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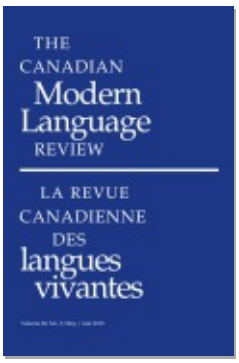

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French Immersion and At-Risk Students: A Review of Research Evidence

Fred Genesee

Abstract: This report reviews results of research on the outcomes of French immersion students with special educational needs related to low levels of general academic ability and low levels of first language ability (and possibly impairment), as well as those of students with difficulty or who are at risk for difficulty in learning to read. Studies of the effectiveness of interventions for such students are also reviewed and analyzed. The report ends with suggestions for future research and educational policy.

Keywords: immersion; literacy; second language reading

Résumé : On trouvera dans le présent rapport les conclusions des recherches sur les résultats obtenus par les élèves d'immersion française ayant des besoins éducatifs spéciaux et des aptitudes restreintes dans leur première langue (voire une déficience), ainsi que les résultats des élèves ayant des difficultés à apprendre à lire ou bien à risque dans ce domaine. Des études sur l'efficacité des interventions auprès de ces types d'étudiants sont aussi examinées et analysées. Le rapport se termine par des suggestions de recherches et de politiques éducatives pour l'avenir.

Mots clés : immersion; alphabétisation; lecture en langue seconde

Introduction

The purpose of the present report is to review the results of research on (1) the suitability of French immersion (FI) for students with special educational needs and low levels of academic ability and (2) interventions and strategies for meeting the educational needs of such students.[1] With respect to students with low levels of academic ability, research was identified that examined immersion students with low levels of intelligence as measured by standardized IQ tests (Genesee, 1976) and students identified by school personnel as having academic difficulty (Bruck, 1985a, 1985b; Trites & Price, 1978b). With respect to students with special educational needs, the literature

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search identified studies on students who had language impairment (Bruck, 1978a, 1982) and students with, or at risk for, reading impairment. For the purposes of this review, 'at risk' is used generically to refer to all these kinds of students – those with language, literacy, and academic difficulties or who are likely to experience such difficulties, whether they stem from what might be considered clinical factors (reading disability or language impairment) or from non-clinical factors (generally low levels of academic ability). No research on students with other kinds of learning disabilities (see LDAC, 2002) or special needs, such as those resulting from hearing and visual impairments or severe cognitive impairments, was identified in the literature search,[2] and, therefore, it is not possible to report on the outcomes of immersion for these kinds of students. Clearly, there is a need for future research on such learners, a point that is considered further in the Summary section below.

Numerous researchers, educators, and parents have expressed concerns about the suitability of immersion for students who are at risk for poor academic performance because of below-average levels of academic ability, learning disabilities, or difficulties in their first language (L1) (e.g., Bruck, 1978a; Calvé, 1991; Genesee, 2004; Hayden, 1988; Lapkin, Swain & Shapson, 1990; Majhanovich, 1993; Mannavarayan, 2002; Murtagh, 1993; Obadia & Thériault, 1997; Trites & Price, 1978b). It is often reported that students who are expected to have difficulty in immersion for such reasons are discouraged from registering in immersion[3] or are counselled out if they experience difficulty in the program. A number of important educational, ethical, and legal questions are at issue when it comes to including students in immersion who have, or are at risk for, a learning disability or are otherwise prone to academic difficulties in immersion. The educational questions that arise include the following:

1. Should at-risk students or students with identified disabilities (language or cognitive, for example) be discouraged (or actually disqualified) from enrolling in French immersion programs because it would seriously jeopardize their basic education (see, e.g., Trites, 1978)?
2. Is it possible to identify students who are at risk for language and academic difficulty in immersion prior to or at school entry? In other words, do we have the requisite empirical knowledge to devise reliable and valid diagnostic instruments for this purpose?

3. Are some forms of immersion more suitable for certain at-risk students than other programs? For example, Trites (1978) and Wiss (1989) have suggested that late immersion may be more suitable than early immersion for students with learning disabilities that are due to developmental lags.
4. If a student is identified as learning disabled, language or reading impaired, or at risk for academic difficulty in immersion for other reasons *after* enrolling in the program, should such a student be transferred to an English-only program? At what grade level would it be appropriate to transfer such a student, and what kinds of follow-up support should he or she receive in the English program?
5. If students who are at risk for academic difficulty, or are experiencing difficulty, are retained in immersion programs, what kinds of additional support are required to meet their specific needs, and in what language(s) should it be provided (English, French, or both)?
6. What professional competencies do immersion teachers and other professionals who provide special services to immersion students need to have in order to provide appropriate and effective instruction and intervention for at-risk students in immersion?

Several important ethical and legal questions are also at issue. Ethical issues arise because to exclude students who might face difficulty in immersion from participation in these programs is to deprive them of access to what is arguably the most effective form of second language (L2) education and, in turn, from an important life- and job-related skill, namely, proficiency in French. The government of Canada (2003) recently embarked on an ambitious initiative to double the number of young Canadians who are proficient in both official languages by 2013. If this initiative is to apply to all young Canadians, scientific information is needed that attests to benefits of immersion for at-risk students, so that parents and schools are reassured that including such students is appropriate. In addition, bilingualism is important not only in the Canadian context but also in the international context, given the globalization of the economy and of employment opportunities. Can Canadian schools ethically exclude at-risk students from what is viewed as the most effective educational means to promote bilingual competence, given such global realities? Conversely, however, a decision to include at-risk students in immersion assumes that schools have appropriately trained teachers

and effective support services to meet such students' needs. In fact, specialized services for at-risk students are often not available (e.g., Collinson, 1989) and, when available, are not necessarily validated. This raises the legal issue of whether school boards that offer immersion programs should also provide the professional services that they are required by law to provide to students with identified disabilities.

In the sections that follow, research is reviewed that has examined the outcomes of anglophone immersion students (1) with low levels of academic ability and/or who were experiencing academic difficulty in immersion; (2) with L1 impairment; and (3) who are at risk for or with reading impairment. This review is followed by a review of research on intervention for immersion students who experienced difficulty in any of these ways while in immersion programs. The review ends with a summary of findings, recommendations for future research, and policy implications of extant research findings.

