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Bilingual children's writing: Self-correction and revision of written narratives in Spanish and Nahuatl

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Abstract

The article reports on findings from a replication of a study of bilingual children's editing and correction strategies. The earlier study analyzed revisions that 2nd, 4th, and 6th graders made to their own compositions, written in Spanish. The present study applied the same procedure and assessment rubric to the first draft of compositions written in the other language students speak, Nahuatl. Subjects were all fluent speakers of both languages, from an indigenous community in Central Mexico. The discussion of the findings examines how the concept of a Common Underlying Proficiency [Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon: Multilingual Matters] may apply to a situation of community-wide bilingualism that is characterized by wide sociolinguistic disparities between the language of schooling and an indigenous language spoken by both students and teachers. Specifically, how might the access to underlying abilities related to literacy learning be affected by these disparities?

Keywords: Metalinguistic awareness; Bilingualism; Literacy development; Cognitive Academic Language Proficiency

1. Introduction: the research questions

The current policy debate in the United States on the effectiveness of bilingual education, given renewed impetus by the recent passage of English-only propositions 227 in California (1999), 203 in Arizona (2000), and "Question 2" in Massachusetts (2002) has provided a new context for the discussion of research on bilingualism. Long-standing research questions, left unresolved, perceived at one point as either superceded or abandoned, have resurfaced for a new round of reflection and debate.

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For example, with respect to aspects of language learning that are related to schooling, in what way do academic discourse abilities and literacy develop in bilingual children? How might the way that these abilities develop in bilingual children be different from the way they develop in monolingual children? How do these abilities develop in relation to a number of factors related specifically to bilingualism: the difference between linguistic competence[1] in the first language (L1) and levels of competence in a second language (L2), differences in how two languages are processed, and the sociolinguistic and contextual imbalances that affect language use, proficiency, and linguistic development in L1 and L2? To what extent do literacy-related proficiencies develop autonomously (from L1 and L2), and to what extent and in what ways do they interact with linguistic knowledge in bilingual children?

The present study narrows the focus onto one aspect of bilingualism that is related to literacy learning in two languages: children's ability to correct and revise their own compositions, in this case written in Nahuatl, the indigenous language that the subjects in the study speak in addition to Spanish. Findings will be discussed from a replication of a study that examined the Spanish-language revision and correction skills of beginning writers in the same school setting (Francis, 2002). Since all children in the present study also participated in the previous study the opportunity to compare correction strategies between the Nahuatl writing task and the Spanish writing task allows us to examine this aspect of bilingual literacy development from a new point of view. For example, in what way might the deep going social and historical inequalities between indigenous language (IL) and national language (NL) be revealed? Which developmental tendencies (across the elementary school grades) would be shown to be similar, which different? How do the findings square with theoretical models of bilingual proficiency that propose a distinction between linguistic (grammatical) components of L1–L2 proficiency and those components, not strictly bound to either L1 or L2, that subserve different aspects of discourse ability and information processing of texts (in this case, abilities and skills related to literacy and schooling)? How, in performance of academic language tasks, do bilinguals avail themselves of what Cummins (2000) terms a Common Underlying Proficiency (CUP) through the medium of either language? What may be the limits of this access to CUP?

The concept of an access to proficiencies not strictly bound to either L1 or L2 makes reference to an "interdependence hypothesis" (Cummins, 1981, 1991):

> To the extent that instruction on Lx is effective in promoting proficiency in Lx, transfer of this proficiency to Ly will occur provided there is adequate exposure to Ly (either in school or environment) and adequate motivation to learn Ly. (Cummins, 1999, p. 32)

How the related concepts of CUP and interdependence might apply (or how not) in the case of the more atypical circumstances of IL–NL bilingualism is the question that interests us in this study. As formulated, the interdependence hypothesis leaves open the possibility that it may not apply or may apply in an attenuated way; that access to CUP might come to be somehow

[1] In this report, "competence" is synonymous with *knowledge*. So for example in reference to language it could refer to knowledge of grammar, the strictly linguistic subsystems of grammatical knowledge (the cognitive domains that correspond to phonology, morphology/syntax, semantics). As well, there would be other kinds of competence (of the non-linguistic kind) that are called upon in actual language performance (comprehension or expression). "Proficiency" refers to *ability*, the sets of skills, and knowledge structures, deployed in language use for a particular purpose: reading ability, discourse ability of a specific kind (e.g. face-to-face conversation), abilities required for writing and self-correction, and so forth.

obstructed or blocked such that any practical benefit that might accrue to the IL-speaking bilingual turns out to be of little consequence.

The particular school setting in which this study was done had several features that made it possible to examine the effects of the sociolinguistic and pedagogical status of the indigenous language on the interdependence hypothesis. The indigenous language received positive recognition, was broadly tolerated and respected, and was the object of a demonstrably forthright symbolic valorization, in line with official national educational policy for bilingual programs. However, perhaps because most young children entering first grade in this community command at least passive comprehension abilities in Spanish, together with other pressures and constraints internal to the school and in the community, literacy instruction is almost exclusively carried out in the national language. Exceptions include occasional writing contests in Nahuatl, and introduction to the Nahuatl alphabet (see Francis (1997, 1998) for ethnographic data specific to this community and school and Rolstad (2001), for national trends in Nahuatl–Spanish bilingual education). Thus, in comparison to the expected ascending indices of performance across the grades in Spanish, there were two plausible outcomes in response to the parallel Nahuatl assessments: (1) performance in the sociolinguistically disfavored indigenous language, virtually excluded from day-to-day literacy instruction and practice, with no availability in the community or at home of any compensatory reading material, and minimal presence in "environmental print," would show weak, non-significant, advances across the grade levels, or none at all, or (2) statistically significant ascending curves, commensurate with the achievement curves in Spanish, would be evidenced, despite the sociolinguistic imbalance. In sum, parallel measures of writing ability were taken in the two languages children know; but in only one of them, the language of instruction, do they practice this ability in any consistent and sustained manner in school. To which prediction, #1 or #2, do the assessment results lend support?

2. A proposed conceptual framework: metalinguistic awareness as a central component of literacy-related underlying proficiency

Based on a review of research findings from studies of the effectiveness of bilingual instruction, Cummins elaborates on the notion of interdependence. In this framework, literacy-related academic discourse proficiencies maintain a degree of independence from both the language through which they may have been learned, and the other language that the bilingual child acquires or learns. In addition, some components of these higher-order analytic abilities, comprehension strategies, conceptual schemas, and information processing involving higher degrees of abstraction would develop through experiences largely independent of language. Thus, a complex three-way interdependence allows bilinguals to access both interlinguistic (L1 $\leftrightarrow$ L2) resources, and the literacy-related (largely non-linguistic) "underlying" proficiencies that are "common" to both L1 and L2.

