VARIATIONS IN THE GRADUATION RATES AND EDUCATIONAL PATHWAYS OF ENGLISH LANGUAGE LEARNERS IN METRO VANCOUVER

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ABSTRACT

This study highlights selected Metro Vancouver findings of a project that compared the academic trajectories of children of immigrants in Montreal, Toronto and Metro Vancouver. English language learners (ELL) (n=9039), and their home language subgroups, were compared to native English speakers (NES) (n=15034) to examine differences in demographic profiles and educational pathways and performance. While ELLs` demographic profile suggested they might face more educational risk than NESs, analysis revealed that their aggregate graduation rates, Math 12 enrolment rates and mean scores in Math 12 were superior to NESs. Nonetheless, these positive results masked a wide variation among linguistic subgroups. Cross-tabulations and multi-level regression models confirmed that some home language groups far exceeded NESs, while others fell substantially below the NES baseline. The need to make policies consistent with the results of disaggregated data is discussed.

Until recently, few empirical studies documented the educational trajectories and outcomes of youth of immigrant origin in Canadian jurisdictions. Some research has begun to fill this gap (Garnett, 2010; Garnett, Trache and Ungerleider, 2008; Gunderson, 2007; Toohey and Derwing, 2008). This paper highlights selected Metro Vancouver findings of a project (McAndrew et al., 2009) that compared trajectories of children of immigrants, as proxied by students whose native language was not the language of instruction (in Vancouver, 'English language learners,' or ELLs), in Canada's three largest immigrant-receiving centres, Toronto, Montreal and Metro Vancouver.

Two broad questions guided this study:

1. What are the similarities and the differences among ELLs, their home language subgroups, and English speakers with regard to socio-demographic, schooling process and school characteristics?
2. What are the similarities and the differences among ELLs, their home language subgroups, and English speakers with regard to three indicators of educational pathways and academic performance: graduation, and enrolment in, and performance in Mathematics 12?

An important objective in addressing these questions is to provide decision-makers at the school, school board and provincial levels with information for developing measures that will fulfill the educational needs of the children of immigrants.

The research team obtained data from the British Columbia Ministry of Education that described the trajectories of the 1999 grade 8 cohort in the 12 Metro Vancouver school districts. Assuming a normal grade progression, these students would graduate from grade 12 in 2004. Students were divided into the native English speaker (NES) group (n=15 034), the ELL group (n=9 039) and ten home language subgroups based on their self-

TABLE 1: Variables analysed

Socio-economic and demographic variables	Gender
	Median family income in enumeration areas inhabited by students
School process variables	Age when entering high school
	Level of entry into the school system (Grade 8 or before grade 8)
	Frequency of school changes
	Enrolment in ESL classes in or after grade
School context variables	Concentration of non-English speakers in school
	Attendance in a school defined as socio-economically "challenged"
	Private vs. a public school attendance

declared language spoken at home. These subgroups were: Chinese (n=3 573), Punjabi (n=1 332), Filipino (n=516), Hindi (n=368), Korean (n=375), Spanish (n=363), Vietnamese (n=358), Persian (n=319), Russian (n=139) and Arabic (n=103). Beyond home language, three further groups of variables were controlled (see Table 1).

FINDINGS

DEMOGRAPHIC PROFILE

Overall, the demographic profile of ELLs included a higher frequency of risk factors than the NES profile. Fifty –five percent of all ELLs and only 29% of NESs lived in neighbourhoods where the median family income was in the lowest two quintiles. Only 24% of ELLs and fully 48% of English speakers lived in EAs where the median family income was in the two highest quintiles.

School change has also been identified as an indicator of educational risk. Forty percent of ELLs experienced at least one school change within four years of beginning grade 8, whereas 38% of English speakers experienced comparable school changes. While this difference appears trivial, the results were more pronounced among certain subgroups; 57% of Russian-speakers, 55% of Korean-speakers, 53% of Persian and Spanish-speakers and 50% of Vietnamese speakers experienced one or more school changes. About one quarter of Spanish and Russian speakers experienced two or more.

