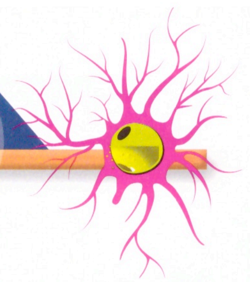


The complexity of cognitive decline

This three-part series will offer a comprehensive research- and practice-based review of cognitive decline. Part 1 (this article) focuses on the definition of normal aging, preclinical issues, mild cognitive impairment and dementia. Part 2 will move to neurobiological issues, including metabolism and medication, and conclude with research on preventing, slowing and sometimes even reversing decline. Part 3 will focus on health and specific actions that counselors and therapists can take to alleviate issues occurring with cognitive decline.

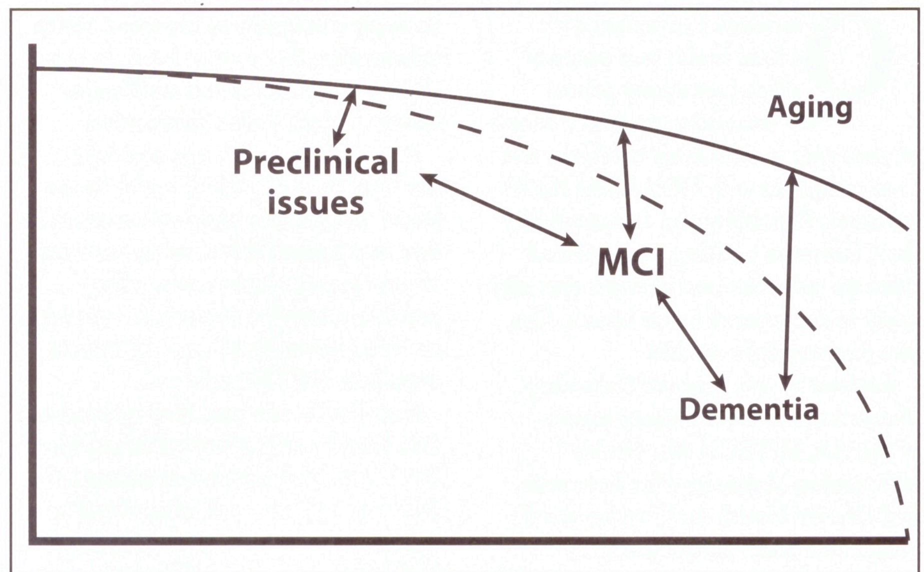


Figure 1. The top curve represents the natural gradual decline in cognitive functioning as seen in normal aging. The bottom curve represents cognitive decline ranging from preclinical issues to mild cognitive impairment to dementia. Some individuals can return to normal levels of functioning (as shown by the arrows).

Defining cognitive decline and its variations

Counselors need a basic understanding of cognitive decline because it is a life span issue. This means that our counseling of infants, children and teenagers has future implications. We have mistakenly placed our focus on a "yes-no" diagnosis of Alzheimer's disease, but the truth is that cognitive decline happens on a continuum that goes from normal cognitive aging to preclinical indications to mild cognitive impairment (MCI) and possibly to dementia, of which Alzheimer's is only one type. Furthermore, evidence is clear that cognitive decline and MCI can be prevented, slowed and even reversed in certain cases.

Figure 1 provides a visual picture of cognitive aging. In normal aging, there is a natural gradual decline in cognitive functioning, as represented by the top curve. The bottom curve (the broken line) illustrates cognitive decline ranging from preclinical issues to MCI to dementia. Note that the figure emphasizes that *some* individuals can and do return to former levels of functioning. We will elaborate on slowing and reversal of decline in the second part of this series and provide examples of prevention in the third part.

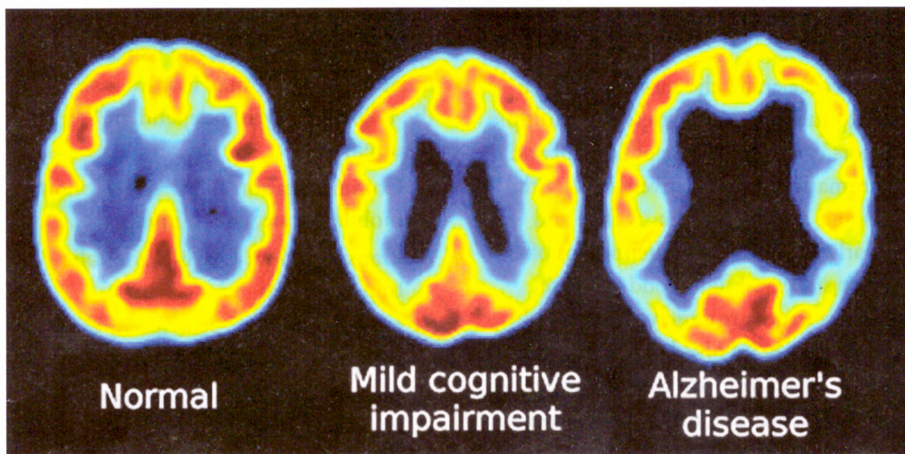
As we age, we experience a natural decline in cognitive ability over time, although our vocabulary remains relatively stable or may even increase. Our other abilities, such as conceptual reasoning, memory and processing speed, decline gradually. In times of stress as we age, we might exhibit one or more symptoms of MCI. The loss of a loved one may result in depression, which can appear similar to the thinking and behavior of dementia. With support and time, however, people under these conditions will return to previous states of cognition.