> We can talk of the influence of these factors loosely in terms of "transfer," although in reality they form the underlying cognitive apparatus that is used to interpret textual meaning rather than being "transferred" directly across languages. Linguistic knowledge, on the other hand, does transfer across languages in a more direct way than underlying operational or conceptual knowledge. Letter recognition among languages that share a Roman orthography is one example. Clearly, cognate relationships across languages also provide opportunities for transfer of linguistic knowledge. (Cummins, 2000, p. 190)

This kind of "analytic" view (we could call it "modular") of how bilingual children avail themselves of the peculiar internal differentiation of their mental representations finds parallels in the work of researchers in the fields of second language learning (Sharwood-Smith, 1993), the psycholinguistics of bilingual proficiency (Baker, 2001; Grosjean, 1995; Paivio, 1991), second language reading (Sadoski & Paivio, 1994) and the neuropsychology of bilingualism (Paradis, 2004). In an earlier survey of bilingual education, Bialystok and Cummins (1991) proposed a discussion on the diversity and interactivity of representational systems (how they are both autonomous and interdependent), taking up Jackendoff's (1987) model of "representational modularity" as a starting point. An interdependent model would explain also why access to the "central processing system" of CUP is not "automatic" (Cummins, 2000, pp. 191–194). In their overview of the research on modular aspects of bilingualism, MacSwan and Rolstad (2005, 236–237) also prefer the metaphor of "access" to that of "transfer" to portray how shared stores of knowledge are available in language tasks performed in L1 or L2.[2] From this point of view, the different components of bilingual proficiency will be affected in different ways (in some cases, perhaps, not at all) by both internal and external factors. Language-specific (i.e. specific to L1 or L2) knowledge, language-specific abilities, non-linguistic knowledge and skills, and external circumstances that differentially bear down upon L1 and L2 are all potential factors that affect performance on literacy tasks in a weaker or socially disfavored language of bilingual students. But again, they are not likely to affect all aspects of performance in the same way. A pivotal question seems to turn on whether positive evidence ("rich immersion" to borrow Gee's term) alone can suffice for optimal rates of learning and acceptable levels of ultimate attainment.[3] One component of academic literacy in particular that can be seen as being non-language-specific is a form of metalinguistic awareness: the ability to attend to written language patterns (the formal aspects of messages) in a systematic and purposeful way. For example, the following Method section describes an assessment of children's awareness of their own bilingual knowledge related to literacy: to what degree are they able to categorize language forms as written in one language or another?

Metalinguistic awareness is one of the important components of Cummins' (1991) Cognitive Academic Language Proficiency (CALP), among the prominent denizens of the central processing system/CUP, accessible to bilinguals when performing tasks in either L1 or L2. In a like manner, Sharwood-Smith (1994) assigns conscious reflection on language patterns and language use to that cognitive domain which maintains a significant degree of autonomy from the systems that correspond to grammatical competence in L1 and L2.

Another central issue related to metalinguistic awareness in second language writing and biliteracy has to do with the extent to which second language learners are able to benefit from conscious reflection on grammatical patterns (Doughty, 2003; Ellis, 1997; Mitchell & Myles, 1998). This question feeds into work on the "process approach to writing instruction" and pedagogical debates about the effectiveness of different kinds of teacher feedback (e.g. corrective feedback), peer-response, and self-correction, open-ended and closed-ended tasks, degree of focus on specific error patterns, and the development of audience awareness. The sharpest differences have emerged around the question of teacher-initiated correction of students' writing. To what extent does writing ability improve through practice alone, or with the added intervention of corrective

[2] Readers may be especially interested in studying this recent discussion as it draws different conclusions regarding the applicability of Cummins' model than the ones presented here.

[3] DeKeyser (1998), Kowal and Swain (1997), Swain (1998), Loschky and Bley-Vroman (1993) propose different approaches that provide the learner with processable attention to language patterns and controlled negative evidence in the overall context of a communicatively based program. Krashen (1998) and Schwartz (1999) offer an alternative model.

feedback? Would corrective feedback by a L2 student's peers have a similar or different effect? In actual practice, how effective and efficient is self-correction? At what level (text/discourse, sentence/grammar, word/orthography) is conscious attention to language form and error correction effective? Can the sub-skills associated with overall mastery be taught out of context? If not, closed-ended tasks might be of questionable instructional value. Should language teachers focus on specific grammatical and orthographic errors, or emphasize more open-ended activities?

So, to reiterate, the primary research question to be taken up in this study: how might bilingual beginning writers access the processing skills that underlie the ability to actively reflect upon and revise their own texts? Starting from the working assumption that these processing skills are not language-specific, we could also assume that in a situation of balanced or equal distribution of each language in the literacy teaching program, that this access would be straightforwardly equal as well. This kind of equilibrium might be observed in some bilingual education programs in Europe or Canada, for example. This study allows us to address the question of how the sharp sociolinguistic imbalance in the society and school in question may affect access to an important aspect of metalinguistic ability related to literacy.

3. Method

3.1. Subjects

As outlined in the previous report (for expository convenience: the "Spanish writing" study), subjects were selected by their respective classroom teachers who had at least listening comprehension ability in both languages and average or above average reading skills (assessed in Spanish, as is customary) commensurate with their grade level. Of the 45 children selected, 15 from each of 2nd, 4th, and 6th grades, an oral language bilingual interview identified four as second language learners of Nahuatl, plus 41 with equivalent levels of linguistic competence in each language (confirmed by self-report and family interview data). Independent of their performance on the bilingual interview, all literacy assessments, in reading and writing, in both languages, were administered to all students. In contrast to the reading assessments, which all four Nahuatl L2 learners attempted, two of them elected to complete the Nahuatl writing assessment entirely in Spanish, hence the difference in total number of participants; Spanish writing: 2nd grade—15; 4th grade—15; 6th grade—15 ($N=45$); Nahuatl writing: 2nd grade—13; 4th grade—15; 6th grade—15 ($N=43$). As confirmed during extensive structured interviews and observation of language use patterns, the predominant affective/attitudinal posture toward the indigenous language among children selected was shown to be positive (high average indices of "language loyalty"), not surprising given the high level of ethnolinguistic vitality of Nahuatl in the community and the policy (and practice) of recognition and public valorization of the IL on the part of the local public elementary school in which all subjects were enrolled (Francis, 1998).

3.2. Assessment procedures: the writing and editing/correction tasks

For comparison purposes a model was chosen for the Nahuatl writing task that would be similar in its narrative structure to *El cazador de venados* [The deer hunter], the model presented to students for the Spanish writing task. *Tecuani uan coneme* [The lion and the children], a Hansel and Gretel type story, consisted of three episodes: abandonment of the children by their father and step-mother, sojourn in the wilderness under the care of a wild beast, return to their community and family. Similar also to *El cazador de venados*, the narrative follows a clear logical–causal pattern

(in contrast to, for example, the temporal-arbitrary structure). The resulting student texts were comparable in length and with respect to qualitative indices of coherence and narrative structure (Francis, 2000). More importantly, all first drafts contained more than a sufficient number of opportunities for revision/correction; only a fraction of which, from any single composition, would be exhausted during the first attempt at editing.