Academic ability

In this section, studies that have examined the performance of students with low levels of academic ability (Genesee, 1976, 1987) or who were experiencing academic difficulty in immersion (Bruck, 1985a, 1985b; Trites & Price, 1978b) are reviewed. No studies of immersion students with severe cognitive or sensory–motor impairment were found (but see Rondal, 1984, for a discussion of related issues; see Kay-Raining Bird et al., 2005, for research on bilingualism and children with Down Syndrome).

Genesee (1976) examined the performance of both elementary- and secondary-level English-speaking students in French immersion (FI) programs and English programs in Montreal in relation to their intellectual ability. Both immersion and non-immersion students were classified as *average* (IQ between 90 and 110), *below average* (IQ less than 85), or *above average* (IQ above 115) based on their scores on a standardized IQ test. Student performance on IQ tests typically correlates positively and significantly with performance on tests of academic achievement, such as reading, mathematics, and science. Genesee examined the students' school performance with respect to both English and French language development (reading, speaking, and listening comprehension skills) and academic achievement (mathematics). With respect to English language development and academic achievement, below-average students in immersion scored

at the same level as below-average students in the English program on both English language and academic achievement tests. In other words, the below-average students in immersion did not score significantly lower in their English language development or academic achievement as a result of participation in immersion in comparison to comparable students in all-English classrooms. Cummins (1984) reports that evaluators in Edmonton reported a similar lack of differential effects of intelligence on the performance of immersion versus non-immersion students in that city. In keeping with their IQ test performance, the below-average students in both immersion and English programs scored significantly lower than their average and above-average peers in their respective programs on measures of reading, spelling, vocabulary, and mathematics in English. With respect to French language acquisition, below-average students in immersion in both elementary and secondary grades scored significantly higher on French language tests (including speaking, listening comprehension, reading, and writing) than below-average students in the English program who were receiving conventional instruction in French as a second language (FSL). In other words, the below-average students were benefiting from immersion in the form of enhanced L2 proficiency.

Genesee also examined whether academic ability had the same effects on the performance of early and late[4] immersion students. His comparisons reveal interesting and differential effects of academic ability on French language proficiency. Specifically, below-average students in both early and late immersion programs scored lower than average students in the same programs on tests of French language development related to literacy (reading and writing); similarly, average students in both program types scored lower than above-average students. In other words, the effects of academic ability were the same in both early and late immersion when it came to acquiring L2 literacy skills. Differential effects of academic ability were found, however, on tests of French speaking and listening. Whereas above-average students in late immersion acquired better speaking and listening skills in French than average and below-average late-immersion students, below-average students in early immersion scored just as well as average and above-average early-immersion students on speaking and listening tests. It is possible that acquisition of oral communication skills in a L2, when integrated with academic instruction, is more cognitively demanding at the secondary than at the elementary level and, as a result, calls on the kinds of cognitive skills that are differentially available to older students. In contrast,

acquisition of L2 skills integrated with academic instruction at the elementary level may call on the natural language-learning ability that all students possess during their early school years. In any case, these findings suggest that early immersion is more egalitarian than late immersion, since it appears to be equally effective for students with different levels of general academic ability. Overall, these results indicate that low academic/intellectual ability is no more of a handicap in FI than it is in English programs and that, to the contrary, low-performing students can experience a net benefit from immersion in the form of bilingual proficiency.

Bruck (1985a) examined the role of academic ability in decisions to switch some students out of early immersion. The question in this research was whether there is a subgroup of students who experience differential difficulty in immersion that effectively precludes their continuation in the program and whether such students might fare better in an English-only program. Bruck, with the assistance of immersion teachers, identified immersion students in Grades 2, 3, and 4 who were experiencing academic difficulty. All these students were then given a battery of tests to assess their academic performance, and their teachers and parents were interviewed in order to document family and psychological characteristics that might distinguish those who decided to switch out of immersion from those who remained in immersion despite their academic difficulty. The tests of academic performance were intended to determine whether those who switched were experiencing specific kinds of difficulty or particularly severe difficulty. Bruck found, as expected, that, in the schools participating in the study, the students who switched scored lower than immersion students in general on a number of achievement tests. However, the academic difficulties of the students who switched were no worse than those of the students who remained in immersion despite low academic performance. What distinguished the students who switched from those who remained in the program despite their difficulties was that the students who switched expressed significantly more negative attitudes toward schooling (and immersion in particular) and exhibited more behavioural problems than students with difficulties who stayed in the program; these results were documented in the reports of parents, teachers, and the students themselves. Bruck suggests that the ability to cope with poor academic performance may be a more serious problem for some immersion students than poor academic performance alone, and she argues that low academic ability alone does not distinguish students who can benefit from immersion from those who cannot. In other words, other things

being equal, some students with low levels of academic ability can benefit from immersion.

In a follow-up study, Bruck (1985b) notes that students who switched out of immersion continued to have academic difficulties and to exhibit attitudinal and behavioural problems. An earlier longitudinal study (Bruck, 1978a, 1978b) reported on the progress of individual immersion students who had switched to an all-English program because of academic difficulties. Bruck notes that there were 'few cases of unqualified success of switching,' in that the students appeared to achieve at the same level in the English program as they had in immersion. She cautions that switching immersion students to an English program too early can create problems, since they will not have had sufficient instruction in English to fit in easily with students whose prior instruction has been in English only. She further notes that switching can have negative consequences for students' self-esteem and may give them a sense of failure (see also Wiss, 1989, for similar concerns).

In contrast, the results from other studies suggest that transfer to an English program can result in improved performance, attitudes, and behaviour for students who have experienced academic difficulty in immersion (see Halsall, 1994, for a review of transfer studies). In a study by Bonyun, Morrison and Unitt (1981, as cited in Mannavarayan, 2002), 90% of parents indicated that after leaving immersion their children felt enthusiastic and positive about school; two-thirds of the children had more positive attitudes; and most parents believed that their children's academic progress was 'going well.' Parkin, Morrison, and Watkin (1987) report that 'not only do most transfer students show a significant improvement in academic progress and attitude' but most children adjust well to the change. Similarly, Waterston (1990) reports that 'the problems disappeared' in 38% of students who transferred; problems decreased in 9%; and in no case did problems increase (see also Trites, 1984; Wiss, 1989).

