This review summarizes selected literature related to dementia in the elderly population. Normative and pathological developmental processes as they relate to the foundations of behavior, assessment and measurement procedures, behavioral applications to therapy with this special population, associated ethical and professional issues, and future directions and challenges for research are examined.
BEHAVIORAL INTERVENTIONS IN ELDERLY POPULATIONS WITH DEMENTIA:
A REVIEW OF RELEVANT FACTORS

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The average lifespan and proportion of aging individuals in the United States is growing, with a projected 25-30% of the population 60 years old or older in 2030 (Centers for Disease Control and Prevention, 2005). Aging is a typical developmental process, which can produce a continuum of normative to pathological processes. Dementia, a disorder often associated with aging, is characterized by memory, cognitive, and functional impairments. Etiology of the underlying disease process dictates diagnosis. The screening, testing, and assessment procedures related to diagnosis, differential diagnosis, and identification of current level of functioning are expansive in number and represent a wide range of variability in content, focus, protocol, methodology, and test recipient, for example. Pharmacological and behavioral interventions appear to be effective in promoting stabilization or slowing the disease process in some individuals with diagnoses of dementia. In addition, working with this population requires an understanding of legal implications (e.g., guardianship, power of attorney), housing opportunities, caregiver stress, elder abuse, stigmatization of service accession, and general perceptions of aging.

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Behavioral Interventions in Elderly Populations with Dementia:
A Review of Relevant Factors

The United States has witnessed a dramatic increase in the average lifespan across gender and ethnicities since the beginning of the twentieth century. In 1900, the average life expectancy for men and women was 49.24 years, as compared to 76.83 years in 2000 (Arias, Curtin, Wei, & Anderson, 2008). Life expectancy is conceptualized as the average number of life-years remaining after a given a point in time, with the most common starting point as birth. Racial and gender disparities in life expectancy rates still exist, although the gaps between Caucasians and African Americans, as well as men and women, appear to be narrowing. From 1990 to 2000, the discrepancy between Caucasian and African American individuals decreased from 6.97 years to 5.67 years (Arias et al., 2008). During that same decade, life expectancy rates at birth increased from 71.83 years to 74.10 years for men, as compared to 78.81 years to 79.45 years for women (Arias et al., 2008). Since the beginning of the twentieth century, women have consistently had greater life expectancies at birth than men, with Caucasian women exhibiting the greatest life expectancies overall (Arias et al., 2008).

In addition to the lengthening of the average lifespan, the proportion of older adults in the United States is growing. According to the most recent estimates, approximately 17.3% of the population in 2008 was 60 years or older, with 5.8% in the 75 years or older category (U. S. Census Bureau, 2009). Despite the increasing size of the elderly population, Americans are largely unaware that the largest growing age group in the United States is the 85 and older group (Research!America, 2006). With the continued aging of the post-World War II baby boom generation (i.e., those individuals born between 1947 and 1962; Eggebeen & Sturgeon, 2006), this age demographic will likely continue to increase. Based on the Centers for Disease Control
Dementia projections (CDC, 2005), approximately 25% of the population will be 60 years or older in 2030.

As individuals age, the probability of experiencing physical and cognitive changes, as well as personal losses (e.g., retirement, loss of spouse, loss of friends), increases. Signs of distress or impairment in older adults are often misclassified or misunderstood as “normal” or stereotypical images of aging (U.S. Department of Health and Human Services [DHHS], 1999). Given the increasing lifespan and the growing percent of the population who are elderly, it is imperative to understand the difference between “normal” or “typical” aging processes, as compared to pathological or abnormal developmental processes.

One non-normative development that occurs in an important minority of individuals during older adulthood is dementia, which is a disorder that largely affects aging individuals at great personal, familial, systemic, and societal costs. Because dementia often affect areas of language, thought, memory, executive functioning, judgment, attention, perception, and daily living skills (CDC & Alzheimer’s Association, 2007), it has tremendous implications for people’s quality of life. In general, maintaining cognitive health, as compared to developing cognitive impairments or dementia, may be the tipping point between living independently or relying on a caretaker and/or receiving institutional care (CDC & Alzheimer’s Association, 2007).

Because of dementia’s implications for people’s quality of life, it is an important condition to be able to identify and treat. The identification and treatment of mental health disorders and symptoms that are not typical of the aging process, including dementia, are affected by numerous factors, including the screening, assessment, and diagnostic processes;
accessibility and efficacy of services; point of access; stigma of mental health in older adults; and legal and public health system considerations. These factors are the focus of this review.

**Foundations of Behavior**

Both physiological and cognitive abilities are affected by the aging process. Predictions of mental health disorders in adults 55 years or older suggest the following prevalence rates (Regier & Narrow, 1999; as cited in U. S. Department of Health and Human Services, 1999): anxiety disorders (11.4%), mood disorders (4.4%), schizophrenia (0.6%), somatization (0.3%), severe cognitive impairment (6.6%), or any disorder (19.8%). Dementia, a disorder with impairments in multiple cognitive areas, is largely considered an aging disorder. Approximately 1.4% to 1.6% of individuals ranging in age from 65 to 69 years have a diagnosis of dementia, as compared to 16% to 25% of individuals over 85 years (American Psychiatric Association [APA], 2000).

**Part A. Diagnostic overview.** Two major classification systems are used across the world today to diagnose mental disorders for clinical and research practices: *Diagnostic and Statistical Manual (DSM)* and *International Classification of Diseases (ICD)*. These classification systems often overlap in diagnostic criteria with some exceptions. Diagnostic criteria for dementia are provided below using both diagnostic classification systems.

**Global diagnostic criteria - Dementia.** Dementia is defined by the *Diagnostic and Statistical Manual of Mental Disorders (4th edition, text revision; DSM-IV-TR; APA, 2000)* as being “characterized by the development of multiple cognitive deficits (including memory impairment) that are due to the direct physiological effects” of various etiological entities (p. 147). The *International Classification of Diseases (10th edition; ICD-10; World Health Organization [WHO], 1993)* defines dementia as “a syndrome due to disease of the brain, usually
of a chronic or progressive nature, in which there is disturbance of multiple higher cortical functions, including memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgment. Consciousness is not clouded. The impairments of cognitive functions are commonly accompanied, and occasionally preceded, by deterioration in emotional control, social behavior or motivation.”

Memory impairment is a mandatory criterion to be met, either short-term or long-term or both, by the majority of current and historical diagnostic systems (e.g., *DSM-III-R, DSM-IV-TR*, *ICD-9, ICD-10*; Wancata, Börjesson-Hason, Östling, Sjörgen, & Skoog, 2007). An additional cognitive impairment or impairments is also typically required for a diagnosis of dementia. The cognitive deficits (i.e., memory impairment + an additional cognitive impairment) must impact the individual’s work or social functioning to a significant degree (e.g., loss of job, demotion, inability to perform work tasks, inability to remember social outings) and represent a change from the individual’s previous level of functioning. If, for example, an individual has consistently paid bills late throughout his or her life, then forgetting to pay the electric bill does not, on its own, indicate a significant degree of cognitive impairment different from previous functioning. The *ICD-10* (WHO, 1993) requires that symptoms persist for six months or longer and a change in behavior and/or personality be identified. Overall cognitive impairment across diagnostic systems includes memory impairment and some additional impairment in cognitive or intellectual functioning. These areas of functioning vary based on diagnostic system (Wancata et al., 2007).

The dementia subtypes may be the result of a general medical condition (e.g., Alzheimer’s disease, cerebrovascular disease, head trauma), the continued effects of substance use or exposure, or a combination thereof and are differentially diagnosed based on etiology
Dementia (APA, 2000; WHO, 1993). The identified cognitive deficits must not occur solely during the course of delirium (APA, 2000) or “clouded consciousness” (WHO, 1993), which represents a short-term impairment in cognition.

Impact of classification system on dementia prevalence. Wancata and colleagues (2007) examined the impact different diagnostic classification systems has on the prevalence rates of dementia in a population-derived Swedish sample ($N = 1,019$; $N_{\text{Men}} = 229$, $N_{\text{Women}} = 790$). Trained psychiatric research nurses collected data on signs and symptoms using the Comprehensive Psychological Rating Scale (CPRS), assessment and testing measures on relevant neuropsychological variables (e.g., recent memory, remote memory, semantic memory, concentration, judgment, abstract thinking), and selected measures from the Alzheimer’s Disease Assessment Scale – Cognitive. Wancata et al. (2007) diagnosed individuals according to DSM-II-R, DSM-IV, ICD-9, and ICD-10 diagnostic criteria, as well as “historical” criteria identified in extant literature (i.e., impairment in short-term memory or long-term memory impairment of orientation other than for place, and absence of clouding of consciousness). Dichotomous scoring for “present” or “absent” was employed. Symptoms were required to cause a socially significant impairment in functioning in order to be classified as “present”. An algorithm was then applied in order to provide diagnoses based on the different systems. Please refer to Table 1 for a list of dementia symptomatology and the resultant distribution of the Wancata et al. (2007) sample according to diagnostic classification system.
Table 1 *Distribution of dementia symptomatology across classification systems (Wancata et al., 2007)*

<table>
<thead>
<tr>
<th>Symptom</th>
<th>N</th>
<th>Percent</th>
<th>DSM-III-R</th>
<th>DSM-IV</th>
<th>ICD-9</th>
<th>ICD-10</th>
<th>Historical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impairment of short-term memory</td>
<td>125</td>
<td>12.1</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of long-term memory</td>
<td>81</td>
<td>7.9</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Decline in other cognitive abilities characterized by deterioration in judgment and thinking, such as planning and organizing</td>
<td>282</td>
<td>28.1</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of abstract thinking</td>
<td>148</td>
<td>14.6</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impaired judgment</td>
<td>87</td>
<td>8.6</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Aphasia</td>
<td>62</td>
<td>6.1</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Apraxia</td>
<td>92</td>
<td>9.0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Agnosia</td>
<td>75</td>
<td>7.2</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Constructional difficulties</td>
<td>108</td>
<td>10.6</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Disturbance in executive functioning (i.e., planning, organizing, sequencing, abstracting)</td>
<td>271</td>
<td>27.0</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Personality changes</td>
<td>164</td>
<td>16.1</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Emotional lability</td>
<td>19</td>
<td>1.9</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Irritability</td>
<td>48</td>
<td>4.7</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Apathy</td>
<td>104</td>
<td>10.2</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Coarsening of social behavior</td>
<td>12</td>
<td>1.2</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of orientation</td>
<td>119</td>
<td>11.7</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of comprehension</td>
<td>62</td>
<td>6.1</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of calculation</td>
<td>93</td>
<td>9.2</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Impairment of learning capacity</td>
<td>175</td>
<td>17.3</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Clouding of consciousness</td>
<td>4</td>
<td>0.4</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Notes: N = 1,019. +, use of the symptom.

Decline in other cognitive abilities and disturbance in executive functioning represent the highest-ranking symptoms indicated. It is worth noting that memory impairments were not, as diagnostic criteria indicate, the primary symptom indicated.

Wancata et al. (2007) also examined the reliability of the diagnostic classification systems and identified percentage of overlap, or agreement. In this case, agreement is defined as Individual A is classified as having a diagnosis of dementia using the *DSM-III-R* criteria, as well as the *ICD-9* criteria. Please refer to Table 2 for overall comparisons across diagnostic classification systems.
Table 2 *Comparison of diagnostic classification systems (Wancata et al., 2007)*

<table>
<thead>
<tr>
<th></th>
<th>DSM-III-R Dementia</th>
<th>DSM-IV Dementia</th>
<th>ICD-9 Dementia</th>
<th>ICD-10 Dementia</th>
<th>Historical Dementia</th>
</tr>
</thead>
<tbody>
<tr>
<td>N (% )</td>
<td>64 (100)</td>
<td>98 (100)</td>
<td>12 (100)</td>
<td>52 (100)</td>
<td>75 (100)</td>
</tr>
<tr>
<td>DSM-III-R dementia (%)</td>
<td>64 (100)</td>
<td>98 (100)</td>
<td>12 (100)</td>
<td>52 (100)</td>
<td>75 (100)</td>
</tr>
<tr>
<td>DSM-IV dementia (%)</td>
<td>63 (64.5)</td>
<td>65 (98.6)</td>
<td>10 (15.6)</td>
<td>28 (45.8)</td>
<td>57 (89.1)</td>
</tr>
<tr>
<td>ICD-9 dementia (%)</td>
<td>10 (83.3)</td>
<td>10 (83.3)</td>
<td>10 (10.2)</td>
<td>52 (32.7)</td>
<td>71 (72.4)</td>
</tr>
<tr>
<td>ICD-10 dementia (%)</td>
<td>28 (87.5)</td>
<td>32 (100.0)</td>
<td>7 (21.9)</td>
<td>7 (58.3)</td>
<td>10 (83.3)</td>
</tr>
<tr>
<td>“Historical” dementia (%)</td>
<td>57 (76.0)</td>
<td>71 (94.7)</td>
<td>10 (13.3)</td>
<td>30 (40.0)</td>
<td>30 (93.4)</td>
</tr>
<tr>
<td>Kappa values</td>
<td>1.000</td>
<td>0.759</td>
<td>0.252</td>
<td>0.565</td>
<td>0.807</td>
</tr>
</tbody>
</table>

The *DSM-IV* system identified the greatest number of individuals as having a diagnosis of dementia (*N* = 98), as compared to *ICD-9* criteria identifying nine individuals as having a diagnosis of dementia. Wancata et al. (2007) suggest this is due to the more stringent criteria set forth in the *ICD* manuals. The main difference between *DSM-III-R* and *DSM-IV* was the change of a conjunction (i.e., “and” to “or”). *DSM-III-R* requires impairment in short-term and long-term memory, whereas *DSM-IV* required one or the other to meet the criterion, which produced a nearly 50% increase in dementia diagnoses between manual editions (Wancata et al., 2007).

