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Bilingualism, writing, and metalinguistic awareness: Oral–literate interactions between first and second languages

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ABSTRACT
This article reports on an investigation of the development of literacy, bilingualism, and metalinguistic awareness. The particular context of the study (high levels of bilingualism among school-age children) and the particular language contact situation (an indigenous language) offer a vantage point on the interaction between language learning and metalinguistic awareness and take into account the sociolinguistic imbalances that characterize bilingual communities of this type. The subjects who participated in the study were speakers of Spanish and Náhuatl from Central Mexico. Assessments of metalinguistic awareness related to different aspects of the children's consciousness of the languages they spoke or understood were compared to a series of assessments of reading comprehension, writing, and oral narrative in both languages. Findings suggest directions for further research along the following lines: metalinguistic awareness is related to different aspects of literacy development in different ways, the key variables being the degree of decontextualization and expressive versus receptive language tasks.

In recent years the term "biliteracy" has gained currency in the fields of bilingual education, foreign language teaching, and teaching English as a second language. If knowing or being in contact with two or more languages presents no special set of conditions for literacy development, the concept would seem to be redundant. Since one learns to read once and subsequently has access to the same text processing and general discourse proficiencies associated with literacy when reading or writing in a second language (L2), there would appear to be no reason to combine the concepts of "bilingualism" and "literacy" to refer to a unique or peculiar set of language skills.

An even superficial consideration of the issue points to some interesting parallels that, in fact, suggest important interactions between learning how to read and write and learning a L2. Setting aside early simultaneous bilingual development, literacy and bilingualism are language proficiencies that are shared widely by individuals across cultural, social, and economic boundaries but, at the same

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time, are far from universal. In contrast to first language (L1) acquisition, both literacy and L2 proficiency involve learning processes that are qualitatively different from the primary, species-wide language competence that unfolds during early childhood. Unlike L1 acquisition, literacy development is closely tied to schooling, with students showing a wide variation in success rate; likewise, after a certain critical developmental period, the attainment of language proficiency (both L2 learning and abnormally delayed L1 learning) is remarkably uneven (Sacks, 1990; Schachter, 1998). To this point, see the extensive research on L2 learning outcomes in French immersion (Calvé, 1991; Harley, Allen, Cummins, & Swain, 1990; Kowal & Swain, 1997; Le Blanc, 1992; Vignola & Wesche, 1990).

The present study examines one of the common factors underlying both L2 learning and literacy learning: metalinguistic awareness. While of a descriptive nature, the findings of the investigation suggest a framework for elaborating a general model of literacy and bilingual development in school-age children.

Research in both literacy learning and L2 learning has uncovered a particularly productive domain of inquiry in the higher order processes associated with reflection upon language structures. In this regard, the literacy/L2 connection is important because it illuminates the fundamentally "secondary" nature of both learning processes. Secondary, here, refers to the essential distinction between the primary and universal development of L1 grammatical competence (however this is circumscribed) and the general cognitive processes of learning that are intimately tied to the different levels of consciousness "turned back" upon these learning processes – termed "metacognition" in general and, in regard to language, "metalinguistic awareness." In the model proposed here, this awareness is necessary for the full development of literacy-related language proficiencies and does not apply to the acquisition of basic L1 grammatical competence, except perhaps in reference to incipient or precursor stages of metalinguistic awareness.

In a restatement of the theoretical model that underlies his theories, Cummins (1996) drew the same general distinction, albeit in different terms. Referring to the extensive analysis of Verhoeven (1990) and Verhoeven and Aarts (1998), "context-embedded/pragmatic" indices, derived from spontaneous speech, are sharply distinguished from measures that are tied to literacy-related discourse proficiencies. Conceived broadly (i.e., applied to all the levels, or subsystems, of language, including the textual discourse level), metalinguistic awareness lies at the core of the proficiencies that underlie Cummins's Cognitive Academic Language Proficiency (CALP) (for compatible research perspectives, see Dreher & Zenge, 1990; Garner 1994; Herriman, 1986; Horowitz, 1990; Olson, 1991). From a modular perspective, Sharwood-Smith (1991) viewed metalinguistic awareness as "an optional final stage in L1 development" (following Karmiloff-Smith, 1986) and as playing a central role in L2 learning – one that it does not play in the acquisition of the primary grammatical competencies of the L1 in young children (see also Schachter, 1988, 1990).

The present study explored a range of metalinguistic reflections, corresponding to different levels of awareness, on the part of a group of bilingual elemen-

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tary school children. The tasks that were presented to the subjects involved focusing attention on one or another aspect of language form – aspects not divorced from meaning but all requiring different degrees of abstraction. The children were asked to make various kinds of judgments related to the two languages they understood (Spanish and Náhuatl), neither of which is part of the school curriculum. That is, subjects had not learned about the distinctions in question from their teachers. The indices of metalinguistic awareness that emerged from interviews were compared to the subjects' performance on a set of academic language assessments measuring oral narrative, reading, and writing skills in both languages. Specific research questions focused on general trends across the grades represented in the sample (second, fourth, and sixth) as well as global comparisons between measures of metalinguistic awareness and literacy-related language proficiencies.

Conceivably, different aspects of the language assessments would be related in different ways to the measures of metalinguistic awareness: (1) degree of abstractness or context-embeddedness (e.g., literacy-related tasks that are more decontextualized in nature would show a closer relationship to indices of metalinguistic awareness); (2) the different processing demands that distinguish reading comprehension from written expression; and (3) the degree of planning in oral versus written production would all be reflected in different ways.

Since a correlation between measures of metalinguistic awareness and literacy would be entirely predictable, our attention shifted toward how awareness of language forms and structures might be reflected in children's literacy development. Written expression appeared to offer the more transparent window into these processes for two reasons. First, metalinguistic awareness would, in principle, play a greater role in composing tasks (see Cumming, 1990); or rather, evidence of deliberate attention to language forms would be more apparent and easier to measure. Second, widespread lexical borrowing (from Spanish in Náhuatl writing) would afford the opportunity to examine this particular manipulation of language patterns that is peculiar to bilinguals and, for the purposes of this study, a phenomenon that is unique to biliteracy.

In the special circumstances that determine the sociolinguistic relations of bilingualism and literacy in an indigenous community in Mexico, Spanish exercises a wide-ranging influence over Náhuatl in all discourse domains.[1] In fact, the Náhuatl reading and writing samples collected for the study were the product of a strictly "experimental" assessment; Spanish is the exclusive language of all literacy instruction in school. Borrowed lexical items of the "open-ended" nonce borrowing type (as opposed to established loan words) would provide us with an important object of study since they evidence degrees of variation in frequency in children's writing. This variation, in turn, should be related to the young bilinguals' development of metalinguistic awareness. The research on lexical borrowing in general (Poplack, Sankoff, & Miller, 1988) and on the distinction between nonce borrowing and code switching in the case of typologically dissimilar languages (Poplack, Wheeler, & Westwood, 1989) is pertinent to our discussion. See also Hill (1993) for a discussion of the research specifically relative to the influence of Spanish on the indigenous languages of Mesoamerica.

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Reflection upon language forms in language learning

Investigators' interest in how literacy and L2 learning are related to metalinguistic awareness has helped to distinguish them from the evolution of primary language and has pointed to possible causal relationships that facilitate language learning (Bialystok, 1991). Indeed, the research has suggested that such a causal link exists. It is thought that early exposure to two languages beyond a certain threshold provides increased access to knowledge about language structure that is normally still unconscious and not available for reflection. For example, young bilinguals would become aware of the separation of referents and their phonological labels earlier than monolinguals. Such explicit knowledge is said to facilitate the process of mapping between language forms (spoken and written) that represent the same thing (Yelland, Pollard, & Mercuri, 1993). Becoming aware of linguistic operations helps the child direct thought toward the essential features of objects (i.e., thought becomes more independent of speech). Being more inclined to contemplate language forms "at a distance," bilingual beginning readers are believed to benefit from this enhanced analytic orientation (Goncz & Kodzopeljic, 1991). See also Galambos and Goldin-Meadow's (1990) study on the effects of bilingualism on children's internal representations of language. They found that bilingual pre-kindergartners were able to direct their attention toward grammatical forms earlier than their monolingual peers.

