The elderly person...has a specifically difficult task: At a time of increasing biological vulnerability, demands due to developmental tasks of old age...require strengths and adaptation. Moreover, the occurrence of most of these events is not under human control... On the one hand, autonomy and agency are asked for to deal with these tasks.... On the other hand.... the elderly person must be able to transform agency... into behavioral dependency, delegating control in order to adapt successfully. For the elderly person staying in control and mastering aging is like walking a tightrope. (M. Baltes, 1996, p. 158)

In this chapter, our goal is to provide non-psychologists with an overview of current concepts, theories, and research in the psychology of aging. Psychological research is one of the most active areas of social and behavioral inquiry into aging; psychologists compose a large segment of the membership of the Gerontological Society of America, the premier aging research organization. Although psychologists, like sociologists or anthropologists or economists, consider themselves social and behavioral scientists, they have some fairly unique ways of both approaching research questions and of conceptualizing the important areas of study in aging. Our goal in this chapter is to provide you with a flavor of both of these issues from the psychologist’s point of view. We will begin with a brief discussion of how we define psychology and then turn to the broad theoretical approach within which most psychological gerontologists work.

Defining a Psychological Approach to Aging

What is psychology? Psychology is commonly defined as a science of mind and behavior. This definition highlights the interest of many psychologists in studying internal mental processes (such as thinking and feeling) along with their behavioral manifestations. Popular depictions of psychology frequently emphasize clinical psychology, or psychotherapy, which is an applied sub-discipline of psychology. Clinical psychologists use the science of psychology to intervene in the problem behaviors and difficulties of thinking and feeling that some indi-
The psychology of aging has focused primarily on four major areas: (1) Research on cognition seeks to describe and explain the changes in memory, problem solving, and other mental abilities that occur with aging. (2) Research on self and personality focuses on understanding how elders’ perceptions of themselves and their abilities change with age, and how these changes influence their behaviors in the everyday world. (3) Research on social relations seeks to understand the changes in later life in our social relationships, as well as in perceptions of others in our social environment. Finally, (4) the study of mental health and aging is an emerging area of applied psychology. Research and practice in this domain focus on losses of cognitive function, the sense of self, and social networks that can lead to pathological psychological functioning, and on helping individuals adapt to these losses.

Psychology, more than microsociological approaches, is concerned with individual behavior. Even when they study the behavior of individuals in groups, psychologists are typically interested in how the group influences individual behavior, when sociologists focus on the inter-personal aspects. With regard to aging, then, psychology is concerned with understanding the factors that lead to, or result from, individual aging. Psychologists ask questions such as, “Who changes in later life, and who doesn’t?” or “What are the consequences for the aging individual of having higher levels of internal resources, such as better memory or more self-confidence?”

Before considering how psychologists actually try to answer some of these questions, we will first consider a major theoretical perspective that has emerged in the psychology of aging which structures much of the way we present the field. Specifically, we consider psychological views of successful aging.

**Psychological Perspectives on Successful Aging**

One way or another, everyone studying processes of aging is implicitly interested in understanding successful aging. Biologists and physicians are interested in understanding why some cells, tissues, and organs decline with age, and why others do not. Economists are interested in understanding why some traits or experiences give rise to better economic outcomes for older adults than others do. Psychologists are interested in understanding why some individuals adapt more easily to the challenges of aging than others. Psychologists give a special meaning to the term successful aging. To psychologists of aging “successful” aging does not mean “optimal” or “problem-free” or “better than average.” Instead, **successful aging** implies that individuals are satisfied or contented with their lives; that is, that they have found ways of maximizing the positive in their lives while minimizing the impact of inevitable age-related losses.

One danger that arises when we talk about “successful aging” is that it seems to set up the expectation that there are “norms of success,” or that we expect all...
Continuity of interests and social bonds anchors adults as they face changes in many aspects of social life.

individuals to have a positive old age. For some, a concept like “successful aging” seems to set up the expectation that we can have an old age that is without loss or decline (Cole, 1983; Rosenmayr, 1989; Rowe and Kahn, 1998).

