

Chapter 6

Synthesis: Cross-Linguistic Relationships¹

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Introduction

Part II focuses on research that addresses relationships across languages in the development of literacy skills in children and adolescents who are learning to read and write English as a second language. Three general questions guided our review of these studies:

1. What is the relationship between language-minority children's first-language and second-language oral development in domains related to literacy? (Chapter 7)
2. What is the relationship between oral development in the first language and literacy development in the second language? (Chapter 8)
3. What is the relationship between literacy skills acquired in the first language and literacy skills acquired in the second language? (Chapter 9)

The scope of these questions is broadened in Chapter 8 to include the acquisition of English as a foreign language and in Chapter 9 to include not only English as a foreign language but societal languages that are not English. Whereas the studies in Chapters 7 and 9 focus on the effects within one modality, oral language Chapter 7 and literacy Chapter 9, the studies reviewed in Chapter 8 examine cross-modal effects—that is, the influence of first-language oral language skills on the acquisition of reading and writing in English as a second language.

Answers to the above questions are important for theoretical as well as practical reasons. Theoretically speaking, understanding the nature and extent of cross-language effects in the acquisition of literacy skills in English as a second language is critical for developing a comprehensive theory of second-language literacy development. In contrast to monolingual English-speaking students, language-minority students bring an additional set of resources or abilities and

¹ In D. August & D. Shanahan (Eds) (2006). *Developing Literacy in Second-Language Learners*, (pp. 153-174). Mahwah, NJ: Erlbaum and Washington, D.C.: Center for Applied Linguistics.

face an additional set of challenges when learning to read and write in English as a second language. Relevant to our purposes, they bring additional resources or abilities that are linked to their first language—both its oral and written forms. In a broader sense, they also often bring cultural knowledge and experiences linked to their first language and culture that can influence the development and use of reading and writing skills in English. See Part III for a discussion of research pertinent to these sociocultural issues. Studies on cross-language/modal effects are important in order to understand whether and in what ways the additional linguistic resources of language-minority students influence their literacy development in English and, more specifically, whether the course of acquisition of literacy in English as a second language is different from that of native-English-speaking children as a result of these effects.

Practically speaking, understanding the nature of these cross-language and cross-modal influences and the conditions that affect their expression is important for designing pedagogical interventions that facilitate the successful acquisition of reading and writing skills in English as a second language. Taking first-language influences into account does not necessarily mean teaching in the first language. Rather, it means, among other things, taking into account first-language influences when trying to understand the progress of language-minority students in school, when seeking to identify the sources of difficulty individual students may have in mastering English as a second language, and when devising educational curricula that are relevant and appropriate to language-minority students even if their education is entirely through the medium of English.

We begin this synthesis by presenting pertinent background information. We then describe the methodology of our review. Next, we summarize the findings of the literature on the three research questions addressed by our review. After identifying methodological issues, we recommend directions for future research.

Background

A number of theories related to language and literacy development underlie the research that was reviewed, and we have used these theoretical perspectives to discuss the results of these studies, where appropriate, in the review chapters that follow. Some of these theories are concerned exclusively with issues relevant to monolingual learners and some with issues relevant to second-language learners. The most salient theoretical frameworks emanating from investigations of second-language learning that figure in our discussion of cross-language issues include transfer, underlying cognitive abilities, target language influences, and interlanguage theories. We also refer to theories of transfer emanating from cognitive psychology (Bransford & Schwartz, 1998).

Transfer

The majority of studies reviewed in this chapter have investigated cross-language relationships with reference to one of two theoretical orientations: the contrastive analysis hypothesis (Lado, 1964) and the interdependence hypothesis (Cummins, 1978, 1979).ⁱ Contrastive analysis involves analyzing a learner's first and second languages to identify structural (i.e., grammatical) similarities and differences (see Lado, 1964, for an early of this theory of transfer). According to the contrastive analysis hypothesis, second-language errors will be made (interference) when learners encounter structures in the second language that differ from or are unfamiliar to them in their first language. This hypothesis has undergone considerable refinement since it was first introduced. Contemporary versions of this theory include the possibility that transfer from the first language can facilitate second-language learning when the two languages share features—for example, phonological forms or cognate vocabulary. In this case, second-language acquisition would be accelerated. Typological similarity is fundamental to the contrastive analysis hypothesis insofar as languages that are typologically similar (e.g., English and Spanish or German) share more structural features than languages that are typologically distant (e.g., English and Chinese or Korean).

Although contrastive analysis theory continues to focus on the comparison of structural features of languages, more recent work in this paradigm has identified nonstructural factors (i.e., not those not related to grammar) that influence (i.e., promote or inhibit) transfer. One such factor is psychotypology—learners' perception of the similarity between their first and second languages. It has been argued that transfer is more likely to occur if learners do not view the two languages as significantly different from each other (Kellerman, 1977). For example, the existence of cognates in two languages may not be a sufficient condition for transfer of cognate knowledge to occur; a belief on the part of the learner that the two languages are similar may be necessary (but probably not sufficient) as well. An additional factor that is thought to constrain transfer derives from the notion of markedness. Linguistically “unmarked” features are those that are universal or present in most of the world's languages, and these are thought to be more susceptible to transfer than typologically unusual features (Eckman, 1977, 1985; Hyltenstam, 1984). In most languages, for example, final consonants are devoiced; thus, the devoicing of final consonants is an unmarked feature. In English, final consonants may be voiced or voiceless. When a learner whose first language is unmarked with respect to this feature (German, for example) learns English, first-language transfer is predicted when the learner is pronouncing a final consonant in the second language that is voiced; thus, both *back* and *bag* would be pronounced [bæk]. It is not predicted, however, that the English speaker will voice final consonants in German, since this feature is more

marked, or unnatural, in the first language (English) but not in the second (German). More contemporary conceptualizations of the contrastive analysis hypothesis also acknowledge that transfer interacts with a host of additional factors, such as developmental processes and language/literacy proficiency (Ellis, 1994; Odlin, 1989).

The contrastive analysis hypothesis was originally formulated to explain the influence of the first language on the acquisition of subsystems of the second-language *grammar* (e.g., phonological, lexical, morphological, syntactic). Within the current discussion of cross-language relationships in the acquisition of literacy, the hypothesis is most relevant to studies investigating structural domains tied to literacy, such as phonology (in studies of spelling, for example) and lexical knowledge (in studies of cognate relationships, for example). However, the contrastive analysis hypothesis cannot account for the existence of cross-language relationships in literacy constructs that are more psychological in nature, such as metacognitive strategies that are used in the first and second languages.