Caution must be exercised when interpreting these results, for a number of reasons. Because they are based on participants' impressions, they are subjective and may be unreliable or lack generalizability. More importantly, the interpretation of such self-reports, even if they are accepted at face value, is not straightforward. These results cannot be interpreted as evidence that students who experience academic difficulties in immersion should be transferred to an English program, since they do not establish that all students in the immersion program who experienced academic difficulty were motivated to seek transfer. As Bruck's results suggest, the variable that distinguishes

those who seek transfer from those who do not may not be academic difficulty per se but, rather, the frustration and anxiety that some students experience in the face of such difficulty (see also Mannavarayan, 2002). Moreover, we do not know whether the students who transferred would have been able to cope with their academic difficulties in immersion had they be given appropriate educational support.

Trites (1976; see also Trites & Price, 1978b) carried out two ambitious studies on primary FI students in the Ottawa area who were experiencing academic difficulty or had switched to an English program as a result of 'learning difficulties,' to use Trites's terminology. While the students in Genesee's and Bruck's research were not experiencing severe levels of learning difficulty, the students in Trites's research arguably were, since they had been referred to the Royal Ottawa Hospital for clinical assessment. In their first study, Trites and Price (1978b) administered a battery of tests to 32 immersion students (mean age = 7.1 years) who were experiencing academic difficulty and to seven comparison groups. Some of the comparison groups were facing general linguistic challenges in school (e.g., minority-language students in French-language schools) and some were experiencing specific problems that Trites and Price refer to as 'traditional' (e.g., a reading-disabled subgroup). The test battery was designed to identify the nature of the immersion students' academic difficulty, and the inclusion of a wide range of comparison groups was intended to determine whether the academic difficulties of the immersion students and the underlying causes of these difficulties were unique to the immersion learning environment.

Trites and Price (1978b) found that the FI group, in comparison to the other learning-difficulty groups, had a high IQ, no evidence of a particular or perceptual deficit, and above-average motor and sensory functions. However, the immersion group performed distinctly lower on one particular test – the Tactual Performance Test, which, the authors contend, is associated with temporal-lobe functions of the brain. Trites and Price considered these students learning disabled, presumably because they were experiencing academic difficulty but were typical with respect to overall level of intelligence, perceptual abilities, and so on. Trites and Price interpret their results to mean that the immersion students had a developmental immaturity in the temporal lobe that made learning in immersion difficult; they do not explain precisely how or why this was the case (see also Wiss, 1989).

Since the students in this first study had been referred for clinical assessment, they may not have been representative of all immersion

students experiencing academic difficulties and, in particular, students who were having difficulty but were not referred for clinical assessment. Therefore, Trites and Price (1978b; see Trites & Price, 1977, for a full report) carried out a follow-up study of immersion students who were experiencing similar academic difficulty; some of these students remained in immersion despite their difficulties, while others switched to an English program. The students had been identified by personnel in a number of schools in Ottawa and not through clinical referral. The performance of the two groups of students was compared on the same battery of tests used in the earlier study. The test profile of the drop-out students was substantially different from that of the students who remained in immersion, and their test profile replicated the unique pattern found in the first study, arguing, according to Trites and Price, that students with this unique developmental lag are at differential risk for difficulty in immersion.

In yet another study, Trites (1984) used his diagnostic battery to identify immersion students who were at risk for academic difficulty prior to entering immersion (see Trites & Price, 1978a, 1979, 1980, for full reports). It could be argued that the earlier results failed to reveal to what extent the developmental immaturity identified by the diagnostic battery was necessary and sufficient to explain difficulty in immersion, since Trites and Price had carried out their research on students who had already been identified as having difficulty. With this goal in mind, the authors administered their test battery to four-year-old children prior to their entering immersion. The students entered immersion one year later, at five years of age, and their academic performance was subsequently assessed in Grade 4. For the sake of brevity, comments here will be limited to what appear to be striking differences between the results of the early-identification study and Trites's previous results. Trites and Price found that 'unsuccessful' Grade 4 immersion students scored significantly lower than 'successful' immersion students on all 14 tests in the early-identification assessment battery. The battery included tests that tap auditory discrimination; quantitative abilities and knowledge; letter and number recognition; comprehension, recall, and interpretation of oral language; and problem solving. In short, these findings did not confirm the authors' previous findings of a unique problem associated with performance on the Tactual Performance Test. As a result, Trites's claim that students who are likely to have difficulty in immersion are at risk because of a specific developmental lag in the temporal lobes is difficult to reconcile with subsequent findings that the performance

of unsuccessful students was significantly lower than that of successful students on all diagnostic tests.

Trites and Price's research has also been criticized on methodological and logical grounds by Cummins (1984) and by Stern et al. (1976). More specifically, Cummins has called into question Trites and Price's claim that the immersion students' academic difficulty is related to depressed performance on the Tactual Performance Test, since no evidence is provided to support this claim. Cummins argues, further, that it is likely that performance on the Tactual Performance Task, even if it is linked to temporal lobe functions, is related to the right temporal lobe, which is involved in spatial processing, and not to the left temporal lobe, which is related to language processing. It is difficult to see the connection between the immersion students' language and academic problems and their depressed performance on a test of spatial/tactual processing.

Language impairment

The literature search uncovered only one set of studies on immersion students with language impairment (Bruck, 1978a, 1982). In order to examine the suitability of immersion for students with language impairment, Bruck (1978a, 1982) identified subgroups of Grade 3 immersion and non-immersion students who were 'impaired' or 'normal' in their L1 development. Classification was based on teachers' judgements, an oral interview, and a battery of diagnostic tests. Bruck then administered literacy and academic achievement tests to the students. She found that the impaired immersion students scored at the same level as similarly impaired students in the English program and that both groups scored lower than their developmentally typical peers in the same programs, as would be expected from the language status of the impaired students. At the same time, the impaired immersion students had developed significantly higher levels of proficiency in French than both subgroups of non-immersion students (impaired and typical) who were receiving conventional FSL instruction. In sum, and as in the case of students with low levels of academic ability, students with low levels of L1 ability demonstrated the same levels of English language development and academic achievement in immersion as similarly impaired students in the English program. At the same time, participation in the immersion program had benefited the impaired students with significantly superior French language proficiency in comparison to students receiving conventional FSL instruction.