Research on the link between early metalinguistic development and literacy has emphasized the ability to separate language structure from communicative intent: the child advances beyond using language to negotiate meaning and begins to perform mental operations on its structural features. This set of abilities is linked to literacy development at all levels, beginning with phonological awareness and the learning of sound–letter correspondences (Chaney, 1992; Dreher & Zenge, 1990).

However, considering for the moment the development of initial literacy, the research evidence has yet to establish a unidirectional causal connection that metalinguistic awareness is necessary for initial reading instruction. Conceptual and empirical obstacles abound (Singer, 1984; Yopp & Singer, 1994). See also Valtin (1984) for a discussion of the role of literacy and schooling in the ability to focus attention inward upon mental operations. "Actual" awareness, which is spontaneous and situation-dependent, becomes "conscious" awareness when awareness is reflective and deliberate. Actual awareness refers to an access level of metalinguistic awareness or a kind of precursor stage in which contextual, extralinguistic information plays the predominant role. Gombert (1992) made a similar distinction, which we will return to in the discussion of the findings of the present study.

In their discussion of how metalinguistic awareness develops and whether it is a prerequisite for learning how to read, Dreher and Zenge (1990) identified four responses from current research: (1) metalinguistic awareness is a necessary precondition for learning how to read; (2) literacy leads to metalinguistic awareness; (3) the relationship is characterized by "mutual facilitation" or "reciprocal causation"; and (4) both literacy and metalinguistic awareness are the result of a stage of cognitive development that corresponds to middle childhood. Consid-

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ering the circumstances in which the school-age bilingual learns to read and write, hypotheses 3 and 4 appear to offer the most defensible starting point. These coincide with Gombert's (1992) extensive review of the literature, which placed the emergence of the stage of conscious awareness during the first years of elementary school.

The oral/written distinction

Research on language and literacy has by and large rejected the early versions of the "parasitic model," which stated that writing is not language but its transcription (i.e., strictly a means of recording speech graphically). Indeed, the study of "written language" and of its relationship to orality lies at the heart of any discussion of biliteracy. However, in one respect, the early dismissal of the notion of written language corresponds to a new, more relativized distinction between oral discourse and writing. See, for example, the analysis of Olson (1991, 1994). Face-to-face interaction is the paradigm case of oral communication, whereas reading is the representative example of a "nonreciprocal" activity. While conversation allows for convergence by active negotiation of meaning and intention, the reader interacts with the text/author by submitting to its framework and/or asserting his or her own schema (i.e., "using the text as a source of information and as the script of a discourse"; Widdowson, 1984, p. 223). The reader clearly enjoys a greater margin of freedom regarding the alternatives but at the same time sacrifices access to the interactive resources of immediate, situation-embedded clarification and recapitulation.

Clearly, the typical characteristics of oral and written language overlap and preclude any sharp dichotomy (Horowitz, 1990; Tannen, 1992). See also the discussion in Meyer (1993) of the notion of context: textual givenness (inner situation), physical/individual givenness (outer situation), and general knowledge-based givenness (cultural framework). Planned discourse, which is characteristic of writing but not exclusively so, resorts less and less to the resources and support of physical/individual context.

Initial reading materials, which closely match young children's language competence and their background knowledge, correspond to a stage of literacy development that is different in kind from the challenges of academic literacy of the upper elementary and secondary grades. Surface-level recoding and the strategies that rely heavily on context can suffice until the reader is confronted (in the third and fourth grade) with texts that require deliberate attention to linguistic representations and the integration and conscious monitoring of higher level discourse skills. The written modality facilitates the latter; however, the same capacity to process language in a new and different way is necessary in oral comprehension tasks as well (Menyuk, 1984).

Investigations on the role that context plays in determining any meaning lead us directly to the issue of the relationship between literacy and metalinguistic awareness. The relevant developmental sequence spans the early childhood years, from ages 4 or 5 through the elementary grades; the critical transition period is the point at which reading begins to take on new academic functions. Comprehension and production begin to depend less on the extralinguistic situa-

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tion and a direct one-to-one correspondence between previous knowledge and text. Now the reader must manipulate and bring to consciousness intratextual reference and literal meaning (Torrence & Olson, 1987). Before age 5, the child operates with an "utterance grammar"; but by second and third grade, he or she begins to apply procedures for integrating spans of cohesively related utterances, subsequently leading to the capacity to cope abstractly with language and, specifically, with extended spans of discourse (Karmiloff-Smith, 1986; Karmiloff-Smith et al., 1993). The development of literacy, then, is seen as an extension of cognitive abilities, of meta-attention directed toward language (Herriman, 1986). Successful readers gain greater control over linguistic processing, shifting some of their attention to forms instead of focusing exclusively on meaning and situational context (Bialystok, 1988).

If bilingualism facilitates the ability to divide one's attention between meaning and form, learning to read and write in two languages would seem to provide an optimal vantage point (a set of complementary perspectives) from which to carry out mental operations upon oral and written discourses of different kinds. For children, the cognitive demands associated with processing written text and searching for solutions to communicate in their "learner language" (Bialystok, 1991) should be strongly related to the development of metalinguistic awareness, as our review of the literature has suggested. The present study explores some of the interactions among these three aspects of language learning in bilingual school-age children.

THE BILINGUAL AWARENESS STUDY

The findings reported in this article are part of an ongoing investigation of language and literacy in Central Mexico that is focused on a particular language contact situation. The situation is distinguished by the displacement of the indigenous languages by Spanish, which has become the dominant language of civic administration, commerce, interethnic communication, the media, and public education (even in the officially designated bilingual schools).

The first phase of the study examined the relationship between bilingualism and metalinguistic awareness, with an emphasis on the students' perceptions of written forms in the two languages spoken in their community, Spanish and Náhuatl (Francis, 1998). The indigenous community of San Isidro Buensuceso in the state of Tlaxcala was chosen because of the high levels of bilingualism evident among school-age children, despite the significant erosion of Náhuatl in the surrounding towns of the highland region along the slopes of the Malintzi volcano. Indeed, the juxtaposition of an apparently stable bilingualism locally with the rapid loss of the indigenous language in Tlaxcala and in neighboring Puebla provided a unique opportunity to explore the students' attitudes toward being bilingual as well as the ethnic and language conflict. For a more complete sociolinguistic background to the study, see Hill (1988), Nutini and Issac (1974), and Francis (1997).

The subjects were 45 bilingual students in the second, fourth, and sixth grades of the local elementary school. Selection was made by the students' respective classroom teachers according to the following criteria: (1) ability to understand

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and follow directions in Spanish and Náhuatl and (2) average or above-average reading skills (measured, as is customary, in Spanish).

Briefly, the results can be summarized under three categories. First, on a series of measures of metalinguistic awareness – in this case, differentiating between Spanish and Náhuatl and identifying the language of written words and short texts – significant differences emerged across the grades. The greatest variation occurred when responses depended upon the subjects' ability to attend to the linguistic form of the words, abstracted from the larger context (both textual and situational). Context-embedded measures of metalinguistic awareness, which showed little or no variation across grade levels, reflected an earlier stage of development and involved an implicit knowledge or access. Variation on the more decontextualized tasks, on the other hand, seemed to tap a more conscious and reflective knowledge. Second, despite the acute sociolinguistic imbalance, ethnolinguistic tension, and interplay of a host of conflicting and ambivalent affective attitudes toward Spanish and Náhuatl, a broad-based development of metalinguistic consciousness characterized childhood bilingualism for the young people enrolled in school. The absence on the community level of subtractive tendencies among the school-age children, resulting in an additive, de facto maintenance situation (Francis & Nieto, 1996), seemed to account for the positive indices, at least for the lower level measures. No evidence from the previous studies has indicated that, within the local speech community, the indigenous language is losing ground to Spanish, even among children enrolled in school. However, it is important to relativize the additive aspect: Spanish continues to expand within all language use domains, accompanied by the continuing restriction in the use of Náhuatl (for the present, resulting in high levels of individual bilingualism). Third, positive attitudes toward the use of the indigenous language, along with other measures of ethnolinguistic loyalty, were generally high for all ages (in contrast to those for the adult informants, which were divided) and tended to consolidate as the students approached the sixth grade. Although older students were more linguistically conscious and tended to prefer Náhuatl for conversation among peers, assessments of the perception of the relative utility of each language for written communication (again, a contextualized, situation-specific measure of metalinguistic awareness) were remarkably uniform across grade levels (see Francis, 1998). As is typical of many officially designated bilingual schools in Mexico, the indigenous language is the object of symbolic recognition and enjoys a generalized acceptance by teachers, who themselves are often bilingual speakers. However, literacy instruction remains the exclusive domain of Spanish, except for the occasional learning activity in Náhuatl.

