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Journal

International Journal of Multilingualism, 13(1)

ISSN

1479-0718

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Publication Date

2016-01-02

DOI

10.1080/14790718.2015.1021352

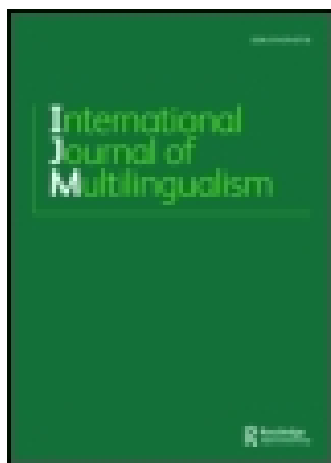
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International Journal of Multilingualism

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/rmjm20>

Language ideologies and literacy achievement: six multilingual countries and two international assessments

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Published online: 25 Mar 2015.

To cite this article: Diana J. Arya, Nicola A. McClung, Noah Katznelson & Lyn Scott (2015): Language ideologies and literacy achievement: six multilingual countries and two international assessments, *International Journal of Multilingualism*, DOI: [10.1080/14790718.2015.1021352](https://doi.org/10.1080/14790718.2015.1021352)

To link to this article: <http://dx.doi.org/10.1080/14790718.2015.1021352>

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Language ideologies and literacy achievement: six multilingual countries and two international assessments

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(Received 25 May 2014; accepted 9 February 2015)

Social psychologists have suggested that language-based ideologies related to ‘stereotype threat’ (i.e. variations in performance-based on ability perceptions of language groups) may affect students’ academic achievement regardless of school language support. However, it is unclear whether efforts to support students’ first language development, particularly for large populations of students whose primary language is not the dominant language, is sufficient for ‘levelling the playing field’ in terms of academic achievement. We analysed subsets of data from the 2011 Progress in International Reading Literacy Study and the 2009 Programme for International Student Assessment to investigate the by-country effects of officially recognised languages on reading performance. Participants represent countries with only two official languages (e.g. Canada, Israel) and primarily used one of these languages at home. Preliminary findings from hierarchical linear modelling show that the dominant official language predicts reading performance unless the minority language reflects a language internationally valued and revered by local stake holders (e.g. English in the United Arab Emirates). Implications suggest that educational resources and programmes should be sensitive to the historical context of country-specific language ideologies and related stereotypical perceptions that favour the dominant language within the school context.

Keywords: language ideologies; linguistic landscape; minority languages; reading comprehension; multilevel modelling

Introduction

Attitudes and beliefs about language, regardless of explicitness, guide the course of interactions and disparities in public spaces (Duursma et al., 2007; Gathercole & Thomas, 2009; Gorter, 2006; Landry & Bourhis, 1997; Shohamy & Gorter, 2009; Wiley & Wright, 2004). This belief-shaping phenomenon describes the effects of language ideologies, which are largely defined as social or political attitudes towards, and subsequent public uses of, language (Gee, 1992; Irvine & Gal, 2009; Lippi-Green, 1997; Schieffelin, Woolard, & Kroskrity, 1998; Woolard & Schieffelin, 1994). These language-specific attitudes may stem from historical conditions influenced by tensions and conflict among member groups defined by differing languages and cultural identities (e.g. Huebner,

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2006; Puzey, 2012; Van Mensel, Marten, & Gorter, 2012). For schools, language ideologies may affect the quality of curricular materials (e.g. quantity and quality of texts in a student's first language; Shin, Sailors, McClung, Hoffman, & Pearson, 2014), school resources (language specialists) and/or the degree to which educational systems accommodate the needs of all learners (Wiley & Wright, 2004). For example, although Chichewa and English are the official languages in Malawi, because of the historical and global dominance of the English language, the Malawian Institute of Education established English as the medium of instruction (Sailors et al., 2014). Similarly, students in Uganda have been punished for speaking heritage languages in school (e.g. Luganda, Runyankore) and, like Malawi, academic success is determined by performance in the colonial language, English (L. Kategaya, personal communication, January 12, 2014). As such, language ideologies appear to play a powerful role in determining the representation, legitimatisation and power of each spoken and written language, which may have an effect on student literacy achievement.

We conducted two large-scale studies using the 2011 *Progress in International Reading Literacy Study* (PIRLS, $N = 49,840$) and the 2009 *Programme for International Student Assessment* (PISA, $N = 33,533$) to determine whether students' language group membership is related to school reading achievement in Canada, Finland, Israel, Kazakhstan, Kyrgyzstan and Norway. Furthermore, we investigated the sociohistorical context of each selected country in order to anticipate students' reading achievement with regard to language group membership.

Theoretical context

Burgeoning interest in the impact of publically displayed and valued language has been framed most widely as the study of the Linguistic Landscape (LL; Gorter, 2006; Gorter, Marten, & Van Mensel, 2012; Landry & Bourhis, 1997; Shohamy & Gorter, 2009). The LL specifically refers to the interest in understanding the influences, beliefs about and uses of language in public spaces (e.g. shop signs, road signs, television broadcasting, radio, lettering within public institutions, etc.). The LL framework has been useful for evaluating and determining the relative status of individual languages used in public spaces (e.g. Gorter et al., 2012). Findings from LL research have shown that publically displayed language is strongly associated with language beliefs, practices, development and sustainability, and this association has been documented across the world (Ben-Rafael, Shohamy, Hasan Amara, & Trumper-Hecht, 2006; Cenoz & Gorter, 2006; Landry & Bourhis, 1997; Xiao, 1998).