All students were provided with the same narrative model: the complete story was read aloud to each group by a native speaker of Nahuatl; the three episodes were briefly discussed in each group, aided by a series of three illustrations that were displayed and that remained in view during the writing task. Students hand-wrote their respective versions of the story, and then each writing sample was typed, double-spaced, by the investigators, and returned to students for inspection. After a brief demonstration of the use of standard editing marks (for insertion, deletion, substitution, transposition, movement), and of the different options available when correcting or revising, students were directed to make any changes on the typescript that they deemed to be necessary or advisable to improve the original version.

3.3. Categories of analysis of the editing/correction task

Following the same assessment rubric as in the Spanish writing task, revisions and corrections were categorized along two dimensions: (1) level or subsystem of language that corresponds to the change, and (2) degree or type of effectiveness of the change.

Under the first category (1), all attempts at revision or correction (regardless of the degree of effectiveness) were coded as follows.

(1) Orthographic correction
  (i) general grapheme/phoneme correspondence
  (ii) word segmentation

umutecoc
(i) unpa itechi cueva ~~umateeae~~ ipa tecuani
Macario (JP206)

Revised version: *again they went into the cave and laid down (to go to sleep) on the lion*. The grapheme/phoneme correspondence correction "umutecoc" is an improvement over the original "umatocac."

In this case, as in most others, judgment of a "spelling improvement" was made based on a closer orthographic representation of the phonemic pattern of the target word.

(ii) guan oquin
~~guano~~ ~~quin~~ guicac y leonyninchan
Felícitas (JP209)

Revised version: *and they take them to the lion's house*. Felícitas corrects the word segmentation error ("o" belongs to "oquin")

(2) Morphosyntactic or semantic pattern at the sentence level:

tepetl
in kokone oqui temoto tekuani ako okacique in tekuani piltontzitzin oyaque ~~altepetl~~
Matilde (LM605)

Revised version: *the children looked for the lion they didn't find him the lion the children went to the mountain* (instead of "town").

que
u cuel ucucho que goanoclanes ulla ~~el~~ un uqui temote motoclacoal
Ofelia (JP211)

Revised version: *again they fell asleep and the sun came up they went to look for food*. The original sequence "ulla el" is not grammatical; "ulla que" can be interpreted as "they went."

ocholo
catcolin leon ^ oauitemototlen coakque

Justino (NP414)

Revised version: *there was the lion* (insert: "*he fled*") *he looked for something to eat*.

(3) Insertion of punctuation/capitalization:

. FIN
huan in yolkatl o kuikak yn coneme^ ^

Timoteo (JA405)

Revised version: *and the animal took the children with him*. Timoteo inserts missing period (at the end of the story).

(4) Discourse-level revisions that involve a potential change of meaning across sentence boundaries or that affect text-level coherence in some way:

guan okin ititi kien kui xotlaltiskue guan okin kakaya ~~kue~~ yaqui kikuiti okseki kuaguitl

Elvira (LN406)

Revised version: *and he showed them how to light [the fire] and he deceived them he was going to bring more firewood from somewhere*. Elvira deletes a plural marker to establish a cohesive tie with a referent (singular) in a previous sentence.

In addition, the above example from Timoteo could also be taken as a revision at the discourse level; the insertion of "FIN" ["END", written in Spanish] represents an attempt at providing a proper conclusion to the story.

The following examples of substitutions of Spanish loan words could be categorized as a kind of discourse-level revision. The original versions that included the Spanish lexical item did not introduce a grammatical error, and their substitution by a Nahuatl word did not affect sentence-level meaning or grammar. As such, a teacher of Nahuatl might argue that such revisions represent an attempt to make the text more "coherent" or more "consistent," pragmatically speaking.

coyotli
okalkaya itek ~~trampa~~ guan ok quirtiquen

Imelda (HF604)

Revised version: *he was inside a trap* (Spanish "trampa" [trap] changed to Nahuatl "coyotli" [hole]) *and they got him out*.

uan
guan oktaquien se tekuani guan quistuan ~~pero~~ quienen se tekuien
tatsitsiuan nanatsin
kin noxasquien nochtin y no ~~papan~~ guan ni ~~mamas~~

Imelda (HF604)

Revised version: *and they saw a lion and they said and* (Spanish "pero" [but] changed to Nahuatl "*uan*" [and]) *how can a lion come with two children and they said to call all the fathers* (Spanish "papan"[fathers] changed to Nahuatl "*tatsitsiuan*" [fathers]) and mothers (Spanish "mamas" [mothers] changed to Nahuatl "*nanatsin*" [mothers]).

Following the same scoring procedure from the Spanish writing task, under category #2, all attempts were coded for the resulting effectiveness of the revision or correction.

0. **No Change**
Original sequence is substituted by the exact same sequence of letters or words.

1a. **Correct → Correct or Correct** (+)
An original sequence that contains no errors is revised; revised version contains no errors, or represents an improvement of some kind over the original.

1b. **Correct → Correct** (−)
No orthographic or grammatical errors are introduced into the revised version; however, the revised version is now unclear, results in a loss of coherence, etc.

2. **Error → Corrected or Improved**
An original sequence that contains error(s) is significantly improved in some way, sometimes resulting in a conventional form, or correct grammatical sequence.

3. **Correct → Error**
An error-free sequence is changed, the revision results in an error.

4. **Error → Error or Error** (−)
An original sequence that contains an error is changed; the resulting sequence is either equally or more difficult to understand, equally ungrammatical or ungrammatical to a greater degree, or results in an orthographic pattern that departs from the conventional form equally or to a greater degree in comparison to the original alphabetic pattern.

Since no single Nahuatl spelling convention is in use in the community (most children and adults would be unaware of any), orthographic "improvements" (1a, 2) or "degradations" (3, 4) were determined by judging the approximation toward or departure from general phoneme/grapheme correspondence.

The following section will report on findings related to a number of key comparisons:

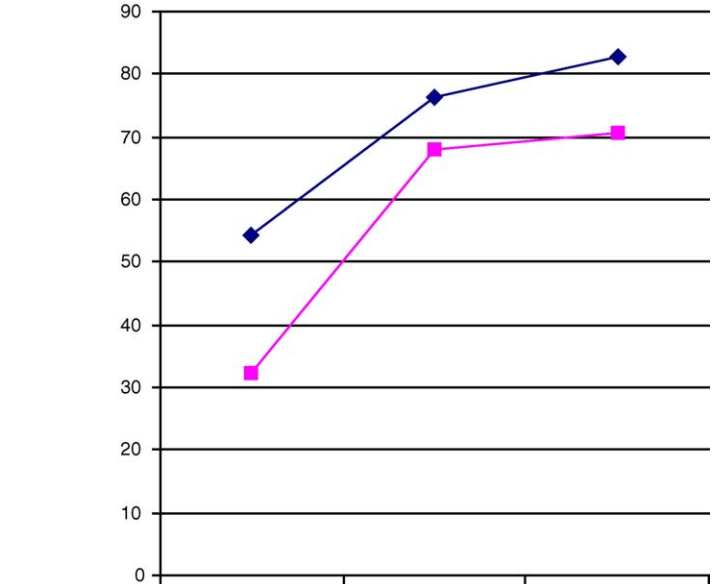
(1) Average number of attempts at correction/revision for each grade level.
(2) Effectiveness of attempts across grade levels. From the above coding scheme: 1a or 2—versus—0, 1b, 3, or 4. Effectiveness was calculated as the number of "effective attempts" as a percentage of "total attempts."
(3) Comparison of average number of attempts and effectiveness of attempts with the same measures in correction/revision of Spanish writing.
(4) Correlation between effectiveness of correction/revision in Spanish and in Nahuatl.
(5) Comparison of measures of effectiveness with assessments of overall coherence in writing and metalinguistic awareness. A previously administered assessment of overall coherence scored the same stories utilized for the present study for: number of events (not necessarily corresponding to the original plot) recounted in causal/logical or temporary/arbitrary order, plus references to characters' internal psychological states. A separate test of metalinguistic awareness sampled children's declarative knowledge of: the conventional name of each of the languages they speak or understand, aspects of language choice (with whom they speak each language), correctly identifying the language of short texts, and individual vocabulary items that are normally not translated from one language to the other (e.g. common proper nouns—in this case their "linguistic origin"), based on the phonological and morphological form of each item. For details, see Francis (1998, 2002).
(6) Comparison between overall rate of effectiveness of correction/revision in Nahuatl and Spanish.

