Bilingual Episodic Memory
An Introduction

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Abstract

Our current models of bilingual memory are essentially accounts of semantic memory whose goal is to explain bilingual lexical access to underlying imagistic and conceptual referents. While this research has included episodic memory, it has focused largely on recall for words, phrases, and sentences in the service of understanding the structure of semantic memory. Building on the four papers in this special issue, this article focuses on larger units of episodic memory (from quotidian events with simple narrative form to complex autobiographical memories) in service of developing a model of bilingual episodic memory. This requires integrating theory and research on how culture-specific narrative traditions inform encoding and retrieval with theory and research on the relation between (monolingual) semantic and episodic memory (Schank, 1982; Schank & Abelson, 1995; Tulving, 2002). Then, taking a cue from memory-based text processing studies in psycholinguistics (McKoon & Ratcliff, 1998), we suggest that as language forms surface in the progressive retrieval of features of an event, they trigger further forms within the same language serving to guide a within-language/within-culture retrieval.

Bilingual Episodic Memory: An Introduction

Bilingualism is tantalizing for behavioral and social scientists because of the close relation between human experience and the language we use to negotiate, interpret, and direct it. Anecdotally and scientifically we cannot help but ask: Does speaking multiple languages give one multiple "takes" on the world? And as our experiences of life flow through the present into the personal past, we wonder if they are uniquely marked by the linguistic and cultural frames in which they were set. The memory researcher sees in these questions the opportunity to investigate a particular kind of memory: *episodic memory*. It is distinguished from *semantic memory*, which is memory for facts about the world. We can know that $2 + 2 = 4$, that Islam and Christianity are both religions "of the book," that Aunt Ellen married Uncle Joe in 1954, and a host of other facts about the world without remembering how or where we learned those things. These are semantic memories. In fact, as we shall see below, we have some very good theories about bilingual semantic memory. Episodic memory, on the other hand, is memory-for-events-that-we-have-personally-experienced. They can be quite simple (e.g. "I remember the alarm clock this morning") and they can be amazingly complex (e.g. "I remember trying to get my sister to forgive my brother for not showing up at her wedding"). Oddly enough, while bilingualism might color such memories in intriguing ways, we have little in the way of theories about it. In presenting the papers in this special issue, each addressing bilingual memory in its own way, we take the opportunity to outline such a theory. The paper is divided into three sections. The first describes the point of departure for our theorizing by providing a brief review of two current models of bilingual (semantic) memory and a presentation of our current understanding of episodic memory in general. A second section explores two sets of questions: (a) how are semantic and episodic memory related, and how might bilingualism shed some light on this relation? and (b) what role does language play in episodic memory? In the third section, we offer a rudimentary model of bilingual episodic memory.

Current Models of Bilingual Memory

Our current models of bilingual memory are essentially accounts of lexical access to semantic memory. This is the project of "mapping form to meaning" (Kroll & de Groot, 1997). Two models currently predominate in the field: the Hierarchical Model and Conceptual Features Model, with more recent attempts to integrate the two (Kroll & Tokowicz, 2001). The Hierarchical Model posits three linked components: a first language lexicon, a second language lexicon, and a conceptual store containing semantic referents (Dufour & Kroll, 1995; Kroll & Sholl, 1992; Kroll & Stewart, 1994; Sholl, Sankaranarayanan, & Kroll, 1995). The linkages between these components vary in strength. Links between words in the first language lexicon and their meanings in the underlying conceptual store would be quite strong for all bilinguals (excepting those experiencing first language attrition). For novice bilinguals, links running from the second language lexicon to the underlying conceptual store would be either non-existent or relatively weak (but see Altarriba & Mathis, 1997), but links running from the second language lexicon to the first language lexicon would be quite strong. Thus, on hearing a word in the second language, the bilingual would translate it into the first language lexicon where the link to the underlying meaning in the conceptual store would be activated to produce the meaning. Fluent bilinguals would have strong and direct links between the second language lexicon and meanings in the conceptual store and so would more rarely translate to the first language to activate meanings. The Conceptual Features account conceptualizes 'words' in either language as activating assemblies of referential nodes, again in an essentially non-linguistic conceptual network (De Groot, 1992a,

1992b, 1993). Where words have highly prototypical, concrete referents (e.g. 'chair,' 'dog') translation equivalents in both languages activate the same set of underlying semantic nodes. Where words have more conceptual and abstract referents (e.g. 'poverty,' 'intelligence'), translation equivalents activate different but overlapping sets of semantic nodes (but see Malt & Sloman, in press). Both theories make powerful predictions about lexical comprehension and production as well as about stages of development in second language acquisition (Kroll & Tokowicz, 2001).