Bruck recommends that students with language disabilities be included in immersion programs and given appropriate support services. While these findings are significant and useful, it would be important to examine the performance of students with language impairment using current diagnostic and conceptual definitions (Leonard, 1998).

A study by Paradis, Crago, Genesee, and Rice (2003) on simultaneous bilingual children with specific language impairment (SLI) is relevant to the broader issue of whether children with SLI are at differential risk for language difficulties if they learn two languages. Since research on immersion students with language impairment is so scarce, it was decided to include a review of this study, on the assumption that evidence that exposure to two languages would be a greater challenge for children with language impairment than exposure to only one language would provide indirect evidence concerning the suitability of immersion for children with language impairment. All but one of the children in the Paradis et al. study were attending monolingual school programs, and, thus, their outcomes do not address the question of how well students with language impairment would perform in immersion.

In their study, Paradis and her colleagues examined the linguistic profile of English–French bilingual children with SLI, using assessments of impairment that are widely used to diagnose monolingual English- and French-speaking children with SLI: namely, the children were at least one standard deviation below the mean on measures of language but were at normal levels with respect to general intellectual development and had no known sensory-motor, socio-emotional, or neurological problems. The performance of the bilingual children, who were approximately seven years old at the time of the study, was compared to that of monolingual English and monolingual French children who had also been diagnosed with SLI. This study sought to answer two basic questions:

1. Are the linguistic impairments of bilingual children with SLI the same as those of monolingual children with SLI?
2. Do bilingual children with SLI experience more severe impairments than monolingual children with SLI?

These two questions were motivated by the common belief that children with SLI are likely to experience more severe and potentially

unique problems as a result of learning two languages. Two general findings from this study are of particular importance:

1. The bilingual children with SLI exhibited the same language profiles as the monolingual children with SLI; being bilingual did not result in a unique pattern of impairments.
2. The linguistic impairments of the bilingual children with SLI were of the same magnitude as those of the monolingual children with SLI; being bilingual did not seem to result in greater impairment.

The results of this study support Bruck's overall findings (1978a, 1982), in so far as they indicate that bilingualism does not put children with impaired capacity for language learning at greater risk for language learning difficulties. Since the diagnostic criteria used by Paradis et al. (2003) reflect contemporary definitions of SLI, their findings go some way toward addressing a shortcoming in Bruck's study. At the same time, additional research is called for to verify the generalizability of Paradis et al.'s results to other bilingual children (see Gutierrez-Clellen, Wagner, & Simón-Cereijido, 2006, for research on Spanish–English bilingual children with SLI). It also remains an open question whether education through an L2 puts children with SLI at differential risk for academic and language difficulties, since this issue is not addressed directly by Paradis et al.

Reading impairment

It is important to distinguish between students who are at risk for reading difficulty and those who would be considered reading impaired. It is generally possible to identify students with a reading impairment only in the middle elementary grades, when most children have mastered basic reading skills and are well on their way to reading fluently. Students are generally considered to have a reading impairment if they score more than one standard deviation below their grade level on tests of reading. But students can be identified as being *at risk* for reading impairment much earlier, in kindergarten or Grade 1 and possibly earlier. This can be done by examining their performance on tests that predict later reading ability, such as knowledge of letter names and sounds; phonological awareness; and phonological recoding, as measured by children's speed of access to phonological codes for words, numbers, or picture names (NICHHD, 2000). Many students who are identified as at

risk for reading difficulty may become proficient, fluent readers if additional support is provided in the early grades. No research was identified that examined students with reading impairment in immersion programs. The review did identify two studies that examined immersion students with poor reading skills (Eagan & Cashion, 1988; Geva & Clifton, 1994) and two that examined immersion students who were at risk for reading difficulties (Bournot-Trites & Denizot, 2005; MacCoubrey, Wade-Woolley, Klinger, & Kirby, 2004).

Geva and Clifton (1994) examined the reading of good and poor readers in Grade 2 immersion in comparison to good and poor readers in a regular English program. The goals of their study were to examine (1) how good and poor readers in early French immersion compare to good and poor readers in an English program and (2) the reading skills of good and poor readers in immersion in their first and second languages. At issue is whether poor readers in immersion are at greater risk than poor readers in an English program and whether poor readers in immersion have the same reading profiles in their two languages. Two major findings are of interest for our purposes:

1. The immersion students' scores in English and French reading showed positive and significant correlations between virtually all L1 and L2 reading measures, including measures of accuracy, speed, and comprehension. For example, the correlation between reading levels of immersion students in English and in French was a very high 0.84; and the correlation between story retelling in English and French was 0.77. In other words, immersion students who read well in English also read well in French, and students who read poorly in English also read poorly in French.
2. When the reading profiles of students in FI and English-program students were compared, no significant differences were apparent *within the same reading level* on measures of accuracy, such as word recognition, omissions, repetitions, and insertions (as revealed by miscue analysis). However, there were differences between the immersion and English-program students on measures of speed and fluency, with the English-program students demonstrating faster and more fluent reading. This was true for both good and poor readers in the immersion group, arguing that immersion students may require more practice to attain native-like levels of accuracy and fluency in reading. In fact, it is typical for immersion students to score lower than English-program students on reading

> tests prior to the introduction of English reading instruction in immersion; the students in this study had not yet been given English reading instruction at the time of testing (E. Geva, personal communication, March 28, 2006).

In a related vein, Eagan and Cashion (1988) report that among subgroups of 'excellent,' 'promising,' and 'unsuccessful' Grade 2 readers in FI, the unsuccessful readers exhibited what the authors refer to as 'the greatest correspondence between their French and English competence in reading' (p. 526). There was less correspondence between English and French reading for the other subgroups in this study. Competence in reading was examined through interviews with the students' immersion teachers and by analyzing tape-recordings of students' oral English reading samples. The sample sizes in this study are small (three students per subgroup), and the methods of analyzing the students' reading competencies are not described in detail. Thus, these findings must be interpreted with caution. In addition, Eagan and Cashion's finding of less correspondence between French and English reading in the excellent and promising subgroups than in the unsuccessful subgroup is at odds with Geva and Clifton's results and with those of other researchers who have looked at cross-linguistic relationships in L1 and L2 reading acquisition (Genesee & Geva, 2006; Geva & Genesee, 2006); Eagan and Cashion provide no explanation of this discrepancy. It is possible that the excellent and promising subgroups were at ceiling and, thus, had no room for differentiation.