The ideological value of language in public spaces cannot be dismissed or minimised, and the representation of one's language in the LL 'can contribute most directly to the positive social identity of ethnolinguistic groups' (Landry & Bourhis, 1997, p. 27). For example, Malinowski (2008) found that the intentional use of Korean in signs displayed in Oakland, California, helped Korean-dominant readers identify particular shops and fostered a sense of kinship in the Korean-American community. The consequences for an LL that does not recognise other languages are evidenced in Shohamy and Ghazaleh Mahajneh's (2012) study of Arab students at the University of Haifa in Israel, who expressed a lack of recognition of their language and culture and a general disconnection with other groups within their community. Thus, the predominance of a particular language within the LL may be a reflection of and/or a result in deeper sociopolitical issues, which have been shown to impact various language minority groups (Landry & Bourhis, 1997; May, 2006; Shohamy & Ghazaleh Mahajneh, 2012; Van Mensel et al.,

2012). The power of language is evidenced in its influences on official language policies (Marten, 2012; Puzey, 2012). For example, Marten (2012) found that Latgalian's absence in the LL of Latgale in eastern Latvia included a general sentiment within 'Latgalian is not a language' (p. 32) and receives no governmental support.

Demonstrations of resistance against disparaging language ideologies can emerge (Scollon & Scollon, 2003), including subversive acts such as graffiti (e.g. Pennycook, 2009). More organised forms of resistance are exemplified in Moriarty's (2012) study, which examined reactions of the inhabitants of a small town in Ireland to a language policy that adopted an Irish version of the town's name, replacing Dingle with An Daingean. When Moriarty examined the bottom-up messages written and posted on the wall of a building located on a main street within the town, she found that the 'Dingle Wall', as it was known, became a space for locals to display their criticism of and enact their resistance to official language policies.

In this study, we wish to expand on investigations into the present-day public displays and practices of language by exploring the sociohistorical heritage of a country's linguistic policies, which may in turn illuminate disparities in school literacy achievement. Understanding significant historical events involving different language groups within a country may help to clarify the reasoning behind particular national language policies and practices. The perceived (and bestowed) power among different groups within a given country reflects the public displays and uses of language as characterised by the LL (Van Mensel et al., 2012). We argue that the language ideologies represented by a country's or region's LL are more fully understood with the consideration of the sociohistorical landscape, which may include political coups, successions, wide-sweeping language reforms and the like. Investigating the sociohistorical context of language policies and ideologies may shed light on the discrepancies between language policies and practices. For instance, national policies and laws designed to ensure language equality may in reality instigate disparities. For example, when Xiao (1998) examined the LL in the province of Yunnan in southwest China, she found that despite language equality policies, the dominant language was far more prominent and socially favoured. Similarly, Trumper-Hecht (2008) compared the use of publicly displayed languages in Canada and Israel and found that unlike Canada's follow-through with English-French equality policies, the dominant use of Hebrew in Israel's LL spaces, including schools, contradicts the officially recognised status of Arabic. The discrepancy observed between Israel's language policies and LL displays may be attributed to the severe political conflicts that have long-plagued this region (Shohamy & Ghazaleh Mahajneh, 2012).

Our focus on illuminating the sociohistorical context is not by any means an attempt to exclude or discount other factors that affect literacy achievement, such as opportunities to engage in discussions about texts in print- and literacy-rich home environments (Park, 2008; Payne, Whitehurst, & Angell, 1994; Sailors et al., 2014), as well as ample school support in language and literacy development (Christensen & Stanat, 2007; Paladino et al., 2009; Shipley, 2011). Certainly, opportunities and resources that support engagement in a variety of literacy activities (reading, writing, discussions, etc.) would have a significant impact on a student's school literacy performance. Our aim is to illuminate the less obvious yet insidious effects of historically rooted language ideologies on the literacy performance of students who identify with marginalised or less dominant groups within a given sociocultural context.

The degree to which a language is used in public signage may be an indication of deeper sociocultural qualities such as individual or group-based values and beliefs related to different language systems, which in turn may affect how a language group is viewed

in social settings. What citizens see, hear and say within the LL may be a symptom of historical tensions and linguistic revolutions that have influenced the way that individuals think about and value dominant and marginalised languages within a given country. As such, it is important to investigate the language ideologies that are potential catalysts for the development and maintenance of the LL. As such, it stands to reason that a closer look at the ideologies underlying the uses and presence of particular languages would clarify the LL at the national level.

Language ideologies

The language most represented in the LL is generally (but not always) the language that holds ideological dominance over other tongues (Landry & Bourhis, 1997). The dominant presence of one language in public spaces reinforces the identities of and perceptions of power from individuals across the different language groups for a given community (Bucholtz & Hall, 2004; Gee, 2007). Language ideologies inadvertently serve as covert rules of language used to uphold social or political values for a community (Woolard & Schieffelin, 1994). These covert rules both influence and are shaped by local and national policies and ultimately shape the LL for any given municipality or institution.

The English-only policies implemented in public schools in California during the late 1990s, for example, were a direct push against the use of and support for less-dominant primary languages during learning and instruction, leading to adverse effects including an increase in dropout rates and displacement of English language learners into special education classrooms (e.g. Artilles, Rueda, Salazar, & Higareda, 2002; Callahan, 2005; Cheung & Slavin, 2012; Ovando, 2003; Wiley & Wright, 2004). National policies that promote the use of the majority language in public spaces and institutions may be more likely to directly (and negatively) impact minority language development. However, not all national language policies are intended to de-emphasise the prominence of a minority language; in fact, several countries included in the present study have enacted laws and programmes to elevate the status of less dominant or titular languages. The following cases highlight key historical movements related to language ideologies within social and political spaces that may have arguably contributed to the present LL for each of the participating countries in this study.