A subsection of Section 4 summarizes a preliminary and tentative analysis of how students responded during the correction/revision task to the insertion of Spanish lexical items in their Nahuatl texts.

4. Results

Keeping in mind the two predictions with which we began (in Nahuatl literacy tasks: access or no-access to underlying proficiencies learned through Spanish) this report of findings will focus primarily on comparisons between performances in the two languages. At first glance, the patterns of correction and revision of the Nahuatl writing samples indicate broad parallels with the children's performance in Spanish. The average number of attempts in each language is similar: 479 in Spanish (average 10.6), 438 in Nahuatl (average 10.2). Likewise, comparing grade levels, as in the Spanish task, while it may appear that older students attempted with greater frequency (2nd grade—94 attempts; 4th grade—153; 6th grade—191) we would hesitate to draw this conclusion. Fourth graders' compositions tend to be two to three times longer than those of the 2nd graders, with 6th graders' compositions even longer; and in no case did any subject exhaust the opportunities of even word-level orthographic correction, not to mention the more open-ended categories. It is rather in the effectiveness of attempts (independent of number) in which a difference is apparent between 2nd graders and older students.

While 2nd graders effectiveness rate is 32.2%, 4th graders attain 67.8%, and 6th graders 70.6%. The difference between 2nd and 4th grades is significant, Scheffé $F(2,40) = 8.34$, $p < .01$, as well as the difference between 2nd and 6th grades, Scheffé $F(2,40) = 9.70$, $p < .01$. See Fig. 1 for a comparison with the same measure of effectiveness that was applied to corrections/revisions in the Spanish writing task. Again, the parallels are noteworthy. In general, students more skillful in correcting and revising their Spanish texts tended to "carry these skills over" to their Nahuatl texts, yielding a correlation of $r = .54$, $p = .0002$ between the two measures. So whatever under-



	2nd grade	4th grade	6th grade
Spanish	54.2	76.4	82.6
Náhuatl	32.2	67.8	70.6

Fig. 1. Percentage of effective corrections/revisions compared to total attempts in Spanish and Nahuatl.

Table 1
Number of subjects who successfully attempted a correction/revision at least once

Level	Orthographic corrections at word level		Morphosyntactic/semantic at sentence level or punctuation/capitalization + discourse level		Punctuation/capitalization + discourse level	
	Spanish	Nahuatl	Spanish	Nahuatl	Spanish	Nahuatl
2nd grade	14	6	8	8	4	1
4th grade	14	12	11	14	9	3
6th grade	*15*	*15*	*14*	*9*	*8*	*5*
Totals	43	33	33	31	21	9

lying proficiencies come together to account for the development of skills of self-correction and revision, they appear to be available to children in the performance of literacy tasks in Nahuatl. Recall that in this situation they are learned through instruction and practice "in" Spanish. Or perhaps a better way of putting it would be: through the medium (as in "channel") of Spanish.

As would be expected, the percentage of effectiveness of correction/revisions in Nahuatl correlated positively with other measures of academic language proficiency—overall coherence in writing: $r = .59$, $p < .01$, metalinguistic awareness: $r = .46$, $p < .01$. Again, the results generally conform to those from the Spanish writing task.

On the other hand, as Fig. 1 depicts, overall effectiveness of correction/revision is significantly higher for Spanish than for Nahuatl, comparing the two sets of ratings: $t = 3.39$, $p < .01$. The comparisons in Table 1 reflect the same divergence. For example, while in Spanish 46% (21 out of 45) of the subjects successfully attempted revisions at the highest level (punctuation/capitalization + discourse level), this proportion falls to 21% in Nahuatl (9 out of 43, all expect one 2nd grade student, 4th and 6th graders).

As with most other indices of academic discourse and literacy reported on in previous reports from our project (reading comprehension, coherence in writing based on first drafts of the story reconstructions under study, oral narration), we take note of the appearance of a more rapid rate of development between grades 2 and 4 (in comparison to, for example, between grades 4 and 6).

4.1. "Correcting" Spanish insertions in the revised version

As reports of previous analyses have shown, the most visible index of the social disparities between IL and NL is found in children's writing: all Nahuatl compositions except that of one 6th grader contain inserted Spanish lexical items.[4] Notably, in all the remaining cases

[4] For the purposes of this discussion we will sidestep the distinction between borrowing and codeswitching, important as it is. Words of Spanish origin that children incorporated into their Nahuatl narratives will be designated as "insertions," following Muysken's (2000) terminology. In this case, it turned out (perhaps because the stories were written, and were composed in a controlled academic setting in which teachers specified that stories be written in Nahuatl), with only one exception, that all Spanish material that found its way into the children's stories was in the form of single lexical items inserted into well-formed Nahuatl grammatical frames. Also, since insertions were written, there was no way of determining their phonological structure (in case they would have been "nativized"—one of the criteria for distinguishing between codeswitching and borrowing); spelling of insertions tended to be standard Spanish.

Table 2
Number of attempts at revision in Nahuatl writing that involve a language switch

Grade	From Spanish to Nahuatl	Spanish to Nahuatl—effective attempts
2nd	1	0
4th	3	0
6th	13	11
Grade	From Nahuatl to Spanish	Nahuatl to Spanish—effective attempts
2nd	2	1
4th	1	1
6th	1	1

(42 out of 43) except for one 2nd grader (who switched more frequently than his peers, alternating phrases and longer sequences), the material inserted from Spanish is in the form of single lexical items. In stark contrast, in Spanish writing no spontaneous (nonce) borrowing or codeswitching is attested in any written sample (aside from historically established loan words).