MacCoubrey, Wade-Woolley, Klinger, and Kirby (2004) sought to determine whether predictors of reading in L1 English are equally useful in predicting risk for difficulty in learning to read French and English among immersion students. They administered a battery of predictor tests in English, all of which have been shown to be good predictors of reading ability in L1 English, to FI students in the fall of Grade 1. The tests assessed phonological awareness, phonological recoding, and phonological short-term memory. Reading achievement was assessed at the end of Grade 1 and then again in fall of Grade 2. The reading tests assessed word-reading skills in English and in French. MacCoubrey et al. found that assessments of phonological processing skills in English discriminated between immersion students who were good readers and those who were poor readers in both English and French. By implication, what is important in learning to read FSL is fundamentally the same as what is important in

learning to read L1 English, and what is important in learning to read in an immersion program is essentially the same as what is important in learning to read in an English-only program. At the same time, MacCoubrey et al. found language-specific discriminators for French and English reading, with phoneme blending and sound isolation discriminating between poor and good readers in English and phoneme blending, sound isolation, and rapid naming discriminating between good and poor readers in French. These findings are important because they indicate that FI students who are at risk for reading difficulty can be identified using English-language tests and that this can be done early in the students' education, before they have had extensive exposure to French. This permits educators to provide additional support for students before they manifest reading impairment. MacCoubrey et al. examined word-level reading skills, and it is possible that a different constellation of discriminators would be important at later stages of reading development, when comprehension of text becomes more important.

Bournot-Trites and Denizot (2005) examined whether the same kinds of predictors of English and French reading would differentiate immersion students who were considered at risk for reading difficulty; the students in their study were in kindergarten and Grade 1. They found that immersion students who were considered to be at risk based on their performance on a set of English tests (including knowledge of letter names, phonological awareness, and word and non-word repetition) were also identified as being at risk based on their performance on a similar battery of French-language predictors. These results, like those of Geva and Clifton (1994), Eagan and Cashion (1988), and MacCoubrey et al. (2004), attest to significant similarity in learning to read in L2 French and L1 English and to significant cross-linguistic relationships in learning to read a second language (see also Comeau, Cormier, Grandmaison, & Lacroix, 1999, for corroborating evidence from a study on cross-linguistic effects for a group of FI students with mixed English-only and English/French language backgrounds). Bournot-Trites and Denizot also found that the immersion students in kindergarten and Grade 1 scored significantly higher than English-program students on both English reading tests and tests of phonological awareness and verbal memory; the latter are significant predictors of word-reading ability. Bournot-Trites and Denizot argue that these results support other researchers' findings that bilingualism enhances metalinguistic awareness, which, in turn, promotes reading acquisition.

Intervention studies

The literature review identified two studies that examined the effectiveness of interventions for students experiencing difficulties in French immersion: one for students with mild reading difficulties (Rousseau, 1999) and one for students with learning disabilities (Bournot-Trites, 2004). Also reviewed is a study by MacCoubrey, Wade-Woolley, and Kirby (2007) that examined the effectiveness of training on immersion students' phonological awareness in English and French; while this study did not examine the effects of training on reading per se, it is relevant to the question of the effectiveness of training in immersion students' L2 on their phonological awareness in that language, an important component of early acquisition of word-decoding skills in French.[5]

Rousseau (1999) used a qualitative case-study approach to examine student, parent, and teacher satisfaction with a two-year transition program for FI students with learning disabilities. The student participants were diagnosed in accordance with the Learning Disabilities Association of Canada's definition of learning disability: they had above-average intellectual ability; there were discrepancies in their academic performance, with both strengths and weaknesses; and there were minimal difficulties, if any, with attendance and behaviour (LDAC, 2002). The assessment was conducted in English, and only children who did not use French at home were included. A small sample of 13 students in a split Grade 3/4 class participated in the intervention. The intervention program emphasized (a) strategy instruction (organization, study habits, peer-assisted learning, problem solving, and proofreading strategies), (b) developing students' awareness of their learning styles, (c) instruction in English reading, and (d) communication between home and school. It was intended that the participating students would be able to participate in regular immersion classrooms after two years in the intervention program.

Reactions to the intervention were solicited from students, and from their teachers and parents, using a variety of open-ended, qualitative methods such as interviews and self-reports. No objective assessment of reading outcomes was carried out, and, therefore, the results of this study represent only the subjective impressions of participants. The students reported improvements in their self-perceptions as learners and in school-related task performance. Parents also reported a high level of satisfaction with the program, indicating that 'the children gained a lot of control over their disability and were

now more able to be active learners. They became aware of their strengths and weaknesses and were not as afraid of failing as they had been' (Rousseau, 1999, p. 11). The parents attributed the success of the program to the small class size; the provision of instruction in learning strategies, which helped the children cope with their learning difficulties; and their own and their children's increased awareness of the nature of learning disability. The participating teachers agreed with parents that the program was a success, and, moreover, they believed that the students had made progress in both academic and non-academic domains as a result of the intervention.

Bournot-Trites (2004) carried out a questionnaire-based evaluation of a peer-tutoring program for Grade 2 FI students who were experiencing mild reading difficulties. The peer tutors were Grade 5 and 6 FI students who had undergone a three-day training program. The tutees were determined to have mild reading difficulties based on the number of words they were able to read from a list of 160 words of increasing difficulty. Student performance following peer tutoring was assessed using the same list of words. Tutoring focused on word-reading skills. Questionnaires designed to assess satisfaction with the program were distributed to tutors ($N = 61$), tutees ($N = 35$), and the teachers and parents of tutors and tutees. All participants indicated their level of satisfaction with the intervention on a series of questions using five-point rating scales. Evaluation results were in the form of average level of satisfaction with the various components and outcomes of the program included in the questionnaire.