Overall *ICD-10* prevalence rates were low (i.e., 3.1%; Wancata et al., 2007). This may be the result of the personality/behavior requirement (this study did not include duration of 6 months requirement), or it could be the result of poor insight. No caregiver or collateral data were collected due to the possibility of not being able to collect collateral information for all participants, which may have decreased the reporting of behavioral and/or personality changes (Wancata et al., 2007). In general, prevalence rates tended to decrease as more stringent criteria were required (i.e., short-term and long-term memory impairments, personality or behavior changes). When the authors controlled for memory impairment and personality/behavior changes, *DSM-III-R, DSM-IV,* and *ICD-10* identified relatively the same number of individuals (Wancata et al., 2007).
**Part B. The brain and normative cognitive development.** In order to examine the foundation for normative and pathological cognitive processes, it is necessary to have a basic understanding of the brain’s structures and relative functions. This knowledge can then inform the diagnostic process, as well as guide differential diagnosis and the selection and application of appropriate interventions.

**Brain structures and functions.** The brain is a complex organ that is part of the nervous system and is responsible for responding to internal and external cues from conception to death. Neurons, cells that process information, and glial cells, cells that provide mechanical and metabolic support the neuronal cells, are the two main categories of cells that comprise the nervous system (Beatty, 1995). Please refer to Figure 1 for a schematic of the main structures of a typical neuron.

*Figure 1. The major features of a typical neuron (Reaper, 2008).*

Typical neurons are divided into three main parts: (1) the cell body, or soma; (2) the dendrites; and (3) axon (Beatty, 1995). The cell’s nucleus and other intracellular structures are encompassed in the soma (Beatty, 1995). The dendrites are extensions of the soma and serve as part of the communication system between neurons (i.e., receive information from other cells and transmit that information to the soma; Beatty, 1995). The majority of neurons have axons, which also contribute to the communication system between cells by transmitting information.
Dementia

from the soma to other cells (Beatty, 1995). The terminal buttons, located at the end of the axons, are responsible for transmitting the information to the receiving cell (Beatty, 1995). The gap, or point of communication between two neurons, is called a synapse (Beatty, 1995).

The brain is composed of gray and white matter, receiving their respective names based on anatomical appearance. Gray matter consists of cell bodies and synaptic connections and typically engages in the low-level processing of sensory and motor information (Beatty, 1995). White matter, however, consists of axons and gets its characteristic white color from the myelin sheath, which is largely composed of fat cells (Beatty, 1995).

The neocortex, or cerebral cortex, is divided into four main regions, or lobes. Each lobe operates and controls different functions. Please refer to Figure 2 for a schematic of the major lobes of the brain.

![Figure 2. The major lobes of the brain (Netley, Lozon, Perdeaux, & Weishar, 2008).](image)

Some of the primary functions controlled by the frontal lobe include: emotions, personality, judgment, intellect, morality, language, planning, abstract thought, attention, voluntary movement, olfaction, short-term memory, perseverance, and impulse control (Heitman, 2003). Both the motor cortex and limbic system are located in the frontal lobe (Heitman, 2003). The parietal lobe affects sensory functions, motor functions, the experience of pain, perception, abstract reasoning, body image, spatial relationships, proprioception, and the ability to read and
create maps (Heitman, 2003). The temporal lobe is involved in memory processing and affects hearing, receptive language, smell, the ability to understand speech, emotional memories, general awareness, and sound discrimination (Heitman, 2003). The occipital lobe affects vision, integrates, and coordinates visual stimuli with other areas in the brain (Heitman, 2003).

**Neurobiological indicators of normative brain development.** Despite the perception that senility and losing cognitive abilities are a natural part of the aging process, evidence suggests that impairments in memory and other cognitive functioning skills are indicative of pathology rather than normative developmental processes (Zaudig, 2002). Del Tredici and Braak (2008) clearly elucidate that aging is a “continuum of biological changes and changes in independent living skills that transpire in the course of a lifetime but which, in themselves, do not necessarily represent a disease process” (p. 1135). It is, therefore, necessary to understand the physiological changes inherent in normal and abnormal aging processes in order to make appropriate comparisons and decisions regarding one’s cognitive health.

Contrary to popular belief that “old age” begins at age 65 years or older (Research!America, 2006), cross-sectional data suggest cognitive decline may begin in early adulthood (Salthouse, 2009). Several neurobiological indicators have been examined relative to cognitive health and decline across the lifespan, including regional brain volume, myelin integrity, cortical thickness, serotonin receptor binding, striatal dopamine binding, accumulation of neurofibrillary tangles, and concentrations of various brain metabolites.

It is important to understand how neurobiological indicators may be utilized to better gauge normal and abnormal aging processes of the brain. Technological advances in microarray technology and brain imaging technologies have increased the knowledge regarding the physiological change processes that take place as the human brain ages (Bishop, Lu, & Yanker,
Dementia (2010). Functional imaging techniques, specifically, allow for the physician or researcher to view the brain directly and examine any extant metabolic diseases or lesions on a smaller, finer scale than was previously afforded by structural imaging technologies (Bishop et al., 2010). In general, the different regions of the brain often communicate and cooperate to complete cognitive tasks. As humans age, functional imaging studies indicate that these communication systems lose some functionality (Bishop et al., 2010).

Atrophy, or the loss of cells, associated with aging does not uniformly affect all brain regions, nor does it affect all individuals in the same manner (Allen, Bruss, Brown, & Damasio, 2005). In general, the brain atrophies at -0.23% per year across the lifespan, as compared to individuals with diagnoses of dementia who experience at least two times the normative brain atrophy rate (Fotenos, Snyder, Girton, Morris, & Buckner, 2005; Marcus, Fotenos, Csernansky, Morris, & Buckner, 2010).

Allen and colleagues (2005) conducted a cross-sectional examination of the effects of white and gray matter volumes of the major cerebral lobes (i.e., frontal, temporal, parietal, occipital) in 87 healthy adults ranging in age from 22 years to 88 years. In general, gray matter tended to decrease linearly across the lifespan, with two exceptions: (1) the temporal lobe aged more like white matter (i.e., cubic model), and (2) the parahippocampal gray matter deteriorated differentially, with the amygdala producing linear atrophy rates and the hippocampus exhibiting a cubic model of decline (i.e., stable until approximately age 60 years then showing an accelerated rate of decline; Allen et al., 2005). White matter volume tended to adhere to a cubic regression model, with general increases in volume until approximately 50-60 years, gradual declines, and an accelerated decline beginning at age 70 years (Allen et al., 2005). Occipital lobe white matter, however, appears to conform to a quadratic regression model, with a peak in
volume at age 40 years (Allen et al., 2005). White matter atrophy in the temporal region appears to peak at greater than sixty years (Allen et al., 2005).

Despite the differential onset of atrophy in gray and white matter, white matter atrophy appears to begin mirroring gray matter atrophy at approximately age 60 years (Allen et al., 2005). This finding is consistent with Fotenos and colleagues (2005), who found early declines in gray matter volume, beginning at 18-30 years, whereas white matter volume remained stable until approximately 44 years ($N = 370, 18-97$ years). Individuals who did not meet criteria for dementia and were 65 to 95 years exhibited an approximate -0.45% atrophy rate, as compared to the average -0.23% per year rate cited across the lifespan. This indicates a normative decrease in brain volume as age increases but is not comparable to the -0.98% atrophy rates identified in individuals with early-stage diagnoses of Dementia of the Alzheimer’s Type (Fotenos et al., 2005; Marcus et al., 2010). The authors suggest that gray matter may be more vulnerable to the dementia disease process, with accelerated volume decreases as the disease worsens (Fotenos et al., 2005).

Allen and colleagues (2005) suggest that, although the respective volumes of gray and white matter in all of the major brain regions are associated with age, some associations tend to be stronger than others. For example, the temporal lobe appears to exhibit a strong age-association with white matter volume, whereas the parietal, frontal, and occipital lobes are weakly correlated in this way (Allen et al., 2005). Similarly, gray matter tends to exhibit a strong age-relationship with the frontal lobe (Allen et al., 2005).

Examination of genetic models of aging (e.g., yeast, nematodes, flies, mammals) indicates that the rate of aging is not fixed, as was previously thought, but is plastic and modifiable (Bishop, Lu, & Yanker, 2010). Convergent and divergent pathways across animal
models can provide a wealth of information regarding typical and pathological aging processes. Bishop et al. (2010) identified decreased mitochondrial function, increased stress-response pathways, and normative caloric restriction (i.e., not pathological or disordered caloric restriction) as convergent processes across animal models that are involved in the typical aging pathways. The aging processes that are involved in abnormal neurodegenerative processes, which take place in cognitive-related disorders, still require further examination.

Typical cognitive development across the lifespan. Verhaeghen and Salthouse (1997) conducted a meta-analytic study to better understand the relationship between age and cognition in adults. Although age alone accounted for a substantial amount of variance, some of the age-related variance appeared to be mediated by speed of processing and primary-working memory (Verhaeghen & Salthouse, 1997). This is consistent with findings by Salthouse and colleagues (2003), where performance differences on speed of processing suggest a 1.0 standard deviation change from age 18 years to 60 years. In addition, age-related cognitive declines appeared to accelerate more rapidly in the 51-80 years category, as compared to the 18-50 years age group, especially in the areas of speed, reasoning, and episodic memory (Verhaeghen & Salthouse, 1997). This suggests a possible nonlinear age-cognition relationship. Age confounds were identified in time-limited testing conditions for older adults ($M = 63.9$ years, $SD = 5.0$ year), as compared to young adults ($M = 20.8$ years, $SD = 2.9$ years), with 89% of age-related variance in rate of approach to recall and recognition tasks accounted for by perceptual and information processing speed (Verhaeghen, Vandenbroucke, & Dierckx, 1998).

To examine the broader picture of age-related cognitive development, Salthouse (1998) examined age-related influences on cognition across the lifespan, using a sample with participants ranging in age from 5 years to 94 years ($N = 5,470$). Although the magnitude of
change of variables of interest varied, inspection of the means for variables as a function of age indicated a general increase in acquisition or cognitive development until approximately age 20 years and then stasis-decrease or decrease-only in skills across the lifespan (Salthouse, 1998). The Woodcock-Johnson Psycho-Educational Battery-Revised was used to collect data on seven composite variables of interests, composed of 16 subscales: reasoning skills (i.e., concept formation, analysis-synthesis), knowledge (i.e., social studies, science, humanities), quantitative skills (i.e., calculation, applied problems), short-term memory (i.e., memory for sentences, memory for words), perceptual speed (i.e., visual matching, cross out), closure (i.e., visual closure, incomplete words, sound blending), and associative memory (i.e., memory for names, visual-auditory learning). Best-fitting models were identified for children (5-17 years) and adults (18-94 years). Hierarchical analyses with one higher order factor emerged as the best fitting model for children, as compared to the more complex model with two, second-order factors and one, third-order factor serving as the best-fitting model for adults (Salthouse, 1998). These best-fitting models suggest that age does not account for all of the shared variance in these models. In general, however, age does appear to account for the highest degree of variance in both models (i.e., children, adults), with additional variables accounting for shared variance beyond what can be explained by the effects of age on cognition.

Across individuals tested, the performance difference for individuals from age 18 years to age 60 years was approximately -0.8 standard deviations for speed and spatial visualization variables, with smaller differences of approximately -0.6 and -0.7 standard deviations for reasoning and memory variables, respectively. Differences in speed of processing (i.e., approximately -1.0 standard deviations) were consistent with Salthouse et al. (2003) and Verhaegen and Salthouse’s findings (1997). In general, the twelve variables (i.e., word recall,
logical memory, paired associates, matrix reasoning, Shipley abstraction, letter sets, spatial relations, paper folding, form board, digit symbol, letter comprehension, pattern comprehension) initially peaked when individuals were 22-27 years old followed by a slight decay, which peaked again in the 27-42 years range, depending on variable of interest. Please refer to Figure 3 for a graphic representation of the Salthouse (2009) data for the four composite variables.

**Figure 3.** Cross-sectional data for four composite variables across the lifespan (Salthouse, 2009).

Despite the trends observed above, which indicate cognitive decline across the lifespan in normative samples, the adult brain has been identified as having greater plasticity than previously thought (National Research Council, 2000).

**Risk and protective factors.** Neurodegenerative and cardiovascular disease, which are the most common disease processes associated with dementia, often develop over years and do not typically produce symptoms at onset. It is necessary, then, to engage in protective behaviors to mitigate risk factors. Some early-life risk factors that have been identified include fetal
undernutrition, low birth weight, not being breast-fed, lower socioeconomic status, and educational attainment (Hughes & Ganguli, 2009). In mid-life, education, occupation, presenting health concerns (e.g., high blood pressure, high cholesterol, diabetes mellitus, obesity, general anesthesia, head injury) and mental health concerns (e.g., depression, personality characteristics that may interact with health concerns, engagement in pleasurable activities, exercise, cognitive activity, socialization) and substance or toxins (e.g., alcohol, tobacco, hormone therapy) may also affect the development or expression of dementia symptoms (Hughes & Ganguli, 2009). In general, it appears as though behaviors and emotions that encourage tension (e.g., high blood pressure, anger, over-working without social outlets, drinking) serve as risk factors, whereas engaging in incompatible behaviors may protect individuals from developing dementia or experiencing earlier onset of cognitive declines.