What is likely the most definitive study of cognitive decline was published in 2017 in *The Lancet* by Gill Livingston and colleagues (see "Dementia prevention, intervention and care"). Estimates are that between 4 and 20 percent of the general population is affected by MCI. Approximately 30 percent of these individuals will progress to dementia within three to 10 years, compared with 3 percent of the overall population. Note that MCI diagnoses do not necessarily move on to dementia.

Normal cognitive aging

Most elders "age in place," retaining their physical and mental abilities. Cognitive domains such as wisdom and decision-making often improve. General knowledge remains essentially the same. The most common issues are slowing of perceptual systems and cognitive processing, attention and memory, which are frustrating both to the individual and to the family. In 2015, Julie Dumas discussed how frontal brain regions gradually become more important for older adults as a mode of compensation for the decline of other portions of the brain.

We should also consider the "superagers," elders who function at a high level into their 80s, 90s and even 100s. These highly skilled individuals make up less than 5 percent of the population. They maintain abilities equal to or not far from the level of younger people. Superagers are physically healthy and productive in many fields, sometimes into their 90s. They are often in good



The impact of cognitive decline on the brain.

health and enjoy successful retirement. Evidence shows that older adults are generally more comfortable with life and happier, despite occasional bouts of illness.

Preclinical cognitive decline

The Alzheimer's Association refers to preclinical cognitive decline as "preclinical Alzheimer's." Using the word "preclinical" only with Alzheimer's is perhaps too narrow because there is variation in preclinical cognitive decline. Serious illnesses such as diabetes and heart issues can lead to preclinical decline and MCI. "Dementia" is a more accurate and useful word than "Alzheimer's." It is also more complicated than is typically presented in the media. Alzheimer's represents approximately 60-70 percent of dementias. Stress is a central element in all dementias, and inflammation and changes in the brain can appear as early as 20 years before impairment appears. There may be subtle changes showing some cognitive decline.

Sophisticated measures that define preclinical Alzheimer's include positron emission tomography (PET) scanning for beta-amyloid accumulation and cerebrospinal fluid testing for beta-amyloids and tau protein. Gray matter loss and hypometabolism (low energy) can be shown in the brain, particularly in the hippocampus. Subtle cognitive decline is often evident but not sufficient to meet MCI or dementia criteria. Increasing memory loss and difficulty finding words are seen as early stage issues.

Hearing loss and nonuse of hearing aids increase the chances of cognitive decline. Vision issues also increase isolation and in themselves can provide preclinical signs and lead to MCI and beyond. Likewise, illnesses of various types increase the possibility of cognitive decline. Growing up or living in a toxic environment can also be a major concern.

Lifestyle and life experience are critical in maintaining cognition. Those who are most likely to avoid preclinical and MCI issues are elders with good cognitive reserve, more education, higher socioeconomic status, and daily physical and mental activity. Research reveals that socialization and stimulation from being with others are critical aspects of prevention and health. Being a member of a minority group, having low income, having less education and living in a dangerous community are factors that are more likely to result in cognitive decline.

Elizabeth Mayeda and colleagues examined the records of 274,283 Kaiser Permanent health care members and found racial and ethnic disparities in dementia incidence. The cumulative 25-year risk at age 65 for getting dementia was:

- 38 percent for African Americans
- 35 percent for Native Americans/ Alaska Natives
- 32 percent for Latinos/as
- 30 percent for Caucasians
- 28 percent for Asian Americans
- 25 percent for Native Hawaiians/ Pacific Islanders

MCI

External pressures, stress and an unhealthy lifestyle can lead to inflammation and preclinical issues, which are basic to cognitive loss. Ultimately, approximately 10 percent of elders can be diagnosed with MCI. Unfortunately, common elder memory issues and behaviors may lead families to refer these individuals to physicians, who may make early and false diagnoses of Alzheimer's. Medicine, psychiatry and psychology have often naively ignored or been unaware of MCI as a distinct diagnosis with different characteristics from dementia.

