Published in final edited form as:

J Am Acad Nurse Pract. 1995 August ; 7(8): 369–377.

Memory Strategies Used by Cognitively Intact and Cognitively Impaired Older Adults

Graham J. McDougall, PhD, CS, RN [Assistant Professor]

Gerontology Nursing Frances Payne Bolton School of Nursing Case Western Reserve University
Cleveland, Ohio

Abstract

This study examined the influence of depression and health on the use of memory strategies of cognitively impaired ($n = 55$) and cognitively intact ($n = 169$) older adults. The intact group used memory strategies more often than the impaired group and were more likely to use external strategies such as diaries, notes, and lists, instead of internal strategies such as elaboration and rehearsal. The impaired group used the internal strategy effort more often. There was no difference in perception of memory capacity between groups. Depression had a negative influence on perceptions of capacity and change in both groups.

The elderly population of the United States—some 31.6 million people as estimated by the 1990 census—represents a challenge to the nation. While 95% of the elderly live, in the community, the nation's nursing home population has increased by 24.4% in the 10-year period from 1980 to 1990. Nearly 1.8 million people lived in nursing homes in 1990; of these, 1.6 million were 65 or older. The incidence of mental disorders in nursing home residents has been estimated at 80% or higher. Cognitive impairments, primarily the dementias, are most prevalent, but these may include a mix of affective disorders such as anxiety and depression (Burns, et al., 1988; Rovner et al., 1991).

Because 80% of all older adults' cognitive complaints involve forgetfulness and self-reported memory problems (Poon, 1985), methods must be found to enhance cognitive performance in this vulnerable population. In a study of older adults ($N = 14,783$) living in the community, 15% of people 55 years of age and older, and 23% of those 85 years of age and older reported memory problems within the previous year (Cutler & Grimes, 1988).

Elders' complaints about their memories provide information about how they view their own cognitive ability. Older adults want to improve their everyday memories in domains that are of specific concern: people's faces and names, important dates and telephone numbers, things and household objects, recent and past events, meetings and appointments, information and facts, and directions (Bolla, Lindgren, Bonaccorsy, & Bleecker, 1991; Leirer, Morrow, Sheikh, & Pariante, 1990). Due to the cognitive losses that occur with normal aging and cognitive impairments, the elderly are interested in all types of memory aides and memory training (Herrmann, 1990).

As individuals age they must cope with problems and failures of memory. The level of distress experienced and action taken are related to the perceived severity of symptoms and their attribution to aging. (Prohaska, Leventhal, Leventhal, & Keler, 1985). The purpose of this study was to identify the types of memory strategies used by cognitively intact and cognitively impaired elders and to determine the influence of depression and health status on the use of these memory strategies.

RELEVANT LITERATURE

Health education and health promotion, emphasizing self-regulation, techniques, may be an important aspect of promoting cognitive self-care in older adults. Self regulation, a personal control paradigm, is defined as the ability to voluntarily modify one's own physiological activity, behavior, or processes of consciousness (Massey & Pesut, 1991). Older adults are interested in learning about self-regulation. Nurses, using self-regulation paradigms, are teaching and testing techniques such as biofeedback, imagery, memory training, progressive muscle relaxation, and yoga. Bower (1989), who reviewed multidisciplinary studies of self-regulation techniques, determined that these methods are easily taught, non-pharmacological nursing measures that are research-based and effective for stress reduction and relief of chronic pain in older adults.

Memory strategy training is a self regulation technique; current nursing studies report that both cognitively intact and cognitively impaired elders learn memory strategies (Clites, 1984; Johnston & Gueldner, 1989; Rosswurm, 1991). Memory aids may be broadly classified as learning strategies if they are largely under the control of the learner. In the educational psychology literature these learning strategies are conceptually classified as metacognitive (designed to monitor cognitive progress), cognitive (designed to make cognitive progress), or social affective (designed to involve social interaction) (O'Malley, Russo, Chamot, & Stewner-Manzanares, 1985). Cognitive strategies and, more specifically, memory strategies, may be broadly classified as either internal or external (Sugar, 1992).

To accomplish memory tasks, individuals must monitor their cognitive and metacognitive processes and select cognitive strategies that facilitate their ability to remember. Findings from memory research indicate that older adults do not use effective acquisition strategies and have limited repertoires of alternative memory strategies. (Brigham & Pressley, 1988; Byrd, 1986; Perlmutter et al., 1987). When older adults use memory strategies, they often use more external than internal strategies (Harris, 1978; Intons-Peterson & Fournier, 1986; Sugar, 1992). However, when given appropriate instructions, older adults are capable of using both types, of strategies and can improve their memory performance. An individual's performance is shaped by his or her understanding of the cognitive demand characteristics of the situation, perception of likely outcomes of behavior in such a situation, and both the internal and external memory aids used (Cavanaugh, Grady, & Perlmutter, 1983; Hultsch, Herzog, & Dixon, 1987).