Although aging is the main risk factor for developing mild cognitive impairment or dementia, cognitive disorders are not inevitabilities simply due to aging. Exercise has been identified as a possible moderator in the relationship between serum folate levels, which are believed to be indicative of possible folate deficiency, and dementia (Middleton, Kirkland, Maxwell, Hogan & Rockwood, 2007). In addition, exercise (e.g., aerobic fitness) has been associated with increased hippocampal volume in geriatric populations, which is associated with increased memory function (Erickson et al., 2009). Social engagement, as indicated by frequency of social activity and degree of perceived social supports, is associated with increased cognitive functioning in elderly individuals (Krueger, Wilson, Kamenetsky, Barnes, Bienias, & Bennett, 2009). Thus, there are environmental or lifestyle factors that can serve as the basis for prevention and treatment of dementia.
Screening, Assessment, and Measurement

The global identification of dementia-related symptoms is the first step in correctly identifying an individual as having a dementia-related disorder. It is necessary to conduct a differential diagnosis to ensure the correct diagnosis (i.e., dementia) has been provided. Misclassification of dementia or as a similar disorder when dementia is the true presentation can delay the early identification of the disorder and related disease process. Early identification and intervention can help slow the disease processes and, in some cases, prolong quality of life and decrease cost of services. Therefore, the clinical differential diagnostic process, as well as screening, testing, and assessment procedures are vital to the correct classification and diagnosis of dementia and dementia subtypes.

Part A. Differential diagnosis. After cognitive and functional impairments indicative of dementia have been identified, it is necessary to differentiate and diagnose the dementia subtype. It is also necessary to rule out other possible psychological disorders that may present similar constellations of symptoms. The differential diagnostic process will aid in appropriate pharmacological and treatment service provision, as the course and symptomatology differs across dementia subtypes and disorders.

Differential diagnosis – dementia subtypes. Dementia subtypes are largely driven by an identified disease process (e.g., Alzheimer’s disease, head trauma, vascular disease). Mild cognitive impairment, despite its absence as a diagnostic category in DSM-IV-TR or ICD-10, is recognized in the extant literature as cognitive impairments above and beyond those involved in typical cognitive development or decline, therefore it will be discussed below.

Mild cognitive impairment. In general, Mild Cognitive Impairment (MCI) is viewed as a transitional state between typical cognitive functioning and fully symptomatic dementia.
Individuals with MCI exhibit atypical cognitive functioning but are not significantly impaired. Not all individuals with MCI transition into dementia. Flicker and colleagues (1991) conducted a longitudinal study ($N = 64; N_{control} = 32, N_{MCI} = 32$) and examined the potential predictors of cognitive decline in individuals identified as having MCI. Baseline and follow-up data were collected (i.e., two years later) for both the “normal” and MCI groups. At follow-up, four of the individuals classified as “normal” during baseline received diagnoses of dementia or MCI, as compared to 23 individuals in the MCI group who declined. Of the battery of psychological tests administered, Flicker et al. (1991) found the shopping list task, a verbal recall measure, the misplaced objects task, a visuospatial recall measure, and two language tests (i.e., object function recognition task, object identification task) to demonstrate a high degree of sensitivity and specificity in identifying MCI individuals who exhibited a significant degree of cognitive decline at the two-year follow-up. It is important to note that individuals were excluded from this study if they had a history of seizures, schizophrenia, mania, depression, substance use, head trauma that resulted in a loss of consciousness greater than one hour, serious neurological disorder, clinically significant focal neurological deficits, severe cardiovascular conditions, or metabolic disorders. Several of these medical conditions are associated with the development of various dementia types (e.g., Vascular Dementia, Frontotemporal Dementia), which suggests the sample examined in Flicker et al. (1991) was relatively homogeneous and possibly less affected by dementia subtypes that may present earlier in the lifespan.

**Alzheimer’s disease (AD)/Dementia of the Alzheimer’s Type (DAT).** Currently, Alzheimer’s disease (AD) cannot be diagnosed definitively without the use of autopsy or biopsy (U. S. Department of Health and Human Services, 2009) and is considered a diagnosis of exclusion (APA, 2000). It is characterized by a gradual or insidious onset of symptoms, often
with recent memory loss presenting early in the course of the disorder (APA, 2000). Additional
cognitive disturbances are often observed several years after recent memory loss begins, with
gait/motor disturbances and mute behaviors sometimes presenting in end stages of the disease.
Personality changes (e.g., irritability) are often more pronounced during mid-stage AD/DAT
(APA, 2000). According to DSM-IV-TR (APA, 2000), the course of AD/DAT begins gradually
and ends, approximately eight to ten years after symptom onset, with death of the individual.

The DSM-IV-TR distinguishes between early and late onset, with age 65 years as the
golden standard, but Reisberg (2006) suggests this is an antiquated artifact of the historical
development of Alzheimer’s disease as a disorder and is not substantiated by literature support.
Symptom onset typically does not begin prior to age 49 or 50 (APA, 2000; Reisberg, 2006). In
addition, Reisberg (2006) suggests that AD/DAT as a diagnosis of exclusion is no longer
necessary with the advances in technology and testing procedures. He indicates that the Mini-
Mental State Examination (MMSE), due to its floor and ceiling effects in AD/DAT clients, is
largely ineffective in gauging the effects of disease (Reisberg, 2006). Measures of praxis (e.g.,
cube drawing measure) and vocabulary or language measures are better indicators of early onset
of AD/DAT (Reisberg, 2006).

Researchers have identified three gene mutations associated with early onset AD/DAT
(i.e., APP on chromosome 21, presenilin 1 on chromosome 14, and presenilin 2 on chromosome
1) and one associated with late onset AD (i.e., apolipoprotein E on chromosome 19, allele 4;
DHHS, 2009). Several additional genes have recently been linked with late onset AD and are
undergoing further examination (i.e., CLU, PICALM, CR1, ADAM10, and Rps23r1; DHHS,
2009). Amyloid plaques, neurofibrillary tangles, and loss of neuronal connections and cell death
have been identified as potential causes of AD/DAT (DHHS, 2009). Plaques are mostly
Dementia composed of beta-amyloid, a protein fragment, which builds up in the synapse (DHHS, 2009). Tau, a protein that normally functions to help guide other nutrients through the neuron, has been identified as the main component in neurofibrillary tangles (i.e., the accumulation of abnormal tau proteins; DHHS, 2009). The build-up of abnormal plaques and neurofibrillary tangles in the synaptic cleft are cited as potential causes of neuronal death (DHHS, 2009). If neurons have difficulty communicating, then connections break down and brain atrophy occurs.

A comprehensive health report that featured death- and dying-related variables in the United States (National Center for Health Statistics, 2010) found that the majority of all deaths in 2007 were accounted for by individuals 65 years or older (i.e., 72.4%). Heart disease (28.3%) and cancer (22.2%) were the top-ranking causes of death, with Alzheimer’s disease accounting for 4.2% of deaths in older adults (NCHS, 2010). Inspection of the 1980 data reveals that Alzheimer’s disease was not reported as one of the top ten causes of death. It was not until 1999 that Alzheimer’s disease appeared as a cause of death category and accounted for 126.5 (SE = .6) per 100,000 deaths (NCHS, 2010). This number continued to rise and was most recently calculated as 194.8 (SE = .72) per 100,000 deaths in 2007 (NCHS, 2010).

**Vascular Dementia (VaD).** Vasular dementia (VaD) is characterized by memory and cognitive impairments that cause significant impairment in the individual (APA, 2000). Evidence must exist to support the etiological basis of the dementia as cerebrovascular disease (APA, 2000). *ICD-10* (WHO, 1993) indicates that VaD is the result of vascular disease and is likely the cumulative effect of small infarcts. The *DSM-IV-TR* suggests that possible neurological signs and symptoms include: extensor plantar response (i.e., toes fan out), pseudodulbar palsy (i.e., characterized by difficulty with the chewing and swallowing process, slurred speech, possible emotional outbursts), gait abnormalities, exaggerated deep tendon reflexes, weakness in the
extremities (APA, 2000). Reisberg (2006) suggests that cerebrovascular disease is more pervasive and likely plays a role in several cognitive disorders, which has also been supported by the DHHS in their study on AD (2009). As compared to AD/DAT, the onset of symptoms in VaD is often abrupt, with rapid changes in functioning across the course of the disease (i.e., typically not gradual or insidious; APA, 2000). With the early identification of hypertension or the related vascular disease, treatments may be able to prevent continued progression of symptoms (i.e., the end result does not have to be death in the case of VaD if individuals are accurately identified early in the course of the disease process).

**Frontotemporal dementia (FTD).** Extant research indicates that the term “frontotemporal dementia (FTD)” may be more appropriate as a broad classification term than the *DSM-IV-TR* distinction of either Dementia due to Pick’s Disease or Dementia due to Frontotemporal Degeneration (Cycyk & Wright, 2008; Reisberg, 2006). Despite often being referred to as Pick’s disease, FTD also includes frontotemporal lobar degeneration, frontal lobe degeneration of non-Alzheimer type, dementia of frontal lobe type, corticobasal degeneration dementia associated with motor neuron disease, semantic dementia, and primary progressive aphasia (Cycyk & Wright, 2008). Frontotemporal dementia is primarily a neurodegeneration of the anterior temporal and/or frontal lobes, which results in marked changes in cognitions, language, personality and social functioning (Cycyk & Wright, 2008). Problems that can arise when the temporal lobe is the focus of brain atrophy or injury are hearing problems, agitation, irritability, receptive aphasia, difficulty with form perception, and attentional deficits (Heitman, 2003). Frontal lobe degeneration can cause problems in emotion, the limbic system functioning, personality, judgment, intellect, morality, language, planning, consciousness, motor cortex...
functioning, abstract thought, voluntary movement, smell, attention span, short-term memory, perseverance, and impulse control (Heitman, 2003).

Contrary to the overall memory impairment criterion, FTDs often present with depressive symptoms, apathy, disinhibition and progressive language dysfunction without memory impairments (Cycyk & Wright, 2008). This criterion excludes many cases of FTDs until later stages of the disease process have produced memory impairments, which greatly decreases the probability of effective treatment services halting or slowing the progression of the disorder (Reisberg, 2006). Non-language changes (i.e., behavioral, personality) are more common in early onset FTD than language changes (Cycyk & Wright, 2008; National Institute on Aging, 2010). FTDs often progress to death in 3 to 15 years due to infections, such as pneumonia (Cycyk & Wright, 2008). Loss of personal awareness, reduced social appropriateness, mental rigidity, strange eating habits, perseverations, and/or mood changes in conjunction with executive dysfunction or decreased use of speech with intact visuospatial abilities often present prior to death (Cycyk & Wright, 2008). Similar to AD/DAT, the FTD disease course is irreversible, with treatment strategies focused on slowing the disease progression and minimizing caregiver burden (Cycyk & Wright, 2008). In general, individuals progress more rapidly to death in FTD than AD, with 8.7 ± 1.2 median survival for FTDs from onset of symptoms, as compared to 11.8 ± 0.6 years median for AD (Cycyk & Wright, 2008). Please refer to Table 3 for an outline of testing procedures to identify and diagnose FTD.
MRI and single photon emission computed tomography (SPECT) technologies have been used to differentiate between FTD and AD. Both FTD and AD present with medial temporal lobe atrophy, but FTD patients tend to asymmetrically lose tissue in both anterior frontal and temporal lobes (Cycyk & Wright, 2008; Laforce et al., 2010). In addition, FTD clients show both bifrontal and bitemporal cortical damage, whereas AD clients show temporoparietal damage only (Cycyk & Wright, 2008). As previously mentioned, “behavioral changes are the most salient clinical feature of FTD and are often highly bizarre and disturbing, such as grabbing food from a stranger’s plate, disrobing in public, or attempting to ingest inedible objects” (Cycyk & Wright, 2008, p. 435). Due to the presentation of depressive symptoms, apathy, and potential anhedonia, it is imperative to differentiate FTD from Major Depressive Disorder.

**Dementias due to other etiologies.** The *DSM-IV-TR* lists additional dementia subtypes by etiological distinction, typically by biological or medical disease process that is producing
brain atrophy or injury (e.g., Dementia due to HIV infection, Substance-Induced Persisting Dementia). The three dementia subtypes listed above are the more commonly discussed dementia subtypes. Worth noting is the dementia subtype associated with Parkinson’s disease or Lewy body dementia (LBD). Resiberg (2006) suggests that “dementia associated with Parkinson’s disease” might be a more preferable classification of the dementia subtype and presentation, due to the differential course and interaction dementia and Parkinson’s appear to have as compared to other subtypes. In addition, dementia is largely considered a disorder of aging, which may not be true in atypical cases or in individuals who have diagnoses of Dementia due to Head Trauma (e.g., boxers, soccer players, football players). The interaction between environmental factors (e.g., head trauma, toxins or substances, cognitive health practices) should be examined to understand the source of dementia subtype, as well as guide future research regarding risk and protective factors.

**Differential diagnosis – Other psychological disorders.** In order to treat mental disorders appropriately, it is imperative to provide an accurate diagnosis. Recommended treatment methodologies and available services vary greatly across different disorders.

**Delirium.** Delirium, which is also a cognitive disorder, overlaps with dementia on the “memory impairment” criterion (APA, 2000). In order to distinguish between dementia and delirium, the diagnostician is to identify attentional difficulties present in delirium (e.g., decreased ability to maintain and shift attention adequately) and differences in course (APA, 2000). The *ICD-10* (WHO, 1993) requires a six-month duration of memory and other cognitive impairment deficits in order to receive a diagnosis of dementia, which would aid in the differential diagnosis between dementia and delirium. It is possible for an acute delirium episode
to be superimposed on the enduring, persisting dementia (e.g., substance-induced delirium as a result of medication mismanagement; APA, 2000).

**Amnestic Disorder.** Amnestic disorders are also cognitive disorders and also present with severe memory impairments (APA, 2000). Amnestic disorders do not present with additional cognitive impairments (e.g., apraxia, aphasia, agnosia, executive dysfunction; APA, 2000).