Low English proficiency is an impediment to school success and some 28% of ELLs required English as a second language (ESL) classes during their high school careers. Once again, the variation was pronounced among the linguistic subgroups. Fifty-six percent of Korean-speakers, 46% of Russian-speakers, 43% of Persian-speakers and 36% of Chinese-speakers arrived in grade 8 at English proficiency levels sufficiently below grade level to warrant ESL instruction. By contrast, only 10% of Hindi and 16% and 17% of Vietnamese and Spanish-speakers required ESL.

ELL school contexts also appeared less favourable. Fifty percent of ELLs attended schools where over 50% of the cohort population were also ELLs, whereas only 13% of English speakers did so. This was more prevalent in the Vietnamese and the Chinese communities where 69% and 62% respectively attended schools where over 50% of their cohort were ELLs. It also suggests a certain amount of de facto segregation in Metro Vancouver schools. While high concentrations of ELLs do not intrinsically disadvantage students attending these schools, they do indicate a) reduced exposure to the English language as spoken by native born speakers, and b) greater exposure to economic disadvantage in that a disproportionate number of ELLs are in lower socio-economic quintiles. Indeed, a measure of school economic disadvantage showed 42% of ELLs enrolled in disadvantaged schools, compared to 21% of NESs.

Overall, ELLs appear to reside in less economically advantaged neighbourhoods than NESs, attend schools characterized by similarly less economically advantaged populations, and to be limited in their exposure to NES peers. Within the aggregate ELL group, certain linguistic subgroups demonstrated high frequencies of need for ESL instruction, suggesting low English proficiency, and frequent school changes in their high school careers.

GRADUATION

Despite these risk indicators for ELLs, their graduation rate in aggregate was higher than that of NESs (see Figure 1); 80% of ELLs and only 77% of NESs graduated in BC within 6 years of beginning grade 8.

This positive result for ELLs masks the variation in graduation rates among the linguistic subgroups. Chinese-speaker graduation rates were exceptionally high at 89%, especially in contrast to the 60% rate for Spanish-speakers. Punjabi and Korean-speakers also displayed rates that placed them above the 'All ELL' rate, whereas Hindi and Vietnamese-speakers were substantially below the 'ALL ELL' rate.

Multi-level regression models were built to account for the differences in graduation rates among the subgroups, and to uncover the percentage of variation that occurred at the school level. This report is derived from a larger project where regression analyses were conducted only on home language groups who a) were common across Montreal, Toronto and Vancouver, b) were present in numbers great enough to conduct valid statistical analyses; and c) who represented a range of variation in