Psychologists interested in successful aging have tried to argue that it does not necessarily mean a universally positive, unburdened old age. Baltes and Carstensen (1996) note “A single individual may be physically ill but psychologically strong, feel despair about family but contentment about work, and experience great dissatisfaction but a profound sense of meaning in life” (p. 399). Indeed they argue, “We cannot predict what any given individual’s successful aging will look like until we know what are the domains of functioning and goals that that individual considers important, personally meaningful and in which he or she feels competent” (p. 399, emphasis original).

In studying successful aging, psychologists generally focus on whether elders experience life satisfaction and well-being. This approach has a long tradition in aging research (Erikson, Erikson, and Kivnick, 1986; Jung 1960) and certainly characterizes much of the contemporary scholarship on the topic (for example, Baltes and Baltes, 1990; Brandstätter, Wentura, and Greve, 1993; Heckhausen and Schultz, 1995; Marsiske, Lang, Baltes and Baltes, 1996; Ryff 1991; Staudinger, Marsiske, and Baltes, 1995; Whitbourne, 1985). In popular terms, successful aging research can be likened to the cliche, “It’s not how old you are, it’s how old you feel.” Psychologists, thus, focus on the meaning and well-being that individuals maintain in the face of losses to interpersonal ties and physical and cognitive functioning.

Beyond well-being, many successful aging models have focused on trying to understand how individuals maintain adaptive functioning in the face of declining resources (see Marsiske et al. 1996, for a review). How do individu-
How we view and evaluate changes that are inevitable with aging is a major influence on psychological adaptation.

als with cognitive or physical loss, for example, go on achieving their critical daily tasks? Baltes and Baltes (1990) have proposed one influential model, which they call selective optimization with compensation. That model posits two major processes through which elders can maintain high levels of functioning in critical life domain (See also Freund and Baltes, 1998).

The first process, selection, suggests that, across the life span, we cannot do all things. Rather, we must all select from an array of choices the one or two options we will follow; for example, we cannot develop multiple professional careers, and so must pick a particular career path. With age, resources available to the individual (cognitive, physical, social, and economic) may begin to shrink; as a result, the selection pressure on individuals may become even greater. Individuals may need to reduce demands on their time and energy, both physical and cognitive. If we focus our resources on the domains that are most important to us, Baltes and Baltes argue we may be able to maintain adequate functioning longer.

The second process, compensation, refers to our ability to find alternative ways of achieving important tasks. If we usually walk to the store, for example, but develop a physical impairment that hinders our doing so, then compensation would involve finding an alternative way of getting to the store: for example, using a walker, using a wheelchair, or having a family member provide transportation assistance. To the extent that older individuals are successful in compensating for losses, they may be able to prolong their period of active life involvement. We will see a good example of compensation later in the section on cognitive functioning.

Throughout the chapter, we focus on the ways that individuals can maintain optimal psychological functioning, despite the variety of losses they may experience with aging. For us, this focus is the unifying theme of psychological research on aging.

In the remainder of this chapter, we will examine the four major areas studied in the psychological aging literature. We will begin with cognitive aging, followed by aging of the self and personality, and then consider how psychologists look at social relations in later life. Finally, we will look at how these three domains (cognition, self, and social relations) may be affected when individuals experience psychological and brain-related changes that would be classified not as "normal aging," but rather as "pathological aging." Specifically, we consider mental health and aging.
Cognitive Aging

Modern experimental psychology is largely based on cognition, which is the study of mental functioning, including memory, problem solving, intelligence, attention, speed and perception. In the psychology of aging, no single topic receives more attention than the study of cognition. Our review of psychological aging will pay considerable attention to various aspects of cognitive aging.