Episodic Memory in General

The explanatory potential of these models is limited when the subject is memory for more complex events. *Episodic memory* (Tulving, 1972, 1983) is usually characterized by two defining features. First of all, episodic memories include some spatio-temporal information associated with their occurrence. Events happen in particular places at particular times. Second, the experience of recall is uniquely marked by a sense of reliving: the rememberer is mentally conscious again of a previous mental experience. Tulving referred to this as 'mental time travel' in which the individual is mentally present again in an experience of the personal past. This autonoetic consciousness is marked by "remembering" as opposed to noetic consciousness which is marked by "knowing" (Tulving, 1985). Thus, I "know" that the Chicago Symphony Orchestra performed Berlioz's Requiem last Tuesday evening. It is a fact of which I am aware but about which I have no personal experience (I wasn't there). I "remember" the Chicago Symphony Orchestra performing Berlioz' Requiem last night (I was there) and my memory of it is characterized by my ability to relive moments of the experience.

The range of memory phenomena to which episodic memory is applied is rather broad – from single words to autobiographical memories. Thus, at one end of the continuum, the items in memory might be words-learned-on-a-list during the study phase of a laboratory experiment. At test, the subject might be asked to recall as many words as he or she can (free recall) or be presented with a second list and asked if any words on the second list were also presented on the first (recognition). This is an exercise of episodic memory because the new learning being tested is not the meanings of the words (these are already present in semantic memory) but rather the occurrence of the words on the list seen during the study phase of the experiment. At the other extreme of the episodic continuum are complex autobiographical memories for personal events. Consider, for example, a man's remembering how he told his psychoanalyst yesterday about getting lost on the way to his wedding two years ago and finding himself outside the house of a former girlfriend. He also remembers that he decided not to tell his psychoanalyst at that moment that he and his former girlfriend had met twice in the month before that marriage. By definition, this too is an episodic memory because it includes spatio-temporal information and because the rememberer has a more or less vivid sense of "having been there" in the past. Nevertheless, in comparison to the list-learning experiment, it is a stunningly complex memory for multiple embedded episodes: one memory ("telling the psychoanalyst") encompasses another embedded memory ("getting lost on the way to the wedding") encompassing yet another remembered episode ("meeting the former girlfriend") which at the time of the psychoanalytic session occurred internally but was not reported (the man remembers deciding "not to tell" this part of the memory). Clearly, even within episodic memory there are considerable differences among "items" in memory.

In this regard, Conway (2002) argues for a distinction between episodic memory and autobiographical memory that addresses something of this complexity. In his revisionist account, episodic memory is a "system that contains experience-near, highly specific, sensory-perceptual details of recent experiences – experiences that lasted for comparatively short periods of time (minutes and hours)" (p. 54). But these are short-lived memories: "Its temporal range may be defined by the individual's sleep/wake cycle…" (p. 63). Further, because storage is not marked by an elaborated conceptual structure, retrieval is highly dependent on cue-specificity (a very close match between information in the cue and information in the memory). Baddeley (2002) has recently expanded the notion of working memory to include an "episodic buffer" that links visuospatial and phonological information temporarily held in working memory with information in long term memory through which conscious retrieval is exercised. Clearly, this would cover the requirements of the exercise of free recall for words to which one had been exposed on a list several minutes ago. At the other end of the episodic continuum is Conway's articulation of autobiographical memory as the retention of sensory-perceptual episodic memories organized in hierarchical levels according to the goals of the working self and lasting for months and years (Conway, 2002; Conway & Pleydell-Pearce, 2000). Most of what we consider "our memories" are of this latter sort. They have the multiply embedded nature of the example given above of the "man's recalling today at noon his telling his psychoanalyst yesterday about…"

Given these two forms of memory – semantic and episodic – and corresponding research traditions, and given the elaborate theories of bilingual semantic memory, how might we throw a bridge from one to the other? Two possibilities suggest themselves. On the one hand, in a general sense, we might investigate how semantic and episodic memory are interrelated and function in parallel. On the other hand, in a more particular sense, we might ask what role language plays in episodic retrieval?

How are semantic and episodic memory related?