Legitimisation of titular languages. During the early 1990s, former Soviet republics like Kazakhstan and Kyrgyzstan began to adopt laws designed to re-establish their respective titular language that had reigned prominently before Russia subsumed these countries during the nineteenth century. Russian was no longer the only official language for these states, but it remained the ‘language of interethnic communication’ as well as the standard language used in universities, large-scale businesses and government institutions (Pavlenko, 2008, p. 296).

According to Pavlenko (2009), ‘derussification’ had mixed results, depending on the political climate of governing institutions and the attitudes of citizens (p. 253). More than half of Kyrgystan’s population is Kyrgyz, who, generally agree with the importance of learning and using the Kyrgyz language while still preferring their children to attend Russian-speaking schools (Orusbaev, Mustajoki, & Protassova, 2008). Despite efforts to preserve and maintain the knowledge and practice of Kyrgyz, Russian proficiency continues to be necessary for economic prosperity, access to universities and legal information, and thus in many ways remains the dominant language. Further, Kyrgystan’s

dependence on Russian as the language of prosperity seems to contribute to the maintenance of a peaceful existence among factions of citizens who speak languages other than Kyrgyz (Giger & Sloboda, 2008).

Kazakhstan has twice as many titular speakers as Kyrgyzstan, and Kazakhs have experienced greater success in their efforts to elevate their titular language, which is spoken by the majority of the population (Dave, 2004). Positioning themselves as citizens of a young and new nation, Dave suggested that this country has managed to increase the number of Kazakh speakers and decrease the presence/use of Russian. However, as long as communities of titular language groups view Russian as crucial for achieving prosperity, Kazakh and Kyrgyz will play no more than a nominal role in one's cultural membership.

Rewarded bilingualism. Unlike the citizens of Kyrgyzstan and Kazakhstan, many Canadians view bilingual skills as more than a mere nod of respect for one's mother tongue; being bilingual in both French and English is a precursor for economic prosperity in Canada (Heller, 2008). French and English were recognised as the two official languages in the 1982 Canadian Charter of Rights and Freedoms, and based on the 2011 census of the Canadian population, 23% (7,300,000) identify themselves as speakers of French (the minority language) while 61% (19,400,000) identify as speakers of English (the majority language; <http://www.statcan.gc.ca>). Although both English and French are acknowledged as official languages at the national level, language-specific policies may differ at the provincial level due to a variety of local charters and acts that have been adopted to emphasise the rights and responsibilities of one language over another (Foucher, 2007; Heller, 1999).

The notion of identity and language choice within public and private contexts has been long studied in Canada (Heller, 1982, 1992; Pavlenko & Blackledge, 2004). Heller (1982, 1999) observed initial pushback during the 1970s against the use of English by many citizens in Quebec (the only French-dominant province in Canada), but this tension eventually gave way to a level of acceptance and even a desire for fluency in both international languages. Even many of the Francophones in Quebec, who insisted on using French even when responding to questions posed in English, came around to renegotiate their views of language, power and identity and to accept the new standard of French/English bilingualism, which has become a required trait for any citizen in Quebec who wishes to thrive socially and economically (Heller, 1992; Pavlenko & Blackledge, 2004).

Obligatory bilingualism. Norway is a unique case for our study in that two variations of Norwegian (rather than two different languages) are nationally recognised modes of communication, Bokmål (literally translated, 'book language') and Nynorsk ('new Norwegian'). These language variants are officially considered written (rather than oral) forms, and Norwegians speak one or more of a variety of dialects that approximate Bokmål or Nynorsk (Språkrådet, 2005, 2006). According to the Language Usage Act revised in 1981, all public institutions, including schools, were required to use at least 25% of both variants. Further, students are required to demonstrate competency in both standards upon high-school graduation. This requirement of language equity (Bucken-Knapp, 2003) has created sociopolitical tensions among Norwegians, including some students, who find learning both variants a waste of time and energy (Ciobanu, 2013; Venas, 1993). Bokmål is used by the majority of Norwegians and is the official language of the crown as well as the established language of the largest city and capital, Oslo

(Kristoffersen, 2000). Although all government institutions recognise both variants, Bokmål is generally used in practice unless there is a request for the use of Nynorsk. Nynorsk is used by relatively fewer citizens who generally live in the provincial regions of the country (Egeland, Landrø, Tjemsland, & Walbækken, 2006).

The push for Nynorsk as an official mode of communication has been characterised as a political move to reaffirm a ‘purely’ Norwegian identity (Allern, 2010; Bucken-Knapp, 2003; Calvet, 2006). Bokmål (adopted as an official writing system in 1907) is a distant variant of Danish, and thus a lingering reminder of Danish occupation of Norway from the 1500s to the early 1800s (Bucken-Knapp, 2003; Ciobanu, 2013; Haugen, 1966; Pedersen, 2010). The adoption of a language variety that represented the voice of the people was made possible during the mid-nineteenth century when Norwegian lexicographer Ivar Aasen travelled to far-reaching counties of Norway to investigate the variants of spoken Norwegian. The product of his journeys was Nynorsk (‘new Norwegian’), which is a representation of the variants Aasen observed. A variety of sources from social media and political debates reveal opposing views about Nynorsk (e.g. Brunstad, 1995); one sentiment supports Nynorsk as a fair representative of the varied dialects across Norway while another perspective casts Aasen’s work as a variant that represents no one’s language in particular, thus obligating Norwegian citizens to acquire yet another language system that so few outside the country would attempt to learn (Eriksen, 1993; Linn, 2010). This tension between the desires of many Norwegians ensues, rendering language choice within school an ideological debate with potential social and academic consequences (Ciobanu, 2013; Linn, 2010; Puzey, 2011; Røynealand, 2013).