FIGURE 1: Six-year graduation rates of NESs, ALL ELLs, and linguistic subgroups

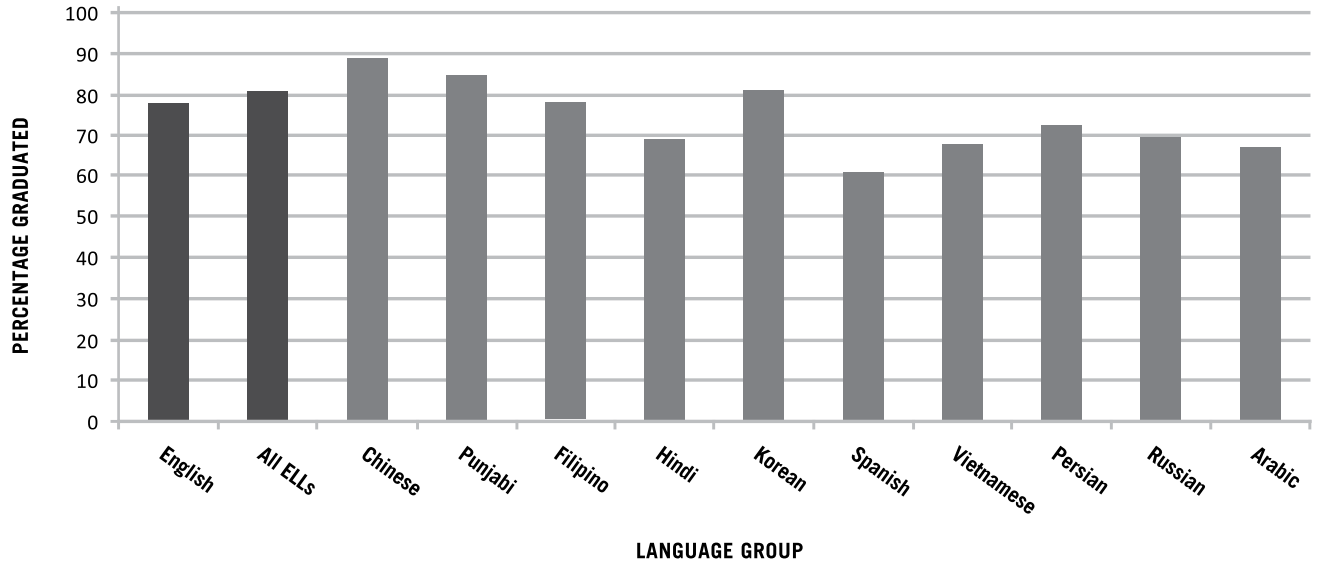
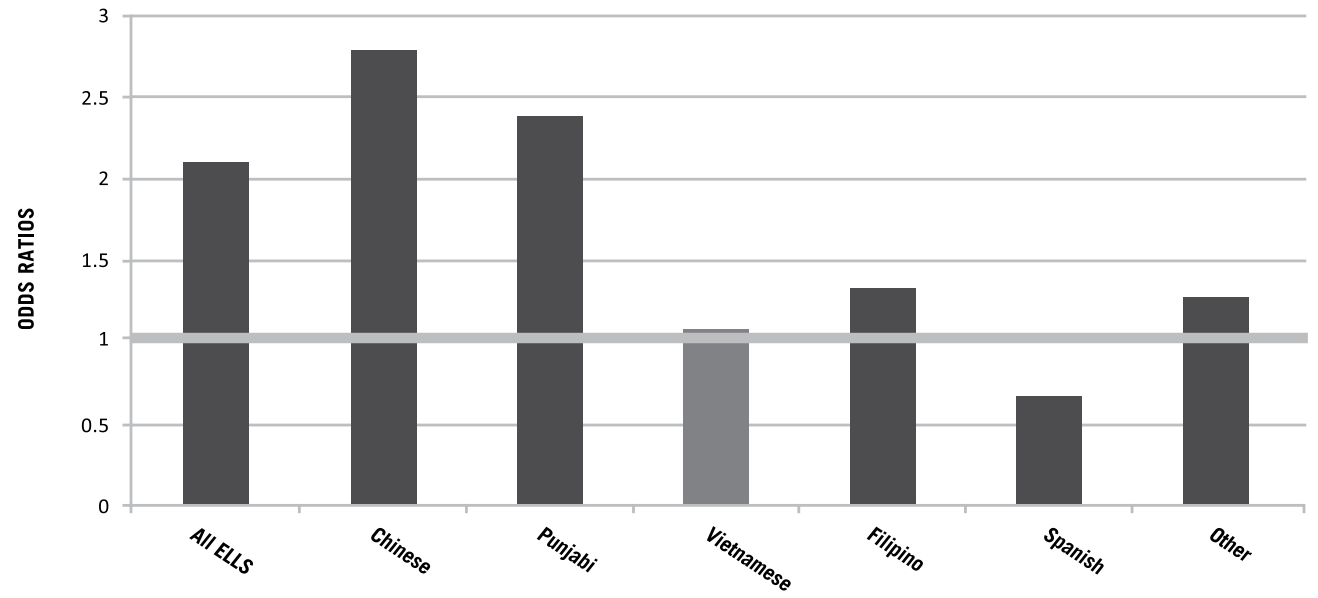