How are semantic and episodic memory related? One view of the relationship suggests that *all* information is initially encoded into episodic memory and later deconstructed into component 'facts' and encoded into semantic memory. This is more or less the view of Schank in *Dynamic Memory* (1982) and for shorthand we will refer to it thus. Basically, the notion is that as we move through the day we temporarily encode into primary memory the experiences we have as individual episodes. If an experience is not remarkable in any way nor provides us with new information about the world, it decays and disappears ("I forget it"). If the experience provides us with some new information about the world, we encode that new information into semantic memory as another 'fact' among many. If the experience is unique in some way and we "tell" it to someone (or indeed ourselves), then, by giving it narrative ('story') form we encode it into long term memory (Schank & Abelson, 1995). Note that in this view, any new information enters the cognitive system first as an episode. Information in semantic memory is essentially the distillate of episodic memories.

Tulving has recently taken issue with this view and proposed that the opposite is in fact the case: information enters semantic memory first and may be later transferred to episodic memory (Tulving, 2002, but see Hodges & Graham, 2002). He calls this the *SPI* model. Information is encoded **S**erially, stored in **P**arallel, and retrieved **I**ndependently. The model comprises three hierarchically related modules. At the lowest level, the Perceptual Representation System (PRS) encodes sensory information in an associational network. At the next level, Semantic Memory encodes facts, in associational and hierarchical networks, and finally Episodic Memory stores memories-of-events related to

the self. Information enters the system *serially* starting with the PRS and, if appropriate, may be stored as a fact in semantic memory, and, again where appropriate as an event in episodic memory. As information is spread across the modules it is stored in *parallel,* but may be retrieved *independently* from any one of the modules. Thus, in contradistinction to Schank's view, any information that resides in episodic memory (as memory for an event) was first encoded into semantic memory.

How language in general, or bilingualism in particular, might relate to either of these models has not been worked out in much detail. In one sense, the models of bilingual memory discussed above (Revised Hierarchy and Conceptual Features) could be easily coordinated with either the Schank or Tulving models by assuming that all information in the semantic or episodic systems is essentially non-linguistic but rendered so by a labeling process. Thus, semantic and episodic modules would be both contained in the non-linguistic 'conceptual store' (Revised Hierarchy Model) or rendered as networked representational nodes, again independent of, but linked to, the bilingual's lexicons (Conceptual Features). This way of coordinating the bilingual models and memory-systems models is problematic, however, because it is arguable that seemingly non-linguistic concepts may well be already shaped by the lexical and syntactic properties of language (Pavlenko, 1999 and this issue). That is, the conceptual store may itself be, at least partially, linguistic.

In another sense, the boundaries between the episodic and semantic systems may be far more porous in retrieval than either the Schank or Tulving models suggest. Altarriba has examined emotion words in English (Altarriba, Bauer, & Benvenuto, 1999) and in Spanish (this issue) in terms of their concreteness, imageability, and context-availability and found patterned differences across the two languages. In particular, based on word ratings, she finds that Spanish-speakers rate emotion words higher on context availability than English speakers rate emotion words in English. (Context-availability refers to the ease with which an individual can generate an imagined or remembered context to a word). This suggests that the representation of emotion words may be different for Spanish speakers than it is for English speakers. 'Contexts' suggest episodes, and one wonders to what extent the retrieval of a word with high context-availability might involve the simultaneous retrieval of information from both semantic and episodic memory. Such simultaneous retrieval would violate the assumption in Tulving's SPI model that retrieval from the PRS, semantic, and episodic modules is independent. Altarriba does not address these implications, but by examining specifically bilingual performance on semantic and episodic retrieval tasks, her work opens up larger insights into the relation between these types of memory.

In a theoretical sense, these two formulations (Schank vs. Tulving) also invoke the larger discussion of the 'bicultural in the bilingual' (Agar, 1991). 'Episodes' and 'context' imply some narrative structure, no matter how simple, and narrative traditions are culturally shaped. Narrative traditions (a part of language) direct our perception of reality and the encoding of memories as "top-down" constraints on cognitive processing. This is suggested by the cross-linguistic work of Berman and Slobin (1994) who gathered evidence on the development of narrative abilities by having children of various ages tell a story to a word-less picture book. Child speakers of different languages were guided in their selection of detail, contextualization of action, and sequencing of events by the syntactic and narrative affordances of the languages they spoke. Slobin is careful to point

out that these effects are seen at the moment of verbal report and terms the process 'thinking for speaking' (Slobin, 1996). That is, the narrative traditions that individuals inherit from their languages and cultures may not directly *determine* their perception of reality (a strong form of Whorfian relativism). Nevertheless, while it is certainly true that "how the story is told" may be different from "how it happened," it is also true that members of cultural communities learn from childhood what stories are worth telling and how to tell them (for an up-to-date account see McCabe & Bliss, 2003). It is but a small step to suggest that narrative conventions *shape* perception (a kind of central tendency) because members of cultural communities learn in common what to look for in the world (a weaker form of linguistic relativity). Again, these are 'top-down' constraints. They are found in memory as schemata or scripts, and they exercise an organizational effect on 'words' in the lexicon, 'facts' in semantic memory, and 'events' in episodic memory.