Out-group discrimination. The long-standing Palestine–Israel conflict far surpasses the gravity of the language-related tensions observed in Norway. The hostility between many Arabic- and Hebrew-speaking groups residing within (and beyond) the borders of Israel has been long observed, and the political (and linguistic) dominance that has occupied this country since the Second World War has created an intractable conflict that undermines attempts to establish peace among factions (Bar-Tal, 2007). Halperin (2008) found from individual interviews ($N = 240$) and large-scale survey responses ($N = 847$) with Israeli-Jewish participants that expressed hostility towards another group (i.e. Palestinian and Arab-speaking groups) stemmed from a firm belief that these ‘outgroups’ intend to inflict harm on others. Halperin concluded that entrenched beliefs of intentional harm by other groups preclude a peaceful resolution in this region.

Hebrew is displayed in the majority of Israel’s public signage with only 6% of all public signs in Arabic, even though 18% of the Israeli population speaks Arabic as a first language. Shohamy and Ghazaleh Mahajneh (2012) attribute this gross discrepancy to the governmental discrimination against Arab-speaking citizens of Israel. The long-standing lack of official recognition of Arab speakers in Israel may have arguably trickled down to social disparities at the school level. Even with token attempts to support first language learning, how would this constant awareness of government-based, out-group discrimination affect Arab speakers’ school achievement?

The ‘lesser’ majority language. Swedish has been highly regarded in Finland relative to the other aforementioned minority languages. Although most of the public signage is in Finnish, the ‘big brother’ language of Sweden lingers in many public institutions, a reminder of the past when Sweden ruled Finland. Larson (2008) describes the politically tumultuous LL during the rise of Finnish nationalism during the 1850s, when Finnish speakers fought efforts to supplant Finnish publications with works by Swedish authors.

While most advertisements, shop signs and road signs were displayed in Finnish, Swedish was reserved for the language of literature, and this shaped the identity of Finnish speakers as the ‘lesser’ Finnish citizens (Karner, 1991; Larson, 2008; Östman & Thøgersen, 2010).

Finland did not become an international economic force in its own right until the 1980s. Language Act no. 423/2003 obligated businesses and governmental institutions to provide services in both Finnish and Swedish (Karner, 1991). It may be surprising to many outsiders that Finland, widely touted as having one of the most successful educational systems in the world (e.g. Hargreaves, Halász, & Pont, 2007; Sahlberg, 2007, 2009), would contend with any negative perceptions of the Finnish language, even with only a small portion of the population (approximately 6%) speaking Swedish as a primary language.

A common thread running through each national case included in this study is the influence that beliefs about the value and affordances of particular languages have on the LL, and how the LL in turn reaffirms such beliefs and values about particular language groups. Table 1 summarises key sociohistorical aspects for each of the highlighted regions.

Languages most prominent in public spaces, including schools and universities, are generally the languages most valued and recognised as the language of power. The LL may thus represent more than just written displays of the dominant or majority language; the signage within the public spaces of a given community may be the product of the political moves, historical treaties, military coups, etc. that have taken place over a long period of time. Such a linguistic legacy for any given country might have a significant effect on student academic achievement.

For this investigation, we conducted two related studies to determine whether membership in a majority or minority language group is uniquely and consistently related to reading comprehension performance at the national level. Study 1 explored this relationship in fourth-grade students in subsets of the PIRLS 2011 data set in Canada, Finland, Norway and Israel ($N = 49,840$). Study 2 examined the language and reading comprehension among 15-year-olds who participated in PISA from Canada, Kazakhstan, Kyrgyzstan and Finland ($N = 33,533$). The following research questions were explored: Is there an effect of membership in a majority or minority language group on reading performance for elementary and secondary students, when controlling for gender and

Table 1. Summary of LL context, by country.

Country	Official languages (dominant, less-dominant)	Sociocultural context of the LL
Kazakhstan	Kazakh, Russian	<i>Legitimisation of titular languages.</i> Russian still necessary for economic success.
Kyrgyzstan	Russian, Kyrgyz	<i>Rewarded Bilingualism.</i> French/English bilingualism predicts economic success.
Canada	English, French	<i>Obligatory bilingualism.</i> Country divided over policies to elevate Nynorsk.
Norway	Bokmål, Nynorsk	<i>Out-group discrimination.</i> Continued political strife between Arab and Jewish member groups.
Israel	Hebrew, Arabic	<i>The ‘lesser’ majority language.</i> Swedish prestige despite Finnish LL dominance.
Finland	Finnish, Swedish	

socioeconomic status (SES)? Is this effect stronger in countries that have a recent history of social and political strife (e.g. Israel) compared to countries in which there is relatively less tension between linguistic groups (e.g. Norway and Finland)? Based on the ideological reviews for each of the countries, we anticipated that speakers of the majority language (e.g. English in Canada) would outperform speakers of minority language speakers (French). Further, we hypothesised that an observed lack of difference in performance between the language groups for a country would be attributed to significantly fewer negative, ideological associations with minority languages (e.g. Swedish language in Finland).

The effect of language group membership on achievement may vary by neighbourhood, city, province or region, depending on the relative prominence of a particular language; French speakers for example have been shown to outperform speakers of English in the French-dominant Quebec, while English achievement is greater in other provinces (http://www.statcan.gc.ca/pub/81-595-m/2011092/tbl/tbl19_2-eng.htm). However, by focusing on differences at the international level, this study provides a global context of language-group differences in literacy achievement that may usefully inform related within-country investigations.

Method

Participating countries

Data set samples for Studies 1 and 2 are organised by country and were included in analysis if the official national languages matched the official languages of instruction, and that participants were able to take the respective test in one of these languages. Excluded countries either had only one official language (e.g. France), more than two official languages (e.g. South Africa, Belgium and India) or reflected a complex home/school language mix (e.g. Luxembourg and Spain) that would further complicate comparisons of student reading performance. Countries like Macau and Mauritius were also excluded because no official languages are declared. Only students who spoke the language of the test at home were included in these studies.