The principal question posed by the findings of the first phase of the language awareness study is, what connections, if any, may be explored between these apparent trends in the development of metalinguistic consciousness and literacy? That there could be a certain degree of correlation would not be surprising. Hence, our examination focused on how the ability to discriminate between written forms in Spanish and Náhuatl related to reading and writing and what the pedagogical implications of these possible connections for literacy learning are. From the start, we expected that any relationship to emerge would be indi-

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rect. The present exploratory investigation examined only a few among the many interacting variables that intervene in language and literacy development in the bilingual context; for the moment, only tentative conclusions are offered that may contribute toward the elaboration of more prescriptive hypotheses.

METHOD

Subjects

A total of 45 bilingual students (23 boys and 22 girls; 15 second graders, 15 fourth graders, 15 sixth graders) were selected with the purpose of forming not a "representative sample" in the strict sense but one that would reflect the achievement levels of a layer of the school population (itself a subset of school-age children; approximately 70% according to INEGI, 1990) that generally meets the expectations of the educational system in the area of literacy. In addition, since one of the principal objectives of the study was to examine the interaction between reading and writing skills in Spanish and in Náhuatl, it was necessary to set a minimal threshold in literacy skills, even for the second graders. Results from the test battery confirmed that the teachers had selected a sample that was sufficiently heterogeneous and, at the same time, met the two criteria mentioned earlier.

Assessment instruments and procedures

Over a period of five months, each of the subjects was administered an extensive battery of informal, nonstandardized assessments in: (1) oral language proficiency (the Entrevista Bilingüe) (Francis, 1992) to determine language dominance, (2) reading, and (3) writing in both Spanish and Náhuatl. The parallel forms in each of the three areas were administered by separate evaluators, who were fluent in the respective languages. Upon completion of the academic evaluations, a wide-ranging, structured interview was administered in Spanish to explore the students' language attitudes, perceptions of bilingualism, and awareness of the sociolinguistic relations characterizing the contact between Spanish and Náhuatl, including the measures of metalinguistic awareness as well as the Language Awareness Test (LAT).

Oral language dominance

Designed to provide an estimate of language dominance, the Entrevista Bilingüe produced language samples in three areas. The first section consisted of vocabulary from two sets of plates depicting everyday scenes, such as the weekly market and home interior (tapping Náhuatl lexicon) and the countryside/cornfield and home exterior (tapping Spanish lexicon). The second section consisted of sentence/phrase level responses to 10 questions for each language, based on a series of story strips. The third section, utilizing the same series of illustrations, required the students to tell the story independently from beginning to end; the illustrations were available for reference to support the oral narrations.

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This task (oral narrative) offered the opportunity to assess discourse coherence. Narratives were scored for the frequency of discourse connectors, excluding the coordinating conjunction *y* 'and', and the number of inferences that went beyond the purely descriptive level; the total was divided by the number of sentences to control for length. Discourse connectors indicated temporal and causal relationships between events; given that the language task had as its referent a series of illustrations, narrative inferences that transcended the mere description of individual scenes contributed to coherence. Reporting the characters' thoughts and words would be one example; another would be constructing an event sequence that is not represented graphically but ties one episode to another.

The first and second sections clearly identified two distinct groups. The first group comprised 41 "balanced bilinguals" who demonstrated native-speaker proficiency in face-to-face conversational skills and a command of basic grammatical structures and vocabulary in both languages. The second group comprised 4 Spanish-dominant "passive bilinguals" who responded to the Náhuatl sequences of the second section correctly and appropriately but in Spanish. Systematic ethnographic observations of all the subjects during informal recreational activities, self-reports, and language acquisition histories obtained from parent interviews confirmed the Entrevista Bilingüe data in all cases. The oral narrative task yielded a markedly different pattern of scores, which will be summarized in the Results section.

Reading

The data from two separate evaluations were combined to measure reading proficiency. The students read stories orally, at their appropriate grade levels, in Spanish and Náhuatl. This was followed by an oral retelling, in either the language of the text or in their dominant language, to the respective evaluator. Retelling was scored for completeness using the following formula: number of events plus references to the characters that the subject was able to reconstruct from memory. The readings were taped, and the first 30 oral reading miscues were scored for semantic and syntactic compatibility on a scale of 0 to 6 (3 + 3 = syntactic and semantic compatibility at the text level; 3 + 2 = syntactic and semantic compatibility at the sentence level only; 1 + 1 = compatibility with a fragment, etc.).[2] Miscue scores correlated significantly with completeness of retelling (Spanish, $r = .76$; Náhuatl, $r = .55$; both, $p < .01$).

Students completed cloze passages of grade-level texts in each language, which were scored using the same procedure as in the miscue analysis. Combining the scores provided a more valid overall measure. Oral reading in a L2 or in a language one does not customarily read often produces the undesirable effect of an exaggerated attention to, or inclination toward, local processing, which is focused on phonological execution. The cloze test, which frees the subjects from the performance pressures of oral reading and allows for time to reflect (albeit briefly) on their responses, should provide a compensatory corrective. For both languages, the oral miscue texts were of a narrative genre; the cloze passages were taken from expository texts.

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Writing

In each language students listened to traditional narratives; the narratives were accompanied by the display of three illustrations that represented the corresponding episodes of each story. Reconstructing the events from memory with the aid of the graphics, the students produced their own written versions. As first drafts, the opportunity for revision or editing was minimal. Writing samples were scored for coherence, the number of events organized sequentially (any logical or coherent order, not necessarily a recapitulation of the original) within each episode, and the number of references to the characters' internal mental states. In contrast to the oral narrative task, the graphic display provided only minimal context support. For this reason, instead of noting inferences that transcend the descriptive level, only references to the characters' psychological states were recorded. Parenthetically, this feature was closely tied to the central theme of the narrative itself, as each of the three episodes revolved around the thoughts and emotional state of the protagonist. See the discussion of "mental verbs" in Torrence and Olson (1985). A separate analysis examined the disparate patterns of lexical borrowing: for example, when writing in Náhuatl, the frequency of Spanish borrowings in two categories (content words and discourse connectors). The exclusively unilateral Spanish to Náhuatl pattern here is interesting as an example of the asymmetrical cross-linguistic transfer that is imposed by a sharply unequal sociolinguistic distribution of language functions. That is, case by case, regardless of which language was dominant, which was L1 or L2, or which was used more frequently in daily verbal interaction, the direction of lexical transfer was the same.

In this study, writing samples were not scored for grammatical accuracy. Interrater reliability on a random sample of assessments (approximately 20%) from the oral narrative, miscue, and cloze responses and scoring for coherence of the writing samples ranged from .60 to .72, representing the percentage of exact agreement obtained. Percentage of agreement within one point increased significantly to over .90 for all samples except retelling, which registered a interrater consistency index of .86.

The written message identification (WMI) task

The subjects, presented with text fragments or short written messages in the two languages, were asked to read each item and to identify the language (Spanish or Náhuatl) in which the text was written. The 10 items consisted of sets of two (translation equivalents) of the following: (1) a note to a friend, (2) a message to a family member, (3) a shopping list, (4) a hypothetical public announcement, and (5) the opening line of a story.