Returning to the question of the relation between semantic memory and episodic memory, these considerations would seem to suggest that narrative constraints act to "configure" the entire system (and not only episodic memory). Our current understandings of the structure of memory would place such schemata or scripts in semantic memory, but it is evident that such scripts would have pervasive effects across the components of either Schank's or Tulving's models. Thus, whether we take in reality in 'narrative chunks' (Schank) or via a 'perceptual representational system' (Tulving), we filter the information through culturally shaped scripts. This issue is sharpened considerably by bicultural/bilingual experience since presumably the bilingual would have more than one set of such narrative constraints. Two of the papers in this volume speak to the influence of narrative framing (Pavlenko) and cultural scripts (Van Hell), but more empirical work directly addressing the organization of memory is needed in order to integrate these insights into memory models. It is our hope that the work presented here will stimulate such efforts.

What role does language play in episodic memory?

Leaving aside for the moment the relation between semantic and episodic memory, we ask how language might play a role in episodic retrieval itself. A first step in addressing this question is delimiting the object of enquiry. That is, just what are the features of the items in episodic memory? This is an important issue because, in one sense, there is a strong tradition of research on bilingualism and episodic memory, but this research has focused on atomistic 'items' such as words or, at best, sentences. Laboratory experiments have used priming, recognition, free recall, lexical decision, word completion, and a host of other paradigms to test for language effects on recall for words and sentences (for a review, see Francis, 1999). This work has been immensely fruitful, but its aim has been determining whether the semantic referents (images and concepts) linked to words in the bilinguals' lexicons are stored separately, in common, or in some mixed fashion. Thus, where episodic memory has been implicated in research on bilingual memory, it has largely served to illuminate an essentially semantic memory system. On the other hand, a number of studies in recent years have addressed autobiographical memory among bilinguals (Larsen et al., 2002; Marian & Neisser, 2000; Schrauf & Rubin, 1998, 2000; Schrauf, 2000). This work finds in general that retrieval of memories is language-specific and that it matches the language spoken at the time of the encoding of the event. Autobiographical memory is certainly episodic memory, but this work needs to be integrated into a larger theory of episodic memory in general (Schrauf & Rubin, in press). Thus, we need models that do justice to memory for more complex, real-world events – to the felt-experience of bilingual worlds.

The papers presented in this volume provide a representative sampling of the

continuum of types of episodic memory. Pavlenko examines participants' memories for a movie they have been shown. Van Hell gives students the beginnings of a story about Carnival or Ramadan and asks them to remember, retell, and finish the story. Schrauf asks college students to recall autobiographical memories from their own lives. Minimally, of course, such memories possess the defining features of episodic memory: they include spatiotemporal information about the occurrence of the event and they involve autonoetic consciousness. What gives these memories a winning ecological validity is that they are narratively shaped: they possess characters, settings, and plots. 'Characters' invoke the representation of other people's intentions and beliefs (and the corresponding folk psychology that we use to ascertain, evaluate, and manage other people's intentions and beliefs – as well as our own). A 'setting' must be represented in memory: a 'where' and a 'when' are necessary. 'Plots' imply story-like coherence: movement through the sequence of events (no matter how simple) is meaningful in some way. And, finally, the original events unfolded over time (they are durative), and the memories, at least in the telling, unfold again over time.

Not all memories are triggered by or even necessarily include language (think of Proust's *petite madeleine*!), but very many do. How does language function in the retrieval and formation of *these* kinds of memories? For the sake of simplicity, we might start by considering the monolingual case. Here, theories that map lexical form to underlying images and concepts stand us in good stead, since some details in a remembered event may be lexically labeled during retrieval – perhaps in private inner speech, but certainly in any social "telling" of the memory. Thus, for example, the man talking to his psychoanalyst might distinctly remember driving down 'Mulberry Street' just before his wedding, and he may remember thinking "what am I doing?" as he drove down Mulberry Street. And if some conversation figures in the original event, it may be recalled linguistically as reported speech. (The man remembers "telling his psychoanalyst"). In this sense, language is just one more form of information – along with visual detail and recall of the setting, and possibly noises or smells remembered – to be integrated into the ongoing recall of the sequence of actions in the event.