The tutees showed significant improvement in word reading from pre-test to post-test, but because there was no control group, it is not possible to determine whether their improvement in word reading was due to the intervention or to typical developmental changes. All participants (including parents and teachers) expressed positive attitudes toward the program and its effects. Specifically, the tutees felt more confident and efficient in reading and were more motivated to read. Even the tutors reported benefits with respect to self-esteem, interest in reading, and reading ability. While it is not possible to ascertain the true effects of this intervention, these results attest to the feasibility of providing intervention for FI students with (mild) reading difficulties. Questions remain as to whether peer tutoring could be used effectively with students with more severe reading problems and whether it produces significant gains in reading performance.

MacCoubrey et al. (2007) examined the effect of instruction in French phoneme blending and segmentation on the phonological

awareness skills in French and English of kindergarten immersion students who were considered to be at risk for reading difficulty. This risk assessment was based on the students' performance on tests of English phonological awareness, English letter knowledge, and word reading: specifically, the at-risk students scored at or below the 40th percentile on tests of both phonological awareness and letter knowledge in English and were able to read fewer than two words from the Word Identification sub-test of the Woodcock Reading Mastery Tests – Revised, Form G (Woodcock, 1998). In question in this study is whether early intervention in French can be effective at improving the phonological awareness skills of English-speaking immersion students who are at risk for reading difficulty. Treatment extended over 12 weeks; training sessions consisted of four components, including warm-up activities, letter-sound activities, and activities that made explicit the role of segmentation and blending in the alphabetic code. All training was in French. The performance of a control group of students who did not receive this treatment was also examined. These students were engaged in activities over 12 weeks with the same games, puppets, and word lists used with the treatment group, but they did not receive instruction in phonological awareness; instead, their activities focused on vocabulary building.

Comparison of pre- and post-treatment results indicated that students in the treatment group achieved significantly greater improvement in phonological awareness, in both English and French, than the control group. The treatment-group students displayed this improvement in English as well as French, even though training had been in French only. However, the treatment group did not show a significantly larger improvement in letter-sound knowledge in either French or English. The authors suggest that the lack of a group difference in letter-sound knowledge may have resulted from both groups' having had letter-sound instruction in school.

Summary, recommendations for future research, and policy implications

Summary

Research by Genesee (1976, 1987) on immersion students who are at risk in school because of below-average levels of academic ability indicates that such students are not differentially handicapped in

their native language and academic development in comparison to groups of similar students in English-only programs. Research by Bruck (1985a, 1985b) found that students experiencing difficulty in immersion are not precluded from staying in the program and progressing at a rate commensurate with their level of ability. At the same time, both studies found that students with academic difficulties can benefit from immersion in the form of increased levels of functional proficiency in French. In contrast, Trites and Price (1977, 1978b; Trites, 1976, 1978) have proposed that there is a specific subgroup of learning-disabled students who have delays in cognitive and perhaps even neurological development in certain critical brain areas and are not suitable candidates for early immersion, although they may succeed in late immersion. There are methodological and conceptual difficulties with these studies, however. There is evidence from a number of researchers that immersion students with academic difficulties who are transferred to an English program as a consequence of academic difficulty show improvements in performance and self-esteem (Mannavarayan, 2002; Parkin et al., 1987; Waterson, 1990; Wiss, 1989). Bruck's (1985b) research, in contrast, found less positive outcomes from transfer. However, since none of these studies, except Bruck's, included comparison groups of similar students who remained in immersion, it remains to be seen whether the improvements they report can also be realized if students who are experiencing difficulty in immersion remain in the program and receive additional and appropriate support.

Only one study was identified that examined the performance of immersion students with language impairment (Bruck, 1978a, 1982). Bruck's results suggest that students with delays (and possibly impairments) in L1 acquisition are not differentially disadvantaged in immersion programs in comparison to students with similar L1 profiles who attend English-language programs. At the same time, it appears that such students attain levels of academic achievement that are commensurate with their learning disabilities and that they can also benefit from immersion in the form of enhanced competence in French.

No research on immersion students with reading disabilities was identified. Four studies were identified that examined immersion students who had poor reading skills (Eagan & Cashion, 1988; Geva & Clifton, 1994) or were at risk for reading difficulty (Bournot-Trites & Denizot, 2005; MacCoubrey et al., 2004). The findings of MacCoubrey et al. and of Bournot-Trites and Denizot indicate that immersion students who are at risk for reading difficulty have the same risk

profile whether they are assessed in English or in French and that, in effect, such students have an underlying risk for reading difficulties that is likely to show up whether they are educated in English-L1 programs or in French-L2 programs. This follows from the fact that the same kinds of processes are important in L1 and L2 reading acquisition and that there are significant cross-linguistic correlations in these abilities (see Comeau et al., 1999, for supporting evidence). Indeed, Geva and Clifton's study on immersion students with poor reading skills supports this expectation. The findings from these studies are consistent with the results of the report of the National Literacy Panel on Language-Minority Children and Youth (August & Shanahan, 2006). Following an extensive review of research carried out since 1980 on reading acquisition in minority-language students educated in English as a second language in the United States, the panel reports that there are significant cross-linguistic factors in L1 and L2 reading acquisition and that learning to read in an L2 involves some of the same fundamental processes and factors as learning to read in an L1.

Three intervention studies were identified. One examined students with learning disabilities (Bournot-Trites, 2004); one examined students with reading difficulties (Rousseau, 1999); and one examined the effectiveness of phonological awareness training in French on the phonological awareness skills of at-risk students in FI (MacCoubrey et al., 2007). The Bournot-Trites and Rousseau studies reported high levels of satisfaction with the interventions under investigation on the part of students, teachers, and parents. These studies have methodological limitations, however. The Rousseau study did not assess the students' reading performance after intervention, and neither study included comparison groups, so that it is not possible to ascertain with certainty whether or not these interventions produced significant improvements in student performance. MacCoubrey et al. (2004) found that immersion students with low levels of phonological awareness and poor word-reading skills in English showed significantly greater improvement in phonological awareness (but not in letter-sound knowledge) in both French and English following phonological awareness training in French than a control group that did not have such training. Although this study did not include tests of word reading and, thus, cannot determine whether or not the treatment improved reading per se, the results are nevertheless relevant because phonological awareness in French is an important predictor of word decoding in FSL.