In the second theoretical orientation, the interdependence hypothesis, Cummins (1981, 2000) has postulated that acquisition of first and second languages is developmentally interdependent; that is, development of the first language can influence and, in particular, facilitate development of the second. However, not all aspects of first-language development are postulated to be equally facilitative of second-language development. In this regard, Cummins distinguishes between language for academic and higher-order cognitive purposes and language for day-to-day interpersonal communication—commonly referred to as CALP (cognitive academic language proficiency) and BICS (basic interpersonal communicative skills), respectively (see Cummins, 2000, for a full explication of these constructs). These language constructs are characterized by the extent of contextual support during language use and the cognitive demands implicated during verbal communication. *Context-embedded communication*, such as talking about a movie with someone who has also seen it, is characteristic of day-to-day social language use. The meanings participants seek to convey are supported by shared context or common experiences, and the participants are able to negotiate meaning actively and directly. For *context-reduced communication*, such as discussing a movie with someone who has not seen it, careful use of language is required to provide information that will ensure clear communication because the participants cannot draw on immediate contextual cues or shared experiences. This form of communication is especially important in school.

The other continuum in Cummins' framework refers to the cognitive demands required of communication. *Cognitively undemanding communication* requires language skills that have been overlearned and, thus, call for little cognitive involvement on the part of the participants. An example is talking about a favorite

sport while watching it. *Cognitively demanding communication*, on the other hand, calls for language skills that have not been fully automatized. Examples are explication of the methods and results of a scientific experiment, and arguments for and against nuclear disarmament. It is language for higher order cognitive purposes, that is those that are context-reduced and cognitively-demanding (e.g., literacy-related language skills), that are developmentally interdependent. More specifically, Cummins (2000, p. 173) posits that “academic proficiency transfers across languages such that students who have developed literacy in their first language will tend to make stronger progress in acquiring literacy in their second language”, and this is hypothesized to be true because first and second language academic language skills are developmentally linked to common underlying proficiencies.

An additional hypothesis formulated by Cummins associated with the interdependence hypothesis is the threshold hypothesis; this hypothesis is also related to transfer, albeit indirectly. The threshold hypothesis implicates transfer insofar as there are positive linguistic effects that result from attaining sufficient levels of competence in both languages. Whatever the precise mechanism, this hypothesis raises important questions regarding cross-language relationships in second language literacy development; namely, are there relative levels of oral proficiency in the two languages of English-language learners that are necessary to facilitate cross-language relationships and if so what are these requisite levels.

It has proven difficult to define with any precision the constructs and developmental relationships proposed in Cummins’ hypotheses and, indeed, they have been the subject of considerable controversy (see, for example, Edelsky, Hudelson, Flores, Barkin, Altweger, et al., 1983; MacSwan & Rolstad, 2003). In particular, it is not entirely clear what Cummins means by his construct of *common underlying proficiency*. We take it to refer to procedural knowledge that underlies language use for academic or higher-order cognitive purposes and entails,; for example, the skills involved in defining words or in elaborating ideas verbally as is often required when language is used for academic purposes. We differentiate Cummins’ notion of common underlying proficiency from underlying cognitive abilities, which we discuss next. We also assume that it does not refer to structural features of the type that figure in the contrastive analysis framework. Despite some uncertainty about the constructs involved, this framework warrants consideration here because of its prevalence in current research on second-language literacy development, especially in research reviewed in Chapter 9.

Both of these theoretical frameworks assume what Bransford and Schwartz (1998, p. 68) call a “direct application” approach, which “characterizes transfer as the ability to directly apply one’s previous learning to a new setting or problem.”

This is evident in the emphasis on transfer of structures in the contrastive analysis hypothesis and in the emphasis on transfer of language proficiencies in the interdependence hypothesis of Cummins. Empirical tests of transfer using these theoretical frameworks have tended to examine transfer of specific knowledge or skills in isolation from other processes or strategies, what Bransford and Schwartz refer to as “sequestered problem solving.” In essence, current frameworks for studying cross-linguistic relationships in second-language learning have circumscribed the nature of transfer and methods used to study it in specific ways. We return later to Bransford and Schwartz’s “preparedness for future learning” proposal, which offers a broader framework, to illustrate that alternative frameworks are available for studying cross-linguistic transfer.

Throughout this review, the term *transfer* is used to describe cross-language relationships found in structures that belong exclusively to the linguistic domain (e.g., phonology), as well as skills that involve cognitive and language abilities (e.g., reading comprehension).

Target Language Influences

In contrast to theories based on notions of first-language transfer, some theories include the premise that second-language acquisition, including literacy, can be accounted for primarily by reference to features of the target language being learned (Dulay & Burt, 1974). Such influences result in developmental patterns, including “errors,” that resemble those made by first-language learners of the same language and thus are often referred to as “developmental” influences. Target language effects of this sort may be influenced by the nature of the target language itself. For example, English is considered to have a deep orthographic structure in that the relationship between the orthographic and phonological systems is complex and often obscure; take the sound “f” for example, it can be represented in English by each of the following graphemes: “f” as in “fur,” “ph” as in “phenomenon,” “gh” as in “enough.” In the case of English spelling, then, target language (English) influences are expected to emerge relatively late in development owing to the depth or opaqueness of some sound–letter correspondences. In this case, knowledge of first-language phonology might be expected to play a role in early stages of learning to spell, especially if the learner has a first language with a “shallow” orthographic system, such as Spanish.² However, even though knowing how to spell in Spanish may enable children to spell with relative ease certain phonemes that are common to Spanish and English, learning to spell phonemes in the target language (English) that have multiple spellings will result in developmental patterns or “errors” that reflect the

² Spanish has a shallow orthography in that there is a relatively consistent and clear relationship between letters and sounds.

challenges of the target language. For example, like their English-as-a-first-language counterparts, English-language learners will take longer to learn to spell inconsistent exemplars (for example, “ph” and “gh”). In other words, target language influences would be expected to emerge relatively early in development for certain spelling elements because the nature of the spelling system of the target language. Target language, or developmental, influences, in contrast to transfer, are not cross-linguistic in nature; but as was just illustrated, the emergence of developmental errors can be influenced by characteristics of the target language, and this effect, in turn, can indirectly influence the role of first-language transfer.