With the opportunity to revise their first drafts, students would therefore be presented with a large number of potential choices in this domain. Although few children elected to attend to this feature, making a quantitative analysis difficult and any interpretation entirely speculative, the distribution of these choices merits our attention. For example, only among the oldest and more experienced novice writers did any effective revisions involving a change from Spanish to Nahuatl occur. Of the 17 total attempts, all 11 effective cross-linguistic revisions were made by 6th graders. Of the few attempts at shifting from Spanish to Nahuatl made by 2nd and 4th graders, none turned out to be effective (see Table 2). Clearly no definitive conclusion is warranted given the small number of these interlinguistic revisions. In addition, all 11 effective Spanish to Nahuatl revisions were made by three 6th graders. However, this passing observation does coincide with previous analyses of the same children's performance on different literacy and oral language tasks and activities related to language choice. With grade level, older students begin to prefer Nahuatl over Spanish in peer conversational interaction (Francis, 1997). In their writing, 4th and 6th graders begin to favor Nahuatl content words over their Spanish insertions (although Spanish discourse connectors actually increase) in contrast to younger bilinguals (Francis, 1999). The same tendencies were evident in a study of the children's oral narratives. Sixth graders resorted to Spanish content word insertion at a lower rate of frequency than both 2nd and 4th graders (Francis & Navarrete Gómez, 2000).

Further study might explore the connection between general language awareness and ability to focus attention on features related to interlinguistic influences and L1–L2 transfer of different kinds. The data from the present study is also too sparse in regard to this question. Nevertheless, the few indications of a possible relationship suggest that a more structured or closed-ended task that, for example, would direct students to specifically direct attention to codeswitching and borrowing in their writing, might provide data that reveal systematic tendencies across grade levels and in relation to measures of awareness of differences between Spanish and Nahuatl. Among the 6th graders, for example, the three students with the highest scores on the test of metalinguistic awareness all attempted "corrections" of Spanish insertions. Again, the relatively low frequency of attempts in this category, interesting as it may be, prevents us presently from drawing any conclusions from the findings as they stand. As would be consistent with the sociolinguistic

imbalance between IL and NL, a few of the young writers attempted revisions involving a shift from Nahuatl to Spanish.[5]

5. Discussion

First of all, the findings allow us to confidently reject prediction #1, that performance in the sociolinguistically disfavored indigenous language, excluded from day-to-day literacy instruction and practice, with no availability in the community or at home of any compensatory reading material, and minimal presence in "environmental print," would show weak, non-significant, advances across the grade levels. Prediction #1 also roughly coincides with what Cummins (1981) has termed the Separate Underlying Proficiency model,[6] shown to be deficient in studies of more typical child bilingualism, but that might have held up under the more extreme circumstances of language contact inequality in this speech community.

If nothing else, this study offers confirmation to the results of many others that have called attention to the missed opportunities in school when instruction is restricted to one language. The vernacular language can be shown to be a tool for higher-order literacy development even in exceptional circumstances of a vastly unequal distribution of resources. Engaging in tasks that require reflection need not be restricted to the language that is by custom, official policy, or expediency associated with schooling and writing. The evidence points to untapped possibilities for promoting additive bilingual development, but at the same time, certain limitations.

Prediction #2, as it was formulated, receives support in the comparisons of performance between the languages. Parallel to performance in Spanish writing, children show evidence of significant gains across the grades in writing ability when the target language is Nahuatl (in the domain of written expression in school, the "un-practiced" vernacular). But the findings also prompt us to pause and speculate about factors that affect accessibility to the Common Underlying Proficiency, and condition interdependence. Recall that despite the "parallel development" of writing ability in Nahuatl, overall average performance appeared less robust than in Spanish (see Fig. 1). For now, we must put aside one of the more central "internal factors" that previous research has attended to: knowledge of the language in which the writing task is carried out. For better or for worse, the original cohort of students who completed the Spanish writing task self-selected itself in regard to this variable: two of the bilinguals with the lowest level of productive ability in Nahuatl excluded themselves from the analysis by composing their stories in Spanish. Of the

[5] As would be expected, no attempt at a Spanish to Nahuatl switch was made by any student during the Spanish writing task. A purist, or ethnolinguistically conscious point of view, as the case may be, would probably categorize all revisions of Nahuatl to Spanish during the Nahuatl writing tasks as at least pragmatically non-effective since the context of the writing task called upon children to compose in Nahuatl, not Spanish. In contrast, a more "syncretic" interpretation might point to the fact that children generally are aware that any person literate in Nahuatl is also bilingual, aware as well that the converse does not follow.reviewer made the observation that Nahuatl orthography is not fixed and prescribed in the same way as Spanish is, and asked how or to what degree might the participants in the study have perceived this difference. Previous reports from the project have touched on this interesting question only indirectly (Francis, 1998); and future research could attempt to gauge this perception. Adult bilinguals sometimes are aware of this aspect of the sociolinguistic imbalance between the languages; the youngest children in the study probably were not. Table 1 perhaps offers a clue to how this divergence might have affected the results: 6th graders' rate of self-correction at the orthographic level in Spanish and Nahuatl turned out to be comparable.

[6] Informally, Separate Underlying Proficiency (SUP) would propose that all aspects of academic language proficiency, including literacy, are language-specific. In contrast to the CUP model, SUP implies that no knowledge component, skill, or ability would be "shared" and be autonomous from the linguistic representations of L1 and L2. In its strongest version, all concepts would be language-specific.

four Spanish-dominant bilinguals, the two whose interlanguage system more closely approached the competence of the 41 native speakers/balanced bilinguals, attempted the task as directed.

Tentatively (to be taken as a proposal for further research) we might categorize the factors that would affect access to CUP into two categories:

(I) factors related to how the language is processed in written form related to knowledge representations and skills that students can draw on in performance,
(II) attitudes and motivational perspectives related to the sociolinguistic context, how IL and NL are portrayed to children in reference to actual language use patterns, and how they are perceived.

(I^a) Under the first category, the proximity of the respective orthographic systems of Spanish and Nahuatl, and students' mental model of each, is a good place to begin. The adoption of an alphabetical system closely following the grapheme–phoneme correspondences of Spanish, naturally facilitates both the composing and revision/correction tasks in the IL. It is this orthographic affinity, that we have pointed to in previous work, that may be responsible in large part for the consistently strong performance of bilingual children from other indigenous communities on this kind of assessment (Francis, 2000; Francis & Hamel, 1992). In all replications of this study, competent child speakers of the IL, without exception, have complied with the task demands when presented with adequate scaffolding. While the orthographic factor logically facilitates access to at least lower-level writing skills, the absence of standardization might introduce an element of confusion among young beginning writers. Competing orthographies currently in circulation represent the same sound patterns differently, one particularly salient divergence being that between the original 16th Century origin orthography introduced by the Spanish, and recent attempts to reform it. For example the names of historical figures *Nezahualcoyotl* and *Cuauhtemoc* would be spelled, under at least one version of a "reformed" orthography, "Netsaulkoyotl" and "Kuautemok," and the plumed serpent of prehispanic oral tradition fame, *Quetzalcoatl*, "Ketsalkouatl" (refer to examples in DGEI, 1988; SEP, 1979, and compare to Siméon, 1885/1977). Both *Nezahualcóyotl* and *Cuauhtémoc* are still popular Mexican given names, and *Quetzalcoatl*, along with literally thousands of proper nouns and other loan words of Nahuatl origin are part of the "sight vocabulary" of both literates and non-literates, being prominently displayed in environmental print domains of all kinds, from television, newspaper headlines, bill boards, and store signs, to baptism and wedding invitations. They thus form part of (both Spanish monolingual and Nahuatl-speaking) child literacy learners' sight recognition reading vocabulary as well. Needless to say, virtually without exception, these ubiquitous Nahuatl words in environmental print correspond to the still conventional 16th Century origin spellings. Parenthetically, both of the above mentioned patterns (e.g. "ki" and "qui") were in evidence in students' writing samples produced during the present study. Typically, bilingual classroom teachers do not possess a fluent command of either orthographic system that is comparable to their spelling abilities in Spanish.