Another step during country selection for both studies involved a descriptive analysis of the number of students within each of the two language groups for each country. Countries that had fewer than 100 students for each group (e.g. New Zealand, Ireland and Hong Kong) were excluded. These criteria align with LL methodology, which focuses on the presence of official languages in a given country.

Sampled databases

The participants in Study 1 took part in the large international research project, the 2011 PIRLS. Countries that met the criteria described above were Canada, Israel, Finland and Norway. The participants in Study 2 took part in the 2009 PISA. Countries that met our selection criteria were Canada, Finland, Kazakhstan and Kyrgyzstan. [Tables 2 and 3](#) show the countries included from each database and the sample size and percentage of student participants for each respective language group as well as for gender and SES.

Both international assessments used a uniform sampling approach for each participating country; the international guidelines were designed to ensure that differences in national achievement outcomes could not be attributed to the use of different sampling methodologies. Two-stage stratified sample designs were employed, and probability

Table 2. PIRLS sample by country and language.

	<i>n</i> (%)	<i>n</i> (%)
<i>Canada</i>		
	English	French
Female	8558 (51)	3129 (48)
Male	8170 (49)	3347 (52)
Low SES	379 (2)	189 (3)
Mid-SES	7576 (45)	2673 (41)
High SES	3867 (23)	1798 (28)
Missing SES	4908 (29)	1816 (28)
Total	16730 (100)	6476 (100)
<i>Norway</i>		
	Bokmål	Nynorsk
Female	1417 (49)	158 (50)
Male	1458 (51)	157 (50)
Low SES	116 (4)	13 (4)
Mid-SES	958 (33)	126 (40)
High SES	1292 (45)	121 (38)
Missing SES	509 (18)	55 (17)
Total	2875 (100)	315 (100)
<i>Israel</i>		
	Hebrew	Arabic
Female	1427 (51)	641 (47)
Male	1394 (49)	724 (53)
Low SES	29 (1)	201 (15)
Mid-SES	838 (30)	472 (35)
High SES	975 (35)	154 (11)
Missing SES	979 (35)	538 (39)
Total	2821 (100)	1365 (100)
<i>Finland</i>		
	Finnish	Swedish
Female	2276 (51)	94 (55)
Male	2194 (49)	76 (45)
Low SES	253 (6)	6 (4)
Mid-SES	2327 (52)	88 (52)
High SES	1365 (31)	67 (39)
Missing SES	525 (12)	9 (5)
Total	4470 (100)	170 (100)

samples were pulled from target populations in each country (Hopstock & Pelczar, 2011; Martin & Mullis, 2012).

The PIRLS participants were representative samples of fourth graders that were identified by their school as typically developing. The PISA sample included 15-year-old students (i.e. between 15 years and 3 months and 16 years and 2 months at the beginning of the testing period). Similarly, the PISA participants were not identified as cognitively or linguistically disabled, nor non-native language speakers (i.e. unable to read or speak the language of the test; Fleischman, Hopstock, Pelczar, & Shelley, 2010; Martin & Mullis, 2012).

Table 3. PISA sample by country and language.

	<i>n</i> (%)	<i>n</i> (%)
<i>Finland</i>		
	Finnish	Swedish
Male	2139 (50)	526 (47)
Female	2151 (50)	582 (53)
Low SES	443 (10)	102 (9)
Mid-SES	1856 (43)	523 (47)
High SES	1899 (44)	445 (40)
Missing SES	92 (2)	38 (3)
Total	4290 (100)	1108 (100)
<i>Kyrgyzstan</i>		
	Russian	Krygyz
Male	293 (43)	1421 (49)
Female	381 (57)	1459 (51)
Low SES	26 (4)	170 (6)
Mid-SES	250 (37)	713 (25)
High SES	330 (49)	1734 (60)
Missing SES	68 (10)	263 (9)
Total	674 (100)	2880 (100)
<i>Canada</i>		
	English	French
Male	7852 (50)	1893 (47)
Female	7991 (50)	2101 (53)
Low SES	1025 (6)	347 (9)
Mid-SES	0 (0)	0 (0)
High SES	13992 (88)	3433 (86)
Missing SES	826 (5)	214 (5)
Total	15843 (100)	3994 (100)
<i>Kazakhstan</i>		
	Kazakh	Russian
Male	1553 (51)	832 (49)
Female	1490 (49)	869 (51)
Low SES	282 (9)	262 (15)
Mid-SES	615 (20)	443 (26)
High SES	2067 (68)	937 (55)
Missing SES	79 (3)	59 (3)
Total	3043 (100)	1701 (100)

Reading performance

The development of PIRLS and PISA reading comprehension assessments involved an elaborate series of workshops involving country representatives who reviewed the items and passages extensively. Diagnostic reviews of constructed items for both assessments include the use of item response theory, which involves item-level analysis for quality control purposes. Specifically, plausible values (i.e. estimates of student ability) were used to address issues of biased statistical inferences and to allow the use of standard statistical tools to estimate population characteristics (Wu, 2005).

PIRLS 2011

Occurring every five years at the fourth-grade level (or its national equivalent), PIRLS aims to provide information about literacy development and education on an international level. The fourth year of formal schooling was chosen specifically because students are thought to have made the transition from learning to read to reading to learn within this grade level (Joncas, 2007, p. 36). PIRLS is conducted by the International Association for the Evaluation of Educational Achievement and is funded by the participating countries with support from the World Bank and the US Department of Education's National Center for Educational Statistics (Mullis, Kennedy, Martin, & Sainsbury, 2006). The PIRLS reading assessment included texts that spanned many genres, including five literary texts (e.g. short stories or episodes with illustrations), five informational texts (e.g. biographies) and narratives and expositions (e.g. scientific, geographical and procedural texts that included text boxes, photographs, maps or diagrams).