Interlanguage Theories

Interlanguage theories, developed by researchers working on second-language acquisition in adults, acknowledge the importance of both first- and second-language sources of influence on second-language development. Most notably, Selinker (1972) and Nemser (1971) argue that the mental representations or abstract system of rules of the target language constructed by second-language learners can best be described as an interlanguage, that is, “a grammatical system with its own internal organizing principles which may or may not be related to the [first and second languages]” (Towell & Hawkins, 1994, p. 23). Interlanguage theories move theories of second-language acquisition away from an exclusive reliance on first- or second-language influences and postulate that aspects of the internal organization and developmental trajectory of second-language acquisition may be unique.

Underlying Cognitive Abilities

Relationships between first- and second-language acquisition have also been attributed to *underlying cognitive abilities* (Geva & Ryan, 1993). Working memory, phonological short-term memory (e.g., pseudoword repetition), phonological awareness, and phonological recoding (e.g., RAN) are commonly identified in the research literature as such abilities. Phonological short-term memory is a good example of a common underlying ability that has been investigated in research on learning to read in a second language. Like other common underlying abilities, it is thought to be part of one’s general cognitive endowment and to be largely independent of specific language experiences or other experiential factors. This does not mean that experience does not influence the development of phonological short-term memory or other abilities in this category, but the abilities apply to the acquisition of any language. These underlying abilities are thought to account for individual differences in the rate and success of language learning for a first, second, or any other language.

Phonological awareness, although thought to influence the acquisition of reading in any language, is probably influenced in subtle ways by one's early language and literacy experiences. Nevertheless, awareness that language comprises sounds and that sounds have different structural and functional properties is at the core of phonological awareness, and individual differences in such awareness account for differences in learners' success in literacy in the first or second language. The aspects of phonological awareness that are language specific account for relatively little cross-language variance.

It is important to distinguish working memory and phonological processing from Cummins' notion of common underlying proficiency. Cummins' notion is clearly language-dependent and developmental in nature. In contrast, underlying cognitive abilities are thought to be fundamentally cognitive and nonlinguistic in nature and are part of one's innate endowment—they are not learned. More specifically, Cummins' notion of language for academic purposes is clearly an acquired proficiency that is intimately linked to language experience, in contrast with phonological processing and working memory.

Moderator Variables

Finally, cross-language and cross-modal influences on the development of literacy in a second language can be moderated by a broad range of variables, as was noted earlier in the case of transfer. Moderator variables include such factors as level of proficiency in the first and second languages (see Cummins' threshold hypothesis), the extent to which and the ways in which the first language is used in the home, socioeconomic and generational status, instruction, and even personality. The influence of moderator variables is discussed in Chapters 7 to 9, as appropriate, while the influence of moderator variables related to sociocultural factors is discussed in detail in Chapters 10 to 12, and instruction is discussed in Chapters 13 to 18.

Methodology of the Review

Detailed analyses and summaries of findings for the three questions identified at the outset of this chapter are presented in Chapters 7 to 9. The review of research was conducted as described in the introduction to this report. The findings are summarized with respect to language learning outcomes that are relevant to the main question addressed in each chapter. For example, in Chapter 7 (the link between first- and second-language oral proficiency), the results are reviewed in terms of working memory, phonological processes, and oral language abilities (i.e., phonology, vocabulary, grammar and discourse); see Chapter 3 for definitions of these constructs. These variables are adjusted in Chapters 8 and 9 to

better reflect the literacy outcomes addressed in the research reviewed in those chapters, and, moreover, not all domains are discussed for each question. Word-level outcomes are described first and are followed by descriptions of text-level outcomes. The findings are organized according to grade-level categories—elementary, middle, and high school—when possible. This is a narrative review of evidence. Appendix 6-A describes why particular research studies that tested the same hypothesis were not subjected to quantitative synthesis techniques.

Many of the studies reviewed in these chapters used correlational designs to examine the links between first-language oral and literacy skills and reading/writing skills in English. A number of studies used between-group designs, in which English-language learners are divided into high- and low-performing groups. In some cases the groups consist of English-language learners on the one hand, and monolingual English-speakers on the other. Students in each group are compared on indices of oral language proficiency and literacy. The logic of this design is analogous to that of a classic experimental design in which one seeks to determine whether between-group differences on one variable (e.g., monolingual–bilingual) are associated with comparable differences on another variable of interest (e.g., written-word recognition). Failure to find comparable differences on both variables suggests the lack of a relationship between the variables in question, whereas finding comparable differences on both variables suggests a link. However, although these studies can suggest links between the variables of interest in this chapter and thus have been retained for review, the evidence they provide is indirect only.

The performance of these groups is then compared with respect to indices of first-language oral proficiency or literacy, such as first-language vocabulary knowledge. If learners who are good English readers also have relatively good first-language vocabulary skills whereas the poor readers have relatively poor first-language vocabulary skills, it can be inferred that the difference in English reading scores is related to differences in first-language vocabulary knowledge. Failure to find differences on vocabulary between the two reading groups would suggest a lack of relationship between first-language vocabulary and English reading. These studies can provide descriptive evidence that the variables of interest are related to one another, but do not provide evidence of causal connections. That is, it is important to emphasize that studies of this type are also correlational in nature and thus provide only descriptive evidence of the associations among the variables of interest.

Summary of Empirical Findings

While the studies reviewed for Part II vary in many important respects—including their research designs and the language and literacy constructs assessed,

they all sought to understand how first- and second-language and literacy development may be interrelated. As discussed above, transfer theory is one of the most powerful and most frequently cited frameworks used to discuss and examine literacy development of English-language learners. The studies reviewed here provide ample evidence for transfer with regard to specific linguistic structure/properties and psycholinguistic processes, although the evidence is not consistently robust in all cases and varies as a function of the construct under study (for example, comparing phonological awareness with syntactic knowledge). As noted earlier, however, the empirical evidence for transfer uncovered by extant research is probably circumscribed by the researchers' particular conceptualizations of transfer. Research carried out within contrastive analysis and interdependence theories indicates that certain aspects of second-language oral proficiency and literacy are related in some important ways to performance on similar (or identical) constructs in the first language. There is also evidence for cross-modality influences, although cross-modality transfer has not been observed across the board. For example, first-language vocabulary does not appear to predict second-language reading comprehension.