The presence of depression in the elderly is associated with poorer memory efficiency and more relaxed response criteria, that is, a greater tolerance for false positive errors and decreased functional ability. Depression has been shown to be a mediating factor in the

relationship between memory complaint and memory performance in studies of older adults receiving psychotherapy or other treatment for depression. Further, depression and anxiety may moderate the effects of age changes on an individual's perception of memory performance (McDougall, 1994; Zelinski, Gilewski, & Anthony-Bergstone, 1990).

Poor health or presence of chronic illness requires greater use of prescription medications and, thus, may also affect cognitive functioning and, specifically, memory. A major criticism of early research on cognitive aging was that 35% of 263 studies published during the period 1975 to 1982 failed to report the health status of the subjects. Health in older adults is usually defined in one of three ways: presence or absence of disease, how well the person functions, or the person's general sense of well-being.

The National Health Interview of 1984, a major health survey of adults 55 years of age or older ($N = 14,738$), determined that several measures of health, functional limitations, and sensory impairments best predicted everyday memory problems but only accounted for 7% of the variance (Cutter & Grimes, 1988). Self-ratings of health have been found to account for 17% of the variance in self-assessed memory scores. In the present study, the types of memory strategies used by both cognitively intact older adults living in the community and cognitively impaired nursing home residents were examined.

METHOD

SUBJECTS

Cognitively intact (NCI): The cognitively intact sample was drawn from individuals living in the community and attending continuing education programs designed for older adults. It was assumed that they were cognitively intact. The sample was recruited from two sites, one in Texas and one in Louisiana. In the Louisiana site, questionnaire packets and self-addressed, stamped envelopes were distributed to individuals who signed consents indicating their willingness to participate. Participants then returned the packets to the investigator. The return rate was 54%. In Texas, a survey packet was mailed to each person who called the investigator expressing the desire to participate. Participants mailed back the survey to the investigator upon completion, in a stamped, self-addressed envelope. The return rate for the Texas sample was 100%.

This nonprobability sample consisted of 128 (76%) females and 41 (24%) males, 55 years of age and older. The majority of the participants were white (96%), the remainder were African-Americans. Forty-one percent were married ($n = 69$), 37% were widowed ($n = 63$), 10% were divorced ($n = 17$), and 12% were never married ($n = 20$). Subjects ranged in age from 55 to 83 years. Males were significantly younger than females. Seventy percent of the subjects belonged to at least two organizations, with many belonging to five. Yearly incomes ($n = 100$) ranged from \$3,000 to \$450,000. Seventy-three percent of the subjects earned between \$3,000 and \$33,000. Only 3 individuals earned more than \$83,000 per year. They had a high perceived health state, fewer chronic health problems and less depression than the cognitively impaired sample. (See Table 1.)

Cognitively impaired (CI): The CI sample included adults 59 years of age or older residing in long-term care facilities in the greater Cleveland area. Residents were approached by master's prepared nursing research assistants and asked to participate in the study. All participants were able to sign consent forms and were screened with the Mini-Mental State Examination (MMSE). To avoid diagnostic ambiguity, level of cognitive impairment was determined with reliable and valid screening instruments. Depression was not considered to constitute cognitive impairment, nor did it interfere with the individual's ability to provide informed consent; therefore, individuals were not disqualified on the basis of being depressed (Stanley, Stanley, Guido, & Garvin, 1988).

After screening 100 residents, the final sample, consisting of 55 elderly subjects whose MMSE scores were neither too high nor too low, was established. Ninety percent ($n = 50$) were female; all had lived in the facility for 1 to 26 years, with an average of 4.5 years; and all had completed high school. Socioeconomic status was undetermined. There were 7 subjects in the severely impaired (MMSE scores of 15 to 16) group and 48 subjects in the mildly impaired (MMSE scores of 18 to 23) group. Twelve residents had a diagnosis indicating a possible disturbance in cognition: dementia (6), cerebrovascular accident (2), and Parkinson's disease (4). The participants had numerous chronic conditions and were taking both prescription and over-the-counter medications. Eleven residents were taking medications for anxiety (6) or depression (5). These subjects had mild depression and low perceived health status (Table 1).