FIGURE 2: ELL and linguistic subgroup odds of graduation relative to NESs

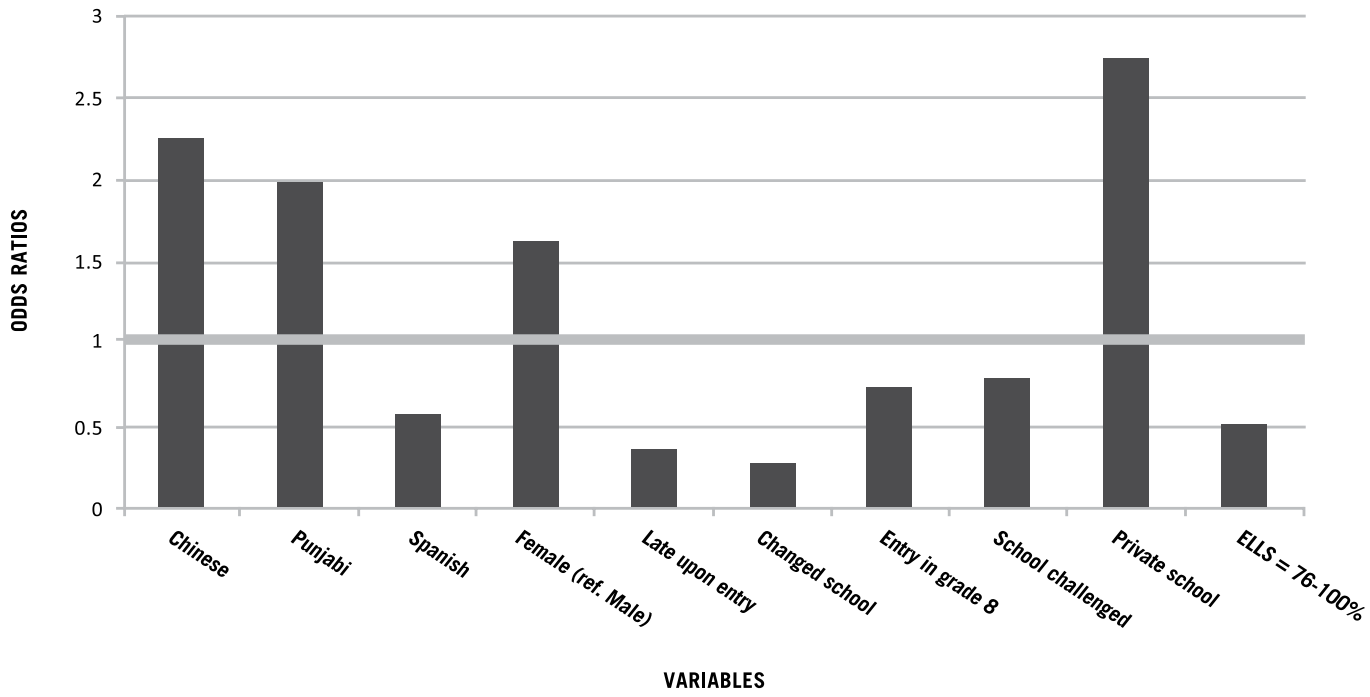


*sig. ratios in dark columns

graduation rates (see Figure 2). As a result, only five linguistic subgroups and a remainder group, 'other,' appear in the following findings. First, we calculated the odds of graduation relative to NESs. A score of 1.0 indicates even odds, no advantage or disadvantage.

With controls in place, ELLs had twice the NES odds of graduation. Chinese-speakers' odds were even better at 2.8 times NES odds. The Vietnamese-speaker disadvantage disappeared in the model. Their odds became even and statistically insignificant. Spanish- speakers however,

FIGURE 3: Impact of demographic, school process and school context variables on ELL graduation



remained at a significant disadvantage with .68 (or 1.47 times against) the NES odds of graduation.

A second model examined the impact of the control variables on ELLs (see Figure 3). Only statistically significant results are reported. In this model, Chinese and Punjabi-speakers retained their increased odds of graduation relative to all other ELLs, and Spanish-speakers had an even larger disadvantage. Filipino and Vietnamese-speaker odds were statistically insignificant. Female ELLs had better odds than males and median neighbourhood income was not significant.

Schooling process variables appeared important. Students who entered grade 8 late, possibly due to grade retention, had roughly one-third their peers' odds of graduating on time. Even more deleterious was the effect of changing schools. Students who changed schools more than once had odds of graduating only one-quarter those of stable students. Lastly, ELLs who entered the BC system in grade 8 had roughly three-quarters the odds of graduating of those who entered in elementary. The need for ESL service in high school was not significant.

The school context variables had significant effects. Nonetheless, attendance at 'challenged' schools reduced graduation odds to about four-fifths. By contrast, attending an independent (private) school increased graduation odds substantially. A high concentration of ELLs attending the school also reduced graduation odds.