Despite current evidence for transfer and its strong appeal, a cross-language framework, especially one that focuses on transfer as the primary influence, is not sufficient for understanding the full complexity of second-language literacy development among the diverse English-language learners who are being schooled in English as a second language. As discussed in a previous section, transfer is not the sole source of influence in second-language oral proficiency and literacy development. Common underlying abilities (e.g., working memory) also play a significant role in second-language development, as they do in first-language development; certain error types can be understood in terms of typological differences between the first and second languages; and features of the target language mediate development, especially in advanced stages; and well-developed oral language and literacy skills in the first language can facilitate second-language literacy development to some extent.

Our review indicates that it may be time to move thinking about and research on second-language literacy development beyond simple frameworks that do not accommodate the complex processes that interact dynamically across grade levels as English-language learners acquire literacy in English as a second language. As an example, a conceptualization of transfer as “preparedness for future learning” might broaden the notion of transfer, as well as research paradigms for studying it, and thus expand our understanding of what constitutes cross-linguistic transfer in second-language learning. The concept of preparedness for future learning emanates from current theories of transfer (e.g., Bransford & Schwartz, 1998) that view the learner's use of knowledge from the first language as evidence of

resourcefulness; that is, the learner's ability to generalize knowledge and abilities in the first language to second language literacy tasks is seen as a type of cross-language bootstrapping. Viewed from this perspective, transfer could entail not only corresponding or analogous skills, but also meta-linguistic or meta-cognitive skills that emerge from competence in the first language. An example would be English-language learners who transfer comprehension monitoring skills from the first to the second language. discussion of the complex and interrelated factors that impinge on second-language literacy development is presented in Chapter 21.

The Relationship between Language-Minority Children's First- and Second-Language Oral Development in Domains Related to Literacy

The studies reviewed in Chapter 7 examine cross-language relationships in (1) working memory; (2) phonological processes; and (3) oral language, including phonology, vocabulary, grammar, and discourse-level skills. Definitions of working memory and of each type of phonological process are provided in Chapter 3.

With respect to working memory, there were only three studies, but all three provided statistically significant evidence for significant relationships between working memory in English language learners' first language and English. With respect to phonological processing, there was consistent evidence of significant cross-language effects for phonological awareness such that English-language learners with high levels of phonological awareness in the first language also had relatively high levels of phonological awareness when assessed in the second language. The evidence from studies of phonological recoding and phonological short-term memory, while suggesting that cross-language effects exist, was inconsistent. This inconsistency may be due to the very limited research in each of these domains. More specifically, there were two studies on phonological short-term memory and three on phonological recoding. Thus, additional research is needed to examine these domains further.

With respect to oral language, there was evidence of cross-language effects with respect to phonological development. More specifically, English-language learners were found to exhibit developmental patterns in the second language in speech discrimination, speech production, and intra-word segmentation that differed from those of native English speakers but reflected characteristics of the first language. In other words, differences between the first and second languages resulted in second language patterns that differed from target-language forms. In another study, first-language influences resulted in second-language patterns of phonological development that resembled those of children with speech impairment, underlining the importance of this line of research to ensure that ELLs are not inappropriately judged to be impaired based on what are normal

development patterns in their second language. In general, however, it is impossible to know at this time how robust these effects are because these studies varied considerably with respect to both the ages of the students and the specific language domains examined. Moreover, there are only one or two studies in each domain.

There was also evidence of first-language effects on second-language vocabulary development. Studies on the acquisition of English as a second language vocabulary revealed that cross-language lexical effects are most likely to occur in what might be regarded as higher-order vocabulary skills, such as interpretation of metaphors, paradigmatic associations, and quality of formal definitions. Studies showing that English-language learners are able to take advantage of cognate relationships also indicated cross-language effects. Clearly, cross-language cognate effects are relevant only when English-language learners have a first language that shares cognate vocabulary with English. It remains to be shown whether these cross-language lexical effects represent transfer of knowledge from one language to another or the influence of language-independent cognitive capacities that make some children better language learners—whether of the first or second language. It is also possible that both influences are at work. In fact, a number of the studies of lexical development suggest that correlations between first and second languages are due to such general language-independent influences—metalinguistic abilities that are reflected in quality of formal word definition and conceptual-attentional capacity.

Studies of the development of grammar and discourse-level skills in English among English-language learners are inconclusive with respect to cross-language effects because there is little overlap in focus among studies on grammar and there have been no studies on discourse-level skills.

The Relationship between Oral Development in the First Language and Literacy Development in the Second Language

A narrative summary of findings from studies of elementary, middle, and high school students indicates that measures of first-language oral proficiency (e.g., vocabulary tests, grammatical sensitivity tasks, teacher ratings) either do not correlate with English word reading skills or do not explain unique variance in English word reading skills. On the other hand, a consistent pattern emerged with regard to the relationship between phonological processing in the first language and word-level reading and spelling skills in English. Phonological skills developed in processing the first language have the potential to exert a strong positive impact on English word reading. In line with this conclusion, the review of studies of school-age children from different first-language backgrounds and educational settings (e.g., various heritage language programs in Canada,

Mexican-American children in bilingual programs in the United States, English-language learners residing in the United Kingdom who speak Urdu at home; Hebrew-speaking Israeli high school students learning English as a foreign language) suggests that different aspects of phonological processing skills measured in students' first language (e.g., rhyme detection; phonological awareness involving segmentation, blending, and matching; phonological memory; and rapid automatized naming) and working memory correlate significantly and consistently with word-level reading skills in English. The findings also suggest that second-language processing skills that are linked to literacy may be better developed than the parallel first-language skills, possibly as a result of exposure to systematic literacy instruction in the second language. There is some evidence, however, that the relationship may be conditioned by similarities and differences between the first language and English.

Studies of spelling errors that either used between-group designs or focused on spelling development suggest that students' spelling errors could be traced to differences between Spanish (the first language) and English (the target language) phonology, such as /b/–/v/ misspellings, the spelling of /d/ for /th/, and the simplification of final consonant clusters (e.g., *han* for *hand*). In contrast, studies of spelling that used correlational designs failed to find significant relationships between first-language oral proficiency and English spelling skills possibly because the first language oral proficiency measures used in the latter studies are less related to spelling than the measures used in the former studies

As for text-level aspects of literacy (i.e., reading comprehension and writing), global measures of oral language proficiency in the first language (such as self-ratings or measures of listening comprehension in the first language) do not appear to be related to the development of reading comprehension or writing skills in English. Although overall, first-language oral proficiency does not appear to constrain or enhance English-language learners' reading comprehension in English, first-language reading comprehension is directly related to second-language reading comprehension (see Chapter 9). There is also limited evidence that specific aspects of first-language competence, such as knowledge of first- and second-language cognates, are associated with the development of reading comprehension in English.