It is possible, however, that beyond representing specific pieces of information as *contents* of memory, language plays a much more active role in the on-line *processing* of a memory. Thus, linguistic elements themselves (e.g. morphosyntactic and lexical forms) might serve as a series of triggers for the recall of successive details concerning settings, objects, characters, plots, etc. A suggestive parallel is found in psycholinguistic models of memory-based text-processing (Keenan & Jennings, 1995; Kintsch, 1988; McKoon & Ratcliff, 1992a; McKoon & Ratcliff, 1992b; Ratcliff & McKoon, 1994). Here, the words, concepts, and propositions of texts trigger information in memory, and this information is coordinated into coherent interpretations over the milliseconds and seconds of text comprehension. But words and combinations of words can activate multiple meanings in memory. This raises the question: what constrains the retrieval of information so that only what is textually relevant is recalled? And the answer is *context*. Context crucially conditions which meanings come to the fore. Contextual factors here include other syntactic, lexical, and semantic information in the text itself as well as information previously activated in earlier processing of the same text.

Thus, in text processing, the retrieval of information from memory is both activated and constrained by language. If we consider the comprehension of specifically

narrative texts, then we are not too distant from how language might play a similar role in the recall of narratively structured episodic memory. As information is recalled, at both conscious and unconscious levels, it activates further information. Some of that information is linguistic (words, phrases, sentences) and as it is recalled it activates further information. Furthermore, as noted above, some of that information involves the culturally shaped narrative traditions discussed above. Presumably, these too would have powerful effects in triggering information in a kind of cascade that issues in a final, full-blown episodic memory

A Model of Bilingual Episodic Memory

Bilingualism complicates this simple picture, however, and in doing so forces a re-examination of the language/memory relation. On the one hand, of course, there is the possibility of mental codeswitching during retrieval. That is, for the bilingual, the relevant morphosyntactic and lexical forms may well trigger associations across languages (see Schrauf, this issue). This is considerably more complex, however, than simply allowing that a word in one language might trigger its translation equivalent in the other language and then bring to mind new associations. What would keep the system from switching willy-nilly from language to language? The analogy to memory-based text processing would suggest that the lexicon proper to a language and its specific syntactic structure *guides* (constrains, conditions) successive acts of retrieval. As retrieval is initiated in one particular language, the linguistic forms of that language that emerge during retrieval would trigger additional linguistic forms (and associated semantic referents) within that language. Any language-specific linguistic component would have this potential role. For example, the phonological form of a word may act as a language-specific cue for other phonological features. Thus, in thinking of a conversation in Spanish, a bilingual Puerto Rican Spanish-English speaker might activate the characteristic velar *r* in Spanish which would activate other phonological forms in Spanish (and not English). This would be true as well for morphosyntactic forms. One of the Spanish-English speaking participants in Schrauf's study in this issue reported that in the process of retrieving a particular memory, she found that a morphological form, the Spanish diminutive *–ito* in the cue word *solito* (alone), triggered semantic information ("It made me think of my little nephews and stuff"). (When attached to adjectival forms, *-ito* suggests either small size or endearment). A more obvious within-language activation of information would be lexical forms activating related lexical forms. Documenting the immediate associations people make to particular words is one way of exploring this dynamic (Altarriba et al., 1999).

In the case of lexical and syntactic forms, a further argument can be made that the underlying semantic referents are themselves language-specific in certain ways. In earlier work, Pavlenko (1999) has argued that concepts themselves, far from being non-linguistic 'pure' thought forms, may be lexicalized and/or grammaticized. If this is the case, then it is possible that morphosyntactic and lexical forms (which are language-specific by definition) are linked to underlying referential concepts that are also language-specific. In this way, as linguistic forms and underlying referents are activated, successively and in parallel, they act to channel the 'cascade' in one or the other language. What remains to explain, therefore, is how the flow is interrupted in the case of mental codeswitching and crosslinguistic influence during retrieval. That such codeswitching occurs is patently the case. Consider Pavlenko's research (this issue) where she suggests that bilinguals typically employ culture-specific interpretive frames in narrating an event. In cases where such frames are not congruent with the language of the recall, the storytellers may have to appeal either to codeswitching or to lexical

borrowing and loan translation. In terms of our incipient model, the within-language retrieval sequence is momentarily interrupted while a word or expression are borrowed from the other language, but it is quickly returned to its original channel under the influence of the more pervasive activation of elements associated with the original language. Thus, on the basis of the analogy to memory-based text-processing, it is our opinion that a likely model of bilingual episodic memory is one in which retrieval and narration are simultaneously and interactively accomplished, with linguistic information playing an ongoing role in conditioning retrieval. Of course, further experimental work is necessary to resolve the issue.