An interesting question for future research would be to examine children's notions of what spelling conventions in Nahuatl might be like. Given the minimal exposure to Nahuatl texts and the near absence of any literacy instruction in the language, we can be reasonably sure that children's conceptions of orthography in this study were "carried over," so to speak, from Spanish. A better way to think of this kind of "transfer," if we recall, is that: the bilingual learners in this study learned literacy-related abilities through Spanish. Since a core subset of these abilities is not language-specific, and is represented autonomously in a Common Underlying Proficiency,

the abilities belonging to this "core" are now accessible in the resolution of literacy tasks in Nahuatl.

(I^b) Given that virtually all practice in writing, in school and out, is in Spanish, lesser degrees of automaticity in regard to a number of sentence and word-level skills would be expected, for example an uncertainty about certain spelling patterns, and segmentation. Word boundaries follow different morphological patterns in Nahuatl and Spanish, patterns that children have knowledge of (as revealed in speech) but only practice, with rare exceptions, in writing, in Spanish.

(I^c) The evidence from all language assessments in this study clearly indicates that students possess complete knowledge of the core grammatical system of Nahuatl that corresponds to normal late childhood syntax and morphology. On the other hand, discourse organizing markers, and sentence-level grammatical structures in Nahuatl that serve the requirements of producing structured continuous discourse of the non-conversational type, and text construction, are rarely, if ever practiced. These discourse-serving grammatical patterns are practiced to varying degrees in Spanish, mainly in school. Of course, passive exposure to these patterns is more extensive through reading and studying school texts, again only in Spanish (for a report of these findings, see Francis, 2001).

(I^d) Transfer from Spanish (e.g. borrowing and codeswitching), to partially compensate for the imbalance in (I^c), or other asymmetries in lexical knowledge (that "favor" Spanish) is a factor that has been the focus of considerable discussion among local bilingual educators. On the negative side, hesitations regarding the appropriate use of inserted Spanish vocabulary, as well as interference from Spanish at the phonological/orthographic level could affect composing. On the other hand (the positive side), a possible facilitative effect might apply to young bilinguals whose fluid command of borrowing and codeswitching strategies allows them to make use of this interlinguistic resource freely in their written expression.

Under the general category of students' perspectives related to the sociolinguistic context, we can again cautiously speculate.

(II^a) Spanish being the unmarked language of academic discourse and literacy, perceptions about the appropriateness of Nahuatl for tasks such as writing and editing may affect students' productivity. The request, on the part of a teacher, or outside investigator, to perform a literacy task in the socially marked language may be interpreted in a number of different ways; for example, it may be misinterpreted in a way that could result in either non-compliance or in a level of performance that underestimates the child's true ability. This, in fact was the case on an earlier series of language assessments carried out with a group of younger bilinguals from the same community (Francis, 1997).

(II^b) The perceived utility of IL writing would conceivably be related to motivational postures; as a general rule literacy is learned through Spanish, thus it is assumed that a speaker of Nahuatl who is literate is also bilingual. In other words, a written message in Spanish could always be read by any literate person in the indigenous communities of this region; the same cannot be assumed about a written message in Nahuatl, and monolingual speakers of the IL would most likely not be literate. This aspect of audience awareness, which would be part of school-age children's general sociolinguistic knowledge, might suggest the idea that writing in Nahuatl (unlike in the past) has become superfluous from a purely instrumental/communicative point of view. Aside from "expressive" or aesthetic purposes (e.g. writing a poem for a contest in school), a written message in Spanish would *always* have a wider potential readership in this bilingual community.

That children are actually aware of this sociolinguistic relation between the languages was the object of a series of structured interviews in an earlier phase of the study (Francis, 1998).

(II^c) School language policy, overt assertions and observations, and implicit messages of the "hidden curriculum" kind about the value of literacy in Nahuatl would interact in different ways with all the above factors. The partial evidence available to us under this sub-category would point to a certain advantage for this particular cohort of bilinguals. Teachers and principals are usually bilingual themselves, lead students weekly in the Nahuatl language version of the national anthem, help sponsor and organize periodic cultural events that validate and honor the linguistic heritage of the community, and collaborate with district bilingual supervisors in sponsoring a yearly Nahuatl writing contest. In their personal conduct, in the classroom and out (e.g. with parents), they exhibit the same respect and recognition of the indigenous language. As indicated earlier, teachers and principals openly proclaim to parents and children that the school adheres to official Secretariat of Public Education policy on bilingual education for IL communities (CONAFE, 2000; DGEI, 1999). No observational data is available regarding the effect that the close to exclusive use of Spanish in academic discourse might have on children's perceptions of language use in school (despite, or in "contradiction" to, the strong positive symbolic valorization of the IL); see Hamel (1995) for discussion.

Keeping in mind, to reiterate one last time, that the limiting factor of less than native-speaker grammatical competence in the IL did not obtain in this population of bilingual children, explanations for the gap in performance on the Nahuatl writing task would be sought among the above written language processing and contextual/motivational factors, or others as yet unforeseen. The present findings do not favor any one set or combination over another; and we should remember that under a number of the sub-categories we might find an unambiguously facilitative effect. Investigators in this particular kind of bilingual instructional setting (basic academic language proficiencies and literacy taught in the NL, degrees of access to the CUP component of these knowledge structures and abilities when students attempt literacy tasks in an IL) could design a combination of controlled experiments and more open-ended assessments to focus on one or another factor to specify the weight we might be able to assign to different limiting and facilitative conditions.

For example, if it turned out that grammatical aspects of academic discourse ability (Gee, 2001) do not develop as rapidly and completely in the IL as they do in the NL (factor I^c), we could ask how such an imbalance might be remediated. This question would be pertinent to curriculum planning in an IL developmental/additive bilingual program; see Hinton and Hale (2001) for a recent survey. A hypothesis to explore could be the following: learning the special grammatical patterns associated with academic discourse in the disfavored vernacular would represent a far less formidable pedagogical undertaking than learning the core grammatical structures of the IL if the latter had not been acquired during the preschool years. For the indigenous student whose primary language is the NL, and whose exposure to the IL has been minimal, learning the IL as a second language in late childhood will more likely come up against an entire array of limiting circumstances, some of which were alluded to earlier: motivation related to relative prestige and utility, language prejudice and discrimination, etc. While L1 acquisition during early childhood is assured under the circumstances of *any* normal pattern of socialization, high levels of L2 attainment, even as "early" as late childhood are not (Herschensohn, 2000, p. 38).