This relationship may be mediated by the association between first- and second-language phonological processing skills (see Chapter 7) and the role of first-language phonological processing in second-language word recognition skills (see Chapter 8). Cross-language effects are not invariant and may be influenced by typological, sociocultural, and instructional factors.ⁱⁱ

Finally, it is difficult to generalize from the available studies about the relationship between first-language oral proficiency and English writing skills in

English-language learners because the studies differ in many respects. Nevertheless, they provide suggestive evidence that cross-language/cross-modal effects on the development of second-language writing skills are more likely to occur when discrete rather than general aspects of first-language oral proficiency (e.g., range of vocabulary rather than overall proficiency) are examined.

The Role of Cross-linguistic Transfer in Second-Language Literacy Acquisition for Children Who Are Learning English as a Second or Foreign Language

The studies reviewed in this section examined cross-language influences of literacy knowledge, processes, and strategies in students who are learning a second language. These studies differ from those reviewed for the previous two questions in that they include only students who are literate in their first language, and they employ *written* measures of the constructs investigated. The general approach within these studies was to isolate specific components that underlie the reading process (vocabulary, word recognition, reading comprehension, spelling, and so on) and test the nature of their relationships across languages. Some studies were guided by the contrastive analysis hypothesis, but the majority of studies looked at the transfer of universal/conceptual proficiencies that underlie literacy. As a result of the review, it appears that the contrastive analysis hypothesis works with both structural factors (e.g., constructs of language distance and markedness) and nonstructural factors (e.g., perceived linguistic distance, first-language proficiency, and development) to account for transfer in the domains of spelling, vocabulary, and word recognition. Transfer of higher-order literacy skills (such as reading comprehension and strategy use), on the other hand, is explained more adequately within Cummins' interdependence hypothesis. These two theories appear to mark the boundaries between purely linguistic and conceptual knowledge.

The studies measuring word reading demonstrate cross-language relationships in word and pseudoword reading. These studies also suggest that this relationship holds across a wide range of ages, from beginning readers in early elementary school to advanced learners in high school; across normally developing and disabled readers; across language pairs that are structurally close and distant; and across varying levels of second-language proficiency.

At the same time, several studies provided evidence that the phonological processes underlying word recognition are influenced by the orthography of the first language and are thus language specific. In considering facilitation versus interference, the strong correlations found between first- and second-language word reading performance across studies show that students who are better at word reading in one language are also better at it in the other. This relationship

could be a result of factors specific to reading in the first and second languages, but there is some evidence of influence of nonlinguistic skills related to general cognition.

Studies of spelling point to differing influences of first-language phonological and orthographic knowledge at different levels of second-language proficiency; students who are at higher levels in the second language produce errors similar to those observed in first-language acquisition. This reflects within-language developmental pathways rather than cross-language processes. Most of the studies viewed the acquisition of second-language spelling as a stage in which reliance on the first language early in the process is facilitative, since many of the phoneme–grapheme mappings applied in both the first language and English. However, the small number of studies available does not allow for conclusive statements.

With respect to vocabulary, most studies show that various aspects of word knowledge appear to transfer across languages. Positive transfer of vocabulary knowledge was shown to occur in cognate recognition. These effects were mediated by developmental factors, proficiency level, and the actual or perceived typological distance between the languages. In the process of inferring meaning for unknown words, transfer may also be negative, as when meaning is erroneously assigned to words on the basis of influence of first-language syntax. Such cases of negative transfer are thought to be language dependent and may be resolved through exposure to the second language, but may persist even as students become more proficient in the target language.

For reading comprehension, which requires the ability to understand complex written language beyond the word level, most studies looked at older students (above grade 3). Reading comprehension ability in the first language was found to correlate significantly with reading comprehension in the second language under most conditions (typological distance, language status, direction of transfer, age of learner, and tasks). The evidence also suggests a facilitative effect, in that processes underlying reading comprehension, when developed in one language, are predictive of reading comprehension in the other (and no evidence of interference was found).

A similar relationship was found for reading strategies, again investigated primarily with older students. Most studies that addressed this component found that bilingual students who read strategically in one language also read strategically in their other language (subject to proficiency level and other influences). The effects tended to be facilitative, with no evidence of interference found (for example, in strategies related to accessing cognate knowledge). In general, strategic reading skills do not need to be relearned as second-language acquisition proceeds since they are not language specific.

For writing, most studies showed that aspects of writing skills that have been developed in one language can be accessed for writing in the other. The skills assessed included emergent skills associated with the writing process, but also skills related to higher-order processes, including discourse elements in beginning writers and sense of story structure in older elementary students.

As for the question of facilitation versus interference, as in other domains, skills associated with the writing process developed in one language appear to be available for application to the other and thus demonstrate facilitation.

Methodological Issues

The studies reviewed in Part II employed a variety of methodologies, the most frequent being error analyses, correlational/regression analyses, and between- and within-group comparisons. Despite these varied methodologies, all of the studies shared a common goal: to identify associations between features, skills, or levels of competence in learners' first and second languages. Our discussion of methodological issues pertaining to the studies revolves around this common goal and focuses on the logic of research designed to elucidate cross-language relationships.

Correlational techniques were used by many of the studies since, obviously, correlations can be used to identify associations between the first and second language in the same or related domains of language development. However, simple correlational analyses between single first- and second-language measures are limited in their ability to elucidate the precise nature of the association between first- and second-language and literacy development because they do not consider alternative theoretically plausible possibilities. For example, evidence for transfer of the type represented in Cummins' developmental interdependence theory often consists of significant positive correlations between academic skills in the first and second languages, such as reading comprehension. Although significant positive correlations between first- and second-language reading comprehension may be suggestive of transfer of reading skills, they are not sufficient since other factors may also be at work. Pursuing our reading comprehension example, a plausible alternative would be that individual differences in overall cognitive ability underlie, and may even explain, the significant correlation between first- and second-language reading comprehension insofar as English-language learners with superior levels of cognitive ability may also have superior first- and second-language reading skills. Alternatively, cognitive ability along with first-language reading ability may be at work. If research is to provide precise descriptions of first- and second-language relationships, multivariate analyses will be necessary. Alternative conceptualizations of transfer that also include multivariate approaches, such as

that proposed by Bransford and Schwartz (1998), will provide more comprehensive conceptualizations of transfer since they consider a broader range of influences in the transfer phenomenon.