Why is cognition so important to the study of aging? First, cognition is an area of psychological functioning that shows some of the most dramatic effects of aging. As we will see, there is substantial evidence that increased age carries both significant risks and benefits in terms of our ability to perform a variety of mental tasks as we age. Second, cognition is assumed to be important to quality of life. Specifically, psychologists believe that declines in the ability to perform cognitive tasks may lead to other problems, such as lessened ability to perform critical tasks of daily living, such as cooking and managing money. Psychologists believe that our mental capabilities—abilities like remembering, solving complex problems, paying attention, or performing other mental tasks—are a key component of our ability to take care of our everyday environment and ourselves. Therefore, studying how such mental capabilities change and what might cause such changes is an important area of investigation (Willis, 1996).

When we use the term cognition, what do we mean? That question has no simple answer; research on cognitive aging has turned out to be a very broad and multidimensional area. Psychologists have used many different research techniques to study cognition. Many of us think about cognition as "what we know," or "how we solve problems," or "mental capacity." In this chapter, we focus on the most important investigations of cognitive and intellectual aging.

What do we know about cognitive aging? Think about what you know and what you believe about mental functioning in later life. Do most people decline or improve their memory and intelligence as they get older? Would older adults perform as well as younger adults on most standard intelligence tests? When older adults do show decline in an area of cognitive functioning, is this decline irreversible? Are age differences in cognitive functioning due solely to changes in the aging brain, or are they due to changes in the social context of aging (for example, changes in mental demands associated with retirement)?

Paul Baltes and his colleagues (Baltes, 1987; Staudinger, Marsiske and Baltes, 1995) have offered one useful summary of what we know about these questions. Based on the research results, they formulate a series of summary "propositions" about life-span developmental psychology, which relate in part to cognitive changes with aging. We summarize each of these five major ideas below with a review of the evidence that supports them. Because of the general interest in memory aging, we also focus specifically on memory as an example of cognitive aging.
The Complexity of Cognition

Cognition is not a single thing. It has many different components (for example, memory, speed, attention, verbal ability), and adult development and aging do not necessarily have the same effect on each component. We might describe the complexity of cognition as being multidimensional and multidirectional.

As already noted, there are many different ways of studying cognition. Researchers taking the information processing approach study a wide array of tasks, including individuals' abilities to remember word lists, autobiographical life events, and details of text passages. They also study attention, especially the ability to perform one task while simultaneously doing another. Tests of attention range from how quickly a person pushes buttons on a computer keyboard when a particular image appears on the screen to how quickly a person decides if a given word spoken or shown is a real "word." For a good set of reviews of this literature on information processing and speed see Creak and Salthouse (1992).

Psychologists have also developed a diverse group of experiments using the psychometric approach. Experiments developed with this approach include tasks that measure verbal ability, usually the ability to recognize or define words. Other psychometric tasks measure spatial ability, such as the ability to recognize objects when they are rotated, flipped or moved. Test yourself in this kind of spatial ability: compare these symbols: △ ▽ ▼ ▲ In order to test reasoning, psychometric researchers ask subjects to look at a series of alphabetic or numeric characters and identify what pattern unifies them. Try this sample reasoning task: In the series c m d c n d c __, what would come next? If you guessed o, you did well on this reasoning task, because you realized that there was an alphabetic series m-n-__ embedded between the repeated c's and d's. For a review of these kinds of tasks, see Schaie (1996) or Horn and Hofer (1992).

Several theorists, looking at this wide array of tasks, have argued that they can really be summarized in two broad categories. One category, which has been called "fluid intelligence" (Horn and Hofer, 1992) or the "mechanics of intelligence" (P. B. Baltes, 1993), refers to basic information processes such as attention, memory, reasoning, and speed of responding. A second category, which has been called "crystallized intelligence" (Horn and Hofer, 1992) or "pragmatics of intelligence" (P. B. Baltes, 1993), refers to the kinds of knowledge we accumulate through formal and informal schooling and life experience. This category might include our knowledge of languages; it might also include the professional and personal knowledge and expertise we have accumulated.