PISA 2009

PISA is a series of assessments administered to 15-year-olds around the world by a consortium within the Organization for Economic Cooperation and Development. The goal of PISA is to measure academic skills that are pertinent to life success as students begin to transition into adulthood. The coordination and development of PISA is led by the Australian Council for Educational Research (Fleischman et al., 2010). The PISA reading assessment measured a similar array of reading and thinking skills as did PIRLS and was moderately aligned with the National Assessment of Education Progress (Fleischman et al., 2010). The goal of PISA was to determine whether students near the end of high school had developed the reading skills that are essential for full participation in society (i.e. prerequisite reading levels for post-secondary education and career success).

Assessment translation

In any cross-linguistic study, it is critical that the measures are reliable and contain comparable information across languages. The development of PIRLS included exhaustive procedures to verify that the translation of the assessment corresponded to international standards, and to ensure equality across languages. Translation was provided for the test directions, passages and items, student, home and school questionnaires, directions for preparing and administering the assessment at schools and scoring guides for students' open response questions (Martin & Mullis, 2012). Similarly, PISA experts, along with test developers, worked to ensure that the items were (1) comparable across languages, (2) culturally unbiased and (3) appropriate in terms of the interests and reading levels of 15-year-olds (Fleischman et al., 2010; Martin & Mullis, 2012).

*Variables used for analyses**Reading achievement scores*

For both the PIRLS and PISA databases, the overall standardised reading score was selected as the outcome variable for each of the respective studies.

Student background characteristics

Gender, language spoken at home and SES were important control variables in this study. Mother's education level was used as a proxy for SES.

Statistical techniques

Hierarchical linear modelling (HLM) was employed for both Study 1 and Study 2 to compare the mean scores of the students within each of the two language groups for each country while controlling for gender and SES. Because the PIRLS and PISA data sets were collected from students within specific schools, they presumably have a multilevel structure. Likelihood-ratio tests were conducted to investigate whether a random intercept was needed for schools in the models for each country. Because all of the tests were significant, random intercepts for schools were included in all models. In PIRLS students were also nested in classrooms, and classrooms were nested in schools; however, additional likelihood-ratio tests indicated that random intercepts at the classroom level were not required in either country. As a result, two-level models emerged as the best fitting to the data in all analyses. Finally, 30% of PIRLS and 5% of PISA students were missing data on mother's education/SES. A dummy category for missing SES was created in order to include these students in the samples.

Results

The percentages of students in each country from the different language groups were similar with the exception of Israel, where more students who spoke Arabic were from low SES backgrounds than students who spoke Hebrew. Additionally, the percentages of the samples who spoke the majority or minority language across countries differed significantly: 72% English and 28% French in Canada, 96% Finnish and 4% Swedish in

Table 4. PIRLS means on standardised literacy score by country, language and subgroup.

		Majority	Minority
Canada	Male	0.33	0.01
	Female	0.47	0.16
	Low SES	0.10	-0.08
	Mid-SES	0.36	0.05
	High SES	0.72	0.34
	Missing SES	0.22	-0.07
Finland	Male	0.48	0.38
	Female	0.72	0.61
	Low SES	0.28	0.49
	Mid-SES	0.56	0.31
	High SES	0.82	0.72
	Missing SES	0.28	0.36
Israel	Male	0.60	-0.46
	Female	0.60	-0.19
	Low SES	0.22	-0.52
	Mid-SES	0.54	-0.14
	High SES	0.92	0.25
	Missing SES	0.34	-0.55
Norway	Male	-0.09	-0.17
	Female	0.05	-0.16
	Low SES	-0.43	-0.50
	Mid-SES	-0.10	-0.26
	High SES	0.16	0.02
	Missing SES	-0.24	-0.29

Table 5. PISA means on standardised literacy score by country, language and subgroup.

		Majority	Minority
Canada	Male	0.18	0.06
	Female	0.50	0.39
	Low SES	0.05	-0.04
	Mid-SES	-	-
	High SES	0.40	0.30
	Missing SES	-0.19	-0.38
Finland	Male	0.30	0.04
	Female	0.77	0.53
	Low SES	0.26	-0.10
	Mid-SES	0.50	0.33
	High SES	0.65	0.39
	Missing SES	0.02	-0.26
Kazakhstan	Male	-1.18	-0.33
	Female	-0.81	-0.01
	Low SES	-1.19	-0.35
	Mid-SES	-0.88	-0.04
	High SES	-1.00	-0.16
	Missing SES	-1.28	-0.36
Kyrgyzstan	Male	-0.68	-1.80
	Female	-0.34	-1.34
	Low SES	-0.89	-1.78
	Mid-SES	-0.34	-1.36
	High SES	-0.54	-1.57
	Missing SES	-0.63	-1.99

Finland, 67% Hebrew and 33% Arabic in Israel and 90% Bokmål and 10% Nynorsk in Norway for PIRLS; and 80% English and 20% French in Canada, 80% Finnish and 20% Swedish in Finland, 64% Kazakh and 36% Russian in Kazakhstan and 81% Kyrgyz and 19% Russian in Kyrgyzstan for PISA. The sample percentages were somewhat consistent with the population statistics reported above. Tables 4 and 5 present the mean standardised literacy scores (by country, language and subgroup) for the PIRLS and PISA samples.