Simple correlational techniques are further limited in that they can reveal only an association between the first and second language (or between oral and written language skills), not the precise causal nature of the relationship. The clearest evidence for the causal role of transfer from the first language to second-language development would come from intervention studies designed to promote acquisition of a particular subcomponent of literacy in the first language, with subsequent testing of the same component in the second language. For example, to establish that knowledge of sound-letter correspondencies in the L1 facilitates L2 spelling would require research that provides training of sound-grapheme correspondencies in the first language of an experimental group of ELLs and no such training for a control ELL group. Evidence from subsequent assessment of experimental and control group students' knowledge of sound-grapheme correspondence in the second language that the former outperformed the latter would constitute evidence for transfer. However, no such studies emerged from our search.

Many of the studies conducted within the contrastive analysis framework were based on analyses of how the first- and second-language systems of the learners differed with respect to particular features; analysis of student errors was then undertaken to determine the extent of influence of the first language. This was typically the case with studies of spelling, for example, in which second-language spelling errors could be explained on the basis of differences between first- and second-language phonology and orthography. Although such studies did not necessarily involve formal correlational analyses, they were intended to reveal associations between second-language errors and features of the first language. For example, when attempting to spell words such as *bump*, Spanish-speaking English-language learners might produce *bup*. This could be interpreted as negative transfer from Spanish since words in Spanish do not end in consonant clusters—arguably, *bup* is a simplification of the English form in accordance with Spanish phonological rules. However, such an interpretation would be premature since this particular transfer error is not distinguishable from developmental errors made by native-English-speaking learners. In fact, in initial spelling, children learning English as their first language are unable to spell preconsonantal nasals correctly, and in spelling a word such as *bump*, they may omit the *m*...

Moreover,, findings based on a sample of only second-language learners coming from a single first-language background do not allow one to attribute the presence of a first-language feature in the second language unambiguously to transfer from the first language since other explanations could account for the

same results. Stronger evidence for transfer would come from comparisons with the error patterns of native English speakers, if known, as well as from results for English-language learners with different language backgrounds—some speaking a first language that does not have the target feature and some speaking one that does (“double dissociations”). If both groups of students made the error predicted on the basis of a contrastive analysis, a source other than transfer, such as developmental factors, might be implicated.

Finally, conclusions of cross-language studies on second-language literacy acquisition can be misleading if they do not provide longitudinal results for learners across age/grade levels. In particular, studies that report significant associations between English-language learners’ first and second languages in specific domains at one point in development give the impression that these effects are either permanent or characteristic of learners at all ages. Longitudinal data are called for if we are to distinguish negative transfer from the first language that inhibits learning in the second in the long run from negative transfer that reflects a short-term strategy used by novice learners to bootstrap into the second language system. Indeed, the latter possibility enjoys some empirical support from evidence reported earlier that first-language effects on second-language development tended to occur more frequently in novice second-language learners and in the early stages of second-language learning in some domains. In any case, the implications of these alternative interpretations of transfer are theoretically and practically significant. Theoretically, evidence of short-term negative transfer would argue for the bootstrapping hypothesis, whereas evidence of long-term negative transfer would argue for fossilization; that is, acquisition of a target-deviant form that is a part of the learner’s stable language system. Practically speaking, short-term transfer would be cause for minimal concern; indeed, it could be taken as evidence for acquisition. In contrast, evidence of long-term negative transfer would be cause for educational concern.

Strong evidence of relationships and influences between English language learners’ first and second languages in second-language literacy development is provided by the studies reviewed here. At the same time, more complex research designs are called for if we are to better understand the precise nature of these relationships, the causal mechanisms they entail, and their long-term developmental impact on second-language learning. In particular, there is a need for more longitudinal intervention studies with multivariate designs that examine learners with different language backgrounds (including native English speakers) across grade levels and take into account the multiple factors that may influence relationships between first and second oral language proficiency and literacy .

Directions for Future Research

Reading Readiness

The foundations for literacy development are established during the preschool years, both at home and in some cases, at school. Research on the development of reading readiness skills in English-language learners during the pre-school years is sparse at present, particularly with respect to cross-language and cross-modal relationships. A variety of issues concerning reading readiness in English-language learners' first language and how this facilitates the acquisition of literacy in English as a second language require empirical investigation, including the types of readiness skills that develop in English-language learners in different home environments, factors that influence their development, differences in readiness development among English-language learners who speak typologically diverse languages, interventions that can promote their development in the home and the preschool, and, most importantly, how these factors influence the development of English literacy in school.

Despite the importance that has been attached to phonological awareness for early literacy development among researchers and policymakers alike, additional research is still needed to better understand cross-linguistic aspects of phonological awareness and, in particular, the specific phonological awareness skills in the first language that promote early second-language literacy development and under what circumstances such cross-linguistic facilitation is evident. In a related vein, we need research that examines the influence of phonological awareness in the first language on English second-language literacy development at different grade levels, including for those students who begin schooling in English in the primary grades and those who begin in upper elementary, middle, or high school. Research on phonological awareness training in the first language for English-language learners who are at risk for reading difficulty in English as a second language would also be beneficial.

Relationship between First-Language Literacy and Second-Language Literacy for Academic Achievement

Although the development of reading and writing skills is a goal in itself, reading and writing in school are intimately linked to academic development. Yet, cross-language relationships between reading and writing development in specific academic domains (e.g., science) have received scant empirical attention. More specifically, at present, we have virtually no empirical evidence whether specific first language reading and writing skills that are linked to particular academic domains, such as mathematics, science, and social studies, influence acquisition of the corresponding reading and writing skills in English as a second language;

how these relationships might change over grade levels; and how they are mitigated by typological similarities in discourse styles of the English-language learners first and second languages.

