995), led the Ministry of Education to announce three, mainly affirmative, 5-year plans for the Arab sector (1990, 1999, 2001).

These 5-year plans resulted in several improvements. For instance, from 1990 to 2001, enrolment rates of 14–17 year-olds in secondary schools increased in the Arab sector by 26% versus only 6% in the Jewish sector. More study hours were allocated to Arabic-speaking schools, increasing the average hours per class and the average hours per pupil at all school levels, and especially the upper secondary level, more in the Arab sector than in the Jewish sector (Sprinzak, Bar, Levi-Mazloum, & Piterman, 2003).

Despite some improvement, inequalities in terms of inputs and outputs between the two education systems still continued to appear (Abu-Asba, 2005; Gazit, 2006; Golan-Agnon, 2004; Lavi, 1997; Lewin & Stier, 2002) (see Table 1). Data from a collection of official publications on allocation of inputs as well as on some yielded outputs reveal the gap in favor of the Hebrew-speaking system (Segev et al., 2007; Sprinzak et al., 2003; Ministry of Education – Economic and Budgeting Administration, 2007).

Inequalities between Israel's Jewish and Arab populations go beyond the education system. According to various sources (Haidar, 2005; Knesset Research and Information Center, 2004), the Arab population is characterized by larger families, lower levels of parental education, lower income levels, higher ratio of families living below the poverty line, and lower percentage of employment (see Table 2).

These disparities are in line with the persistent achievement gaps (TIMSS, PIRLS, PISA) between the two populations, as intensively reported in national and international studies (Abu-Asba, 2005; Aviram, Cafir, & Ben Simon, 1996; Cafir, Aviram, & Ben Simon, 1999; Karmarski & Mevarech, 2004; Mevarech & Karmarsky, 2007; Sprinzak et al., 2003; Zuzovsky, 2001, 2005).

Even though it is difficult to compare results obtained from studies that differ in their testing instruments, grade level and subjects tested, the picture that appears from recent studies remains the same and demonstrates the high achievement gaps in favor of Hebrew-speaking students in all school subjects tested. Fig. 1 presents these gaps.

The huge and still growing achievement gap (above 1*SD*) in reading literacy revealed in the last PIRLS study, despite all efforts to close it, was the trigger for this study, which aims to explain why Arabic-speaking students in Israel are doing poorly in international reading literacy studies and why they are lagging behind Hebrew-speaking students who participated in the PIRLS-2006 study in Israel.

More specifically, the study aims to make it possible to decide between the alternative explanations for this phenomenon: the one that associates these gaps with socioeconomic inequalities between the two sectors, another that considers the diglossic nature of the Arabic language to be the main cause for the low attainment of Arabic-speakers in reading literacy, or an explanation that rests on both alternatives.

Both of these alternative explanations are supported by a vast amount of empirical studies. Among those that associate reading achievement with socioeconomic factors – most of which do not deal specifically with reading achievement in Arabic – there are some that focus on home material resources (Benabou, 1996; Bradley & Corwyn, 2002; Coleman, 1988), and others that focus more on the human capital at home – i.e., parents' level of education, language spoken at home (Willms, 1999, 2003, 2006), or mother–child interaction at home (Aram & Levin, 2001; Korat & Levin, 2001). When aggregating these family background socio-economic measures at the school level, their effect even increases (Chin & McBride-Chang, 2006). Findings from other studies (Hanushek, 1996), point to the fact that schools with a high percentage of students from low SES background, also lack resources, good teaching conditions and are usually staffed with less qualified and less experienced teachers. Such schools are considered poor. Findings from other studies show that students studying in wealthier schools tend to outperform those studying in poorer schools (Ogle et al., 2003; Snow, Burns, & Griffin, 1998). A distinction is thus made between factors that operate at the microlevel – students' home, and at the macrolevel – the schools. This distinction is treated later on when the socioeconomic measures used in this study are described.

The other explanation, which targets linguistic factors and considers diglossia to be the main reason for the spread of illiteracy among Arabic-speaking students, is also supported by many studies. Ferguson (1959), who first introduced a theory regarding the phenomenon of diglossia, used the Arabic language as an example of a diglossic situation. He defined it as follows:

> . . .a relatively stable language situation, in which in addition to the primary dialects of the language, which may include a standard or regional standards, there is a very divergent, highly codified, often grammatically more complex, superposed variety, the vehicle of a large and respected body of written literature, either of an earlier period or in another speech community, which is learned largely by formal education and is used for most written and formal spoken purposes but is not used by any sector of the community for ordinary conversation. (p. 336)

The diglossic situation that characterizes the Arabic language is a result of the existence of two varieties of the same language that are used for socially distinct functions – modern standard Arabic known as *literary or classical Arabic*, and spoken Arabic which is used for everyday communication. The two varieties differ in vocabulary, phonology, syntax and grammar. While spoken Arabic is the language the children use at home and with friends, they first encounter literary Arabic at a relatively late stage in their linguistic development, only at school. Thus the latter can be viewed as almost a second language (Ayari, 1996). Adding to this the fact that the literary Arabic, originally the language of the Quran, has higher prestige and is used by educated persons, the two forms of language have become distant. When the linguistic distance is significant it creates discontinuity between the two forms of language and hinders the acquisition of the written language.

Maamouri (1998) uses the concept of "diglossic continuum" to describe the linguistic distance between the written and the oral language. He places the Arabic diglossia in the middle of a diglossic continuum because all the varieties of Arabic included in this continuum are mutually understandable. Despite this, the existing linguistic distance in the Arabic languages clearly interferes with the acquisition of reading skills (Saiegh-Haddad, 2003).

Data obtained in the PIRLS-2006 study in Israel on reading literacy achievement, and in the TIMSS-2003 study on mathematics and science achievement of Hebrew-speaking students tested in Hebrew, and of Arabic-speaking students tested in Arabic in these subject areas, as well as data on socioeconomic measures of students' homes and schools, enabled me to examine and evaluate the two alternative main explanations.

Comparison between the achievements of both populations while controlling for the socioeconomic factors reveals the net effect of the linguistic factors in reading literacy, an area supposed