LAT and the language attitude interview

The key measure of metalinguistic awareness, the LAT, assessed the students' ability to identify the origin (Spanish or Náhuatl) of 25 common lexical items, the majority of which were proper nouns (18 of Náhuatl origin, 7 of Spanish origin; see the Appendix). Test items were chosen that normally have no transla-

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tion equivalent in either Spanish or Náhuatl discourse in Mexico. The items would occur alternately in "typical" monolingual Spanish or Náhuatl discourse with only phonological nativization, as appropriate. Four of the items (TAMAL, METLAPIL, TEMASCAL, and COMAL) are pronounced in the local speech community with the accent falling on either the final or penultimate syllable according to typical Spanish or Náhuatl pronunciation, respectively. This afforded the opportunity to score for a match between accent placement and language identification. Because in Náhuatl discourse the Spanish items are never translated (and vice versa), the judgment requested of the young bilinguals required that their attention be directed to the structural features – in this case the phonological configuration of each word (a kind of etymological awareness, based on sound patterns). Thus, the LAT would qualify as measure of a low-level metalinguistic skill, in contrast to the higher order metatextual and metapragmatic abilities associated with, say, nonnarrative expository text processing or academic discourse competence (Gombert, 1992; Olson, 1994). Again, the benefit of the LAT was that it estimated awareness from a domain that was not the object of study in school (unlike the higher order metalinguistic skills mentioned earlier). The subjects were asked to read each item (to verify that they could decode the words) and then to indicate in which language the word was written. The options of "neither," "both," or "uncertain" were not offered (nor were they explicitly excluded); nevertheless, none of these responses was given by any subject. The maximum possible score on the LAT was 18: total number of the 18 Náhuatl terms identified correctly minus the number of Spanish items misidentified as Náhuatl.

Other metalinguistic awareness measures included (1) naming the languages that the respondents knew or understood, (2) choosing between Spanish and Náhuatl in regard to their perceived utility/suitability for the purposes indicated in the WMI, and (3) identifying the language used with specific interlocutors or in specific contexts. The language attitude questionnaire included items such as individual preference, facility, feelings regarding hypothetical loss and future transmission to the subject's children, and examples of embarrassment/shame in public associated with the use of Spanish and Náhuatl (see the Appendix). Of all the different metalinguistic measures, the LAT stood out as the most decontextualized task. Language naming, the WMI, matching language with interlocutors, and preferences/attitudes all benefited from reference to one or another kind of context support (i.e., extralinguistic information or transparent passage-level context clues).[3] The findings of a previous study (Francis, 1998) revealed that these measures correspond to Valtin's (1984) "access level." Indeed, the findings suggest that they represent aspects of general pragmatic knowledge related to an awareness of linguistic categories – but of a clearly concrete and situation-dependent kind. In fact, the weak and null correlations between the situation-dependent measures and literacy confirmed this characterization.

RESULTS

The summary of the findings are reported under three general headings: (1) grade-level tendencies regarding performance on the academic language tasks

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(oral narrative, reading comprehension, and writing) and, in particular, the apparent interdependence of skills acquisition; (2) comparisons between each of the three measures of academic language and estimates of language awareness (primarily the LAT); and (3) an analysis of lexical borrowing in relation to metalinguistic consciousness, as measured by the LAT.

In regard to the first two headings, the results described broad patterns of development across and within languages that were important to verify, given the possibility that the access to literacy-related discourse proficiencies (CALP), learned through Spanish-medium instruction, would not be available when the subjects were asked to perform the reading, writing, and oral narration tasks in Náhuatl. Recall that literacy instruction, even initial reading in first grade, is provided in Spanish. Thus, the Náhuatl literacy tasks that formed this part of the assessment involved the application of academic discourse proficiencies to a language in which the subjects generally did not have the opportunity to practice these proficiencies. In this way the quasi-experimental indigenous language assessments estimated what is often referred to as the students' ability to "transfer." Plausibly, access to CALP-type proficiencies could have been blocked or greatly attenuated because of the virtual exclusion of the indigenous language from any significant curricular domain related to academic uses of language and literacy learning.

The findings presented here focus on the dimension of context-embeddedness in describing the tendencies that were evidenced cross-linguistically: which indices shared a common underlying core of proficiencies related to the "secondary" learned processes and which did not. The findings from the third heading, the lexical borrowing analysis, suggest a line of further investigation with regard to how, precisely, bilingualism, literacy, and metalinguistic awareness are related. The findings related to the first two headings confirm reports from previous studies that the above-mentioned relationships are applicable to the present bilingual context.

L1/L2 interdependence

The oral narrative task of the Entrevista Bilingüe is differentiated from the language skills associated with basic interactive conversational proficiency, as measured in the vocabulary and question and answer sections. Only the oral narrative task showed an upward trend from second to sixth grade in both languages for the sample as a whole. In both languages, the sixth graders had significantly advanced in their discourse competence, as indicated by a one-factor analysis of variance (ANOVA); they constructed stories that were longer and more elaborate, contained a greater number of narrative inferences that went beyond the descriptive level, and relied to a greater degree on discourse markers to enhance coherence (see Table 1 and Figure 1). Comparing the performance on the oral narrative task in Spanish with the paired measure in Náhuatl, we find a correlation of $r = .62$, $p < .01$. Likewise, reading comprehension (see Table 2 and Figure 2) showed a similar upward trend, with a correlation between the languages of $r = .61$, $p < .01$. Performance on the writing activity (see Table 3 and Figure

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Table 1. *Oral narrative in Spanish and Náhuatl*[a]

	Second grade (*M*)	Fourth grade (*M*)	Sixth grade (*M*)	Scheffé *F*
Spanish	22.9	32.6	46.2	5.02 (2, 42)*
Náhuatl	6.9	5.9	16.7	3.61 (2, 40)**

[a]Number of narrative inferences + number of discourse connectors ÷ number of sentences.
*$p < .05$ between second and sixth grade (Spanish).
**$p < .05$ between fourth and sixth grade (Náhuatl).

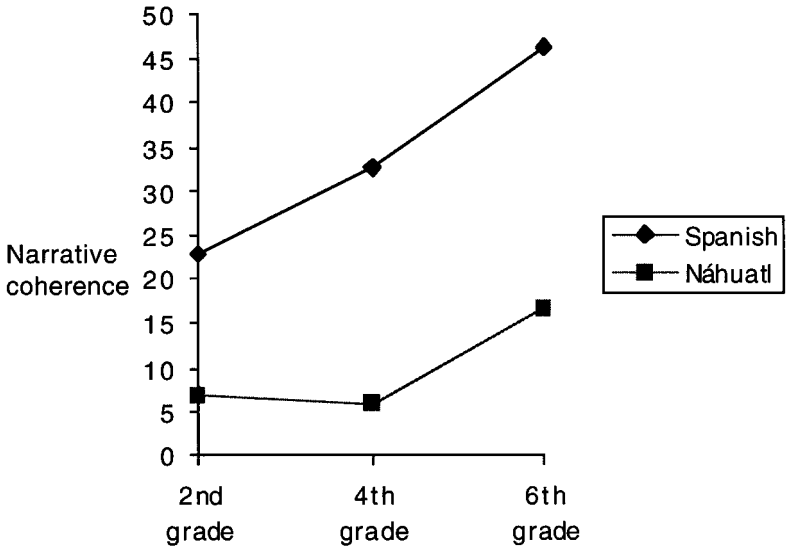


Figure 1. Oral narration. Narration coherence: number of discourse connectors + inferences ÷ number of sentences.

3) seemed to evidence the most precipitous growth in both languages, from second to sixth grade, between the languages, correlating at $r = .43$, $p < .01$.

Considering the method of selection of the sample, the Spanish data is entirely predictable. However, the evidence of discourse proficiencies when the children engaged in academic language tasks in Náhuatl confirms the interdependency of school-related discourse skills, even in such an unfavorable context of diglossic imbalance, and underscores the broad applicability of these processes. While oral discourse competence directly builds upon a preschool foundation of spontaneous text construction (see Littleton, 1998; Watson, 1989), its development evidently depends upon school-related language experiences, thus justifying the inclusion of the oral narrative task in the same category as the

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Table 2. *Reading comprehension in Spanish and Náhuatl*[a]

	Second grade (*M*)	Fourth grade (*M*)	Sixth grade (*M*)	Scheffé *F*
Spanish	4.8	6.4	6.7	3.93 (2, 42)*
Náhuatl	4.2	5.0	5.6	3.61 (2, 42)*

[a]Syntactic and semantic compatibility of oral reading miscues and cloze responses.
*$p < .05$ between second and sixth grade.