MATHEMATICS 12 ENROLMENT

Although graduation is the most important high school outcome, we were also interested in ELLs pathways to graduation and how these pathways indicated future plans. While graduation is an important school outcome, it does not help us understand future post secondary transitions; unfortunately, no data were available on post-secondary acceptance or entrance. Therefore we examined enrolment and mean scores in Principles of Mathematics 12 (Math 12). In British Columbia, Math 12 is the terminal mathematics course required for entrance to most university programs; however, it is not required for graduation. While crude, it therefore provides a valid indicator of intention and qualifications to enter university.

Table 2 reveals that ELL enrolment rate in Math 12 was nearly double that of NESs. Again, there was substantial variation across the linguistic subgroups and between subgroups and NESs. In fact, Chinese-speaker enrolment rates were over 2.5 times those of NESs. Korean-speaker enrolment rates were even higher at 83%. Russian and Persian-speakers also enrolled in Math 12 far more frequently than NESs. By contrast, Spanish and Hindi-speaker enrolment rates were relatively low. These latter two groups were the only 2 of 11 (including 'Other') who enrolled in Math 12 less frequently than NESs.

TABLE 2: Math 12 enrolment rates and mean scores

	% ENROLLED	MEAN SCORE
NESs	**28**	**74**
All ELLs	**54**	**77**
Chinese	77	80
Punjabi	37	71
Filipino	36	68
Hindi	22	71
Korean	68	83
Spanish	19	69
Vietnamese	41	71
Persian	47	73
Russian	55	73
Arabic	39	71

In aggregate, ELLs out-performed NESs by three percentage points in mean scores. Again, these mean scores varied by linguistic group. Chinese and Korean-speaker scores were very high, six and nine points above the NES baseline, whereas Filipino and Spanish-speaker scores were five and four points below NESs. Overall, the enrolment and achievement of non-native English speakers in this academic mathematics course is impressive.

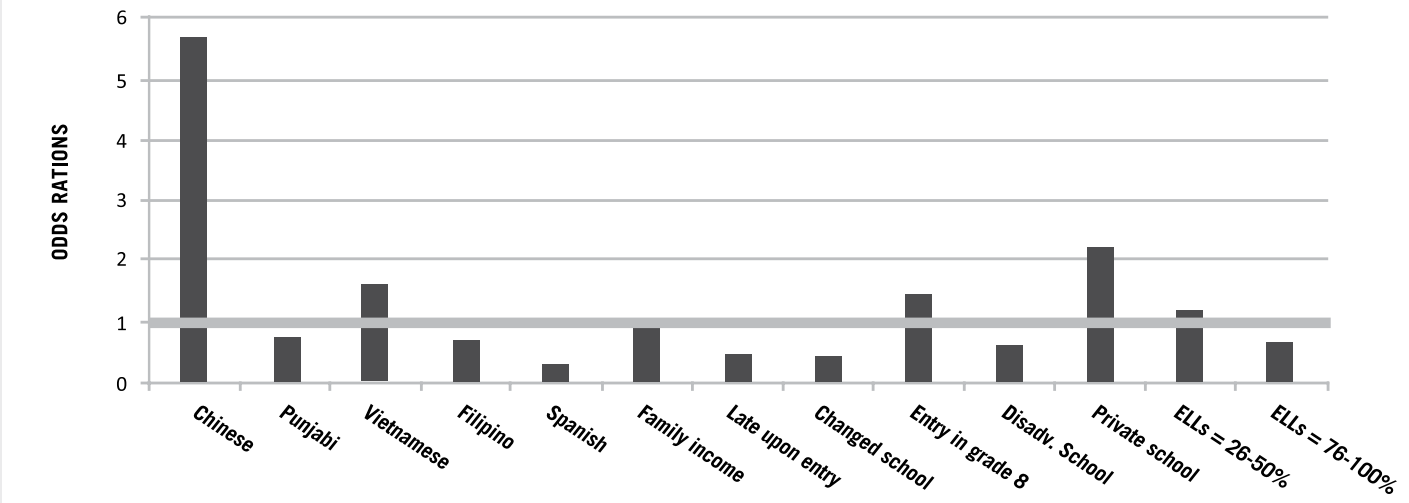
Multi-level models, analogous to the graduation models above, were employed to illuminate the effects of the three groups of variables (shown in Table 1) on enrolment in Math 12. The first model (not shown) overwhelmingly confirmed favourable Chinese odds of enrolling, about 11 times greater than NESs. Vietnamese-speakers also had significant favourable odds of three times that of NESs, while Spanish-speakers had poorer odds of enrolment in Math 12 than NESs.