**Major Depressive Disorder.** Major Depressive Disorder in aging individuals is sometimes referred to as pseudodementia. A major depressive episode can be characterized by cognitive impairments, agitation, and other behavioral and personality symptoms that mirror dementia symptomatology (APA, 2000). The treatment course and medications, however, typically do not converge in the same manner, which is why differential diagnosis is vital. Medical evaluations, identification of onset of symptoms, a temporal outline or sequence of depressive and cognitive symptoms, family history, course of illness, and response to treatment are all useful in conducting a differential diagnosis. Premorbid cognitive state, if reliable reports are available, may be most informative. In cases of dementia, premorbid cognition is typically already declining, whereas a more drastic or abrupt change in cognition is observed in conjunction with the onset of depressive symptoms in cases of Major Depressive Disorder (APA, 2000).

**Mental Retardation.** Mental retardation is a persisting disorder that affects general intellectual function with co-occurring impairments in adaptive functioning skills (APA, 2000). The onset of mental retardation occurs prior to age 18 years, whereas the onset of dementia typically occurs later in life depending on dementia subtype (APA, 2000). Dementia may
Dementia develop in individuals with a diagnosis of mental retardation, in which case both diagnoses are given (APA, 2000).

**Schizophrenia.** Individuals with diagnoses of schizophrenia may present with multiple cognitive deficits and decreased adaptive functioning skills (APA, 2000). The cognitive deficits during the course of Schizophrenia, however, are typically less severe than those observed in clients with dementia (APA, 2000). In addition, Schizophrenia typically has an earlier onset of symptoms and there is often an unidentifiable etiology for the cognitive impairments, as compared to the etiological bases for dementia diagnoses (APA, 2000).

**Malingering and Factitious Disorders.** Observation over time and settings will provide the appropriate information for this differential diagnosis. Often, individuals who are malingering or are presenting with a Factitious Disorder are not capable of maintaining cognitive deficits across time and situations (APA, 2000). For example, if the individual is incapable of conducting simple math during cognitive testing but is able to make change for a dollar or run the scoreboard at a ball game, then the likelihood of dementia decreases.

**Typical cognitive declines.** Please refer to the section on typical cognitive development for more information on normative cognitive declines due to the aging process. In general, a diagnosis of dementia may be given if the cognitive impairments are above and beyond typical cognitive declines and cause functional impairments.

**Part B. Screening, testing, and assessment.** Screening, testing, and assessment processes are all informative in the diagnostic, treatment planning, and intervention stages of service provision for individuals with diagnoses of MCI or dementia. It is important to understand the difference between these measurement methodologies before examining specific measures, as well as the concepts of sensitivity and specificity. Sensitivity is defined as the percentage of true
positive cases identified by a measure, whereas specificity is defined as the proportion of cases identified as true negatives (Groth-Marnat, 2003). For example, if a measurement tool is used to identify individuals who are sick, then a sensitive measure would identify a high number of cases of sick individuals. It is necessary to understand how many of those individuals are actually sick (i.e., true positives) or misidentified as sick (i.e., false positives). If the measure is also high in specificity, it would be able to delineate the truly sick individuals (i.e., true positives) from the truly healthy individuals (i.e., true negatives). If, however, the measure is low in specificity and high in sensitivity, then the tool will identify a high number of sick individuals as sick individuals (i.e., true positives), as well as classify healthy individuals as sick individuals (i.e., false positives).

**An overview.** Screening tools are typically quick, short measurement tools utilized to identify possible cases, which includes true and false positives. These tools are often high in sensitivity and low in specificity and should not be the sole basis for a diagnosis. The purpose of screening tools is to cast a wide net in order to identify, with hopefully greater certainty, those individuals who may have a specific disorder or problem. If screening tools decrease sensitivity, then the probability of missing true positive cases increases. Testing and assessment processes are necessary after the screening process identifies potential cases.

Testing and assessment processes are often confused. As a measurement methodology, testing is often part of the assessment process. The testing process often focuses on a specific behavior or set of behaviors under controlled or standardized conditions, which often allows for ipsative, as well as between-subjects comparisons (Vanderploeg, 2000). The testing process often requires minimal interpretation by the administrator. Many of the screening measures
identified above are implemented as a test battery in order to screen for impairments across a wide array of cognitive functioning variables.

Neuropsychological tests have been used to gauge normative cognitive development, as well as identify mild cognitive impairment, preclinical dementia, and dementia. When neuropsychological tests are used for diagnostic purposes, a reliable, valid comparison group of typically developing individuals is necessary to make appropriate judgments regarding diagnosis and severity of impairment. From a measurement standpoint, studies that utilize cross-sectional data are problematic due to the inclusion of individuals with mild cognitive impairments not identified by testing or individuals who are transitioning into dementia in the sample (Holtzer et al., 2008). This heterogeneous sample increases the variability of test results in the comparison group. Holtzer and colleagues (2008) examined the between-groups differences in a longitudinal study across four samples (i.e., conventional cross-sectional data, robust norm group, incident dementia, lost to follow-up group) and found that the robust norms group, or the group that was composed of individuals who did not meet criteria for dementia at baseline or follow-up sessions, scored better on the neuropsychological battery than other groups (Holtzer et al., 2008). Perhaps the predictive and discriminative ability of neuropsychological measures would be increased if additional longitudinal studies were conducted, comparing robust norm groups and cognitively impaired groups of differential severity.

Additionally, within-person variability can affect neuropsychological testing results (e.g., practice effects, ipsative differences; Holtzer, Verghese, Wang, Hall, & Lipton, 2008). Inconsistency across an individual’s performance during neuropsychological testing may be an effective predictor of cognitive deficits or pathological brain development (Holtzer et al., 2008). Holtzer and colleagues (2008) suggest that Holtzer et al. (2008) found that within-person
variability in responding across three neuropsychological testing variables (i.e., verbal IQ, attention/executive functioning, free recall) was a significant predictor of incipient dementia up to one year after baseline assessment.

Some measurement tools are classified as assessments but are not to be confused with the assessment process. For example, Worden and colleagues (2008) examined two standard assessment tools used in nursing home facilities (i.e., Camberwell Assessment of Needs in the Elderly [CANE] and Minimum Data Set/Resident Assessment Instrument [MDS/RAI]) in order to identify the actual, as opposed to the accepted and assumed, interchangeability of these tools rather than evaluations based on face validity alone. Both measures were generally created to identify unmet needs (Worden, Challis, Hancock, Woods, & Orrell, 2008). These measures were found to be distinct assessment tools with different measurement foci. The CANE tended to be a better identifier of mental health needs and symptoms, whereas the MDS/RAI had a more inclusive view of the health domain, especially the potential needs related to nursing home facilities (Worden et al., 2008). It is necessary to identify and understand the desired information (e.g., mental health assessment, housing assessment, neuropsychological assessment) before selecting an assessment tool.

The assessment process differs from screening, testing, and other forms of measurement in that it is a more comprehensive approach to solving problems or answering questions, which includes collecting data from a multitude of sources (e.g., medical evaluations, other mental health professionals, testing results, client self-report, family reports, behavioral observations) and requires clinical judgment and interpretation. The assessment process informs treatment planning, diagnosis, follow-up procedures and re-assessment, for example (Vanderploeg, 2000).
**Measures.** Below are screening, testing, and assessment tools utilized in working with individuals with diagnoses of dementia, MCI, or suspected of having abnormal cognitive declines. These measurement tools vary by assessor, reporter, and methodology.

**National Adult Reading Test (NART).** The NART is a measure that is utilized to retrospectively estimate the premorbid level of intellectual functioning in individuals who exhibit cognitive deficits (Ferraro & Sturgill, 1998; Shulman & Feinstein, 2003; Taylor, 1999). Intelligence, which is often measured in using Wechsler Intelligence Scales, is a complex construct that is comprised of multiple abilities (Shulman & Feinstein, 2003). Intelligence tests often have a mean score of 100 points and a standard deviation of 15 points, with approximately 95% of the population falling within the normal intellectual quotient range (IQ; 70-130 points or ± 2 SDs; Shulman & Feinstein, 2003). Knowing an individual’s premorbid intellectual functioning can help guide professionals’ appropriate diagnostic and treatment choices.

The NART tests individuals’ abilities to pronounce a series of 50 words with incompatible spelling-to-sound rules (e.g., ache, yacht; Ferraro & Sturgill, 1998). The developers of the NART state that correct pronunciation of these words is due to familiarity, or recognition, with the word, rather than an ability to decode the spelling. Ferraro and Sturgill (1998) found that familiarity does increase correct responding, but familiarity across terms was extremely heterogeneous, ranging from 1.63 to 6.98 on a 7-point Likert-type scale.

The NART has also been criticized for its efficacy in identifying premorbid IQ in the dementia population, especially those individuals exhibiting language impairments (Shulman & Feinstein, 2003; Taylor, 1999). There is considerable debate regarding the utility of the NART as compared to demographic estimators of intellectual functioning (e.g., age, education, social class). Mixed results exist regarding the NART’s ability to estimate premorbid intellectual
functioning in normative samples (Taylor, 1999; for a counterargument see Bright, Jaldow, & Kopelman, 2002). Taylor (1999) found that the NART tended to underestimate premorbid IQ and appeared to be influenced by the severity of the presenting dementia, whereas demographic variables alone tended to provide a more reliable and valid comparison. Others, however, have not found demographic variables to be highly predictive of premorbid intellectual abilities (Bright et al., 2002).

**Cambridge Contextual Reading Test (CCRT).** The CCRT was developed in an attempt to identify premorbid IQ more accurately in moderate to severe dementia clients, as compared to the underestimations provided by the NART (Shulman & Feinstein, 2003). Rather than utilizing familiar words in isolation, the CCRT presents target words in a sentence that offers context (Shulman & Feinstein, 2003). Findings suggest that contextual sentence presentations increased premorbid IQ scores in individuals with poor reading ability (Shulman & Feinstein, 2003). In addition, the CCRT was found to be strongly correlated with the Wechsler Adult Intelligence Scale – Revised, supporting its validity as a measure of verbal IQ (Shulman & Feinstein, 2003).

**Mini Mental State Examination (MMSE).** Folstein and colleagues (1975; as cited in Shulman & Feinstein, 2003) developed the MMSE in order to screen “seven different cognitive domains or functions: orientation to time (5 points), orientation to place (5 points), registration of three words (3 points), attention and calculation (5 points), recall of three words (3 points), language (8 points), and visual spatial ability (1 point; Shulman & Feinstein, 2003, p. 29).” One of the main development goals was to create a measure that did not require materials to implement (e.g., paper and pencil measure) or an exorbitant amount of time (e.g., generally takes approximately 10 minutes; Shulman & Feinstein, 2003). The MMSE is one of the most-utilized, researched cognitive screens but is no longer available in the public domain. Based on extant
research, cut-off scores have been developed based on various factors (e.g., age, education; Shulman & Feinstein, 2003). As a screening tool, the MMSE can be effective, but it should not be used as the sole assessment measure to identify degree of cognitive impairment (Shulman & Feinstein, 2003).

**Clock Drawing Test (CDT).** The CDT has been used as a screening tool for dementia and other neuropsychiatric disorders affected by executive dysfunction and deficits in visuospatial abilities (Shulman & Feinstein, 2003). Different scoring systems are available for the CDT and methodology and screening procedures vary as well, depending on cognitive ability being examined (Shulman & Feinstein, 2003). It is suggested that, due to the difficulty of scoring and length of implementation, the CDT is perhaps better suited for research purposes (Shulman & Feinstein, 2003). Initial investigations suggest the sensitivity and specificity are good for the CDT in identifying and predicting individuals with dementia (Shulman & Feinstein, 2003).

**Controlled Oral Word Association Test (COWAT) or Letter Fluency Test (FAS-Test).** This screening tool requires the individual to orally generate as many words as possible in a given duration that begin with the letters “F”, “A”, and “S” (Shulman & Feinstein, 2003). This measure screens language and frontal lobe functioning.

**Rowland Universal Dementia Assessment Scale (RUDAS).** The RUDAS is a six-item multi-culturally sensitive screening tool developed to identify potential cases of dementia (Storey, Rowland, Basic, Conforti, & Dickenson, 2004; as cited in Basic et al., 2009). The tasks include body orientation, fist-palm alternation, copying a picture of a cube, description of how to cross the road, category fluency (i.e., animals), and recall tasks (Storey et al., 2004; as cited in Basic et al., 2009). Basic et al. (2009) compared the RUDAS with the MMSE and General
Practitioner Assessment of Cognition (GPCOG). Their findings suggest that the RUDAS is at least as effective and accurate as the MMSE and GPCOG in identifying early dementia in community samples. The RUDAS was developed to be minimally impacted by cultural and linguistic factors and does not require an additional informant. The RUDAS, as well as the MMSE and GPCOG, were affected by concurrent presentations of depressive symptomatology (Basic et al., 2009).

**Dementia Behavior Disturbance Inventory.** The severity of behavioral and psychological symptoms can greatly impact an individual’s course of treatment, housing, caregiving, and overall cost of care. Self-report measures, especially those where the client is the informant, can be problematic as symptom severity increases. Kwok et al. (2011) examined the application and psychometric properties of the 48-item Dementia Behavior Disturbance Inventory (DBDI), as completed by caregivers in a Taiwanese sample. The measure was effective at identifying symptom frequency and relative degree of disturbance. In addition, the DBDI identified the behaviors that greatly impact the caregivers and caregiver-patient relationship (e.g., inappropriate sexual behaviors; Kwok et al., 2011). Behavioral and psychological symptoms occurred more frequently in individuals with specific dementia subtypes (i.e., Lewy bodies, vascular; Kwok et al., 2011).