INSTRUMENTS

Participants from the cognitively intact group completed three questionnaires in their homes without assistance. The cognitively impaired sample was interviewed by the trained nurse research assistants. The interrater reliability among the research assistants who interviewed the CI group was 96%.

Mini-Mental state Exam: Nursing home residents were initially screened with the MMSE to determine the presence/absence and severity of cognitive impairment. The MMSE is used for determining the levels of CI and contains 11 questions. Scores range from 0 to 30, with a score >24 indicating no CI. Reliabilities ranged from .83 to .99 among groups of psychiatric, neurological, and mixed patients, when interrater and test-retest reliability were studied in combination. The coefficient alpha for the MMSE could not be calculated because each subject had only one total score. Individuals scoring >23 and <15 on the MMSE were excluded from the CI sample (Crum, Anthony, Bassett, & Folstein, 1993).

Global Deterioration Rating Scale: Those nursing home residents with MMSE scores within the acceptable range were then screened with the Global Deterioration Rating Scale (GDRS) to determine the level of dementia. The GDRS (Reisberg, Ferris, DeLeon, & Crook, 1982) includes seven broad stages and was initially developed to differentiate the characteristics of normal aging, age-associated memory impairment and primary degenerative dementia, particularly Alzheimer's disease. The GDRS stages range from 1 (no cognitive decline) to 7 (severe cognitive decline and functional ability). The GDRS has been tested successfully as a screening instrument with individuals in the community and with

residents in long-term care facilities. Individuals who scored within the range of GDRS 2 to GDRS 3 were included in the study.

Metamemory in Adulthood Questionnaire: Metamemory was operationalized as seven scores on the Metamemory in Adulthood (MIA) Questionnaire (Dixon, Hultsch, & Hertzog, 1988). The MIA is not a screening device for actual memory problems, but instead a measure of the memory components of knowledge, beliefs, and effect.

The MIA consists of 108 statements rated on a 5-point Likert scale. The seven subscales measure strategy, task, capacity, change, anxiety, achievement, and locus. Each of the dimensions emphasizes ecologically relevant metamemory activities. In this study, only four of the seven MIA scales were used because the achievement and task scales are extraneous representations of metamemory.

Capacity is the perception of memory capacities as measured by predictive report of performance on given tasks (+ = high capacity). An example is: I am good at remembering names. Change is the perception of memory abilities as generally stable or subject to long-term decline (+ = stability). An example is: I can remember things as well as always. Locus is the individual's perceived personal control over remembering abilities (+ = internal locus). An example is: It's up to me to keep my remembering abilities from deteriorating. Strategy is knowledge of one's remembering abilities such that performance is potentially improved; it includes reported use of both internal and external strategies (+ = high use). A sample item is: Do you keep a list or otherwise note important dates such as birthdays and anniversaries?

The strategy subscale determines the individual's ability not only to know about strategies, but actually to use memory strategies such as mnemonics and other memory aids. According to Dixon (1989), the basic purpose of the subscale is to discover whether the individual possesses and uses the type of information about his or her general, remembering abilities that is designed to assist or improve memory performance in cognitive demanding situations. Strategy is knowledge of one's remembering abilities so performance in given instances is potentially improved; it includes reported use of both internal and external strategies (Appendix). In this study, the coefficient alpha in the CI group was .72 and in the NCI group was .85.

The strategy subscale is equally divided between internal and external memory strategies. Internal strategies are determined by nine Likert-type questions. The internal strategies are *rehearsal* (4), *elaboration* (4), and *effort* (1). *Rehearsal* strategies for basic learning tasks usually involve repeating the names of items in an ordered list. Rehearsal for complex learning tasks usually includes copying, underlining, or shadowing the material presented to the learner. In the MIA, an example of an internal rehearsal strategy question is: Do you consciously attempt to reconstruct the day's events in order to remember something? *Elaboration* strategies for basic learning tasks include forming a mental image or sentence relating the items in one category to another. Elaboration strategies for complex learning tasks include techniques such as paraphrasing, summarizing, or describing how new information relates to existing knowledge (Weinstein & Mayer, 1985). In the MIA, an example of an elaboration strategy is: When you try to remember people you have met, do

you associate names and faces? *Effort* is deciding to attend to a learning task or to a specific aspect of input and to ignore irrelevant distractors. In the MIA, the effort strategy is: Do you try to concentrate hard on something you want to remember?