The argument that language might play a critical role in conditioning and constraining the path of episodic retrieval rests also on the notion that language is a privileged carrier of cultural meaning. This is the force of the neo-Whorfian view of linguistically encoded concepts (Pavlenko, in press). Anthropologists have long argued that the world we apprehend is a world labeled and theorized by the sociocultural group to which we belong. For instance, one of the most powerful paradigms in linguistic anthropology is the theory of language socialization according to which children *by learning to speak* become competent members of their cultural communities (Ochs, 1988; Ochs & Schieffelin, 1984; Schieffelin & Ochs, 1986a, 1986b). One need not be committed to strong versions of Whorfian relativism to admit that we pay selective attention to the physical and social world that surrounds us, and that what we pay attention to is largely shaped by the culture(s) we inhabit. It is but a small step to see that in learning to speak we take on that culturally shaped world.

But not all cultural knowledge is represented mentally in language. In recent years, a good deal of research has focused on how cultural knowledge is represented by schemata or cultural models (Holland & Quinn, 1987; Shore, 1996). Taking the famous 'restaurant script' as a point of departure (Schank & Abelson, 1977), this research suggests that people have mental 'outlines' in their head for what to expect in common social and cultural situations. Some of these schemata are probably linguistic, and perhaps the majority could be articulated linguistically, but many are representations of patterns that may never be rendered explicit in language. Nevertheless, they may play a powerful role in organizing material in memory, in driving selective attention and encoding, and in triggering retrieval (Schrauf, 1997). In this way, cultural schemata could play an independent role and/or interact with language in episodic retrieval.

Again, bilingualism, now under the guise of biculturalism, opens up a new perspective on episodic memory. Consider Van Hell's research (this volume) on how bicultural/bilingual Islamic children living in the Netherlands differ in narrative performance in recalling and finishing stories about Ramadan versus Carnival. Insofar as language proficiency is held constant (by choosing children who possessed equivalent fluency in both languages), any differences in performance must be due to differential possession of the relevant cultural schemata. While Van Hell tests for the influence of cultural schemata on narrative recall and production, making language the dependent variable in the design, we might ask if cultural schemata and cross-cultural differences in narrative conventions do not influence language (now as a mediator variable) affecting in turn the flow of ongoing recall. More sensitive experimental measures are required to pursue these lines of research.

The basic elements of this modest proposal for a model of bilingual episodic

memory are these. First, we have emphasized an ecologically oriented version of episodic memories as memory-for-events of larger scale than the traditional 'words' and 'sentences' of psycholinguistic research. We emphasize the canonical features of spatiotemporal detail and autonoetic consciousness but include as well the requirement that they involve some sequenced or narrative structure (however rudimentary). Consideration of narrative structure necessarily invokes the issue of how narrative traditions vary from one culture to another and how they selectively direct attention to some aspects of experience and not others. Second, drawing on a parallel with memory-based text-processing research from psycholinguistics we suggest that as specific language forms and culturally shaped narrative frames are processed as part of memory retrieval, these forms themselves serve to activate further linguistic and narrative forms as well as other information in memory. Thirdly, we suggest that once retrieval is begun in one language, the phonological, morphosyntactic, lexical, semantic, and narrative forms of that language channel retrieval within that language by activating further such forms within that language, but that the achievement of coherence may trigger alternate interpretive frames and codeswitching. Finally, we suggest that the linguistic and non-linguistic, cultural schemata may guide retrieval as well – sometimes employing language forms as mediators in further memory activation.

Final Thoughts

The papers in this volume speak to various elements of this model, but we would be remiss if we suggested that the research presented here was designed to test it. Rather, in light of the pressing need for some way of conceptualizing bilingual episodic memory, we have made an interpretive reading of the papers and taken the opportunity to outline a model. We offer the model in a humble spirit of reflection. We offer the papers that follow in a more confident spirit of scientific report.

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