**Consortium to Establish a Registry for Alzheimer Disease neuropsychological battery (CERAD-NP).** The CERAD-NP was found to be an effective and valid neuropsychological assessment battery for distinguishing non-impaired individuals from individuals with dementia, MCI, and dementia subtypes (Seo et al., 2010). Seo and colleagues (2010) suggest the CERAD-NP might be a useful measure for gauging the progression of neurodegenerative disorders.
Medical testing procedures. Brain-imaging techniques, both structural (i.e., imaging techniques that deal with the structure of the brain and aid in the diagnosis of large scale diseases and injuries) and functional (i.e., imaging techniques that all for direct viewing of brain functions and aid in the diagnosis and research of diseases on a finer scale, such as metabolic disorders and lesions) have greatly impacted dementia diagnostic practices and research (Bishop et al., 2010). Below are some medical scanning techniques used in dementia research and diagnosis.

**Computerized tomography (CT).** This brain-imaging technique was introduced in 1973 and is an enhancement of the well-known x-ray procedure, in which a horizontal slice of brain tissue is reconstructed (Beatty, 1995). In order to conduct the CT scan, x-ray beams are passed through the head (Beatty, 1995).

**Magnetic resonance imaging (MRI).** Rather than utilizing x-ray beams, as in CT scans, MRI scans employ radio-frequency energy in a magnetic field in order to collect information and mathematically reconstruct the desired image slices (Beatty, 1995). Because MRI scans do not use radiation, the technique is noninvasive and can be completed numerous times. In addition, MRI scans have greatly superior spatial resolution, as compared to CT scans (Beatty, 1995). Functional imaging techniques have also been applied to MRI scans (i.e., fMRI), allowing medical professionals and researchers to view both detailed structural and functional images. The fMRI technology allows professionals to view blood flow and oxidative metabolism functionality in the brain (Beatty, 1995).

**Positron emission tomography (PET).** The PET scan is a functional brain-imaging technique, which utilizes a tracer (e.g., fluorodeoxyglucose or FDG; Beatty, 1995). A tracer is a substance that is picked up by the cells and, after a certain amount of time, indicates which portions of the brain, in this case, are active (Beatty, 1995). Higher-order mental functioning can
be viewed with this PET scanning technique (Beatty, 1995). The FDG-PET was used in a study conducted by Laforce et al. (2010) and was found to be superior to clinical evaluation in MCI and unclear cases and effective in the classification of unclear or atypically presenting dementias. Of the clear AD and FTD cases, the FDG-PET scan was negligibly informative and provided confirmation in most cases (Laforce et al., 2010). Out of the 18% of cases clinically identified as MCI, the FDG-PET scan identified 11.8% “at risk” for transitioning into dementia, with the remaining cases being re-classified as typical AD or FTD dementias (Laforce et al., 2010). Overall, Laforce and colleagues (2010) were able to re-classify 59.5%, as compared to 81.1% clinically identified, unclear cases and 17.6% of the MCI cases.

**Applications to Therapy: Behavioral Interventions**

Interindividual variability relative to cognitive changes exists, in both normative and pathological samples (National Research Council, 2000). This suggests that neural changes triggered by aging pathways in the brain may not be uniformly distributed across all individuals. The National Research Council (2000) indicates that adaptive processes at various levels of functioning (e.g., neural, behavioral, societal) may have the ability to mediate or mitigate some of the behavioral effects neuronal changes have on the individual. Cognitive research is attempting to examine how culture and the individual’s social environment may offer opportunities for growth and development (National Research Council, 2000), which suggests that behavioral interventions are needed to modify environmental stimuli. In addition, with the growing number of individuals who will require services, more cost-effective methodologies (e.g., environmental modifications) may be prudent. Psychotherapy and counseling offer a variety of treatment modalities and approaches (e.g., group therapy, family systems, psychodynamic), but pharmacological treatments are largely implemented with this population.
Given the symptom presentation (e.g., decreased memory, potential language/communication impairments, cognitive impairments), traditional talk-therapy approaches are likely to be less effective or frustrating with this population, especially as disease severity progresses. Behavioral approaches, such as environmental cues and one-on-one training and prompting, may be better-suited to this population and more cost-effective in some situations (e.g., changing the physical environment to increase safety rather than engage a client in multiple sessions of counseling).

Behavioral gerontology. Behavioral gerontology is “the study of how antecedent and consequent environmental events interact with the aging organism to produce behavior” (Burgio & Burgio, 1986, p. 321). In the mid-1980s, behavioral gerontology began receiving more attention as an area of study and concern (Burgio & Burgio, 1986). Prior to 1972, behavioral gerontology received negligible attention (Burgio & Burgio, 1986). When working with geriatric individuals with neurodegenerative disorders, Buchanan (2006) suggests that the main goals of behavioral interventions are to help clients maintain current level of functioning without significant decreases for as long as possible, decrease or prevent problematic behaviors, and help the individuals gain access to reinforcers. One of the main differences in working with individuals with diagnoses of dementia is that behavioral interventions are largely targeted toward environmental changes. If individual interventions are implemented, very seldom do practitioners attempt to teach new behavioral repertoires, which, depending on the course of the cognitive impairments and declines and affected brain areas, may be highly improbable (Buchanan, 2006).

Prevention. Eighty-five percent of individuals surveyed indicated physical activity, diet and nutrition, and mental activity as being very important factors in healthy aging (Research!America, 2006). Similarly, 90% of individuals surveyed stated that improving brain
health is important, with 84% reporting engaging in activities believed to promote brain health is beneficial: avoiding tobacco (70%), eating fresh fruits and vegetables (67%), doing crossword puzzles (67%), reducing stress (64%), limiting alcoholic beverages to one per day or fewer (63%), spending time with family and/or friends (62%), seeing a doctor regularly (61%), and working with numbers (60%; American Society on Aging – MetLife Foundation, 2006). These belief systems regarding what should be done to improve brain health appear comparable to what it is Americans are reportedly doing to promote brain health: arts/crafts/hobbies (68%), sports/exercise (44%), games/puzzles (35%), work (25%), socialize (22%), nutrition (13%), learn new things (7%), and rest (3%; American Society on Aging – MetLife Foundation, 2006).

Despite recognizing the importance of socialization and seeing a doctor regularly, only 58% individuals with cognitive concerns reported speaking to another individual about these concerns (American Society on Aging – MetLife Foundation, 2006).

**Behavioral interventions: Environmental.** Environmental modifications (e.g., low light levels, physical space alterations to increase safety) and general behavioral managements (e.g., routine development, target cognitive functions, address safety issues) have been recommended (Cycyk & Wright, 2008; National Institute on Aging, 2010) for individuals with FTD. Environmental modifications have been found to be effective in enhancing safety, improving orientation, directing attention, and increasing socialization of individuals with diagnoses of dementia (Buchanan, Christenson, Houlihan, & Ostrom, 2011). Safety has been increased through the use of patterned floors and doorknob coverings, as well as removing excessive furniture, which may cause falls (Buchanan et al., 2011). Visual cues (e.g., signs, color-coding) are also used to signal dangerous areas (Buchanan et al., 2011). Orientation, as identified in MMSEs (i.e., time, person, place) is often affected by dementia. The use of clocks or calendars
with large faces and numbers strategically placed can aid in the identification of time and date. Buchanan et al. (2011) indicate that these interventions are minimally effective. The individual can identify time and date when in the presence of the prompt but is likely to forget the information once the prompt is no longer visible. The removal of extraneous stimuli and use of external cues, similar to those used to increase safety, can also be effective in increasing attention (Buchanan et al., 2011). Simple repositioning of chairs has been found to be effective in decreasing social isolation and increasing socialization in the dementia population (Buchanan et al., 2011). The U.S. DHHS produced a booklet on home safety techniques for individuals with Alzheimer’s disease (2010), which employs numerous environmental modifications, cuing, and prompting, despite the lack of behavioral terminology in the pamphlet. The booklet provides recommendations for each room in the individual’s home and provides an accessible way for caretakers and family members to access and implement these effective techniques to decrease falls and, hopefully, increase the duration of the individual in his or her home environment (DHHS, 2010).

Wandering behaviors and exit-seeking behaviors are operationally defined as a breakdown of stimulus control (Buchanan, 2006) or, alternatively, a breakdown of the individual’s ability to view, integrate, and comprehend environmental cues to make appropriate goal-oriented decisions. Environmental modifications, such as the introduction of colored arrows, grid patterns, aversive stimuli in dangerous areas, and visual barriers have been utilized with some success (Buchanan, 2006). Learning is increased if stimuli are paired with reinforcement (e.g., the client views the colored arrow and is directed to the safe, appropriate area where a reinforcing tangible or activity is immediately available).
Inappropriate sexual behaviors, such as public masturbation, may occur in clients with diagnoses of dementia. Buchanan (2006) conceptualizes these behaviors similarly to wandering and exit-seeking (i.e., breakdown of stimulus control). Essentially, the behaviors are not inherently problematic or pathological but the location of behavior is socially disruptive. Hussain (1981; as cited in Buchanan, 2006) was able to decrease public masturbatory behaviors in an elderly male by utilizing redirection (i.e., nursing staff stopped the behavior and escorted him to his room) and discrimination (i.e., orange circles were painted in his bedroom and bathroom and indicated acceptable areas for masturbatory behaviors). After six days, Hussain (1981; as cited in Buchanan, 2006) the behaviors took place solely in the resident’s room.

**Behavioral interventions: Individual.** Severity and presenting behavioral disturbances vary across individuals and are influenced by dementia subtype, more specifically, the area of the brain that has been affected by the disease or injury process (Buchanan, 2006). Some of the more common behavioral disturbances cited are physical and verbal aggression; sexually inappropriate behaviors (e.g., disrobing, masturbating in public, touching others); wandering; paranoia; incontinence; refusal to eat, drink, or take medications (Buchanan, 2006). The focus of behavioral interventions with elderly clients who present with dementia and related behavioral symptomatology is often to increase socialization and increase independence (Buchanan, 2006).

Comorbid depression commonly affects individuals with diagnoses of dementia (APA, 2000; Buchanan, 2006). Cognitive-behavioral therapies can be effective in early stages of AD but decreases in efficacy as language impairment increases (Buchanan, 2006). Based on the theory that depression is the result of decreased access to pleasant events, or reinforcing events, behavioral activation treatment indicates increasing pleasant events in order to decrease depressive symptomatology (Buchanan, 2006). Relative to implementation with individuals who
have comorbid depressive symptoms and dementia, Buchanan (2006) suggests that caregivers increase access to physically and cognitively appropriate reinforcing activities.

Aggressive behaviors are also seen in dementia clients, ranging from 20% to 86% of cases (Ryden, Bossenmaier, & McLachlen, 1991; as cited in Buchanan, 2006). Activities of daily living (ADLs) have been identified as possible antecedents, or stressors, that prompt aggressive behaviors (e.g., bathing). Safety issues related to the caregiver, as well as the actor, are present in aggressive behaviors in clients with dementia (Buchanan, 2006). Minimal behavioral research has been conducted in this area, but preliminary results suggest that introducing reinforcement, incompatible behaviors, and/or video modeling (e.g., “Bathing without a Battle” video) may be effective in decreasing aggression (Buchanan, 2006).

Agitation, which is slightly more nebulous than aggression from an operational definition perspective, sometimes includes aggressive behaviors, as well as pacing and disruptive vocalizations (e.g., unprompted shouting; Buchanan, 2006). Cohen-Mansfield (1986; as cited in Buchanan, 2006) identified 73% of nursing home patients with cognitive impairments engaging in at least one agitation-behavior per day. Some studies indicate that playing music may be effective in decreasing agitation in some dementia clients, but it is not clear why or for whom this treatment is effective (Buchanan, 2006). If disruptive vocalizations become severe enough, they may require more focused treatment or result in greater social isolation or increased medication (e.g., sedatives; Buchanan, 2006). Differential reinforcement of other behavior (i.e., the clinician ignored the vocalizations and reinforced behaviors other than the vocalizations) and noncontingent reinforcement on a time-based schedule (i.e., access to social attention and/or sensory stimulation was provided on a set time-based schedule) produced desired results in small samples of dementia clients (Buchanan, 2006).
Functional behavioral analyses were conducted on a sample of three individuals with dementia in a nursing care facility with problematic behaviors (e.g., vocalizations, wandering), suggesting that three different, individualized treatment packages were required to decrease the problematic behaviors (Dwyer-Moore & Dixon, 2007). Differential reinforcement for appropriate vocalizations (i.e., DRA) and functional communication training (i.e., FCT) were utilized to target disruptive vocalizations in two residents, respectively (Dwyer-Moore & Dixon, 2007). These interventions, implemented in an ABAB design, were found to be effective in decreasing problematic behaviors and increasing adaptive behaviors in both clients. In addition, wandering behaviors were eliminated utilizing noncontingent access to attention (i.e., NCA, Dwyer-Moore & Dixon, 2007). For both the wandering-NCA and vocalization-DRA individuals, attention was identified as the maintaining behavior (Dwyer-Moore & Dixon, 2007). For the vocalization-FCT individual, the intervention of choice was selected due to an identified skill deficit (Dwyer-Moore & Dixon, 2007). The functional behavioral analysis identified different target and maintenance behaviors for each of the individuals, which required different, individualized approaches to treatment.

Dementia-related disorders are neurodegenerative and, currently, no intervention, procedure, or medication exists to reverse the effects of the signs and symptoms. Rehabilitation for this population is conceptualized as stabilization or slowing the disease progression (Buchanan, Christenson, Houlihan, & Ostrom, 2011). In the area of memory, Buchanan et al. (2011) suggest using environmental cues to enhance the client’s ability to recall information or provide face-to-face prompting or supports to encourage recall of information. Environmental cues, also referred to as external memory aids or cognitive prosthetics, may be placed in the individual’s environment to decrease the reliance on memory (e.g., shopping lists, appointment
calendars, labeling drawers and cabinets). Buchanan et al. (2011) also suggest using an intervention called spaced retrieval, which utilizes shaping techniques and increased time durations between question and response. Studies conducted on elderly clients with dementia indicate that this method has helped some individuals learn certain kinds of information, such as names of nursing facility staff (Buchanan et al., 2011). Behavior analytic techniques have been found to be effective in helping individuals with mild to moderate dementia increase independence in activities of daily living (Buchanan et al., 2011).