External memory strategies in the MIA include a total of nine Likert-type questions related to the use of *lists* (2), *notes* (3), *places* (2), *someone* (1), and *calendars* (1). An example of *list* is: Do you write down items you wish to remember? An example of *note* is: When you finish reading a book or magazine, do you somehow note the place where you have stopped? An example of a *place* is: Do you routinely keep things in a familiar spot so you won't forget them when you need to locate them? An example of *someone* is: Do you ask other people to remind you of something? An example of *calendar* is: Do you write appointments on a calendar to help you remember them?

Geriatric Depression Scale: Depression was operationalized with the short version of the Geriatric Depression Scale (GDS). This 15-item instrument has a YES/NO response format (Brink et al., 1982; Sheikh & Yesavage, 1986). Scores range from 0 to 15, with a score of ≥ 5 , indicating depression. The GDS correlates highly with other depression measures and the authors reported an alpha reliability coefficient of .94 and a split-half reliability of .94 (Yesavage et al., 1983). The GDS has been successfully tested with cognitively intact and impaired elderly residents of nursing homes with alpha reliabilities reported as .99 and .91 (Leshner, 1986; Parmelee, Lawton, & Katz, 1989). In this study, the coefficient alpha in the CI group was .83 and in the NCI group it was .73.

Health Scale: Health status was measured by the Health Scale, a subscale of the Multilevel Assessment Instrument (Lawton, Moss, Fulcomer & Kleban, 1982). Subjects rated the quality of their health using a 4-point response format. Anchors are "better" to "not so good" and "excellent" to "poor." Total scores on the 4-item tool range from 4 to 13, with higher scores indicating better health. Lawton et al. (1982) reported an alpha coefficient of .76 and test-retest correlation of .92. Chronic conditions and prescription medications that might affect memory functioning by causing or simulating dementia were recorded and included as variables. Alpha in the CI group was .61 and in the NCI group it was .75.

RESULTS

DESCRIPTION OF THE SAMPLE

Cognitive aging research has typically emphasized average losses over the age of 40 and neglected the substantial heterogeneity of older persons between and within age groups (Rowe & Kahn, 1987). Exploratory analyses were conducted on the two groups. The cognitively intact sample was, therefore, divided into three 10-year-span age groups: the young old, (ages 55 to 64, $n = 50$); the middle old, (ages 65 to 74, $n = 90$); and the old old (ages 75 to 83, $n = 29$). Means, standard deviations, and ranges were calculated on all variables according to the three age groupings. Analysis of variance indicated significant ($p < .05$) age group differences on two variables: medications and overall strategy scores. Post-hoc comparisons were done using Fischer's LSD to examine group differences. The oldest age group reported taking significantly more prescription medications than the young or middle-aged groups $M = 2.66$, $SD = 1.14$, $F(2,166) = 3.9$. The middle older adult group's

summed strategy scores were significantly higher than the younger and older aged groups ($M = 66.44$, $SD = 8.40$), $F(2,166) = 4.563$.

The cognitively impaired sample was divided into two cognitive level groups with an MMSE score of 17 as the division between mild and severe impairment. Due to the uneven distribution of the variables, the Mann-Whitney U test was used to test for significant group differences. The severely impaired ($n = 8$) group was significantly different ($p < .05$) than the mildly impaired group ($n = 47$) on three variables: over-the-counter medications (1.81 vs. 5); total memory strategies (3.61 vs. 3.19); and internal strategies (3.75 vs. 3.18).

MEMORY STRATEGIES—NCI GROUP

The overall mean strategy score was 3.67 in the NCI group, or 64.5 summed, for comparison purposes (Table 2). The 65- to 71-year-olds within the nonimpaired group used significantly more ($p < .05$) total memory strategies than either of the younger or older age groups. Cavanaugh and Murphy (1986) reported a strategy score of 66.60 for overall memory strategy use in a similar study with older adults living in the community. The NCI groups used significantly more ($p < .0001$) external memory strategies (3.75), such as notes and lists, than internal strategies (3.47) such as effort, elaboration, and rehearsal. Of the external strategies, place was used more often than list or note; rehearsal was preferred over elaboration (Tables 3 and 4). Of the internal strategies, the NCI group used significantly more ($p < .0001$) rehearsal (3.63) than elaboration (3.29) strategies.

Pearson correlations between age and metamemory factors and depression and metamemory factors were nonsignificant. Pearson correlations between health status and metamemory factors were also not significant. For this cognitively intact group of older adults, however, as their perceived health status increased so did their perceptions of their memory capacity (i.e., recall performances for names and dates). Capacity refers to the individual's predictive report on recall performance in a designated situation, such as the individual's ability to remember names, places, and dates of interest. The inverse correlation ($r = -.19$), while nonsignificant, between depression and change was unexpected. Even though the individuals were not depressed ($M = 1.75$), the affective component of depression has an influence on perceptions of memory capacity, such that as the level of depression increased, perception of memory capacity decreased.