Writing

Research on the development of writing skills in English-language learners is extremely sparse, and research on cross-linguistic influences in the acquisition of writing skills by English language learners is even more sparse. Thus, much more research that focuses on the relationship between English language learners' first- and second-language skills in the context of learning to write for academic purposes in English is called for. This should entail studies that investigate the influence of first-language oral as well as first-language reading and writing skills on English second-language writing development. The small set of studies that examined the relationship between first-language oral proficiency and English writing serves to identify gaps in the extant research base, including studies on the potential role of specific aspects of first-language linguistic knowledge (e.g., cohesion, syntactic complexity, decontextualized oral language skills, range and type of vocabulary, familiarity with various discourse genres); typological similarities and differences between the target language, English, and different first languages; the development of writing skills across grade levels; and the impact of systematic and sustained practice in writing in the first language on second-language writing development.

The acquisition of proficient writing skills probably requires good spelling skills; decontextualized language skills that enable the writer to express abstract, complex ideas; the acquisition of meta-cognitive strategies, such as audience awareness; and familiarity with and opportunities to practice writing different text genres. Research that examines cross-linguistic aspects of all of these issues is needed if we are to advance our understanding of English second-language writing.

Other Groups of Second-Language Learners

Two characteristics of English-language learners are deserving of special attention: students with different first languages and sociocultural backgrounds and students at different grade levels. There is very little research on English-language learners whose first language is not Spanish—for example, students who speak Vietnamese, Hmong, Cantonese, and Korean, common languages among English-language learners in certain locations in the United States (Kindler, 2002). Research is especially needed that examines cross-linguistic relationships among component skills that underlie literacy in relation to typological similarity with and difference from English. There is also very little research at present on

middle school and high school English-language learners, both those who begin schooling in English at the middle or high school levels and those who have been in schools where English is the language of instruction since primary school and are continuing into middle and high school. Research on most aspects of cross-linguistic influences in the literacy development of middle and high school students is needed.

Similarly, research on cross-linguistic relationships in the literacy development of English-language learners with language delays or impairments is called for if we are to meet the learning needs of all language-minority students, especially in light of the rigorous accountability standards that have been mandated by the No Child Left Behind legislation.

Recommendations for Study Design and Methodology

Longitudinal, Multivariate Research Designs. The issues under research in this section are complex and dynamic—complex because there are multiple variables that influence literacy development, multiple components to literacy development (e.g., phonology, vocabulary, grammar), and alternative theoretical frameworks that have influenced the way in which research in the field has been operationalized; and dynamic because the causal relationships that underlie the development of reading and writing and their influence on academic achievement change as English-language learners progress through school. The most common research designs uncovered in our review were correlational and between-group designs. .

Greater use of longitudinal designs in the study of cross-linguistic relationships would lead to a clearer understanding of literacy development and its many determinants. In addition, the use of multi-level, longitudinal designs would allow for clearer explication of the student, teacher, family, school, and societal factors which influence students' literacy development, and the precise ways in which these factors operate and interact.

Intervention Studies. To advance our understanding of the role of cross-linguistic relationships in literacy development, research is needed that examines the transfer of literacy-related language subskills, as identified earlier, using intervention studies. In such studies, students would be randomized to either receive first language training or not. Subsequently, both groups would receive second language training in the task to which transfer was expected to occur. The first component of the test would be to show that the group that received first language training developed the first language skill to a higher level than the group that did not receive first language training. Next, to test for transfer, the group that received first language training would be examined to determine if they

learned the second language skill at a more rapid pace (i.e., acquired new knowledge in the second language more quickly), or otherwise outperformed the group that did not receive the training. Either of these outcomes would be considered evidence of transfer from the first to the second language because the students' acquisition of a second language skill was enhanced by their acquisition of a first language skill. Students' differential acquisition of the first language skill was a result of random assignment which would allow for a reasonably strong inference that transfer had taken place. To make the study stronger, the group that did not receive the first language training, could receive training in something that is not expected to enhance the first language skill that transfers to the second language, but instead enhances an unrelated first language skill that is not expected to transfer.

Such research not only would advance our understanding of cross-language relationships in the development of literacy skills in English as a second language, but also would provide critical information for the development of home- and school-based interventions.

Standardized Assessment Tools. Synthesizing and generalizing results from the extensive and varied research that has been conducted on cross-linguistic aspects of literacy development in English-language learners is complicated by measurement issues. In particular, at present, different tests are used to assess the same underlying construct. In some cases, a problem arises because different tasks are used to assess the same construct without ascertaining how the assessments relate to one another; for example, Abu-Rabia (1997) and Da Fontoura and Siegel (1995) assessed working memory by using a sentence completion task, while Gholamain and Geva (1999) used an "opposites task" (see Chapter 7 for details). In other cases, such as in studies of phonological awareness, complications arise because a construct may actually be composed of different components (such as phoneme deletion ability versus rhyme detection ability) and thus warrant the use of different tests, but only one test is used and the author generalizes to the construct as a whole; this is problematic in that there is insufficient research on the distinctiveness of each component and their developmental relationship to one another. More research on the validity of tests/tasks that are used to assess key constructs in this domain is called for. As well, standardization of test instruments used to assess important constructs that have been used in cross-linguistic literacy research (e.g., phonological awareness, working memory, oral language proficiency) would be useful so that it would be possible to compare across studies the cross-linguistic influences in literacy development for learner groups with different first languages (e.g., Spanish versus Chinese), at different ages/grades (5 to 17 years of age), and with different sociocultural backgrounds.

Careful Description of the Learner Group. Our understanding of literacy development in English-language learners could also be enhanced considerably if greater care were taken in the description of study samples. At present, descriptions of learner groups are often sketchy, leaving many unanswered questions about significant characteristics of the learners. To provide better and more detailed descriptions of student samples, researchers would need to agree on what characteristics to describe and on what standards to follow when reporting information about these characteristics—that is, what kind of information (and in what detail) is needed about the socioeconomic status, schooling opportunities, language skills, and language and literacy background of English-language learners at the time of testing.

New Conceptual Paradigms

Understanding of cross-linguistic influences in second-language literacy development could be enhanced if additional conceptualizations of transfer were explored. As noted previously, Bransford and Schwartz (1998) have argued that thinking about transfer should be broadened to include the notion of “preparedness for future learning. Bransford and Schwartz’s framework shifts attention away from a search for direct transfer of knowledge and skills to include the ability to learn new language and literacy skills by drawing on all of the learner’s resources.

In a similar vein, Riches and Genesee (in press) have argued that when it comes to literacy development, English-language learners are best conceptualized as having a reservoir of knowledge, skills, and abilities that serve second-language learning and use. Some of these will be the same skills and knowledge possessed by monolinguals, and others will be unique to bilinguals and encompass discrete language skills, related to, for example, phonology and grammar, as well as knowledge and experience acquired through the medium of the first language and first-language learning.