Figure 4 shows the second model which examined the impact of the three groups of variables (Table 1) on Math 12 enrolments among ELLs. Statistically significant results are reported. Chinese maintained overwhelmingly favourable odds of enrolment, over five times that of other linguistic subgroups. The only other group with favourable odds compared to other ELLs was Vietnamese-speakers. Punjabi, Filipino and Spanish-speakers all had lower odds of Math 12 enrolment compared to all other ELLs; Spanish-speakers were the least likely to enrol in Math 12.

There was no female enrolment advantage. However, median income was a statistically significant predictor, at 1.01. While modest, the income odds ratio appears even smaller due to the fine grain of the variable. The ratio describes the advantage predicted by every additional thousand dollars of neighbourhood income. Both results were consistent with Garnett (2010) and Garnett et al. (2008).

Significant schooling process indicators are age of entry, school change, and entry to the system in grade 8 vs. elementary school. Interestingly, later entry increased odds of enrolment in mathematics. Garnett (2010) found the same result. Possibly, the reduced linguistic demands and cultural transferability of mathematics, coupled in some cases with advanced preparation in their home countries made mathematics an attractive option for later immigrants. Changing schools and being older than 13 upon grade 8 entry resulted in lower odds of Math 12

FIGURE 4: Impact of demographic, school process and school context variables on Math 12 enrolment



enrolment. While this result was expected, it was not statistically significant.

At the school level, attendance at disadvantaged schools significantly reduced the odds of enrolling in Math 12. Private school attendance doubled odds of enrolment in this prestigious course. Our examination of the impact of concentration of ELLs on Math 12 enrolment revealed that students concentrated in schools with a moderate proportion of ELLs (26%-50%) were 1.21 times more likely to enrol in Math 12, while schools with higher concentrations (51%-75%) resulted in sharply reduced Math 12 enrolments.

POLICY IMPLICATIONS AND CONCLUSIONS

The findings of this study should be interpreted carefully. Readers are particularly cautioned that the relatively positive findings for ELLs here are for a grade 8 cohort, i.e. students who had been in BC schools for at least 5 years and generally much longer. Other research points to problematic outcomes for ELLs with less time in our school systems (e.g. Toohey & Derwing, 2008). Furthermore, differences in home language subgroups should not be construed as genetic differences, but as a reflection of the different cultural, financial and educational backgrounds of the families in the ethno-cultural groups signified by these languages, and the interplay between these factors and the reception these groups have received in our Canadian schools and society (Garnett, 2010).

Nonetheless, we can offer some basic policy implications. Data must be disaggregated for decision-making. There is wide variation in academic trajectories among subgroups masked by labels such as 'immigrant,' 'ELL' or, in BC, 'ESL'. The dominant pattern of Chinese-speakers was extraordinary achievement; by contrast, Spanish-speaker outcomes were persistently low (see also Garnett, 2010; Gunderson, 2007). Decision makers ought not to consider their needs similar. Accordingly, in a universe of scarce resources, it makes more sense to target a larger share of resources to under-performing groups of students. This implication needs to be reconciled with a funding system in BC that grants supplemental funds to school boards for *all* students with ESL designations, but also demands all ESL students receive quantifiable 'extra' instructional support.

Schools also need to address gaps in ELLs' content knowledge as well as linguistic knowledge. Surprisingly, the subgroups at greatest risk of non-graduation had the least frequent need for ESL service and vice-versa. Extensive first language academic knowledge likely accounts for the positive outcomes of Chinese and Korean-speakers in mathematics. Conversely, students from countries with less highly developed educational infrastructures, who may also have experienced interrupted schooling, may have relatively underdeveloped first language academic knowledge, a serious impediment to their second language academic fluency (Cummins, 2000).

Beyond language indicators, school change emerged as a strong and consistent indicator of vulnerability. Effective protocols for the transfer of student records across schools and jurisdictions may be helpful. Close monitoring of the educational progress and attendance rates of students with histories of frequent school change may also mitigate poor outcomes. As well, schools may seek to mediate the social impact of school change with student welcoming programs, buddy programs, and outreach to new parents. Finally, ministries, school districts and educators may need to focus on the continuity of curricular content issues that students encounter when they change schools.