The evidence is now fairly clear that when we compare adults of different ages on the two dimensions of fluid mechanics and of crystallized pragmatics, we get very different aging patterns. Exhibit 5.1 displays a summary figure of these two dimensions of intelligence by age offered by Baltes (1993). The figure suggests that the fluid mechanics of intelligence begin to decline fairly early in adulthood, although the actual age when this change begins remains subject
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Exhibit 5.1 Baltes’s Summary of the Two Major Categories of Intellectual and Cognitive Functioning. The fluid mechanics show relatively early loss. The crystallized pragmatics, on the other hand, appear to increase or remain stable until very late life.

Multidimensionality

Different Forms of Intelligence

Multidirectionality

Examples:
Language
Social
Intelligence

Pragmatics (Crystallized)

Mechanics (Fluid)

Examples:
Memory
Problem Solving
(Symbols, figures)

Intelligence as Cultural Knowledge

Intelligence as Basic Information Processing


for discussion and debate (Schaie, 1994; 1996).

However, crystallized pragmatics appear to increase or remain stable until individuals are at least in their 60s, on average. When individuals’ knowledge levels are tested on vocabulary, basic facts in recent history, and specific job-related knowledge, knowledge does not show a clear decline as subjects age. In fact, the curves suggest there may be “benefits of experience” that lead to enhanced performance into very old age. Baltes and Staudinger (1993), for example, have argued that their measure of wisdom, the kinds of knowledge people have for answering advice questions, shows stable performance into old age. In fact, they found that those performing at the highest levels of wisdom included disproportionately more older adults than younger adults.

The multidimensional nature of cognition makes it difficult to answer questions about change with aging in a simple fashion. Taken together, the research literature suggests the importance of a multidirectional and multidimensional conception of adult cognition and intelligence. No single ability and no single direction (gain, loss, or stability) can summarize all of adult cognition and intelligence.

It should be mentioned, however, that relatively few studies have looked at what happens to the cognitive performance of the “oldest old”—individuals in their 80s, 90s, and older. Because the survival of large numbers of people to
these ages is a fairly recent demographic phenomenon, it has been difficult to collect data on such very old individuals. However, two major recent data collections—the Georgia Centenarian Study (Poon, Martin, Clayton, Messner, Noble, and Johnson, 1992) and the Berlin Aging Study (Lindenberger, Mayr, and Kliegl, 1993)—have examined cross-sectional trajectories of cognitive and intellectual functioning in these very old adults. As you might expect, these very old individuals have a relatively high level of physical and sensory impairments. Correspondingly, there appears to be a fairly strong negative, linear age trajectory in their cognitive functioning. At these ages, both fluid and crystallized intelligence show negative effects of aging for all educational and socio-economic groups, but diversity in performance persists even among the oldest old.

Development as Gain/Loss

At all points of the life span, development always consists of both gain and loss. In early life, for example, as we gain more and more ability to engage in logical thinking, we lose the ability to believe in magic. In later life, even as we might lose some ability to do some kinds of mental tasks (for example, some kinds of memory get worse), we might gain others (for example, wisdom or knowledge about the world).

Cognitive gains and losses occur throughout the adult life span. Some theorists have argued that what changes with age is that the relative proportion of losses to gains increases, so that in old age we experience proportionately more losses than gains (Baltes and Baltes, 1990).

Perhaps more interesting, from a cognitive perspective, is how the gains and losses can interact with one another in producing everyday cognitive performance. An interesting example comes from the work of Salthouse (1991), who tried to demonstrate a process he called “cognitive compensation” in his work with younger and older expert typists. Salthouse showed that younger and older typists differed significantly in what might be called typing “mechanics;” specifically, on simple measures of typing (motor tapping) speed, older adults were much slower than younger typists were. However, on a measure of overall typing speed, there was no difference between younger and older typists. How did older typists perform at the same level as younger typists, despite age differences in basic tapping speed? It appeared that older adults were looking much farther ahead in their to-be-typed material than younger adults. In other words, older typists may reduce the amount of time spent looking at the to-be-typed material to compensate for their slower tapping speed. This example, which has since been replicated (Bosman, 1993), is a fascinating example of compensation, because it suggests that a gain in one kind of competence (looking farther ahead when you type) can be used to offset a loss in another (typing speed). Expressed more generally, by relying on those systems in which older adults experience gains or stability of performance, they may be able to minimize the everyday effects of losses.
Exhibit 5.2  *Pattern of Older Adults’ Training Gains in Intellectual Measures.*

Trained older adults are compared with untrained control subjects. Measures on the left represent measures of what was trained (figural relations). Measures on the right represent untrained abilities. Scores represent performance of older adults following training. Clearly, on measures of the trained ability, older adults show substantial benefits of cognitive training.