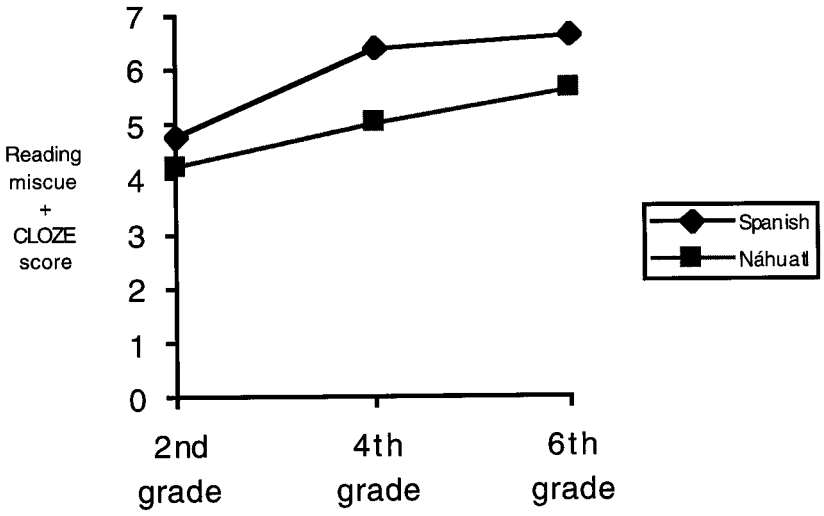


Figure 2. Reading comprehension. Reading miscue + CLOZE score: total score combining syntactic and semantic compatibility from miscue analysis and cloze responses. Maximum score: (3 + 3) + (3 + 3) = 12.

reading comprehension and writing tasks. Again, unlike the indices that correspond to conversational discourse, the condition that required the subjects to narrate independently produces a variation across the grades that parallels the reading and composition measures. The finding is noteworthy, as the independent narrations were produced under relatively context-embedded conditions (a series of illustrations that represented familiar sequences of events), which were the same as those utilized to elicit the conversational language samples. To this point, note that the Scheffé values for the ANOVA for oral narrative were markedly lower than for reading or writing (also evidenced graphically in the weaker, or relatively less consistent, grade-level tendencies for oral narrative; see Figure 1).

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Table 3. *Writing in Spanish and Náhuatl*[a]

	Second grade (*M*)	Fourth grade (*M*)	Sixth grade (*M*)	Scheffé *F*
Spanish	5.8	15.8	17.3	18.03 (2, 42)*
Náhuatl	6.1	9.3	14.7	20.36 (2, 42)*

[a]Number of events organized sequentially + number of references to internal mental states.
*$p < .01$.

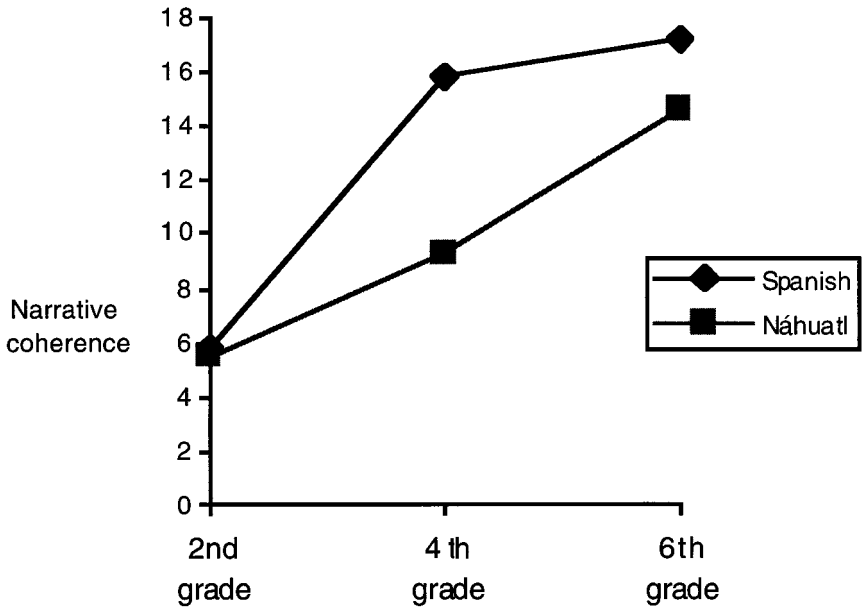


Figure 3. Writing and story retelling. Narrative coherence: number of events in a sequential/logical order + number of references to characters' mental states.

Literacy skills and metalinguistic awareness

In addition to the close interdependency between L1 and L2, the positive trends in all three areas of literacy and literacy-related skills suggest a common core that corresponds to higher level academic language use. The data, however, revealed an important difference, one which differentiated the oral narrative (Figure 1) from both the reading comprehension and writing tasks (Figures 2 and 3). Comparing performance between the three literacy measures on the one hand and metalinguistic awareness (the LAT) on the other, significant correlations were obtained in both Spanish and Náhuatl, but only with reading compre-

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Table 4. *Correlations between LAT scores and literacy measures in Spanish and Náhuatl*

Reading	
Spanish	.40
Náhuatl	.45
Writing	
Spanish	.47
Náhuatl	.35
Reading: Combined score	.41
Writing: Combined score	.42
Retelling: Combined score	.42

Note: $p < .05$ for all correlations.

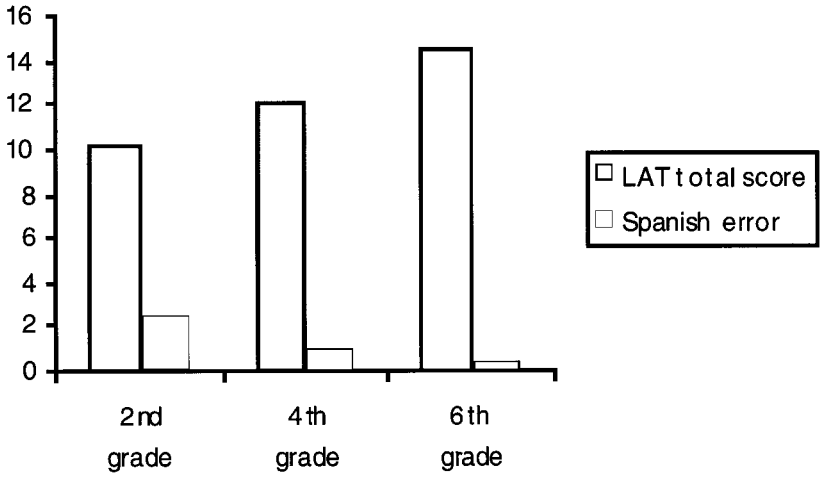


Figure 4. LAT scores.

hension and writing (see Table 4). In contrast, no such relationship in either language was evident in the findings between oral narrative and metalinguistic awareness. Combining the Spanish and Náhuatl scores for each literacy/discourse skill (for the purpose of verifying this pattern of results), the comparisons yielded significant correlations in the same range ($p < .05$), but again only for reading and writing.

However, comparing the LAT to the oral retelling (Table 4) component of the reading assessment, the positive correlation suggests that modality is not the critical factor that accounts for a possible relationship between literacy-related language proficiencies and metalinguistic awareness.