MCI is a gray area between normal cognitive aging and dementia. Many older people will have one or more of the behavioral or cognitive issues from the list below to some degree but still function effectively and even work productively. Socialization may appear fully normal.

The Mayo Clinic lists the following behavioral and cognitive illustrations as indicators of possible MCI:

- Forget things more often
- Forget important events such as appointments or social engagements
- Lose your train of thought or the thread of conversations, books or movies
- Feel increasingly overwhelmed by making decisions, planning steps to accomplish a task or understanding instructions
- Start to have trouble finding your way around familiar environments
- Become more impulsive or show increasingly poor judgment
- Family and friends notice these changes
- Experience depression, irritability and aggression, anxiety, apathy

The Mayo Clinic also makes recommendations for treatment and prevention, including treating other conditions that can affect mental function, such as high blood pressure, depression and sleep apnea. For prevention, it focuses on diet, exercise, memory training, intellectual stimulation, socialization and omega-3 fatty acids.

In reviewing these possible indicators, some readers may be reminded of personal experiences or those of a friend or family member. However, the more self-aware clients are of cognitive issues, the more likely it is that they do not have MCI or that it is relatively stable. It is here that we can best understand the cognitive continuum and the common decline as

we grow older. Thus, if you or your clients are troubled by forgetting names, losing glasses or keys, or missing appointments, these are not necessarily indicators of a truly serious concern. However, forgetting to turn off the stove, placing the wrong object in the refrigerator or forgetting how to get home are serious concerns.

Family and friends noticing changes is important, but the level of self-awareness is even more critical. If the individual is not self-aware, the chances for MCI and eventually diagnosis of dementia are increased. Instances of mind wandering, failure to listen or understand, and slow reaction times may also be observed.

Counselors can be helpful in sorting out what is of concern and what is just a normal cognitive slip. Start by listening empathically to the client and family story. Awareness of fear and strong emotions is essential. Sorting out what is normal behavior from what might be the first signs of cognitive decline can be challenging. It is best to think positive and search for strengths. If the signs are strong or the client and family are anxious, then referral to a physician is essential. At the same time, having awareness of the possibility of a premature Alzheimer's or dementia diagnosis being given, counselors need to be cautious and know the orientation of the physicians they recommend.

We (the authors of this article) are defined as "senior citizens." We have had a number of friends who seemed to be doing fine but grew worried about memory issues, visited a physician and were diagnosed on the spot with Alzheimer's. Typically, there was no mention of MCI and little discussion of the possibility for improvement. Few recommendations are provided for behavior change and prevention.

Our approach with friends and colleagues is to point out that Alzheimer's is not a "yes-no" condition; rather, it is on a continuum of cognitive decline. We share that they may have signs of MCI or they may have simply allowed themselves to become overly stressed about normal cognitive aging. When they hear that all is not lost, our friends start smiling and their bodies relax. We always recommend that they stay in touch with medical personnel, but with an attitude of initiative and hope. We also mention the importance and value of lifestyle recommendations (which will be discussed in Part 3 of this series).

Stress accelerates the movement from MCI to full dementia. Stress and multiple stressors cause the release of cortisol and inflammation that negatively impact the brain and nervous system. A false and too early diagnosis of Alzheimer's is often a major stressor. High blood pressure and heart issues are closely related, and they are deeply involved with stress and cortisol. Those who are challenged by obesity, diabetes and major depression are also particularly at risk. On their own, prescription drugs, opioids and exposure to toxins can be key issues, but they too are often stress related.

Building resilience and optimism — increasing the ability to "bounce back" — is a major goal of counseling and therapy. This is a place where we can start our work with clients and patients who fear dementia. Counselors' ability to maintain the relationship and build client confidence is central. Counselors are a vital resource to help individuals deal with cognitive decline, either real or imagined. Our clients likely have not heard of the cognitive continuum or even MCI. As counselors, we can build the relationship, state facts and facilitate their development of a healthy lifestyle.

Dementia and its variations

Alzheimer's represents approximately 60-70 percent of all dementias. There are several varieties of dementia that have vascular issues and behaviors in common. For life span prevention, it may be useful to think of a heart-healthy life. Dementia diagnosis reveals memory loss, difficulty with time and place, and an inability to carry on five activities of daily living:

1) Personal hygiene: Cleanliness, bathing, oral care, grooming
2) Dressing: Ability to dress/undress oneself
3) Eating: Feeding oneself, not necessarily able to cook
4) Continence: Toileting and cleaning oneself
5) Transferring/mobility: Ability to get out of a chair and bed, walk from one place to another

These difficulties are not arrived at all at once, and overlap with MCI is possible.