The policy mix should address both students and schools. While our models often could not reliably indicate school level variance due to the small size of some linguistic subgroups, a small but non-trivial amount of unexplained variance appeared to exist at the school level. It appeared slightly larger for ELLs than for NESs. School administrators and counsellors are key players in ensuring immigrant students' success (Kouritzin, 2004; Derwing et al., 1999). Both must organize schools and timetables to ensure the needs of these students are met. Of course, the school level personnel with the most impact on ELLs are teachers. The mean score and graduation rate gaps among some subgroups, who had been in BC schools for at least five years, indicate room for improving instructional delivery, and the accommodation of linguistic and cultural diversity. Rigorous pre-service and in-service professional development could address these needs.

Within the limits of available data, this study has shown that while the aggregate outcomes for ELLs – our proxy for youth of immigrant origin- are positive, the over-performance of some ethno-cultural groups masks the risk among others. Thoughtful policies may ameliorate these inequities.

VARIATIONS DES TAUX DE DIPLOMATION ET CHEMINEMENT SCOLAIRE D'ÉLÈVES APPRENANT L'ANGLAIS DU VANCOUVER MÉTROPOLITAIN

Cet article porte sur les résultats propres au Vancouver métropolitain tirés d'une étude comparative (Mc Andrew et coll., 2009) sur le cheminement scolaire d'élèves apprenant l'anglais (EAA), représentatifs des élèves immigrants, dans trois grandes villes canadiennes d'accueil : Toronto, Montréal et Vancouver. Les données décrivent la cohorte 1999 de 8e année de 12 conseils scolaires (EAA n=9 039). Les élèves ont été répartis en groupes linguistiques, selon la langue qu'ils ont rapportée parler à la maison.

Deux questions ont orienté cette étude :

1. Quelles sont les similitudes et différences entre les EAA, leurs sous-groupes linguistiques et les locuteurs de l'anglais (LDA) relativement à certaines variables sociodémographiques, liées au processus de scolarisation et liées à l'école?
2. Quelles sont les similitudes et différences entre les EAA, leurs sous-groupes linguistiques et les LDA relativement à trois indicateurs de cheminement et de réussite scolaires : la diplomation, l'inscription et les résultats en *Mathematics 12*?

Le profil démographique des EAA inclut plus de facteurs de risque que celui des LDA. 55 % des EAA habitent des quartiers où le revenu familial médian est dans les deux quintiles inférieurs, contrairement à 29 % des LDA. Seuls 24 % des EAA habitent des quartiers où le revenu familial médian est dans les deux quintiles supérieurs comparativement à 48 % de LDA. 40 % des EAA ont changé au moins une fois d'école dans les quatre ans précédant la 8e année contre 38 % des LDA. Cette différence ténue masque des chiffres plus marqués chez certains sous-groupes. Ainsi, 57 % des locuteurs du russe, 55 % des locuteurs du coréen, 53 % des locuteurs du perse et de l'espagnol et 50 % des locuteurs du vietnamien ont changé au moins une fois d'école. Près du quart des locuteurs de l'espagnol et du russe en ont vécu au moins deux. Seuls 28 % des EAA ont dû suivre des cours d'anglais langue seconde (ESL), mais les variations sont plus marquées dans certains sous-groupes. Ainsi, 56 % des locuteurs du coréen, 46 % du russe, 43 % du perse et 36 % du chinois ont suivi des cours d'ESL car leur niveau d'anglais n'était pas suffisant à leur arrivée en 8e année. Par contre, seuls 10 % des locuteurs de l'hindi, 16 % du vietnamien et 17 % de l'espagnol ont suivi ces cours.

Le contexte scolaire des EAA semble défavorable. La moitié d'entre eux vont dans des écoles fréquentées par plus de 50 % d'EAA, contre 13 % des LDA. Bien que d'importantes concentrations d'EAA ne désavantagent pas nécessairement une école, elles indiquent une exposition réduite à des locuteurs natifs de l'anglais, langue qu'ils doivent apprendre, et des écoles désavantagées économiquement puisque la plupart des EAA (qui fréquentent ces écoles) appartiennent aux quintiles inférieurs. Une mesure du désavantage économique des écoles montre que 42 % des EAA fréquentent des écoles défavorisées, contre 21 % des LDA.