To reiterate, the LAT was the only metalinguistic measure that yielded a sufficiently broad variation across all three grade levels for purposes of comparison (Figure 4). For example, on the more contextualized language identification

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task (the WMI), where text fragments instead of individual words were presented, all 15 sixth graders and 10 out of 15 fourth graders responded correctly to all items. Discourse context – Meyer's (1993) "textual givenness" – greatly facilitated the tasks. By contrast, the range of the second graders' correct responses was significantly greater (only 5 out of 15 receiving a perfect score), thus providing the opportunity to repeat the comparison with academic language assessments using a more context-embedded, lower level measure of metalinguistic awareness. For the second graders ($N = 15$), correlations between the WMI and the Náhuatl reading comprehension and Spanish writing tasks were significant at the .05 level ($r = .56$ and $r = .58$, respectively). In relation to the Spanish reading and Náhuatl writing tasks correlations were weak and not significant (the sample was incomplete as a result of the "passive bilinguals," who wrote in Spanish). Again, the comparison between metalinguistic awareness (in this case, the WMI – the access-level measure) and the oral narration task produced very low, nonsignificant correlations, reflecting the patterns that emerged from the total sample of 45. Providing context support for the language identification judgment produced a ceiling effect for the metalinguistically more sophisticated fourth and sixth graders. For the beginning readers, the WMI turned out to be sensitive to differences and correlated with some literacy measures, but not systematically so (as would be expected).

Lexical borrowing and writing samples

Analysis of the cross-linguistic lexical transfer data was prompted by the striking observation, apparent from even the most superficial examination of the writing samples, that lexical borrowing was widespread and prolific among virtually all of the subjects when they wrote in Náhuatl; yet when writing in Spanish, the subjects assiduously abstained from using Náhuatl material. While the historical/sociolinguistic asymmetry between the languages would explain a significant difference in borrowing frequency, the fact that there was not a single instance of Náhuatl vocabulary in any of the 45 Spanish stories deserves special attention. The same conspicuous imbalance in lexical/language choice was also evident in the oral narrative task.

Turning to the Náhuatl writing samples, there was another common feature in the student productions: all introduction of Spanish material, without exception, was restricted to single lexical items – hence, our circumvention of the term "code switching."

The total number of different Spanish words used was recorded for each story and then divided by the total number of running words to control for length. As Figure 5 indicates, the variation in total frequency of borrowings (number of different Spanish items), although it diminished with grade level, was not significant from second to sixth grade. Rather, it was the grammatical function of the items that varied markedly. The older, more experienced writers resorted to fewer nonce borrowings of nouns and verbs, while the use of Spanish discourse connectors increased. The one-factor ANOVA showed a significant difference between the second and sixth grades for content words, $F(2, 39) = 19.66$, $p < .01$, as well as for discourse connectors, $F(2, 39) = 8.38$, $p < .05$.

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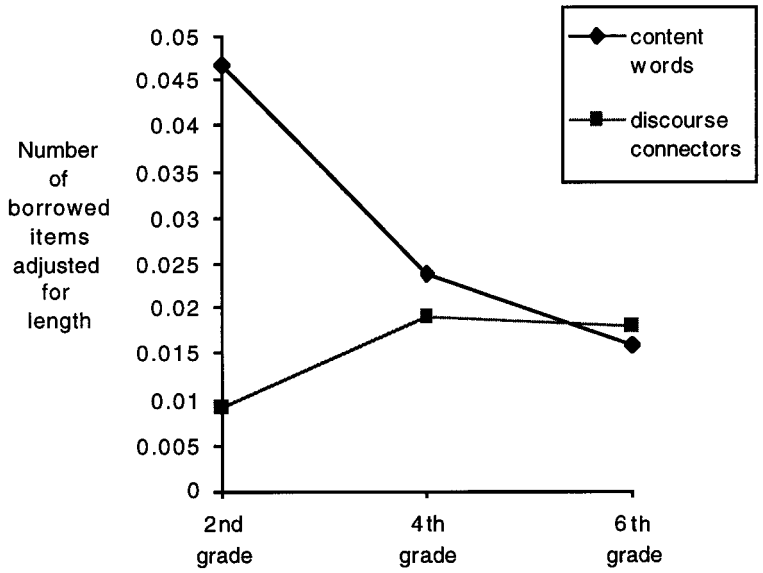


Figure 5. Borrowing from Spanish when writing in Náhuatl. Index to borrowing from Spanish: total number of content words and discourse connectors from Spanish ÷ total number of running words.

Comparing the frequency of borrowing (by category) with the LAT metalinguistic awareness measure, borrowing discourse connectors correlated significantly ($r = .42$, $p < .01$) as did borrowing content words, which inverted the relationship ($r = -.64$, $p < .01$).

Mindful of the debate among indigenous language activists, bilingual teachers, and members in the speech community as a whole on purism versus "language mixing," we shifted the analysis to the possible relationship between frequency of loan word use and proficiency in literacy tasks in general. Impressionistically, it seemed that the best writers tended to avoid borrowing. In fact, total borrowing was negatively correlated with reading comprehension and writing in both Spanish and Náhuatl ($r = -.51$, $r = -.56$, $r = -.56$, $r = -.40$, respectively, all at the $p < .01$ level). Again, comparisons with the oral narrative task were not significant.

A case study in loan word avoidance

Taking a closer look at the performance of two proficient, balanced bilinguals with above-average literacy skills, these global tendencies are confirmed. Pascual (sixth grade) and Elvira (fourth grade) received the highest and second highest scores, respectively, in Náhuatl reading and placed within the top 15% of the total sample in Náhuatl oral narration and writing. Elvira received the highest score on all Náhuatl language measures in the fourth grade cohort. In

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addition, on a series of language acquisition and sociolinguistic indicators, the two students shared a broad common experience and outlook. According to their parents they displayed early childhood bilingualism, with pre-kindergarten Spanish proficiency; the use of Náhuatl was actively promoted at home, coupled with a conscious identification on the part of each family with the cultural and linguistic heritage of the community; and their interviews recorded positive responses on all indicators of Náhuatl language loyalty (use with friends and family, personal preference, self-evaluation of fluidity, shame/inhibition in public, intergenerational transmission, and hypothetical possibility of loss). Pascual and Elvira were among the select group of bilingual children who actively participated in the periodic Náhuatl language competitions sponsored by the Department of Indian Education; both had won prizes or scholarships for their submissions and overall academic performance.

Notably, they distinguished themselves from all the other subjects on the issue of Spanish lexical borrowing; they occupied first and second place with regard to loan word avoidance when writing in Náhuatl. Pascual borrowed no items; Elvira borrowed one item ("guan in soatl amo okinyekitalla *kuando* okin itaya" 'and the woman didn't like them and *when* she saw them'; note the orthographic "nativization" of *cuando*). Again, a hasty interpretation of the findings would affirm the purist argument; but, in fact, our case study exemplifies the correlations for the sample as a whole, showing an inverse relationship between frequency of borrowing and all literacy tasks in both languages.

However, conceptually, the direct link here would appear to be between borrowing patterns and metalinguistic awareness, as reflected in this particular academic language activity. Given the language use context (an oral reading of the model passage in Náhuatl) and the implicit criteria upon which the language task would be judged (instructions to write in Náhuatl), the subjects would tend to interpret the task, at least in part, as a request for a display of their knowledge of the language. In general, a higher level of metalinguistic awareness, a greater capacity to reflect on language form (particularly patterns related to cross-linguistic lexical choice), and the ability to regulate the access to the linguistic codes would dispose the young bilingual writer to constrain his or her lexical/language code choices, resulting in less borrowing, especially on content words.[4]

DISCUSSION

Bilingual children's awareness of their own bilingualism (i.e., their ability to separate the languages for purposes of reflection and introspection) has attracted relatively little research interest. The findings of the present study suggest tentative directions for further investigation.

Interdependence of literacy-related skills and language awareness

The finding of consistent parallels among the various aspects of academic language proficiency in both the L1 and L2 represents another confirmation of Cummins's (1991) interdependence principle. Again, measures of contextualized, face-to-face conversational proficiency stood apart. The present Spanish/

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Náhuatl data provides evidence that, to a great degree, the psycholinguistic factors override the limitations associated with the critical social disparities between the dominant and subordinate languages. Certainly, these apparent distinctions reaffirm the importance of the discussions on modularity and the delimitations and interactions between the linguistic system and other conceptual systems (see Bialystok & Cummins, 1991; Schachter, 1990).