In contrast, learning to use grammar associated with literacy and academic discourse in the IL (readers should feel free to substitute for "IL"—"any disfavored other language of a bilingual child") requires sustained experience with the corresponding "secondary discourses." In this case,

no "critical period" effect would apply, as it might, hypothetically, to the development of core grammatical competence. The same hypotheses would apply (i.e. be testable and possibly be falsified) to factors: (I^a) orthographic abilities, (I^b) automaticity of writing skills in general, and (I^d) metalinguistic awareness related to borrowing and codeswitching. The rationale would be that these are secondary type language learning objectives subject to standard teaching methods of the kind that children can normally profit from in school. The above, parenthetically, would also be a test of the degree of modularity of the type of "three domain model" of bilingual proficiency discussed so far. If different kinds of grammatical knowledge correspond to different domains (the reader will take note of the assumption: that there are different "kinds," and that in fact different "domains" do exist), this might be revealed in the way that they develop in bilingual children (e.g. the *uneven* way that they may develop under certain circumstances).

In regard to our Category II factors, the broader sociolinguistic imbalances that may partially restrict access to the CUP, research could begin to explore how different levels of recognition/integration of an IL in school affect performance on bilingual literacy tasks. Two candidates for research sites, and a hypothetical third, might provide for a number of critical comparisons.

(1) Across the state line from our experimental Spanish–Nahuatl bilingual school, the "Escuela B. Juárez" serves a population characterized by similarly high levels of both Nahuatl grammatical competence and ethnolinguistic vitality. While children are not prohibited from speaking the IL in private conversation, no recognition, symbolic or otherwise, is afforded to the language, a fewer number of teachers are bilingual themselves, and cultural events and activities confer no status (by systematic omission) to the indigenous language.
(2) The "Escuela H. Cortés," from the same region, shares most of the characteristics of the "Escuela B. Juárez," with the exception of an explicit policy on Spanish-only, including the prohibition of the IL in school for any purpose.
(3) The orientation of the hypothetical "Academia Bilingüe Nezahualcoyotl" coincides with the generally positive valorization of bilingualism of our present research site; in addition, a modest weekly enrichment component to the Language Arts curriculum introduces higher-order literacy-related learning activities in the IL, tied to the general academic content objectives of the school program. The interesting question here would be: how robust are the psycholinguistic mechanisms of interdependence such that they may resist greater and greater degrees of adverse social circumstance to the development of additive bilingualism (as in cases #1 and #2)? On the other hand (in relation to the more facilitative conditions of case #3—the "bilingual academy"), what is the minimal threshold "time on task" in the disfavored language that may result in any measurable closing of the gap in actual performance between the two languages? For example, would a distribution of 10% IL/90% NL produce any significant narrowing of the divergent curves on Fig. 1? For some of the debate on the question of "distribution of languages" in a bilingual program see the papers in González and Maez (1995).

6. Conclusion

Previous studies that have provided evidence for a Common Underlying Proficiency and interdependence have compared bilingual children's performance on measures of academic achievement typically between two languages of "NL status," each with no shortage of written language resources, and school text materials at their disposal (although Modiano's (1972) study of Tzotzil, Tzeltal, and Spanish, which could be taken as a precursor of sorts to this line

of research, focused on an IL–NL comparison as well). The variable of interest most often has been linguistic competence: can second language learners avail themselves of CALP-type abilities, acquired through a L1, when presented with academic tasks in their L2, a L2 still at a stage of development far short of native-level competence? The present Spanish–Nahuatl study held linguistic competence between L1 and L2 constant (as it turned out), while attending to the effect of the broad social imbalances that separate the two languages. These imbalances, it is proposed, were reflected in the way a series of factors conditioned access to CUP. Given that exposure to Nahuatl literacy, and any sustained practice in the language in the expressive realm, is so minimal, the evidence of an access to the CUP during the Nahuatl writing and revision/correction assessments lends support of a different kind to the proposal that a core network of knowledge structures that underlies CALP is autonomous from the grammatical systems of the two languages to some important degree. Access to CUP is not blocked and interdependence is not shut down. At the same time, the lag in performance on the Nahuatl writing tasks confirms that this access is not automatic. Non-native levels of competence in the L2 (e.g. beginner levels) would restrict access; logically, no competence or level zero beginner knowledge of a L2 would indeed block access to CUP and shut down interdependence (e.g. recognizing cognates and guessing what an article is about from a journal in one's field of study doesn't count). The effects of non-exposure and unavailability of written texts in the IL, exclusion of the IL from school, lack of opportunity to practice, sociolinguistic inequalities, etc., limit access in a different way. Because the students in the Spanish–Nahuatl revision/correction study were responding to their own assessments of structural accuracy and coherence, rather than teachers' observations and notations, the findings are neutral in regard to the question of the efficacy of teacher-initiated corrective feedback. However, the fact that they found this task of self-correction to be appropriate and meaningful in both languages indicates that increased attention to this literacy-learning objective should result in higher levels of reflection upon and analysis of texts.

The idea of interactivity among the three domains, the L1 linguistic system, the L2 linguistic system, and the components of the largely non-linguistic CUP, offers the beginning of an attempt at explanation, that in turn, refers us to a number of ongoing research questions in the field of bilingualism:

- how each domain is structured internally,
- how each domain processes the information that corresponds to that domain (if this turns out to be the case),
- what is the nature of the interfaces and transformations,
- are some sub-components subject to greater interactivity than others (the others being more "encapsulated"),
- how does the participation of the different components get integrated in actual performance in real time?

These questions, and others that may be even more interesting, might come to be settled empirically. Evidence from future research may also overturn some aspects or a good portion of this kind of compartmentalized model.

The other areas of investigation mentioned in our literature review should also benefit from future applied research. For example, to which aspects of language learning is the development of metalinguistic awareness especially relevant, and to which aspects might it be less so? One of the applications of the metalinguistic awareness discussion is to the question of focus on form, and the usefulness of corrective feedback in second language learning. Here it might be helpful to

consider the discussion in parts, separating out the realm of learning the L2 grammatical system, from those aspects of second language teaching that are related to literacy.

In summary, attending to the form of written texts through the medium of both of the languages that bilinguals speak should maximize the benefits of this kind of literacy activity. For bilingual children, developing advanced literacy skills in their L2 surely involves one of the higher-stakes objectives of schooling. Evidence that a kind of decontextualized task such as revision and correction of one's own writing can draw broadly, and relatively freely, on the diversity of bilingual children's cognitive and linguistic resources should contribute to our understanding of how these resources can be marshaled most effectively.

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References

Baker, C. (2001). *Foundations of bilingual education and bilingualism*. Clevedon: Multilingual Matters.

Bialystok, E., & Cummins, J. (1991). Language, cognition, and education of bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children* (pp. 222–232). New York: Cambridge University Press.

Consejo Nacional de Fomento Educativo (CONAFE). (2000). *Didáctica bilingüe: Alfabetización en lengua materna*. México, D.F.: Secretaría de Educación Pública.

Cummins, J. (1981). The role of primary language development in promoting educational success for language minority students. In California State Department of Education (Ed.), *Schooling and language minority students: A theoretical framework* (pp. 3–49). Los Angeles: National Dissemination and Assessment Center.