Recommendations for future research

Clearly, there is a need for research on all the issues discussed in this review. Specific recommendations include the following:

1. Additional research on the academic and language development of immersion students with below-average levels of academic achievement is recommended. Such research would reassess the findings reported by Genesee (1976).
2. Research should be carried out on the language and academic development of immersion students with language impairment, using contemporary definitions and criteria of language impairment (see Fiedorowicz, Benezra, McElgunn, Wilson, & Kaplan, 2001; LDAC, 2002).
3. Research on students with reading disabilities (e.g., ongoing longitudinal studies by Erdos, Genesee, & Savage, 2006, and Jared, 2006) should expand our understanding of the academic, linguistic, and reading development of anglophone students who are at risk for reading difficulties.
4. Longitudinal studies should be carried out with students with language, reading, or other learning disabilities, in order to examine their short- and long-term achievement. In domains such as reading, short-term research tends to focus on word-recognition skills and fails to shed light on reading comprehension; different constellations of skills and factors might influence outcomes in these two aspects of reading.
5. Research is recommended on the effectiveness of interventions for students who experience difficulty in immersion as a result of reading, language, or other learning disabilities. It is imperative that this research systematically examine student outcomes as a result of intervention and that comparison groups of students without intervention, as well as comparison groups in all-English programs, be included. It is further recommended that alternative modalities for such intervention and, in particular, bilingual versus French monolingual interventions be examined carefully (see, e.g., Thordardottir, Weismer, & Smith, 1997).
6. It is recommended that comparative evaluations be undertaken to compare the relative merits of intervention for immersion students experience difficulty who remain in immersion and those who transfer to an all-English program.

Policy implications

While acknowledging the need for further research on all aspects of the suitability of immersion for at-risk students, we must also acknowledge the immediate need of parents, teachers, and educational professionals to make important decisions about students who are at risk for or are experiencing difficulty in immersion as a result of language or learning disabilities or other special needs. In response to this need, the following policy implications are offered; at the same time, it is acknowledged that we currently lack definitive information with respect to most of these policy issues. This discussion is organized around the six questions presented in the introduction to this review.

1. Should at-risk students or students with identified disabilities (language or cognitive, for example) be discouraged (or actually disqualified) from enrolling in French immersion programs because it would seriously jeopardizes their basic education?

Research evidence that students who are experiencing academic difficulty in immersion because of either low levels of academic ability or language or reading impairment, or who are at risk for academic difficulty in immersion for these reasons, is scant at best and methodologically weak. Reports of improvements in the performance of immersion students who transfer to English-only programs do not necessarily indicate that immersion students who are experiencing academic difficulty should transfer, because none of these studies included control groups of students with academic difficulty who remained in immersion and none compared the performance of students who transferred with that of students who remained in immersion and received additional support. In sum, while it is still possible that immersion is not suitable for some students, the evidence currently available does not allow us to identify beforehand which students these are.

Research evidence that students who are at risk for or are experiencing academic difficulty can benefit from immersion is more substantial, albeit limited. In particular, research by Genesee (1976) and by Bruck (1978, 1982) indicates that, with respect to both low academic ability and language impairment, immersion students are not at differentially greater risk than similar students in

all-English programs. On the contrary, it appears that at-risk students with academic and language learning challenges can acquire substantial communicative competence in French while maintaining parity in their academic and L1 development with similarly challenged students in all-English programs. Studies that have examined at-risk and poor readers in immersion report that there are significant cross-linguistic correlations between predictors of reading ability; in other words, students who are good readers in English are likely to be good readers in French, and poor readers in English are likely to be poor readers in French. The reading studies provide no evidence to support the argument that students at risk for reading difficulty are likely to be at differentially greater risk in immersion.

2. Is it possible to identify students who are at risk for language and academic difficulty in immersion prior to or at school entry? In other words, do we have the requisite empirical knowledge to devise reliable and valid diagnostic instruments for this purpose?

Research on L2 reading acquisition in both FI and ESL contexts suggests that indicators of early reading acquisition, or word decoding, could be used to identify immersion students who are at risk for early reading difficulty in French in immersion programs. We currently lack sufficient information to know whether predictors of risk for language impairment in L1 English are equally predictive of risk for language impairment in FSL, although research by Paradis et al. (2003) and by Gutierrez-Clellen et al. (2006) would suggest they are. We also lack evidence concerning the diagnosis of other forms of learning disability in the case of FI students.

3. Are some forms of immersion more suitable for certain at-risk students than other programs? For example, Trites (1978) and Wiss (1989) have suggested that late immersion may be more suitable than early immersion for students with learning disabilities that are due to developmental lags

At present, we do not have adequate empirical evidence to answer this question.

4. If a student is identified as learning disabled, language or reading impaired, or experiencing academic difficulty in immersion for other reasons *after* enrolling in the program, should such a student be transferred to an English-only program? At what grade level would it be appropriate to transfer such a student, and what kinds of follow-up support should he or she receive in the English program?

At present, we do not have sufficient empirical evidence to answer these questions confidently. Research evidence, although somewhat inconsistent, suggests that transfer to an all-English program can be beneficial for students experiencing difficulty in immersion; but this does not mean that transfer is the only, or even the optimal, response to such cases, since it may have been additional services in English rather than transfer to English per se that benefited the students who switched. Arguably, students experiencing difficulty in immersion would also benefit from additional support, but this is seldom provided. We do not know at what grade level transfer would be most beneficial, nor do we know what kind of follow-up support would be most beneficial. That follow-up support is advisable is suggested by Bruck's (1985b) research on students who switch out of immersion.

5. If students who are at risk for academic difficulty, or who are experiencing difficulty, are retained in immersion programs, what kinds of additional support are required to meet their specific needs, and in what language(s) should it be provided (English, French, or both)?

Available evidence suggests that intervention for students who are experiencing difficulty in immersion can be effective. However, we currently lack sufficient information to determine how effective intervention can be, because existing research has not always included appropriate control groups. Nor do we know what constitutes effective intervention. At the same time, research on students who are at risk for reading difficulty in immersion, as well as reviews of research on literacy development in L2 learners (August & Shanahan, 2006; Genesee et al., 2006), suggests that the same kinds of intervention that are appropriate and effective for students learning to read in their L1 would be effective for students learning to read in FSL. However, research is needed to examine this issue directly. The reading research also suggests that intervention in either French or English could be

effective in supporting immersion students who are at risk for reading difficulty. We do not currently have enough evidence to know what would be effective for students who are at risk for or are experiencing other kinds of disabilities.