Source: Willis, Blieszner, and Baltes, 1981.

Cognitive Performance is Modifiable

When we measure older adults' cognitive performance, we get a snapshot of how well they are functioning at a moment in time, but it tells us very little of what they are capable. This concept is familiar to all of us if we think about "good days" and "bad days" for taking any type of examination. We do better on a good day, a day on which we feel well, we have minimal anxiety, we feel rested and refreshed, and we believe in our own ability. But if we are tested on a bad day, our performance may not be as good. Moreover, even if our current performance is quite low, it doesn't mean that with a little training and practice we couldn't do much better.

Researchers have demonstrated in several studies that training and practice can substantially enhance the cognitive performance of older adults. Even when individuals show losses or declines in cognitive ability, these losses can be reversed. A large body of research now suggests that cognitive performance can be substantially improved, even in very old adults.

Older adults show improvement in cognitive ability in studies using fluid intelligence measures. In the typical study, adults between 60 and 90 years of age have received tutor- or self-guided instruction in strategies needed to successfully solve fluid intelligence problems. Remarkable consistency across studies has been
demonstrated. First, older adults demonstrate significant performance gains on the fluid intelligence tests selected for training and practice. Exhibit 5.2 shows a typical pattern of training gains. These results are particularly impressive because, you may recall, it is the fluid mechanics aspect of intelligence that show the most precipitous age-related losses in cross-sectional research (Baltes and Lindenberger, 1988; Baltes, Sowarka, and Kliegl, 1989; Blackburn, Papalia-Finley, Foye, and Serlin, 1988; Denney, 1984; Schaie and Willis, 1986; Willis 1987; Willis and Schaie, 1986). Second, training gains are maintained for older adults for very long periods, often up to a year or more. Some longitudinal studies now suggest that long-term effects of training may be observed up to seven years after training (Willis and Nesselroade, 1990; Willis and Schaie, 1994). The only major group of older adults who appear to have absolutely no gains from this type of training in fluid intelligence tasks are adults with Alzheimer’s type dementia (Baltes, Kühl, and Sowarka, 1992). These results suggest that the potential to modify cognitive performance is very much present in older adults and that age-related declines, when found, are not necessarily irremediable.

Cohort Variations in Cognition

The historical and cultural environments profoundly affect age-trends in cognition where they occur. Think about measuring computer skills among older adults. Today’s cohorts of older adults might not be expected to perform well, on average, on many computer tasks because computers were not a part of their lives. Personal computers weren’t even available throughout much of their adulthood. In contrast, consider today’s younger adults, for whom computers are a part of both work and school. Some younger adults have been exposed to computers practically from birth. When these individuals are older, we will probably no longer be able to say, “Older adults might not be expected to perform well, on average, on many computer tasks.” In other words, even if older adults today don’t perform well on computer tasks, this finding probably has less to do with aging than it does with cohort-related historical opportunities to use computers.

Perhaps the preeminent ongoing data collection in cognitive and intellectual aging is the Seattle Longitudinal Study, which has been collecting data on some individuals since 1956 (Schaie, 1996). One key feature of the Seattle Longitudinal Study is that it includes many different birth cohorts. This feature lets us ask cohort-related questions such as, “How does the intelligence of people born in the 1920s differ from that of people born in the 1930s?” To answer this question, we could look at people born in the 1920s when they are in their 50s (in the 1970s) and compare their performance with the 1930s birth cohort when those cohort members are in their 50s (1980s).