Malgré ces indicateurs de risque, le taux agrégé de diplomation des EAA est élevé. En Colombie-Britannique (C.-B.), 80 % ont obtenu leur diplôme dans les six ans suivant l'entrée en 8e année, contre 77 % des LDA. Ce résultat masque des variations. Les locuteurs du chinois ont un taux de diplomation de 89 % contre 60 % pour les locuteurs de l'espagnol. Le taux de diplomation des locuteurs du pendjabi et du coréen est supérieur à celui des *EAA agrégés* et celui des locuteurs de l'hindi et du vietnamien, nettement inférieur. Le taux de diplomation de six sous-groupes est inférieur à celui des LDA.

Un modèle d'analyse de régression multiple confirme que les EAA ont deux fois plus de chances d'obtenir leur diplôme que les LDA (les locuteurs du chinois ont 2,8 fois plus de chances). Le désavantage des locuteurs du vietnamien disparaît, leurs chances devenant égales et statistiquement non-significatives. Les locuteurs de l'espagnol maintiennent un désavantage significatif de 0,68 (ou 1,47 fois contre) par rapport aux LDA. Dans un deuxième modèle, portant sur l'impact de diverses variables contrôle sur les EAA, les locuteurs du chinois et du pendjabi conservent leur avantage et le désavantage des locuteurs de l'espagnol s'amplifie. Les chances des locuteurs du tagalog et du vietnamien sont statistiquement non-significatives.

Nous avons également examiné l'inscription et les notes moyennes au cours *Principles of Mathematics 12 (Math 12)*, exigé par la plupart des universités. Les EAA s'y inscrivent pratiquement deux fois plus que les LDA. Ici encore, on constate d'importantes variations. Le taux d'inscription des locuteurs du chinois est 2,5 fois plus élevé que celui des LDA. Celui des locuteurs du coréen est également très élevé. Les locuteurs du russe et du perse s'inscrivent plus souvent que les LDA. Par contre, les taux d'inscription des locuteurs de l'espagnol et de l'hindi sont relativement bas. Ce sont les deux groupes (sur 11) à s'inscrire moins fréquemment que les LDA en *Math12*.

Les EAA ont obtenu de meilleures moyennes que les LDA par trois points de pourcentage, mais les résultats varient selon les sous-groupes. Avec six et neuf points au-dessus de la moyenne des LDA, les locuteurs du chinois et du coréen ont des moyennes très élevées, alors que celles des locuteurs du tagalog et de l'espagnol sont respectivement de cinq et quatre points inférieures. Sans

variables de contrôle, les modèles à niveaux multiples basés sur la régression logistique confirment ces résultats. Les inscriptions et les résultats des EAA en *Math 12* sont impressionnants.

Nous devons interpréter ces résultats avec circonspection, mais nous pouvons suggérer certaines implications au niveau des politiques. D'abord, il faut désagréger les données pour prendre des décisions puisque les étiquettes *immigrant*, *EAA* et *ESL* cachent d'importantes variations de cheminement scolaire. Deuxièmement, il faut consacrer beaucoup de ressources aux groupes moins performants. Troisièmement, les écoles doivent combler les lacunes dans les connaissances des EAA au niveau du contenu et de la langue. Étonnamment, les sous-groupes présentant le plus grand risque de ne pas obtenir de diplôme sont ceux qui ont le moins besoin de cours d'ESL et vice-versa. Outre les indicateurs linguistiques, les changements d'école constituent un indicateur de vulnérabilité fort et stable. Il faut des protocoles efficaces de transferts de dossiers d'élèves entre les écoles et les administrations. Finalement, les politiques devraient toucher les écoles et les élèves. Les différences de moyennes et de taux de diplomation entre certains sous-groupes, inscrits dans les écoles de C.-B. depuis au moins cinq ans montrent qu'il y a matière à amélioration au niveau de l'enseignement et des accommodements linguistiques et culturels. On pourrait combler ces besoins en mettant sur pied de solides services professionnels avant et pendant la scolarité des jeunes.

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