6. What professional competencies do immersion teachers and other professionals who provide special services to immersion students need to have in order to provide appropriate and effective instruction for students with special needs in immersion?

While a response to this question goes beyond research evidence per se and calls for input from a broad range of researchers and education professionals, some general suggestions are made here. Obviously, greater awareness of the extant evidence on the performance of students who are at risk for or are experiencing language and reading impairment, along with an understanding of the limitations and generalizability of this research, could be of use to immersion teachers in their day-to-day work, as well as to education professionals in making recommendations with respect to individual children. Increased knowledge of interventions that are effective for L1 readers and are likely to be effective for L2 readers could also be useful. Arguably, a broader understanding of language development, L2 learning and teaching, L1 and L2 reading acquisition, and assessment of bilingual students could all be beneficial. Finally, increased knowledge of assessment methods to identify students who are at risk or are experiencing reading, language, or other forms of learning impairment could be useful.

In closing

It is also important to consider sociocultural and family variables. Arguably, the need to learn and use French in such areas as Montreal, for example, is greater and more immediate than in settings where there are few or no francophones. Learning both French and English in school is also, arguably, more important for students in families with dual ethnolinguistic heritage. Thus, decisions to recruit, retain, and support at-risk students in immersion may be different if they have dual ethnolinguistic backgrounds or live in bilingual or francophone regions of the country. As noted earlier, there are also advantages to being bilingual as a result of the globalization of communication and the economy, and, thus, policies with respect to the inclusion of at-risk students in immersion go beyond local and even national

considerations. Of course, consideration must always be given to individual learner profiles and circumstances. Thus, it is advisable to monitor the performance of at-risk immersion students on a regular basis in order to determine whether their participation in immersion should be re-evaluated. Evidence that a particular student is happy and is progressing in accordance with his or her individual capacities, despite difficulty, would support continuation in immersion; evidence that a student is experiencing difficulty in language, reading, or academic domains and is having difficulty coping with his or her difficulties would call for a reassessment of that student's participation in immersion. An additional important consideration should be the child's sense of well-being, as well as his or her actual success in immersion. Students who are unhappy in immersion or who feel that learning through French is a burden are serious candidates for transfer, even if they are doing well academically. In any case, a general policy regarding the recruitment and retention of students who are at risk or are experiencing difficulty in immersion should make provisions for decision making on a case-by-case basis, with periodic reassessment of progress by students who are considered to be at risk or who have a learning disability. At present, we lack sufficient evidence to exclude students on the basis of specific risk or impairment profiles.

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Notes

1. This research review was commissioned by Canadian Parents for French.
2. See Appendix A for a description of the literature search protocol.
3. In Quebec, a severe language impairment qualifies anglophone and other non-French-speaking children for exemption from attending French-language schools (C. Erdos, personal communication, January 22, 2007).
4. In late immersion programs, French is used for academic instruction starting at the end of elementary school or the beginning of secondary school (usually between 9 and 13 years of age), depending on the province. Students often have studied French as a discrete subject in the grades prior to beginning late immersion.
5. This study is included in the review, although it has not been published in a refereed journal, because there is such a paucity of research on this topic and because, in this reviewer's opinion, the methodology is sound and appropriate.

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Appendix A

Methodology of the review

1. The contents of key journals that report research on immersion in Canada were examined 'manually' for relevant articles; a list of journals examined is included below. Manual inspection was limited to the previous seven years (i.e., from 1999 through 2006). The inclusion criteria were broad, so that if the abstract of any article appeared relevant, it was obtained for further review.
2. An electronic search for relevant articles was undertaken, using ERIC, PsycINFO, and Google Scholar. A list of keywords used in these searches is provided below. As in Step 1, all articles that appeared relevant based on the abstract were downloaded for further analysis.
3. Eight key researchers in Canada who have carried out research on immersion or were likely to be familiar with such research were contacted via e-mail and asked for references to research on the topic.
4. All articles identified in steps 1–3 were obtained and read in order to identify additional articles that might have been missed. It was not possible to obtain copies of several reports prepared by school boards or ministries of education, because of time constraints and because many such reports are quite old and are not archived in publicly accessible libraries or in electronic form.
5. All articles identified up to this point were then read, and one of the following decisions was made for each:

- exclude the article from further consideration because the subject matter was not relevant to the goals of the report, OR
- retain the article for further consideration. Articles that did not include empirical evidence of student outcomes but were relevant to the goals of this report were retained, but their use was limited

to the preparation of the conceptual part of the report. Articles that included empirical evidence relevant to the goals of the report (e.g., test results, teachers and/or parents' reports) and met minimum methodological standards were retained for inclusion in the empirical review sections of the report. Both qualitative and quantitative studies (including case studies) were retained.

6. Each empirical article retained was then classified with respect to which risk factor it addressed: academic ability, language impairment, or reading difficulty. Each subset of empirical studies thus identified was subsequently reread, and summaries and critiques were prepared.

Journals searched manually (1999–2006)

- *Applied Psycholinguistics*
- *The Canadian Modern Language Review*
- *Canadian Journal of Education*
- *International Journal of Bilingual Education and Bilingualism*
- *American Journal of Speech-Language Pathology*
- *Canadian Journal of Behavioural Sciences*
- *Journal of Speech, Language, and Hearing Research* (*formerly the Journal of Speech and Hearing Research*)
- *Journal of Education for Students Placed at Risk*

Keywords used to search electronic databases

- Academic ability *and* bilingual education
- At-risk *and* bilingual
- At-risk *and* bilingual education
- Bilingual education
- Cognitive ability *and* immersion
- Foreign language immersion
- French immersion
- Immersion
- Immersion *and* academic ability
- Learning disabled *and* immersion
- Learning disabled *and* bilingual

- Learning disabled *and* bilingual education
- Second language immersion
- Special education *and* immersion
- Special education *and* bilingual education
- Special needs *and* immersion
- Special needs *and* bilingual