Cummins, J. (1991). Language development and academic learning. In L. Malavé & G. Duquette (Eds.), *Language, culture and cognition* (pp. 161–175). Clevedon: Multilingual Matters.

Cummins, J. (1999). Alternative paradigms in bilingual education research: Does theory have a place? *Educational Researcher*, *28*, 26–41.

Cummins, J. (2000). *Language, power and pedagogy: Bilingual children in the crossfire*. Clevedon: Multilingual Matters.

DeKeyser, R. (1998). Beyond focus on form: Cognitive perspectives on learning and practicing second language grammar. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 42–63). New York: Cambridge University Press.

Dirección General de Educación Indígena (DGEI). (1988). *Noamoch tlen se xiutl tlamachtilistli, libro náhuatl, Primer grado*. México, D.F.: Secretaría de Educación Pública.

Dirección General de Educación Indígena (DGEI). (1999). *Lineamientos generales para la educación intercultural bilingüepara las niñasy los niños indígenas*. México, D.F.: Secretaría de Educación Pública.

Doughty, C. (2003). Instructed SLA: Constraints, compensation, and enhancement. In C. Doughty & M. Long (Eds.), *Handbook of second language acquisition* (pp. 256–310). Blackwell.

Ellis, R. (1997). *Second language acquisition*. Oxford: Oxford University Press.

Francis, N. (1997). *Malintzin: Bilingüismo y alfabetización en la Sierra de Tlaxcala*. Quito: Ediciones Abya-yala.

Francis, N. (1998). Bilingual children's reflections on writing and diglossia. *International Journal of Bilingual Education and Bilingualism*, *1*, 1–29.

Francis, N. (1999). Bilingualism, writing, and metalinguistic awareness: Oral-literate interactions with first and second language. *Applied Psycholinguistics*, *20*, 533–561.

Francis, N. (2000). The shared conceptual system and language processing in bilingual children: Findings from literacy assessment in Spanish and Náhuatl. *Applied Linguistics*, *21*, 170–205.

Francis, N. (2001). Complejidad sintáctica—¿competencia lingüística o competencia discursiva? Análisis de narrativas infantiles orales y escritas. *Memorias: VEncuentro Internacional de Lingüística en el Noroeste* (pp. 15–38). Hermosillo: Universidad de Sonora.

Francis, N. (2002). Literacy, second language learning, and the development of metalinguistic awareness: A study of bilingual children's perceptions of focus on form. *Linguistics and Education*, *13*, 373–404.

Francis, N., & Hamel, R. E. (1992). La redacción en dos lenguas: Escritura y narrativa en tres escuelas bilingües del Valle del Mezquital. *Revista Latinoamericana de Estudios Educativos*, *22*, 11–36.

Francis, N., & Navarrete Gómez, P. R. (2000). La narrativa como sitio de intercambio entre el náhuatl y el español: Un análisis de la alternancia lingüística. *Estudios de Cultura Náhuatl*, *31*, 359–391.

Gee, J. P. (2001). Educational linguistics. In M. Aronoff & J. Rees-Miller (Eds.), *The handbook of linguistics* (pp. 647–663). Oxford: Blackwell.

González, G., & Maez, L. (Eds.). (1995). *Compendium of research on bilingual education*. Washington, DC: National Clearinghouse for Bilingual Education.

Grosjean, F. (1995). A psycholinguistic approach to codeswitching: the recognition of guest words by bilinguals. In L. Milroy & P. Muysken (Eds.), *One speaker, two languages: Cross-disciplinary perspectives on code-switching* (pp. 259–275). New York: Cambridge University Press.

Hamel, R. E. (1995). The inroads of literacy in the Hñahñú communities in Central Mexico. *International Journal of the Sociology of Language. Special Number: Vernacular Literacy in Nonmainstream Communities*, *119*, 13–42.

Herschensohn, J. (2000). *The second time around: Minimalism and L2 acquisition*. Philadelphia: John Benjamins.

Hinton, L., & Hale, K. (Eds.). (2001). *The green book of language revitalization in practice*. New York: Academic Press.

Jackendoff, R. (1987). *Consciousness and the computational mind*. Cambridge: MIT Press.

Kowal, M., & Swain, M. (1997). From semantic to syntactic processing: How can we promote it in the immersion classroom? In R. K. Johnson & M. Swain (Eds.), *Immersion education: International perspectives* (pp. 284–309). New York: Cambridge University Press.

Krashen, S. (1998). Comprehensible output? *System*, *26*, 175–182.

Loschky, L., & Bley-Vroman, R. (1993). Grammar and task-based methodology. In G. Crookes & S. M. Gass (Eds.), *Tasks and language learning: Integrating theory and practice* (pp. 123–167). Clevedon: Multilingual Matters.

MacSwan, J., & Rolstad, K. (2005). Modularity and the facilitation effect: Psychological mechanisms of transfer in bilingual students. *Hispanic Journal of Behavioral Sciences*, *27*, 224–243.

Mitchell, R., & Myles, F. (1998). *Second language learning theories*. New York: Arnold.

Modiano, N. (1972). *Indian education in the Chiapas Highlands*. New York: Holt, Rinehart and Winston.

Muysken, P. (2000). *Bilingual speech: A typology of code-mixing*. Cambridge: Cambridge University Press.

Paivio, A. (1991). Mental representation in bilinguals. In A. Reynolds (Ed.), *Bilingualism, multiculturalism, and second language learning* (pp. 113–125). Mahwah, NJ: Lawrence Erlbaum.

Paradis, M. (2004). *A neurolinguistic theory of bilingualism*. Amsterdam: John Benjamins.

Rolstad, K. (2001). Language death in Central Mexico: The decline of Nahuatl and the new bilingual maintenance programs. *The Bilingual Review*, *26*, 3–18.

Sadoski, M., & Paivio, A. (1994). A dual coding view of imagery and verbal processes in reading comprehension. In R. B. Ruddell, M. R. Ruddell, & H. Singer (Eds.), *Theoretical models and processes of reading* (pp. 582–601). Newark DE: International Reading Association.

Schwartz, B. (1999). Let's make up your mind: Special nativist perspectives on language, modularity of mind, and nonnative language acquisition. *Studies in Second Language Acquisition*, *21*, 635–655.

Secretaría de Educación Pública (SEP). (1979). *Nahua colibrí*. México, D.F.: Dirección General de Publicaciones y Bibliotecas.

Siméon, R. (1885/1977). *Diccionario de la lengua náhuatl*. México, D.F.: Siglo Veintiuno Edi tores.

Sharwood-Smith, M. (1993). Input enhancement in instructed SLA. *Studies in Second Language Acquisition*, *15*, 165–179.

Sharwood-Smith, M. (1994). The unruly world of language. In N. C. Ellis (Ed.), *Implicit and explicit learning of languages* (pp. 33–44). New York: Academic Press.

Swain, M. (1998). Focus on form through conscious reflection. In C. Doughty & J. Williams (Eds.), *Focus on form in classroom second language acquisition* (pp. 64–82). New York: Cambridge University Press.