Using this kind of analysis, a cohort-sequential design (see discussion in Chapter 2), Schaie has reported data like those shown in Exhibit 5.3. What this figure shows is that, for at least three abilities (inductive reasoning, verbal mean-
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Exhibit 5.3  **Cohort Trends in Intellectual Functioning.** Throughout the twentieth century later-born cohorts show substantial advantages on many measures of intellectual ability, although two abilities (number of arithmetic ability and word fluency) actually show some decline throughout the same period.

![Graph showing cohort trends in intellectual functioning](Image)

Source: Schaie, 1994

...ing, and spatial orientation), there have been sizable positive cohort trends in most aspects of intellectual performance. That is, cohorts born more recently perform better on most of these dimensions of intelligence. For number skills and word fluency, on the other hand, the cohort trends are downward. These findings are of substantial interest to sociologists. They suggest that broad sociocultural changes associated with the progression of the twentieth century have resulted in substantial intellectual performance gains in many cognitive abilities. Reasoning and spatial abilities, as well as verbal abilities, appear to have shown dramatic improvements. It is interesting to speculate on the role of increased participation in formal education, exposure to television and print media, health, or educational quality in producing these trends. In contrast, the ability to perform arithmetic problems and the ability to generate speech (which is what the verbal fluency test measures) appear to have declined. Again, we can only speculate on what kinds of influences, such as increased reliance on calculators, may be responsible. These data underscore the fact that aging itself is a “moving target.” Differences between younger and older adults that exist today may have a lot to do with differences in life opportunities that the two age cohorts have encountered, and little to do with actual aging.
Everyday Cognition: The Role of Context

The cognitive abilities we use vary from person to person, depending on the contexts we inhabit. Think about an air traffic controller. A person in this profession will need to develop and enhance such abilities as quick visual searches, speedy decision making, and focused attention. Now, contrast the abilities used by a professional writer. For this person, strong verbal abilities and vocabulary, and the ability to develop logical arguments, are much more important. In other words, our profile of cognitive strengths and weaknesses probably adapts to the kind of life we lead. If we are looking to understand why older adults might perform better than younger adults on some cognitive tasks but not on others, we should probably look at differences in the kinds of cognitive tasks they confront in their daily lives. We need to think about which skills they use and which skills they don’t.

How do older adults deal with the everyday consequences of age-related cognitive changes? One way of interpreting the mechanics/pragmatics theory of intelligence is that, on those daily living tasks in which individuals had high levels of experience and knowledge, they may have developed high levels of pragmatically relevant knowledge, supporting continued high-level functioning.

To investigate this topic, several researchers have developed measures of “everyday cognition” or “practical problem solving,” which attempt to assess the cognitive components of everyday task performance. Cornelius and Caspi (1987), for example, asked adults how they would deal with a wide variety of everyday interpersonal dilemmas, such as resolving conflicts within the family or with coworkers. Denney and her colleagues (Denney and Pearce, 1989) asked how individuals might solve a variety of instrumental (for example, getting one’s lawn mowed when one has a heart condition and no money) and social (such as adjusting to widowhood) problems. Willis, Marsiske and their colleagues (Allaire and Marsiske, 1999; Diehl, Willis, and Schaie, 1995; Marsiske and Willis, 1995; Willis, 1996) presented older adults with everyday printed materials, such as medication labels or nutrition charts. In another test, they asked individuals to solve common everyday problems, such as finding the right medication dosage for a child or cutting a recipe in half.

Evidence for the effects of aging on everyday cognition has been quite varied. In studies that measure everyday information use and social strategy use (Cornelius and Caspi, 1987; Demming and Pressey, 1957; Denney, 1984; Gardner and Monge, 1977; Heidrich and Denney, 1994), research has tended to support the prediction of mechanics/pragmatics theory. On everyday information and social strategy, older adults typically performing as well as, or better than, younger adults do.

A second stream of research on everyday cognition has tried to look more specifically at “basic cognitive competence” with critical tasks of daily living (such as food preparation, medication use, and housekeeping; for example, Morrell, Park, and Poon, 1990; Willis, 1991). These studies emphasize adults’ abili-