

# 18

CHAPTER

Benjamin, A.S. (2002). Toward a taxonomy of research on memory and aging. In M. Naveh-Benjamin, H.L. Roediger, & M. Moscovitch (Eds.), *Perspectives on human memory and cognitive aging: Essays in honour of Fergus I.M. Craik* (pp. 237-239). New York, NY: Psychology Press.

Aaron S. Benjamin

## Part III Introduction: Toward a Taxonomy of Research on Memory and Aging

Even before the effects of nonpathological aging became a *cause célèbre* for granting agencies, there were a few lonely (and unfunded) souls who pioneered the use of empirical approaches to understanding the effects of aging on cognition in general and on memory in particular. Very early work by our fêted honoree included analyses of word retrieval and aging (Craik & Masani, 1969), language and aging (Craik & Masani, 1967), dichotic listening and aging (Craik, 1965), recall of Finnish digits and aging, and even personality and aging (Craik, 1964). So, lest the uninformed reader suggest that the many references to and citations of Craik in the chapters that follow be nothing more than an overt attempt to curry his favor on the occasion of his Festschrift, I submit to you that this is nothing more than a half-truth.

Although Fergus Craik has never been one to hector his colleagues into his point of view, modern research on cognition and aging has nonetheless come to follow in the footsteps of his early work. The six excellent contributions to this section on aging represent some of the best that the field has to offer, and each of the authors acknowledges a substantial debt to Professor Craik, as either a mentor, a colleague, or simply a good friend. These chapters divide themselves into one of two approaches to the study of memory and aging, each of which I will briefly introduce.

### Global Changes Underlying Memory Deficits

One approach to understanding and characterizing age-related deficits in memory is to look for common elements that underlie seemingly disparate deficits. A particularly appealing aspect of this approach is its parsimony: Rather than construe the myriad of apparent age-related changes in memory in a piecemeal manner, these explanations specify global factors, the effects of which cascade through the cognitive system and give rise to superficially very different effects on memory.

## Cognitive Changes

This strategy is exemplified by the work described in chapter 22 by Salthouse, in which he reviews evidence that a wide variety of tasks—some of which have a mnemonic component and some of which do not—share a substantial portion of the total age-related variance in performance. The relative lack of age-related variance unique to any particular task, and to memory tasks in general, suggests that the existence of a global variable that mediates effects of aging on cognition and memory. He suggests this mystery variable might be something akin to the notion of “self-initiated processing” suggested by Craik (e.g., 1986).

Another suggestion is provided in chapter 24 by Schneider; namely, that perceptual deficits underlie memory deficits. His proposal is that, even when the perceptual demands in a memory experiment appear minimal and no age-related perceptual effects are apparent, there may be different ways in which the young and the old arrive at a coherent perception. If the elderly supplement their declining perceptual faculties in a top-down manner with input from semantic systems, then they may be compromising those very resources that are used to effect good memory. He reviews evidence that, when perceptual demands on the subjects are meaningfully equated across the old and the young, some of the apparent age-related differences in memory no longer obtain.

Hasher, Tonev, Lustig, and Zacks offer in chapter 23 a view of cognitive aging that stresses the loss of inhibitory control. Because older adults have less control over what they attend to and thereby what information enters memory, they suffer from an overload of information, some of which may be irrelevant. Furthermore, they are less able to volitionally “forget” information that is no longer current or relevant, and thus suffer from additional mental clutter. Haster et al. review evidence that stimulus displays that minimize distracting and irrelevant information attenuate age differences in cognitive performance and that lessening the effects of proactive interference in working memory tasks actually eliminates age differences in working memory span estimates.

## Noncognitive Changes

The chapter by Nilsson and Söderlund reviews evidence that certain indices of health, including hypertension, diabetes, vitamin deficiencies, and physical activity, among others, correlate with performance on cognitive tasks, including tests of memory. Given that many of these impairments and risk factors are more likely in the elderly, they suggest that some of the cognitive changes associated with aging reflect more general health and lifestyle changes. It is worth noting, however, that they conclude health status to be an important but not primary determinant of age-related memory problems.

### Specificity of Memory Deficits

The second strategy used in understanding aging and memory is to tease out ways in which memory is selectively impaired in the elderly. Many gross physical and cognitive functions decline with age to some degree; thus, the focus of this approach is on the elicitation of *dissociations*. Such dissociations are thought to reveal cognitively and perhaps neuroanatomically separable functions of memory, some of which degrade in the course of normal aging and some of which do not.

Chapter 19, by Jacoby, Marsh, and Dolan, illustrates this approach. Jacoby et al. discuss interesting differences in aware and unaware forms of bias on recognition in young sub-

jects, as well as deficits in the elderly with the *controlled* use of memory, such as in recollection. They conclude that it is this failure—and not a lack of inhibition, as suggested by Hasher et al.—that underlies the greater susceptibility of the elderly to the effects of proactive interference. One particularly interesting aspect of this chapter is the discussion of rehabilitation of memory deficits in the elderly. Jacoby et al. suggest that the route to effective rehabilitation may not lie in improving inhibitory capacity, but rather in training older adults to adopt cognitive goals that compete with those in which habit-driven action slips are likely to occur, thereby constraining what thoughts come to mind.

A similar argument is advanced by Glisky, who reviews in chapter 21 a research program addressing whether older adults have a particular difficulty with remembering the source of acquired information, and whether such a decline is mediated by individual differences in degradations of prefrontal cortex. She shows that such individual differences do not correlate with performance on tests of *item* memory—that is, memory for information that was focally under study—but do with tests of *source* memory, or the ability to remember peripheral details about the study materials. One major advancement in this work over previous demonstrations of age-related dissociations of source memory is the use of atypical—and theoretically interchangeable—dimensions of “source” and “item” information.

These chapters provide a “slice of life” view of current research on aging and memory. Although sharp differences between some of the views espoused here are apparent, the ultimate arbiter—a reliable, replicable body of data—is still being assembled.

## □ References

- Craik, F. I. M. (1964). An observed age difference in responses to a personality inventory. *British Journal of Psychology*, 55, 453–462.
- Craik, F. I. M. (1965). The nature of the age decrement in performance on dichotic listening tasks. *Quarterly Journal of Experimental Psychology*, 17, 227–240.
- Craik, F. I. M. (1986). A functional account of age differences in memory. In F. Klix & H. Hagendorf (Eds.), *Human memory and cognitive capabilities, mechanisms, and performances* (pp. 409–422). Amsterdam: Elsevier.
- Craik, F. I. M., & Masani, P. A. (1967). Age differences in the temporal integration of language. *British Journal of Psychology*, 58, 291–299.
- Craik, F. I. M., & Masani, P. A. (1969). Age and intelligence differences in coding and retrieval of word lists. *British Journal of Psychology*, 60, 315–319.