Study 1: HLM results (2011 PIRLS)

Findings from PIRLS HLM analyses aligned with anticipated effects of majority/minority test language on fourth-grade reading comprehension, when controlling for gender and SES. Test scores of English-speaking students in Canada were 0.33 of a standard deviation (SD) above the scores of French-speaking peers. Similarly, the scores of Bokmål readers were 0.15 of a SD above the scores of Nynorsk readers in Norway. In Finland, test scores of Finnish speakers were 0.14 of a SD above the scores of their Swedish counterparts, but this difference was not significant. Hebrew speakers in Israel demonstrated the largest advantage compared to observed differences in the other countries; the scores of Hebrew-speaking respondents were 0.80 of a SD above the scores of Arabic speakers. Table 6 provides the results from the HLM analyses of the PIRLS data.

Table 6. Fixed effects estimates and variance–covariance estimates for models of the predictors of standardised fourth-grade reading achievement on the PIRLS 2011 assessment.

	Canada	Finland	Israel	Norway
Female	0.14*** (0.01)	0.24*** (0.02)	0.09*** (0.02)	0.13*** (0.02)
Mid-SES	0.16*** (0.03)	0.25*** (0.04)	0.23*** (0.05)	0.30*** (0.06)
High SES	0.42*** (0.03)	0.48*** (0.04)	0.53*** (0.06)	0.54*** (0.06)
Missing SES	0.04 (0.03)	−0.01 (0.05)	0.01 (0.05)	0.18** (0.06)
Majority language	0.33*** (0.02)	0.14 (0.08)	0.80*** (0.06)	0.15* (0.06)
Intercept	−0.20*** (0.03)	0.07 (0.09)	−0.51*** (0.07)	−0.61*** (0.08)
ψ	−1.34*** (0.03)	−1.82*** (0.09)	−1.22*** (0.07)	−1.68*** (0.09)
Θ	−0.42***	−0.49***	−0.35***	−0.52***

Note: Standard errors in parentheses. Reference groups: male and low SES. Majority language is English in Canada, Finnish in Finland, Hebrew in Israel and Bokmål in Norway. Minority language is French in Canada, Swedish in Finland, Arabic in Israel and Nynorsk in Norway.

SES, socioeconomic status; ψ , between school variance; Θ , within school variance.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Study 2: HLM results (2009 PISA)

Similar to the findings from Study 1, the findings from the investigation of the PISA data set were consistent with anticipated effects of majority/minority test language on reading performance. Like the fourth graders in the PIRLS data set, English-speaking high-school students in Canada significantly outperformed their French-speaking peers by 0.11 of an SD. In contrast to the PIRLS results, 15-year-old Finnish speakers significantly outperformed Swedish speakers ($SD = 0.24$). In Kazakhstan and Kyrgyzstan, Russian-speaking students outperformed Kyrgyz- and Kazakh-speaking peers by more than one half of an SD in both countries. Table 7 provides the results from the HLM analyses of the PISA data set.

Discussion

The presence and power of language ideologies are undeniable; an individual's view of her own language in relation to the language of other member groups sets the stage for social, political and economic inequities, much of which has been explored in this study. Further, language ideologies are rooted in rich, complex histories, which contribute to policies and practices that shape the LL for a given country (Marten, 2012; Moriarty, 2012; Pennycook, 2009; Puzey, 2012; Scollon & Scollon, 2003). This study is a large-scale investigation of the effects of language-group membership on academic literacy performance for students in Israel, Norway, Finland, Canada, Kazakhstan and Kyrgyzstan.

Theoretical frames from LL scholars as well as country-specific sociohistorical contexts contributed served as a guide for our selection and investigation of student achievement across six bilingual countries in fourth-grade and/or 15-year-old students. Our findings suggest that the dominant language does indeed provide an advantage in

Table 7. Fixed effects estimates and variance–covariance estimates for models of the predictors of standardised 15-year-old reading achievement on the PISA 2009 assessment.

	Canada	Finland	Kazakhstan	Kyrgyzstan
Female	0.30*** (0.01)	0.47*** (0.02)	0.33*** (0.02)	0.40*** (0.02)
Mid-SES	0.00 (0.00)	0.25*** (0.03)	0.24*** (0.03)	0.30*** (0.05)
High SES	0.28*** (0.02)	0.40*** (0.03)	0.14*** (0.03)	0.17*** (0.05)
Missing SES	−0.24*** (0.03)	−0.17** (0.06)	−0.09 (0.05)	−0.08 (0.06)
Majority language	0.11*** (0.03)	0.24*** (0.04)	−0.59*** (0.03)	0.66*** (0.05)
Intercept	−0.16*** (0.03)	−0.22*** (0.04)	−0.64*** (0.04)	−1.86*** (0.06)
ψ	−1.10*** (0.03)	−1.77*** (0.08)	−1.13*** (0.06)	−0.98*** (0.07)
Θ	−0.39*** (0.01)	−0.46*** (0.01)	−0.61*** (0.01)	−0.52*** (0.01)

Note: Standard errors in parentheses. Reference groups: male and low SES. Majority language is English in Canada, Finnish in Finland, Kazakh in Kazakhstan and Russian in Kyrgyzstan. Minority language is French in Canada, Swedish in Finland, Russian in Kazakhstan and Kyrgyz in Kyrgyzstan.

SES, socioeconomic status; ψ , between school variance; Θ , within school variance.

* $p < .05$; ** $p < .01$; *** $p < .001$.

literacy achievement at both the fourth-grade and 15-year-old level, yet the strength of this relationship may vary depending on the degree of power or status held by each language within a particular society or political and historical context.

This study bears limitations. First, our investigation of the relationship between the language ideologies and school reading achievement is limited by the geographical boundaries set by our data sets; the country-level data preclude us from investigating intra-national differences. For this reason, we are investigating the possible influences of linguistic ideologies by proxy of the majority and/or dominant language for a given country, and this proxy does not take in to consideration the varying displays and uses of language across the provinces, cities, towns and prefectures. Further, the use of secondary analysis did not allow for us to test more directly related student-level variables of interest such as perceptions of or attitudes towards dominantly displayed languages in the LL. Findings from our investigations do, however, provide indirect evidence for the effect of the linguistic ideologies on school reading performance.