In studying transfer, then the relationship among a host of variables, some linked directly to language structures and strategies of the type emphasized by contrastive analysis and interdependence theories and others involving cognitive and other problem-solving skills of an entirely different nature from those that have been considered to date would be explored. Both of these conceptualizations would broaden our understanding of cross-linguistic effects in second-language learning and improve the way these effects are studied.

Appendix 6-A

Studies Excluded from Meta-analysis

Chapter 7: Cross-Linguistic Relationships in Working Memory, Phonological Processes, and Oral Language

L1-L2 working memory

Only three studies (Abu-Rabia, 1997; DaFontoura & Siegel, 1995; Gholamain & Geva, 1999) were identified.

L1-L2 phonological awareness

Of the eight identified studies, one examined English as a foreign language (Abu-Rabia, 1997),; in two studies age is partialled out in the correlations (Gottardo, 2002; Yan, Siegel, & Wade-Woolley, 2001), two studies use a between groups design that does not allow for directly examining the relationship between first and second language phonological awareness (Hsia, 1991; Liow & Poon, 1998); and in one study phonological processing is assessed in English only (Mumtaz & Humphreys, 2001).

L1-L2 RAN

Only three studies (Gottardo, 2002; Gottardo, Yan, Siegel, & Wade-Wooley, 2001; Gholamain & Geva, 1999) were identified.

L1-L2 phonological short-term memory

Only two studies (Gottardo, Yan, Siegel, & Wade-Wooley, 2001; Mumtaz & Humphreys, 2001) were identified.

L1-L2 phonology

Only four studies (Holm et al., 1999; Hsia, 1995; Kramer & Schell, 1982; Kramer et al., 1983) were identified.

L1-L2 oral vocabulary

Only three studies (Carlisle, Beeman, Davis, & Spharim, 1999; Johnson, 1989; Ordóñez, Carlo, Snow, & McLaughlin, 2002) were identified.

L1-L2 Grammar

Of the six identified studies, three (Shin & Milroy, 1999; Spada & Lightbown, 1999; Quinn, 2001) do not report correlations.

Chapter 8: First-Language Oral Proficiency and Second-Language Literacy

L1 oral proficiency and L2 word reading

Of the nine identified studies, in two studies age is partialled out in the correlations (Gholamain & Geva, 1999; Gottardo, Yan, Siegel, & Wade-Woolley, 2001); one studies English as a foreign language (Abu-Rabia, 1997); one study uses a between groups design that does not allow for directly examining the relationship between first language oral proficiency and second language word reading (Mumtaz & Humphreys, 2002) and; in one study there are no measures of first language proficiency but only of second language dialect pronunciation (Ahern, Dixon, Kimura, Okuna, & Gibson, 1980)

L1 oral proficiency and L2 spelling

Of the seven identified studies, one study examines students acquiring a foreign language (Abu-Rabia, 1997); in one study age is partialled out (Gottardo et al., 2001), and three studies use a between-group design that does not directly allow for studying the relationship between L1 oral proficiency and L2 literacy (Cronnell, 1985; Ferroli & Shanahan, 1993; Jackson, Holm, & Dodd, 1998).

L1 oral proficiency and L2 text-level skills

Of the six identified studies, one study does not report correlations (Buriel & Cardoza, 1988) and one study examines students acquiring a foreign language (Dufva & Voeten, 1999).

L1 oral proficiency and L2 writing

Only two studies were identified (Cronnell, 1985; Okamura-Bichard, 1985).

Chapter 9: First- and Second-Language Literacy

L1-L2 word recognition

Of the five identified studies, two examine students acquiring a foreign language (Abu-Rabia, 1997; Chitiri & Willows, 1997) and in one study (Gholamain & Geva, 1999) age is partialled out in the correlations.

L1-L2 reading comprehension

Of the eight studies identified studies, one presents information in a way that does not allow the computation of effect sizes that are comparable (Verhoeven, 1994); in one study correlations are not reported (Nagy, McClure, & Mir, 1997); and two study English as a foreign language (Lee & Schallert, 1997; Schoonen, Hulstijn, & Bossers, 1998).

L1-L2 spelling

Of the five identified studies, two study English as a foreign language (James & Klein 1994; Nathenson-Mejía, 1989); one is qualitative (Edelsky, 1982); two only provide measures of first language phonology (Fashola, Drum, Mayer, & Kang, 1996; Zutell & Allen, 1988); and in one study a first language spelling test is administered but no correlations reported (Ferroli & Shanahan, 1993).

L1-L2 vocabulary

Of the seven studies that measure the extent to which students recognize structural and semantic overlap in first- and second-language cognates, one study does not provide Spanish measures (García, 1991); two studies are qualitative (Garcia, 1998; Jimenez, Garcia, & Pearson, 1996); one study does not report correlations between L1 and L2 vocabulary (Hancin-Bhatt & Nagy, 1994); one study provides no first language measures (Saville-Troike, 1984); and one study examines English as a foreign language (James & Klein 1994).

Of the three studies that compare the nature of the vocabulary produced by students in their first and second languages on a number of indices of lexical sophistication and complexity, one study does not report correlations (Francis, 2000).

Only one study that examines the effect of first-language syntactic knowledge on the guesses students make about the meanings of new words encountered in the second language but does not report correlations (Nagy, McClure & Mir, 1997).

L1-L2 strategy use

Of the six identified studies, three of the studies are qualitative (Garcia 1998; Jimenez, Garcia, & Pearson, 1996; Langer, Bartolome, Vasquez, & Lucas, 1990) and one studies students acquire English as a foreign language (Schoonen et al., 1998).

L1-L2 writing

Only four studies are reported (Davis et al., 1999; Edelsky, 1982; Francis, 2000; Lanauze & Snow, 1989).

Footnotes Chapter 6

ⁱ In the case of the interdependence hypothesis, the authors explicitly state that they were testing Cummins' theories. Researchers investigating specific first-/second-language linguistic contrasts (such as spelling or cognate studies) based on analyses of two particular languages, on the other hand, did not explicitly situate their studies within the framework of the contrastive analysis hypothesis.

ⁱⁱ For a more extensive discussion of sociocultural factors, see Chapters 11 and 12; for further discussion of instructional issues, see Chapters 15 and 16.