Combining pharmacological and behavioral interventions is currently the most common therapeutic approach utilized with this population. Preventative methods (e.g., exercise, socialization, puzzles) are viewed by the public as useful and effective activities to decrease the probability of developing dementia or delay the onset of dementia-related symptoms. In general, behavioral interventions have demonstrated effectiveness in decreasing problematic behaviors and increasing certain skills in individuals with dementia. Modifications to the environment, such as the use of external cues or the removal of furniture, are used to help individuals with neurodegenerative disorders more safely and independently navigate their respective environments. Intervention complexity in individual settings, however, appears to be inversely related to symptom severity in this population, suggesting that more focused, individualized treatments targeting specific problem areas may be more beneficial and cost-effective. In addition, some of the counseling tasks and responsibilities may fall on the caretakers (e.g., increase pleasant activities) rather than the client due to various cognitive impairments characteristic of dementia. In order to understand how dementia-related symptomatology is maintained, functional behavioral analyses should be conducted to identify the antecedents and consequences of the target behavior. Additionally, cultural factors, such as stigmatization of
aging and dementia; ethnic minorities’ perceptions of dementia and delayed accession of services; and general perceptions of aging in the United States may also affect behavioral interventions and their relative efficacy in this population.

Cultural Considerations and Special Populations

When working with individuals with diagnoses of dementia, there are additional considerations when providing services that go above and beyond those related to symptomatology. Individuals who develop cognitive impairments that transition into dementia-related disorders are often classified as elderly or part of the aging population. Issues related to perceptions of aging and stigma related to seeking services should be considered when working with this population. In addition, there is a disparity in accession of services across ethnicities in the United States, which should also be examined related to distribution of information and decreasing the stigma associated with seeking help for cognitive impairments. Caregivers often provide numerous services for family members, friends, or unrelated individuals. Their needs and how they interact with the individuals with whom they provide care is also an important consideration for this population. Housing needs are also of great concern regarding least to most restrictive levels of care in this population, which require understanding and investigation of the general landscape of housing services and funding sources (e.g., state, federal, out of pocket).

Perceptions of aging in the United States. In a poll conducted in 2006 on perceptions of aging, Americans cited wanting to live an average of 88 years, but reported a perceived lifespan of shorter duration (i.e., 82 years, Research!America). When given a choice between experiencing diminished physical ability or losing mental capacity, 62% of individuals surveyed reported a greater fear of the latter (Research!America, 2006). These results are inconsistent with open-ended questioning, which suggests Americans are more concerned about disease processes
Dementia (i.e., “poor, declining, failing health”) that will produce poor health outcomes (Research!America, 2006). Financial concerns, dependence on others, losing mental abilities, being a burden on family, and living in a nursing home were also cited as concerns of very old age (Research!America, 2006). It is important to note that all of the concerns regarding aging are consistent with the cognitive, physiological, and social declines observed in dementia.

When asked about the primary characteristic of people who are “old”, the majority of Americans stated that physical problems and limitations (i.e., 30%), more so than mental problems and limitations (i.e., 15%) were indicative of aging (Research!America, 2006). Additional characteristics of old age that were indicated were being incapable of self-care (i.e., 13%), one’s appearance (i.e., 12%), one’s attitude (i.e., 8%), actual age (i.e., 5%), and approximately 17% of the individuals surveyed cited other attributes or did not know (Research!America, 2006). Conversely, “youth” was largely characterized as being active, energetic, and busy (i.e., 50%; Research!America, 2006). Appearance (i.e., 13%), a positive attitude (i.e., 10%), mental alertness (i.e., 5%), actual age (i.e., 3%), and irresponsibility (i.e., 2%) were also cited as characteristics of youth (Research!America, 2006). These findings are somewhat consistent with the American Society on Aging’s poll (2006) on brain health and fitness. Brain fitness, as defined by the respondents, consists of being alert and sharp (i.e., 18%), keeping one’s brain active or exercising the brain (i.e., 18%), good mental health or absence of senility (i.e., 16%), good memory or an ability to remember (i.e., 14%), an ability to function normally (i.e., 14%), an ability to think and think clearly (i.e., 11%), the absence of Alzheimer’s Disease (i.e., 9%; American Society on Aging – MetLife Foundation, 2006).

Despite the fact that brain disease is a major health issue, only 3%-7% of Americans believe it is the primary or secondary health concern for people their age, respectively (American
Society on Aging – MetLife Foundation, 2006). A majority of these same individuals (i.e., 59% “very important”, 32% “somewhat important”) indicated that “brain check-ups”, similar to physical examinations, should be included in appropriate care and maintenance of brain health and fitness (American Society on Aging – MetLife Foundation, 2006). Both polls identified an interesting finding, suggesting that as an individual ages the term “old” or “getting old” moves farther away from one’s current chronological age (Research!America, 2006; American Society on Aging – MetLife Foundation, 2006). Contrary to perceptions of aging, as an individual grows older, he or she should maintain a stable degree of intellectual functioning, an ability to adapt and change within his or her environment, and enjoy productive and engaged day-to-day life (U. S. Department of Health and Human Services, 1999).

**Stigma.** The majority of individuals surveyed in 2006 (i.e., 62%; Research!America) believe that America’s face age discrimination, with half of respondents indicating older Americans are not treated with respect in our society. If the perception of aging is that being “old” or “getting old” is characterized by physical problems and limitations, as compared to energetic “youth”, then the climate for stigmatization of aging individuals, especially those who appear to fit the growing old equates senility formula (e.g., dementia), is primed.

Stigma may present in several forms (i.e., self-stigma, public stigma, institutional stigma) with similar results of underutilization of mental health services and poorer quality of care and life (DHHS, Substance Abuse and Mental Health Services Administration [SAMHSA], & Center for Mental Health Services, 2005). Potential barriers to decreasing and eliminating stigma include: lack of information, lack of resources, lack of competent health care professionals, lack of understanding, lack of interest, and territoriality of services and clients (DHHS et al., 2005).
The DHHS report on overcoming stigma in the elderly population makes some recommendations on how to approach decreasing stigma in this age group (DHHS et al., 2005).

*Ethnic disparities in service accession.* Early identification and implementation of appropriate services early in the course of disease is often the best method for reversing the effects of the impairments (e.g., some MCI cases) or slowing the progression of the underlying disease processes and associated impairments. Ethnic minorities typically receive dementia diagnoses later in the disease course, after experience more symptoms at greater severity (Ayalon & Areán, 2004). Latino, Asian, and African American samples of older adults in the United States may be less likely to access services due to stigma (e.g., a belief that Alzheimer’s disease is a “form of insanity” or “could be contagious”) or normalization of the disorder as a natural part of the aging process (e.g., Alzheimer’s disease is a “normal part of aging, like graying hair or wrinkles”; Ayalon & Areán, 2004). Level of education and number of years speaking English accounted for the between groups variance in this study (Ayalon & Areán, 2004). Despite the availability of information developed by organizations such as the Alzheimer’s Association, ethnic minorities still appear to be less informed of the symptoms, course and etiology of dementia. An appropriate and more culturally sensitive method of disseminating information could increase knowledge competencies across ethnic groups in the United States (Ayalon & Areán, 2004). In general, Americans are unaware of the organizations that focus on age-related issues, with AARP being cited by 35% of people surveyed, followed by 31% indicating “nothing/none/no” or 20% indicating “don’t know” (Research!America, 2006). If Americans do not know how to access information or where to locate resources as they age, then the likelihood of early identification of dementia and other age-related disorders, as well as increasing overall access to services, will remain poor in the elderly population.
**Caregiving.** There are currently approximately 43.5 million caregivers in the United States who are 18 years old or older providing unpaid, caregiving services to individuals who are 50 years or older (National Alliance for Caring & AARP, 2009). Caregivers are people who, “as a result of a family relationship, voluntarily, or in exchange for compensation, have assumed responsibility for all or a portion of the care of an eligible adult who needs assistance with activities of daily living” (320 ILCS 20/2). In general, caregivers and the recipients of care tend to be female (National Alliance for Caring & AARP, 2009). Two different types of caregivers did emerge, with younger, middle-aged caregivers providing care for relatives; as compared to older caregivers, who tended to provide more care services for spouses, siblings, and non-relatives (National Alliance for Caring & AARP, 2009). A majority of caregivers (i.e., 75%) hold work positions outside of the caregiving role, with several caregivers citing having to make workplace accommodations to continue to fill the caregiving role (e.g., go in late, leave early, take extended time off during the work day; National Alliance for Caring & AARP, 2009). Due to the time commitment involved, perceptions of time and choice were also examined. Overwhelmingly, caregivers stated that caregiving duties decreased the amount of time that could be dedicated to other life tasks, with approximately 40% of caregivers stating they felt they had no choice in becoming caregivers (National Alliance for Caring & AARP, 2009). Despite the reports that caregiving is not producing stress or strain, the report identified increased financial burdens and indications that emotional strain is becoming more stressful for some (National Alliance for Caring, 2009). Having difficulty coordinating care was associated with the care recipient’s diagnosis of Alzheimer’s disease. In addition, caregivers of individuals with AD reported feeling less choice in taking on caregiving responsibilities and a higher level of burden (National Alliance for Caring & AARP, 2009). Overall, 75% of the caregivers in the United
States are Caucasian, with 10% Hispanic, 10% African American, and 2% Asian American. Hispanic and African American caregivers tend to be women, as compared to gender equality expressed in the Asian American sample (National Alliance for Caring & AARP, 2009). In addition, Hispanic caregivers tended to be younger than African American or Asian American caregivers (National Alliance for Caring & AARP, 2009).

The DHHS collaborated with the National Institutes of Health and National Institute on Aging (2010) to develop educational and resource materials for caregivers of individuals with Alzheimer’s disease. This guide attempts to set up expectations regarding cognitive and skill decline across the dementia stages and where to find additional information. The guide identifies three main challenges in caring for an individual with AD: (1) changes in communication skills (e.g., trouble finding the right words, frustration, loss of train-of-thought); (2) changes in personality and behavior (e.g., increased irritation or agitation, pacing, wandering away from home); and (3) changes in intimacy and sexuality (DHHS, 2010). Planning for health, legal, and financial issues is also presented, with a strong recommendation to ensure the following documents are up to date and readily accessible: (1) durable power of attorney for finances, (2) durable power of attorney for health care, (3) living will, (4) do not resuscitate form, (5) will, and (6) living trust (DHHS, 2010). Home and personal safety of the individual with AD is also important, but the topic often overlooked by most caregivers is self-care (DHHS, 2010). Informational and suggestions for different types of direct care services, as well as potential funding resources, are provided in the guide (DHHS, 2010).

The Family Caregiver Act (320 ILCS 65/10) was also developed to support and assist unpaid family caregivers who provide in-home and community care. The services outlined in this act are educational and help caregiver make informed choices regarding the care of their family
members. In addition, if an elderly individual meets criteria for “frail individual”, which refers to an “older individual who is determined to be functionally impaired because the individual (i) is unable to perform at least two activities of daily living without substantial human assistance, including verbal reminding, physical cueing, or supervision or (ii) due to a cognitive or other mental impairment, requires substantial supervision because the individual behaves in a manner that poses a serious health or safety hazard to the individual or to another individual” (320 ILCS 65/15), then the individual may be eligible for respite care services.

**Housing.** Different types of housing options exist for individuals with diagnoses of dementia. Some individuals continue to live independently in the community or with caregiving services. As symptoms become more severe, alternative housing options may be preferable, from a safety and overall health and mental health perspective, to independent community living. There is great variability across and within housing types. It is advisable that the individual with dementia be placed in the least restrictive care and will require advocacy services if possible (DHHS, 2010). If a caregiver or family member can build a relationship with housing staff, then the likelihood of better, more consistent care increases.

Nursing homes are arguably the most restrictive environments and exist for individuals who can no longer care for themselves and require continual observation and care. Some nursing homes focus specifically on the dementia population or have dementia units available, which may be preferable as the staff is often trained specifically on how to care for individuals with dementia (DHHS, 2010). Nursing home facilities are inspected and regulated by state governments and provide special activities, meals, and medical care (DHHS, 2010). Long-term care insurance may cover some of the nursing home expenses and some nursing homes accept
Medicaid, but nursing home costs are often covered by the care recipient or family (DHHS, 2010).

Group homes are typically comprised of four to ten individuals and are well-suited for individuals who can no longer care for themselves. They are less restrictive than nursing home facilities and often have two to four live-in staff members on site (DHHS, 2010). Staff help with caregiving and daily living tasks (e.g., meal preparation, grooming, medication management; DHHS, 2010). Group homes are typically out-of-pocket costs and do not have a state regulatory board inspecting the premises. It is advised that family check on the care recipient throughout the day and evening to ensure proper service is being provided (DHHS, 2010).

Continuing care retirement communities are homes, apartments, or rooms in a retirement facility. These facilities vary greatly, proving housing services for individuals who can largely care for themselves to individuals who need 24-hour care. Care recipients can move through the levels of care according to increasing or decreasing symptom severity (DHHS, 2010).