Findings from Studies 1 (2011 PIRLS) and 2 (2009 PISA) present a fairly consistent story; membership in a majority and/or dominant language group appears to be a significant advantage for students when responding to school reading tests. For example, English speakers in Canada (the majority language) demonstrated higher literacy performance than their French-speaking (minority language) peers on both the PIRLS and PISA assessments. Speakers of Russian (dominant language) outperformed speakers of Kazak and Kyrgyz. However, Finland is the exception to this pattern, revealing mixed results across the two assessments. The historic reign of Sweden over its Finnish neighbours may not have the same power it once did, especially in the light of Finland's recent international acclaim as one of the most envied countries in terms of student achievement and teacher quality (e.g. Hargreaves et al., 2007; Sahlberg, 2007, 2009).

Perhaps Finnish student achievement is indicative of this recent boost in world recognition.

The variation in effect size for each of our results draws attention to the critical role of language group assignment in literacy achievement, especially when the social, political and ideological context is highly charged. For example, the relatively large effect size observed for Hebrew may be a product of the aforementioned hostility between Hebrew and Arabic member groups. Similarly, the difference in average performance between titular and Russian speakers in Kazakhstan and Kyrgyzstan may be a product of the turbulent relationship between different cultural and linguistic groups in these post-Soviet countries.

The small-to-moderate differences in Canada, Finland and Norway may be attributed to their global standing as economically successful and (especially in the case of Canada) politically powerful nations. It should be noted that the Swedish sample within the PIRLS Finnish database made up less than 4% of the sample, and thus the sample size may not have been large enough to detect a true difference between the two groups. The Swedish/Finnish comparison in the PISA sample was significantly larger and consistent with findings of the other selected countries, thus providing indirect evidence that the sample size might be a reason for the observed inconsistency.

The general message from the findings of this study is that the language that children see and hear most often in public spaces may have some impact on their literacy development and performance, but it is the sociohistorical context that shape perceptions and beliefs about particular language groups that interact in these public spaces. The displays and use of the dominant language in public spaces are reflections and products of historical movements, tensions, wars and sociolinguistic prejudices and ideologies that have shaped the LL to be what it is and what it will become for a given country. Results from our analysis suggest that the language predominantly displayed in the LL may not be the language with the most power. Russian may not be dominantly used in social settings in Kazakhstan and Kyrgyzstan, for example, yet economic and academic success seems to hinge on one's ability to use Russian fluently. As long as Russian remains the preferred language of higher education and governmental institutions for these post-Soviet countries, representation of the titular languages in the LL may not have the same level of influence (despite their similarly complex history of cultural and linguistic dominance) as majority languages such as Finnish in Finland. The results from the current study provide tentative evidence for the effect of language ideologies related to the LL on student achievement. They also suggest that reading comprehension in a majority and/or dominant language may be more supported, while achievement in a minority language may be hindered because of reduced linguistic input in the public sphere and implicit ideological ranking regardless of any other aspects of the reader's linguistic environment. Thus, in addition to other well-known influences on literacy development (such as instruction, home and school resources and reading experience), public language use, as well as implicit messages about the value of specific languages in a country, may be important factors to consider in the development of reading comprehension skill.

Literacy educators and scholars would do well to consider the sociocultural and historical contexts of less-dominant language groups in addition to providing linguistic supports for minority students (Solano-Flores, 2008; Solano-Flores & Nelson-Barber, 2001). Educational resources and programmes that include open, explicit conversations about sociohistorical events and policies associated with the LL may help to expose stereotypes that favour dominant language groups within a school community. Careful

guidance through the use of non-violent discussion protocols (e.g. Dunne, Nave, & Lewis, 2000) could be used to facilitate productive exchanges about language and how canonical views about member groups can shape or reify the LL.

In an effort to address the low academic performance and social discrimination of Turkish-speaking, Muslim students in Germany, schools and community centres were commissioned to create programmes designed to promote a positive perspective of Islamic traditions and cultures (Irvine, 2007). Although many educators and scholars support this effort to harmonise different German cultural groups, its impact on academic performance remains unclear (Smale, 2014). A similar effort in the USA is the Mexican American/Raza programme in Arizona to inspire and elevate the Latina/o student population through the teaching of Chicano cultural heritage, critical thinking and social justice. Academic results from this programme were hopeful; most of the programme's participants (who were on the verge of dropping out) outscored their Anglo peers on the state exams and continued on to college (Camarota, 2007; Camarota & Romero, 2009). Backlash from conservative district officers and state legislators resulted in the cancellation of the Raza studies programme in 2011 by the passage of a state law that prohibits the inclusion of ethnic studies in public schools (Acosta & Mir, 2012). Nonetheless, this programme serves as a model for countries or states that aim to close the achievement gap between different languages and cultural groups.

Future investigations involving a more refined analysis of local and regional differences in student language usage, cultural and linguistic identity and school literacy achievement might clarify the complex and nuanced relationship between language ideologies and literacy achievement. We agree with scholars like Shohamy and Ghazaleh Mahajneh (2012) and Backhaus (2006) who have highlighted the importance of studying more localised public spaces in order to understand the specific language policies and ideologies that may not reflect generalised national LL. For example, what might qualify as a national minority language may in pockets or enclaves (Creese & Blackledge, 2010), from neighbourhoods to entire cities, be thriving majority languages. We hope that the findings from this global, by-country investigation will serve as a foundation for localised investigations around the world.

Disclosure statement

No potential conflict of interest was reported by the authors.

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