The fact that the LAT and WMI measures of bilingual consciousness showed developmental trends across the primary grades and correlated positively with literacy assessments closely associated with schooling deserves commentary, although this result should not surprise us. On virtually any set of contrived academic language tasks, the measures will correlate, with other children performing better than their younger peers. In this regard, the data suggests that, if the benefits of bilingualism extend to metalinguistic development and henceforth literacy, these benefits would not be restricted to the more typical cases of additive/balanced bilingualism. Rather, they would also apply to situations of acute disparity in the distribution of cultural resources at the disposal of the languages in question. Further research needs to examine how the cognitive benefits might perhaps apply differently and to what degree. The growth in the bilingual indigenous children's metalinguistic awareness (Figure 4) is consistent with this view. The LAT, a measure of metaphonological awareness (Gombert, 1992) that depends least of all on contextual clues, evidenced the widest variation across all grade levels and the most consistent correlations with literacy skills in both languages. One could even argue that the context of the assessment itself (in Spanish, administered by a non-Náhuatl speaker) served as a distracting factor, one that the older bilinguals were more successful in separating from the metalinguistic judgment at hand. At a lower level (i.e., respondents had the opportunity to utilize contextual information), the WMI reflected differences only among younger, less metalinguistically mature bilinguals. At the lowest level, represented by the language naming and preference/attitude indices (reflecting antecedents to conscious awareness), no correlation with any literacy measure in either language or at any grade level could be demonstrated. However, the LAT, which is associated with the awareness of phonological and orthographic patterns, was more directly related to the important "bottom-up" literacy skills that contribute to proficient reading and writing. Perhaps the assessment of a more abstract, higher level "bilingual metapragmatic awareness" would show a closer relationship with literacy development.

Regarding the relationship between the LAT bilingual awareness measure and the oral narrative, reading, and writing tasks, our initial predictions prompted us to expect a positive correlation in all cases, including oral narrative. But a closer examination of each language task revealed an important distinction. Both the reading comprehension and writing assessments recapitulated the more typical decontextualized language activities of classroom literacy instruction; indeed, they corresponded to the normal circumstances of language processing in the written modality. While the oral narrative task represented a significant departure from conversational discourse, the students produced their respective narratives under a less "autonomous" condition. The planning phase of their oral texts had been structured (jointly and interactively) in the previous question-

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and-answer sequence. The production of the students' narratives immediately followed the dialogue, with the same series of plates available for context support. Consequently, the divergence between the oral and written tasks in relation to metalinguistic awareness can be attributed to the respective degrees of independence from situational and dialogic context. With a more decontextualized oral narration, where the children would have to depend to a greater degree on their own resources (linguistic and nonlinguistic), we would expect to see a closer relationship with the related literacy tasks and with measures of metalinguistic awareness. Again, this interpretation reflects the findings from the first phase of the study (see Francis, 1998): the greater the context-embeddedness of the metalinguistic activity, the less likely it would vary across grade level.

The significant positive correlation between the oral retelling section of the reading assessment and the LAT offers indirect confirmation of this pattern of results. Here, the scores from a more context-reduced oral discourse task show trends that correspond to reading and writing and to the metalinguistic awareness measure. See the discussion of similar findings with regard to context-embeddedness in Wu, DeTemple, Herman, and Snow (1994).

Based on our tentative findings, the following predictions would be worth exploring in a more controlled study: (1) Would the degrees of situational dependence, contextualization, and interactivity across all language/literacy tasks be related systematically to measures of language awareness? (2) Would expressive language tasks, such as composing written texts, show the closest relationship to metalinguistic knowledge, more so than reading, since writing depends to a greater extent on conscious attention to form and structure? See the discussion in Olson (1991) on the revision process and attention to linguistic properties, as opposed to meaning alone.

In an earlier study, Olson and Hildyard (1983) specified how context interacts with language in facilitating comprehension. In "casual speech" and in highly contextualized written discourse for which the reader has at his or her disposal all relevant previous knowledge, the weight of processing shifts toward "possible world" (knowledge of context) in the formula: sentence meaning + possible world = intended meaning. Constructing decontextualized literal meaning involves elaborating a model of "possible world" stipulated by "sentence meaning." It is precisely this kind of comprehension task – constructing and manipulating stipulated possible worlds (Olson & Hildyard, 1983, p. 301) in the processing of expository texts – that poses the greatest difficulties for students in the middle elementary grades. Likewise, as Olson and Hildyard pointed out, in facilitating the task of capturing meanings and intentions unambiguously, an additional burden falls upon the writer. In general, the ability to step back from one's own text (while encoding or decoding) to contemplate its adequacy and to manipulate its form becomes an essential component of the higher level discourse competencies of school literacy.

Patterns of lexical borrowing

As we reported in the Results section, when writing in Náhuatl, the students in the upper grades evidenced a tendency to avoid borrowing nouns and verbs

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from Spanish. The tendency to substitute Náhuatl vocabulary for Spanish content word borrowings in the fourth and sixth graders' Náhuatl written productions is consistent with earlier findings (Francis, 1997) from the language dominance assessments. On the lexical access (object naming) section of the Entrevista Bilingüe, older students favored Náhuatl terms when interviewed in Náhuatl. Second graders tended to avoid, to a lesser degree, borrowing from Spanish.

The opposite trend under the category of discourse connectors (prepositions, conjunction, and adverbs) reflects the need on the part of the fourth and sixth graders to resort to this linguistic device to construct their more sophisticated narratives. In fact, the use of the all important discourse connectors in Spanish (*hasta*, *para*, *pero*, *entonces*, etc.) when writing in Náhuatl reflects widespread adult usage in everyday speech.[5] Equivalent or analogous forms in the indigenous language are rare occurrences, even among many monolingual speakers. In passing, it is important to note that the model story "Konemej uan tekuani" 'The Children and the Beast', which was read aloud to the subjects for the purpose of serving as a template for the writing assessment, contained no Spanish material. Evidently, the sixth graders utilized connectors such as *inik* 'in order to', *yese* 'but', *pampa* 'so that', and *ijki* 'thus, by this means' to process and store a reduced version of the traditional narrative; however, in the subsequent reconstructions the students applied their own text formation tools, accessed from their Spanish lexicon.[6]

A related study analyzed the students' correction strategies, utilizing the same written versions of "Konemej uan tekuani." The sixth graders distinguished themselves by demonstrating an incipient awareness of editing procedures with regard to language choice. After the students had completed their Náhuatl writing samples, they were given the opportunity to inspect a typewritten version of their stories and were asked to make any changes they thought were necessary or appropriate. A total of 447 attempts at text revision were coded (96 for the second graders, 156 for the fourth graders, 195 for the sixth graders) to examine the development of text revision skills. Only the sixth graders substituted Spanish material with equivalent Náhuatl items (total of 10). Under the category of Spanish word deletion in Náhuatl drafts, two occurrences were recorded for the sixth graders; the fourth and second graders made only one deletion each.

As exemplified in the case study of two students' avoidance of lexical borrowing in their Náhuatl compositions, greater control over language processing was applied to written expression. Reflecting upon their perception of the task requirements, older and more skillful writers were able to manipulate language structures at all levels, to apply higher level orthographic principles that override local, nonstandard dialectical patterns, and to control "interference" from the other language's syntactical patterns. In this study, the ability to monitor language code/lexical choices resulted in less nonce borrowing when this option was available (content words); apparently, this option was not available in the domain of discourse connectors.

Among the more mature writers, the ability to reflect upon and skillfully manipulate the different components of one's bilingual proficiency would allow for a deliberate and "metaphorical" (Gumperz, 1982) use of material, depending

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on the circumstances, from the first or second language. Here, the writer's considerations of style and genre (discourse patterns related to "illocutionary force") would explicitly require lexical borrowing or switches between constituents to produce a desired effect or to signal how a passage of the text should be taken.

However, from a pedagogical standpoint, teachers should be attentive to bilingual children's concerns for keeping the codes separate in, say, writing, since it appears to be symptomatic of a developing ability to regulate the "executive processes" associated with language tasks whether in school or out. In this case, encouraging young bilingual writers to be more discriminating in their lexical and language code choices (e.g., selectively avoiding "unnecessary" or "inappropriate" switches) would be consistent with developing a reflective posture toward their own texts in general. Such considerations would be pertinent in situations of language revitalization where bilingual students' actual usage, reflecting general widespread borrowing, code switching, and mixing, is respected and valued. In any case, the control that the bilingual exercises over language processing, particularly those aspects of metalinguistic consciousness that pertain to reading comprehension and the production of texts, surely constitutes a core competency of what we could call biliteracy.