Assisted living facilities often have rooms or apartments for care recipients who can mostly care for themselves. Some assisted living facilities, like nursing home facilities, focus on providing services for dementia population (DHHS, 2010). Costs typically include rent and special care services (DHHS, 2010). One of the main tenet’s of assisted living facilities is to help individuals remain in the same, stable environment for as long as possible (Lyketsos et al., 2007; Zimmerman et al., 2007). Approximately 20,000 assisted living facilities are operating in the United States, with a projected three-fold increase over the next few decades (Lyketsos et al., 2007; Zimmerman et al., 2007). In conjunction with the growing elderly population and prevalence of dementia, projections suggest that approximately two-thirds to three-fourths of all individuals living in assisted living facilities will present with dementia or cognitive impairments.
Dementia (Lyketsos et al., 2007; Zimmerman et al., 2007). As cognitive decline and behavioral disruptions increase, the ability for individuals to remain in assisted living facilities decreases. Individuals who reside in assisted living facilities are typically younger and have fewer medical conditions than individuals requiring nursing home services (Lyketsos et al., 2007). Dementia is a major predictor of time to discharge in assisted living facilities, with departures occurring approximately 7.5 months earlier, on average, than individuals without diagnoses of dementia (Lyketsos et al., 2007). Discharge for individuals with diagnoses of dementia were delayed if the individual was engaged in treatment (i.e., an average of eight months) or had few(er) exacerbating medical conditions (i.e., an average of six months; Lyketsos et al., 2007).

The Illinois Department of Public Aid implemented a pilot program in 2009 to examine the efficacy of supportive living facilities with dementia care units (Title 89, Subpart E.a). The purpose of these housing entities is to “promote independence, dignity, respect and well-being in the most cost effective manner for residents age 65 years and over who have a diagnosis of Alzheimer’s disease or related dementia” (Title 89, Subpart E.c). Environmental, structural, and service requirements (e.g., medication, socialization, nutritional) are outlined in the Specialized Health Care Delivery Systems code (Title 89, Subpart E). Staffing requirements, including medical personnel, are also required on-site. Medicaid-eligible clients are admitted to this type of facility. Individuals with a sex offense shall not be admitted to a dementia care unit (Title 89, Subpart E.a-d).

A relatively new housing model for elderly individuals has been developed and is being implanted nationwide (i.e., Green House®, Robert Wood Johnson Foundation, 2009). This particular housing model emphasizes quality of life, employs specially trained certified nursing assistants, and adheres to philosophical ideology (e.g., honoring autonomy and choice,
promoting maximal functional independence, fostering enjoyment; Robert Wood Johnson Foundation, 2009). The Green House Project is designed to promote home-living not homelike living, which is accomplished by utilizing 7-10 units, as compared to larger, multi-unit nursing homes. The model allows for an assisted living or nursing home setting, depending on the fiscal and budgetary needs of the particular facility.

**Relevant Ethical and Professional Issues**

In addition to the cultural considerations related to perceptions of aging, stigma, and ethnic disparities, clinicians working with elderly populations with diagnoses of dementia should also educate themselves on state and federal rules and regulations that govern funding, housing, quality of life choices, guardianship, and abuse.

*State of Illinois and federal legal implications.* Despite its inclusion in the *DSM-IV-TR*, dementia is not considered a mental health disorder by the legal system and is sometimes not covered by state and/or federal law or mandate due to exclusionary status. It is imperative for mental health professionals and others collaborating to provide care for individuals with diagnoses of dementia to understand how certain laws will affect the service provision and resource acquisition.

*Older Americans Act of 1965 (2006).* The Older Americans Act (OAA) of 1965 (P. L. 109-365), which was most recently amended in 2006, was developed in response to the overwhelming social need for social services for elderly individuals. This federal act established the Administration on Aging (AoA), which is the main national organization that provides grant funding for states to engage in activities related to aging, such as community planning, social services provision, research, and training. The OAA of 1965 largely influences most public acts, laws, and so forth relative to the aging population.
**Illinois Act on the Aging.** The Illinois Act on the Aging (IAoA) is Illinois’ response to the federal legislation, OAA, and intends to “(1) provide a comprehensive and coordinated service system for the State’s aging population, (2) conduct studies and research into the needs and problems of the aging, and (3) to insure participation by the aging in the planning and operation of all phases of the system” (20 ILCS 105/2). The IAoA created the Department of Aging (DoA), similar to the AoA, to oversee these tasks. An “aged” individual in the state of Illinois, according to the IAoA, is one who is 55 years or older or an individual who is experiencing decreased employment or quality of life opportunities and is near 55 years of age (20 ILCS 105/3.03). Services for the “aged” are outlined in this act and include, but are not limited to, nutritional programs, facilities improvement, transportation services, volunteer and companion programs, adjunctive health services, pleasurable activities, vocational and housing counseling, and benefits advocacy. The goal of service provision, as per the IAoA, is to increase independence and optimal participation in community life for the aging individual (20 ILCS 105/3.06).

**Social Security.** Social security was established in 1935 in the United States to supplement retired and other eligible individuals’ incomes (42 U.S.C. 401). Social security is funded by payroll taxes and certain percentage of workers’ paychecks. In 2006, approximately 12% of the Illinois population was 65 years old or older and received approximately 22.5 billion dollars from social security (AARP, 2008). Social security prevents almost half of retired Illinois residents from living in poverty, with at least 25% of retirees relying solely on social security for their retirement income (AARP, 2008). The Social Security Act (42 U.S.C. 401) has undergone numerous revisions and amendments since 1935 and continues to be hotly debated. Clinicians should be aware of Supplemental Security Income (SSI) and Social Security Disability Insurance
(SSDI) opportunities for their elderly clients as well. SSI is a federal program, which draws from general tax revenue and serves individuals who are retirement age, severely disabled, and meet certain income and resource requirements. SSDI is also federally governed and exists to provide financial aid for individuals who are unable to work due to temporary or long-term disability. The waiting list for SSDI is long and requires proof of disability and a five- to ten-year employment history, with some exceptions.

Alzheimer’s Disease and Related Dementias Special Care Disclosure Act. Specialized facilities that hold licenses or are permitted to provide supportive housing services for individuals with Alzheimer’s disease or related dementias are required to submit and provide specific written information to the state licensing or service-permitting entity, the potential or actual client, or the client’s representative (210 ILCS 4/15). As a potential client, caregiver, or service provider coordinating services, it is important to know the information the client should be able to access. The information the Alzheimer’s care facility is required to provide is the type of care and how it is appropriate for the dementia population, the facility’s treatment philosophy as it pertains to individuals with dementia diagnoses, procedures, services (e.g., assessment, treatment planning), staff:client ratios, facility floor plan, activities, family involvement expectations, and costs of care (210 ILCS 4/15).

Senior Pharmaceutical Assistance Act. The Illinois General Assembly found that senior citizens, individuals who are 65 years old or older, would benefit from pharmaceutical assistance, stating that it is “the single most critical factor to their health, well-being, and continued independence” (320 ILCS 50/5). In addition to this act, elderly individuals can currently seek pharmaceutical assistance under the Illinois Public Aid Code under the Aged, Blind, or Disabled program (305 ILCS 5/Article III). Under the Senior Pharmaceutical
The Senior Health Assistance Program was created within the DoA in order to provide outreach and educational services for senior citizens on the drug coverage and discount programs currently available to them (320 ILCS 50/20). The Illinois Department of Healthcare and Family Services implemented the Illinois Care Rx program, which may also assist some elderly clients who are 65 years or older, disabled, live in Illinois, enrolled in Medicare Part D, and meet income requirements (Title 89, Chapter I).

**Nursing Home Grant Assistance Act.** Individuals who living in nursing homes (i.e., “a skilled nursing or intermediate long term care facility that is subject to licensure by the Illinois Department of Public Health under the Nursing Home Care Act or the MR/DD Community Care Act”; 305 ILCS 40/5) may receive grant assistance under this act if they do not have their housing paid in part or in whole by federal, state, or combined funding (305 ILCS 40/10).

**Competency to make health care and legal decisions.** Early identification of dementia not only allows individuals to take immediate therapeutic and pharmacological action, but it provides time for the individual to make his or her own future plans. Elderly clients, especially those with impairments in cognitive and functional abilities, may likely have a guardian (i.e., “a person, institution, or agency appointed by the Probate Court to manage the affairs of another, called the ward”; Illinois Guardianship & Advocacy Commission, 2006). Legally, individuals who are 18 years old or older are viewed as adults and capable of making their own decisions and handling their own affairs. If, in the case of mental deterioration, physical incapacity, mental illness, developmental disability, or extreme substance use, the adult individual is incapable of making responsible decisions, then a guardian may be appointed (Illinois Guardianship & Advocacy Commission, 2006). Solely having a mental disability is not grounds for guardianship. It should be demonstrated that the individual is incapable of understanding specific decisions
need to be made, the options available, the consequences, and have the ability to communicate this decision (Illinois Guardianship & Advocacy Commission, 2006). The appointment of a guardianship always involves the court system, which is invasive and expensive. Other options regarding advocacy and supports include representative or protective payeeships (i.e., money management system developed for individuals with physical or mental disabilities), financial counseling, bill paying assistance programs, living trusts (i.e., trust arrangements in which an individual maintains the legal title of the property of another individual), caretaker support programs, mental health and health powers of attorney (i.e., written authorization for one individual to act on the behalf of another in private, business, or other matters; Illinois Guardianship & Advocacy Commission, 2006). If the individual was not able to make end of life decisions prior to the worsening of the dementia symptomatology, competence to make medical, personal, legal, and financial choices may be questioned (Berg, Applebaum, & Grisso, 1996). Competent decision-making, in which autonomy is bestowed upon the client or patient, is largely affected by informed consent (Berg, Applebaum, & Grisso, 1996). If the individual is incapable of making informed choices or cannot understand the process in order to make and informed choice, then legal action may be required (Illinois Guardianship & Advocacy Commission, 2006).

Clients have the right, or freedom, to choose whether or not to begin or end counseling services, and it is the clinician’s duty to inform the client of his or her rights regarding the counseling process (American Counseling Association [ACA], 2005). Informed consent should be an ongoing part of the counseling process. When working with individuals with cognitive impairments (i.e., developmental and cultural sensitivity, inability to give consent), the clinician may be faced with an ethical dilemma of gaining consent versus assent for services (ACA,
2005). In these cases, if guardianship has been granted to another individual, the decision becomes his or hers (ACA, 2005). The American Psychological Association (i.e., APA; 2010) outlines a similar ethical procedure to informed consent. Information about the therapeutic process is presented (e.g., fees, type of therapy, efficacy, right to end services, risks), as well as alternative options (APA, 2010). If the individual is unable to provide informed consent for services, the psychologist will still provide the aforementioned explanation, seek assent, consider the individual’s best interests, try to get informed consent by an authorized individual, and proceed with services that are deemed to be in the best interest of the client (APA, 2010). In addition, both ACA (2005) and APA (2010) ethical codes require a degree of competence when working with specific populations. Collaboration with medical professionals, as well as engaging in a fair amount of case management and/or advocacy kinds of activities may be more characteristic of working with this population, especially as the individual’s disease progresses. Knowledge of resources would be of great importance when working with this population.

Elder abuse. Elder abuse, as defined by the Elder Abuse and Neglect Act (320 ILCS 20/2), is defined as “any physical, mental or sexual injury to an eligible adult, including exploitation of such adult’s financial resources.” An eligible adult is one who is 60 years old or older and is the victim of elder abuse. In the state of Illinois, clinicians, as well as other mental, health, and legal professionals, are considered mandated reporters. Neglect (i.e., “another individuals’ failure to provide an eligible adult with or willful withholding from an eligible adult the necessities of life, including, but not limited to, food clothing, shelter or health care”) and self-neglect (i.e., “a condition that is the result of an eligible adult’s inability, due to physical or mental impairments, or both, or a diminished capacity, to perform essential self-care tasks that substantially threaten his or her own health”) are also governed by the Elder Abuse and Neglect
Act (320 ILCS 20/2). Assessments, substantiation of claims, support services, reporting of criminal conduct, and follow-up services are provided under this act (320 ILCS 20/3). Reports of suspected abuse and/or neglect must be made within 24 hours.

Medication management. Medication mismanagement is often underdiagnosed in elderly populations, which can increase the probability of morbidity, mortality, and frequent hospitalizations (Sela-Katz, Rabinowitz, Shugaev, & Shigorina, 2009). Bargerger-Gateau and colleagues identified “responsibility for medication intake” as one of four instrumental activities of daily living (IADLs) that was independently associated with cognitive function (as cited in Sela-Katz, Rabinowitz, Shugaev, & Shigorina, 2009). Sela-Katz et al. (2009) examined the ability for elderly individuals to demonstrate basic knowledge of medication (i.e., patient was to bring medications in to the assessment session, patient displayed medication(s), patient stated what each medication was, patient indicated the purpose of the medication and how many times a day it was to be taken). Two comparison groups were then created based on whether or not individuals were cognizant of the basic knowledge relative to their respective medications (i.e., basic knowledge group, lack of basic knowledge group). There was a significant difference in the ages of the two basic knowledge groups, with the knowledgeable group ($M = 80.7$ years, $SD = 6.1$ years) slightly younger overall than the lack of basic knowledge group ($M = 82.2$ years, $SD = 6.0$ years, $p = 0.01$. Both groups were taking approximately nine different medications. Fialová and Onder (2009) report 20% to 39% of European older adults (i.e., 65+ years) engage in polypharmacy, or the use of nine or more daily medications. Significant differences were also demonstrated in the Mini-Mental State Examination, three-word recall test, abnormal clock drawing test, and diagnosis of dementia, with the lack of knowledge group exhibiting greater degrees of impairment in all variables (Sela-Katz et al. 2009).
As the physical body ages, changes occur which affect pharmacological treatments in elderly populations. If a client is concurrently taking medications, which is often the case with older adults, it is necessary to understand how these physical changes may affect absorption, metabolism, and distribution rates, as well as how multiple pharmacological treatments may interact chemically and within the individual (U. S. Department of Health and Human Services, 1999). Medications often used to manage behavioral symptoms in individuals with dementia often cause sedation, social isolation, agitation, confusion, and/or disorientation (Buchanan, 2006). Although physical exercise mitigates the degree to which some physical changes occur, in general, the aging body loses muscle mass and experiences an increase in adipose tissue, or fat. In addition, the total amount of water in the body’s system also decreases. Several organs also undergo changes, including the gastrointestinal tract, liver, and kidneys. Maintaining a current medical history with this population is necessary to gauge possible medication effects or interactions with other treatments. Working closely with medical personnel is also advisable (Burgio & Burgio, 1986). A dearth of research exists on clinical trials in elderly populations, which requires geriatric physicians to prescribe with great caution and demands a great degree of oversight and management (Fialová and Ondor, 2009). It is important to recognize that a resultant substance-induced delirium state could easily develop due to poor medication management or monitoring.