Diagnosis is almost always a gray area. MCI does not include the issues just mentioned, but it may involve *some* of the following seven independent living requirements.

1) Communication skills: Use of phone, mobile phone, email, internet
2) Transportation: Driving or public transportation
3) Meal preparation: Safe use of kitchen equipment and utensils
4) Shopping: Wise decisions, nothing rotten or spoiled in refrigerator
5) Housework: Laundry, dishes, cleaning
6) Managing medications
7) Managing personal finances: Paying bills, keeping records, avoiding scams

Gradually losing the ability, one by one, to handle the requirements on the list above may indicate a slide from MCI to dementia. Those with partial or full dementia will be unable to complete most of these independent living tasks. However, some individuals with diagnosed dementia may be able to maintain independent living with support from their family or community.

Few individuals will manifest difficulties all at once. Rather, it is a painful series of small events that gradually mount up. Expect uneven development. For example, people with clear indications of dementia still may be able to do garden work or meet with friends and talk reasonably. However, they may repeat what they have said and not remember what they have done.

There are ways other than Alzheimer's to name and define severe cognitive loss. A review of current research reveals that inflammation and amyloid protein buildup are focal dimensions of most dementias. Genes and inflammatory processes are, of course, central, and vascular issues often appear.

Variations of dementia include:

❖ **Vascular dementia.** The cause of 10 percent of dementias. Vascular dementia means that the heart and narrowing arteries are causative. It is estimated that 50 percent of Alzheimer's diagnoses have vascular issues. Thirty percent of stroke survivors may develop vascular dementia.

❖ **Dementia with Lewy bodies.** An estimated 1.4 million people have been diagnosed with this type of dementia. The major symptoms are similar to those of

Alzheimer's and vascular dementia. This often includes sleep disturbances and motor symptoms similar to those found in Parkinson's disease.

❖ **Frontal-temporal dementia.** This form of dementia is marked by early symptoms of personality change and language processing problems. Memory is often spared in early stages. It occurs at younger ages and can be confused with a variety of psychiatric issues.

❖ **Parkinson's dementia.** This is an amyloid-related dementia, with 10 percent of individuals progressing to dementia.

❖ **Others.** Normal pressure hydrocephalus, Creutzfeldt-Jakob disease (rare), Pick's disease, mixed dementia.

❖ **Type 3 diabetes.** This is a proposed term for dementia resulting from insulin resistance in the brain. Those with diabetes have a four-fold dementia risk. The Mayo Clinic notes that Type 3 diabetes occurs when neurons in the brain become unable to respond to insulin, which is essential for basic tasks such as memory and learning.

Whatever the final diagnosis is of cognitive decline, the individual and his or her family members are deeply affected, often anxious and not quite sure what to do next. Community supports and effective counseling are often unavailable. Many physicians and psychologists simply diagnose and then let the individual "float" on his or her own. The Alzheimer's Association notes that many individuals remain undiagnosed and reports that "none of the pharmacologic treatments (medications) available today for Alzheimer's dementia stops the damage and destruction of neurons that cause the disease."

Clients who mention a history of diabetes and heart health issues may profit from counselors' assistance in looking at lifestyle. Some might even appreciate reading this series of articles.

Counselors and therapists need to attend to the sequence of normal cognitive decline, preclinical issues, MCI and dementia. However, we also need full awareness of the difficulty of accurate diagnosis, limitations of medications and treatments, and research that now tells us that decline can be slowed and even reversed.

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Authors' note: Alzheimer's disease and its implications were reviewed thoroughly by Kathryn Douthit for Neurocounseling: Bridging Brain and Behavior in the March 2016 issue of *Counseling Today*. Her discussion of wellness issues that can slow progression is important and provides additional detail. This is recommended reading, or rereading, for further understanding. ❖

Allen E. Ivey and Mary Bradford Ivey are best known for their research and writing on multiculturalism/social justice and their years of work on microcounseling's listening and action skills, now with co-author Carlos Zalaquett. Many articles on neuroscience, microskills and multiculturalism can be found on their joint website at *allenivey.com*.

Letters to the editor: *ct@counseling.org*

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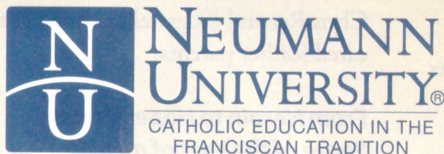

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