CONCLUSION

In principle, bilingualism would seem to make a significant contribution to metalinguistic awareness, which, under optimal conditions, underlies literacy development. On the one hand, a broad array of factors, apart from bilingualism, would also come into play, including preschool development of literacy-related discourse competence, quality of early instruction in language-dependent academic areas, and cognitive development related to the manipulation of abstract symbolic systems in general. On the other hand, further research needs to explore which aspects of bilingual development (grammatical vs. discourse competence, communicative/strategic proficiency, the various sociolinguistic determinants, issues of language dominance, balance, etc.) are directly related to metalinguistic awareness and literacy. Conceivably, some aspects of bilingualism by themselves would evidence little or no correlation with metalinguistic awareness and literacy, such as core grammatical competence (see the Results section for indices that did not correlate with measures of metalinguistic awareness).

The present findings suggest one avenue of inquiry. The developing ability to control processing on the level of lexical borrowings reflects a conscious awareness of forms and structures in two languages that, in the case of our subjects, continues to develop (as opposed to the more common trend in similar sociolinguistic contexts of language substitution). Among the older subjects, this greater control over interlinguistic lexical transfer probably reflects a general ability to avoid interferences of a clearly unbidden variety (e.g., at the phonological/orthographic level) and a broader access to higher level metatextual strategies. In writing, the opportunity to subject these reflective processes to active manipulation would seem to be greater – hence, the connection between metalinguistic awareness and biliteracy. Early exposure to a variety of discourse

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types in more than one language, especially when reflection is qualitatively expedited by the opportunity to be able to process texts (both as a reader and as a writer), should constitute a major component of these optimal conditions.

APPENDIX

THE LANGUAGE AWARENESS TEST (LAT)

18 items of Náhuatl origin

Xicohténcatl – elementary school in San Isidro
Huamantla, Amozoc, Xoxtla – nearby towns
Popocatépetl, Iztaccíuatl, Malinzti – regional volcanoes
Sempoalxochitl – marigold
Sitlali, Metzli, Yolotzin – common Mexican given names [Star, Moon, Little Heart]
Cuauhtemoc – street name after prominent Aztec leader
Tlaloc – Aztec god of rain, common metaphor for precipitation
Poxcatzi – nearby ravine
Comal, Metlapil – common household items
Tamal – popular food (familiar to English speakers in its plural form)
Temascal – traditional steam bath

7 items of Spanish origin

Resurrección, Santísima, Margaritas – local neighborhoods ("colonias" or "barrios")
Benito Juárez – elementary school in San Miguel Canoa
Independencia – street name in San Isidro
Gordita – popular food
Guadalupe – common Mexican given name

THE LANGUAGE ATTITUDE QUESTIONNAIRE

When you are speaking with your teacher, in which language do you speak? When you are speaking with your grandparents . . .
Which do you like better?
Which is easier for you when you are speaking with another boy or girl?
Let's say that you are having a conversation with a friend, and there are some other people there, and they can hear you. One time when this happened, were you ever embarrassed when they heard you speaking in Náhuatl? . . . in Spanish?
In some towns nearby here, before people spoke Náhuatl but today no longer, everyone has forgotten and now only speaks Spanish. Do you think that it is possible that this could happen here, in San Isidro, that people forget Náhuatl (or Mexicano) and only speak Spanish (or Castilla)?
Let's imagine that this actually could happen, that everyone only speaks Spanish because everyone forgot Náhuatl. How would you feel? What would happen?
When you are big and have children, and you are their mommy (or daddy), which language or languages will you teach them? Why?

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NOTES

1. For example, it would be incorrect to characterize the mutual influences between Spanish and Náhuatl as "reciprocal," at least in an unqualified sense. While Mexican Spanish has incorporated a large number of lexical items from the language of the former Aztec empire, cross-linguistic influences in this direction have been virtually restricted to the lexicon (mostly toponyms) of early attestation. Cross-linguistic influence in the other direction is complex and multifaceted; it is manifested in all the subsystems of the language and in all language use domains. In the region of the Tlaxcala highlands, where the present study was carried out, it reflects to a large degree the rapid displacement of the indigenous language in all localities except the community in which the subjects of the study reside.
2. Examples of miscue and cloze scoring include the following:

   Reading miscue:
   Muy contento, el joven empezó a *pensar* (text word: pasear) por esa gran ciudad para conocerla y aprender
   'Very happy (now), the young man began to *think* (text word: stroll) through that great city to get to know it and learn . . . '
   Syntax – 3 (complete)/Semantics – 1 (fragment at sentence level)

   Cloze response:
   nijki amo okxiko in teopixki, okilnamik "Niktitlanis kuajtlan una ompa mak kuakan in *tlacatl* (text work: yolcame) . . .
   'There the priest couldn't stand him either, he thought "I'll send him to the forest so that the *man* (text word: animals) eat(s) him up . . . '
   Syntax – 3 (complete)/Semantics – 2 (incompatible with full-text level context)

3. The contrast between the more contextualized language identification tasks and the LAT is relevant to the discussion on distinguishing between those domains of knowledge that should properly be considered metalinguistic and those that are purely linguistic. By some accounts, speech repairs by very young children fall under the category of metalinguistic ability, since operations are performed on language structures (see Bialystok, 1991; Gombert, 1992, for a survey of the different points of view). However, the criteria applied to the LAT is that such operations on language forms should reflect an awareness or focus on the form itself to some important degree, independent of meaning and context. Since the terms are not translated by either bilinguals or monolinguals when speaking in either language, the only "clue" that the respondent can reliably depend on is the linguistic pattern itself. Hypotheti-

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cally, this is one metalinguistic skill that would be specifically related to childhood bilingualism in this speech community. For example, a young, metalinguistically immature monolingual Spanish or Náhuatl speaker would be at a distinct disadvantage when presented with items such as *Popocatépetl*, *Guadalupe*, or *Sitlali* (see Appendix) because they form part of the present-day lexicon of both languages, with no distinctions regarding their respective referents.

Another possible interpretation of the older children's greater skill on this task is that, with increased exposure to these words and growth in general world knowledge, some of them may come to be associated with one language or the other (in this case, meaning and general pragmatic knowledge intervening in the judgment at hand).

4. Notably, older bilingual's consciousness regarding lexical/language code choice is reflected in a positive correlation between the LAT and the results from the vocabulary survey of the Entrevista Bilingüe ($r = .33$, $p < .05$). Subtracting the total number of Spanish lexical items produced from the corresponding Náhuatl total yielded a kind of "balance score." The average for each grade was a negative value; however, the fourth and sixth graders' averages tended to approach zero. Consistent with other trends, the tendency to favor Náhuatl terms seems to be related to higher levels of metalinguistic awareness. The older students' more developed ethnolinguistic consciousness and the continued growth of their bilingual lexicon conceivably would play a role as well.
5. Historically, the widespread use of Spanish conjunctions and prepositions in Náhuatl discourse dates back to the colonial era. Lockhart (1990) placed the development in his third stage of Spanish linguistic influence, beginning around 1640–1650, a period characterized by intensified contacts with Hispanic society. In contrast to earlier stages, in Stage III, elements of Spanish origin penetrated both the phonological and grammatical systems. Notably, the linguistic influences of Stage II (1540–1640), itself a period of "massive cultural input," were basically restricted to nouns.

   See also the discussion in Romaine (1989, pp. 23–66) on the "hierarchy of borrowing"; nouns were the category that most readily transfer, followed by verbs (loaned verbs having to be integrated morphologically into the receiving language); "function words" offered most resistance. In situations of outright language shift, the loss of certain grammatical constructions appears to be tied to the reduction of "formal stylistic options" (p. 45) and the erosion of their corresponding registers and contexts of use (also referred to as a tendency toward "monostylism").
6. From an information processing limited capacity perspective, see Geva (1992) on the role of conjunctions in L2 text comprehension.

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