*Collaboration with other professionals.* The majority of individuals who are seeking information about cognitive impairments or dementia will often seek advice and information from medical professionals (i.e., 72%), with younger, more educated individuals utilizing media sources like the internet (i.e., 41%; American Society on Aging – MetLife Foundation, 2006). In addition, if individuals present with speech-language concerns, they may seek services from
speech-language pathologists, which will require greater knowledge of cognitive-related disorders for these professionals, as well as collaborative efforts on behalf of all professionals working with the client (Reilly, Rodriguez, Lamy, & Neils-Strunjas, 2010). Language impairments in FTDs often result in earlier diagnosis, whereas the typical behavioral disturbances often result in referrals to counselors or other mental health professionals who may not always readily see dementia as a possible etiological cause for the presenting symptomatology (Cycyk & Wright, 2008).

Depending on the degree of disease progression and whether or not the client is capable of making personal, financial, and legal decisions, the clinician working with the geriatric population may serve as advocate and engage in case management and medication management services more often than as therapist. Collaboration with other professionals, especially medical professionals, will likely occur when working with elderly individuals, specifically those with neurodegenerative disorders. A working knowledge of physiological problems and pharmacological treatments, as well as a respect for this collaborative process will likely benefit the client. In addition, issues related to competent decision-making, elder abuse, and informed consent are important ethical concerns that arise when working with elderly individuals with diagnoses of dementia, especially if caretakers are suspected of perpetrating or experiencing abusive relationships. It behooves the clinician working with elderly clients to be knowledgeable of legislation affecting the rights and benefits of this population (e.g., social security, pharmaceutical assistance, housing assistance), which can potentially help improve the financial position, status, or housing environment of the client. Rules, regulations, and various services for elderly individuals are needed in order to inform social policy and research interests for this population, especially as the proportion of older adults continues to grow in the United States.
Research Challenges and Needs

Social policy. The Centers for Disease Control and Prevention (CDC) and Alzheimer’s Association collaborated to produce and implement The Health Brain Initiative: A National Public Health Road Map to Maintaining Cognitive Health (2007). A coordinated approach across service providers (e.g., mental health, medical) is needed to work toward educating and promoting cognitive health in the United States population (CDC & Alzheimer’s Association, 2007). Individual, family, and societal burdens (e.g., health, emotional, financial) increase with declines in cognitive functioning. If healthy aging practices and typical cognitive developmental processes are better understood, then deviations from typical functioning may be identified earlier and offer the individual access to services during the early onset phases of impairment. In addition, prevention strategies, which may be more effective, may be implemented to decrease the risk factors associated with the development of mild cognitive impairment and dementia.

Diagnostic criteria. Reisberg (2006) compared and contrasted the DSM-IV-TR and ICD-10 classification systems relative to dementia criteria. Definitional, subtype classification, and subtype specific criteria were reviewed and discussed in terms of future research and consideration in the development of the Diagnostic and Statistical Manual (5th edition; DSM-V). Of great importance is the examination of the appropriateness of memory impairment as a required criterion across all of the dementia subtypes, especially if this criterion excludes the early identification of individuals with FTDs. In general, both DSM-IV-TR and ICD-10 need to reevaluate the sections on frontotemporal dementia, which is greatly lacking as compared to other dementia subtypes (Reisberg, 2006).

Prevention strategies and community awareness. In a study conducted by Zimmerman and colleagues (1986), a community sample of hypertensive and nonhypertensive individuals
was screened. At this screening, individuals received educational information regarding follow-up necessity and symptoms associated with varying degrees of hypertension (Zimmerman, Safer, Leventhal, & Baumann, 1986). The implementation of educational materials was effective in changing beliefs and attitudes, as well as reported behavioral change intentions (Zimmerman et al., 1986). Brief, psychoeducational materials distributed in community settings may be an effective first-stage method for providing information regarding age-related expectations and dementia to all individuals, especially those who are less likely to currently engage a medical, mental health, or other professional in personal care. Utilizing the methodology presented by Zimmerman et al. (1986), it would be beneficial to gauge the effectiveness of material distribution to elderly or aging populations, especially to ethnic minorities. If beliefs and attitudes regarding aging and dementia were more accurate, perhaps more individuals, especially those who are currently underdiagnosed at early stages (i.e., ethnic minorities) would access diagnostic and treatment services earlier in the disease process.

_Early identification._ Continued work is needed in order to examine the ipsative differences on neuropsychological measures that may be useful in the early identification of cognitive impairment or dementia processes (Holtzer et al., 2008). Theoretical and neuroanatomical explanations are needed to better understand differential responding on neuropsychological testing batteries (Holtzer et al., 2008). In addition, appropriate and accurate multi-culturally sensitive screening, testing, and assessment tools, as well as educational materials for the community regarding dementia (e.g., symptoms, course, where to seek help), are needed to more readily detect dementia in its early stages for all individuals (Basic et al., 2009).
Zimmerman et al. (2007) examined the efficacy of personal care assistants implementing the short, nine-item Minimum Data Set Cognition Scale (MDS-COGS) in residential care and assisted living setting. The purpose was to identify if front-line staff, who typically have minimal screening skills but great knowledge of the service population, would be effective in identifying undiagnosed individuals with dementia (Zimmerman et al., 2007). Preliminary results suggest that paraprofessionals are capable of reliably implementing the MDS-COGS and identifying individuals with dementia-related symptoms for further evaluation (Zimmerman et al., 2007). This option (i.e., the utilization of front-line staff) could be cost-effective and aid in more accurate responding, especially if rapport has been developed between the individual being screened and the personal care assistant. This model for stage one screening requires further examination.

Measurement. Longitudinal studies utilizing robust norm groups (Holtzer et al., 2008) are needed to better identify the predictive and discriminative abilities of screening, testing, and assessment measures. Robust norms for measures of cognitive ability may be more sensitive to cognitive declines or impairments and provide a better comparison group or model for typical cognitive development across the lifespan (Holtzer et al., 2008). A longitudinal study to identify the utility of the Rapid Dementia Screen (Grober et al., 2008) in identifying and predicting dementia in a cost-effective and efficient manner is needed. Construct validity for numerous cognitive variables is needed, especially for executive functioning (Salthouse, Atkinson, & Berish, 2003). Examination of the predictive validity of social and occupational functioning skills is warranted, as they may be predictors of progression from non-impairment to dementia (Hsiung et al., 2008). Salthouse (2010) also indicates that sensitive neuropsychological measures at the individual level are needed to detect ipsative changes over time and are minimally
affected, or predictably affected, by practice effects. Setting-specific, comprehensive assessment tools to identify unmet needs across dementia subtypes is needed (Worden et al., 2008).

Screening tools to identify individuals with beginning, or incipient, symptoms of dementia are needed. In addition, tools to identify individuals living in the community, as compared to measures validated solely on institutionalized or hospitalized samples, may not provide adequate cross-cultural linguistic and psychometric properties that are necessary (Basic et al., 2009). Minority populations may be less likely to seek treatment or services for early symptomatology, which puts these individuals at greater risk for quick disease progression and more restrictive and costly care (Basic et al., 2009).

Salthouse and colleagues (2003) sought to examine the role of executive functioning as a potential mediator in age-related declines in cognitive functioning in typically developing adults. Executive functioning tasks are quite varied and often include inhibition, working memory, planning, coordinating, and attention. Salthouse et al. (2003) suggest that adequate construct validity for this construct, executive functioning, has not been produced, stating that face validity is inadequate when assessing these skills. This study utilized a combination of neuropsychological, cognitive process, and psychometric variables to test the convergent and discriminant validity of the executive functioning construct. Executive functioning and fluid intelligence were highly correlated, which is problematic from a measurement standpoint and suggests the possibility of a connection between the two constructs that requires further examination.

An additional measurement concern refers to the implementation of measures across time, which is often a necessity in gauging progress, stasis, or decline in clients in clinical practice. Inspection of cross-sectional versus longitudinal presentations of the Seattle
Longitudinal Study (Schaie, 2005) data shows a consistent decline in cognitive functioning as chronological age increases, as compared to an increase in skills prior to a decrease in functioning in the longitudinal data (Salthouse, 2009). Possible confounds include cohort effects, or the relative impact an individual’s society and culture (e.g., education, health care) may have on one’s performance, and retest effects, which refers to the advantages or increased performance an individual may display due to taking the same or similar assessments multiple times. Based on evidence provided by animal models, where environments are typically nearly consistent (i.e., greatly decreasing cohort effects), retest or practice effects appear to be producing the differences between cross-sectional and longitudinal data. This has testing, assessment, and clinical implications regarding accurate data collection, diagnosis, and appropriate treatment.

**Medication management.** Further examination is required on medication management and medication management strategies across the cognitive development continuum (e.g., not impaired, slight impairment, severe impairments). This variable, as an instrumental activity of daily living, should receive more attention due to the number of daily medications used by elderly individuals and its possible predictive ability in identifying cognitive decline (Sela-Katz, Rabinowitz, Shugaev, & Shigorina, 2009). Fialová and Ondor (2009) suggest more comprehensive, systems-based screening tools are needed in order to more appropriately and accurately review medications in the elderly in general, which can then be used as a guiding rubric to, hopefully, decrease errors in prescribing for this population.

**Dearth of research: Behavioral interventions.** Very few articles examining gerontological issues in journals devoted to behavioral research have been published since behaviorism increased in popularity as a treatment modality (Buchanan & Husfeldt, 2008). The 1980s saw the
greatest representation of behavioral research dedicated to elderly populations in journals dedicated to behavioral interventions, with two special issues published (Houlihan & Buchanan, 2011). Behavioral methods have been examined, however, in interdisciplinary journals (Burgio & Kowalkowski, 2011). Burgio and Kowalkowski (2011) do state, however, that clinicians may be less inclined to find and read these articles if they do not subscribe to the journal, which complicates communicating the most current behavioral research for this population to the individuals providing the services. To better illuminate this dearth of research, a review of the eight most prestigious behavioral journals indicates that for every article published on behavioral interventions with geriatric populations, there are 39 published on children and adolescents (Houlihan & Buchanan, 2011). Given the history of behavioral research and journal publication, this translates into approximately one article with a behavioral gerontology focus every two years (Houlihan & Buchanan, 2011).

Buchanan and Husfeldt (2008) suggested that differential responding to reinforcement schedules as cognitive impairment increases is a much-needed area of study in the dementia population. In addition, behavioral variability as disease processes progress, staff-client interactions in financially strained environments, effective reinforcement strategies, more time- and cost-effective functional behavioral analyses (Dwyer-Moore & Dixon, 2007), and specific interventions developed to target specific behaviors (e.g., wandering, aggression) are required (Buchanan & Husfeldt, 2008). The efficacy of behavioral interventions in the absence of pharmacological treatments has not been examined (Buchanan & Husfeldt, 2008).

Staff-client interactions, as they affect the therapeutic and care dynamic, are being examined in the behavioral literature. Williams and Herman (2011) found general trends suggesting that emotional tone is related to client resistance to care. In general, if the staff
emotional tone was implicitly patronizing, condescending, or controlling, the client was more likely to engage in problematic behaviors or resist care (Williams & Herman, 2011). These findings, if accurate, require replication and may guide intervention and staff training. Future studies could possibly examine the effectiveness of changing emotional tone on the level of cooperation in dementia clients in nursing facilities.

Conclusion

This literature review examined the extant literature on the continuum of cognitive developmental process, ranging from typical cognitive decline to pathological cognitive functioning indicative of mild cognitive impairment or dementia-related disorders, measurement of dementia symptomatology, and interventions, and other considerations related to working with this population. Diagnostic criteria for dementia were considered relative to prevalence of dementia diagnoses, appropriateness of current criteria, and differential diagnoses. Early identification of dementia, especially in ethnic minorities, is lagging and requires social intervention to increase access to services. Currently, more research is needed to identify the best definition of this disease process, especially per etiologically-based symptomatology which may be utilized in differential diagnoses and tracking disease progression and course. Due to the multidisciplinary approach in diagnosing and treating individuals with dementia, having an understanding of brain structures and functions is, arguably, a matter of competence in the treating clinician. Neuropsychological and medical testing is quite often used, especially if collateral reports or informants are not accessible. Being able to understand the testing procedures, what they are measuring, and how to best approach service provision with this population of clients is necessary for the practicing clinician interesting in working with elderly individuals. Interventions, or service provision, with this population will likely differ from other
populations. For example, elderly individuals and elderly individuals with cognitive impairments might require more advocacy, case management, and linkage services than other populations. In addition, interventions to target problematic behaviors and to increase safety of the individual may be more important than standard counseling practices. Working with caregivers and guardians to increase medication compliance and create intuitive, safe living environments may be more common tasks than traditional talk-therapies. As the American population continues to age, more service providers across treatment providers (e.g., mental health counseling, medical) will need to become more knowledgeable and aware of the needs of aging individuals. In addition, it will be imperative to educate all individuals on typical aging and cognitive developmental process in order to dispel myths about aging (e.g., aging is not synonymous with senility), decrease the stigma of discussing cognitive concerns, and improve the early accession of services.
References


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Nursing Home Grant Assistance Act, Ch. 23, 305 ILCS § 40/ (1993).


Dementia

Specialized Health Care Delivery Systems, Title 89, Subpart E: Supportive living facilities with dementia care units (2009).