MEMORY STRATEGIES-CI GROUP

The cognitively impaired group used fewer total memory strategies than the nonimpaired group (3.25 vs. 3.67). Of the internal strategies, the CI group used significantly more effort ($p < .05$) than the NCI group as an internal memory strategy (3.91 vs. 3.62). Since only one question (Do you try to concentrate hard on something you want to remember?) was asked related to effort, the validity of this finding is questionable. There was no significant difference between the two groups on the use of place to assist memory. In summary, the CI group scored lower on use of both internal and external strategies.

The Pearson correlations between age and the metamemory factors of capacity, change, and locus were not significant. The inverse correlation between MMSE scores and age was not significant. However, the inverse correlations of age and total strategy ($r = -.32$) and the age

and external strategy ($r = -.31$) were significant at the .05 level. While not robust, the correlations between depression and capacity ($r = -.44$) and depression and change ($r = -.41$) were also significant at the .05 level. The positive correlation between depression and health also was significant ($r = .48$).

DISCUSSION

When comparing the two groups on the metamemory factors, there were significant differences in change, locus, and strategy (Table 2). These findings were anticipated. There were, however, no group differences in capacity. This is an unusual finding given the vast differences between the groups in age, cognitive status, health, and level of depression.

The individuals between the ages of 65 and 74 in the nonimpaired group scored significantly higher on use of memory strategies. This may be a reflection of factors such as societal norms, developmental concerns, and life-span transitions. Major life changes typically occurring during this decade are transition to retirement and application for Medicare. Only one of the seven samples in the Hultsch et al. (1987) summary showed significant age differences in strategy scores. In sample 5, the 55-to-61 age group ($n = 73$) scored significantly higher on strategy use ($M = 67.21$) than the other three age groups. The only remarkable differences between the two groups of community-dwelling older adults in the current study and Hultsch's study were their geographic locations and the fact that some were enrolled in an educational setting at the time of testing. Even though the adults in the NCI group were attending continuing education classes during a 9-month academic year, being in school produced differences in experience. In this study, the 65-to-74 age group ($n = 90$) scored significantly higher on strategy use than the other two age groups. Mean scores on the strategy subscale indicate that this particular age group of older adults relied heavily on memory strategies for assistance with everyday memory tasks.

In the cognitively impaired group, depression had a strong negative influence on memory capacity and change. A high score on capacity is positive, indicating greater memory capacity. A high score on change is also positive, indicating stability. The inverse correlation between capacity and depression indicates that as depression lessened the perception of memory capacity increased. As depression lessened the perception of change increased towards stability. Clearly, if depression were treated, capacity (greater) and change (stability) might increase in these individuals. Therefore, the older adults with cognitive impairment, depression, and health status have a noticeable influence on their perception of capacity, change, and locus.

Metamemory differences associated with age are usually explained in relation to the perceived seriousness of "forgetting episodes" experienced by an individual. If memory loss is not viewed as a problem, that is, if it does not interfere with the current level of functioning and the achievement of everyday goals, then people choose to do nothing about it (McDougall, 1993). As an individual ages, problems with and failures of memory must be coped with; however, the level of distress experienced and action taken are related to the severity of perceived symptoms and attribution of the symptoms to aging (Prohaska et al.,

1985). Memory complaints also have been attributed to neurotic tendencies (Poitrenaud, Malbezin, & Guez, 1989).

Acknowledgments

This paper was presented at the annual meetings of the American Academy of Nurse Practitioners and the Gerontological Society of America. The author acknowledges Elizabeth Tornquist, MA, for her helpful comments on drafts of this manuscript. This research was supported by the American Nurses' Foundation and a Biomedical Research Support Grant.

APPENDIX:MIA Strategy Scale

INTERNAL STRATEGIES

REHEARSAL

- 6. When you are looking for something you have recently misplaced, do you try to retrace your steps in order to locate it?
- 17. Do you think about the day's activities at the beginning of the day so you can remember what you are supposed to do?
- 60. Do you consciously attempt to reconstruct the day's events in order to remember something?
- 81. Do you mentally repeat something you are trying to remember?

ELABORATION

- 48. When you try to remember people you have met, do you associate names and faces?
- 57. When you have trouble remembering something, do you try to remember something similar in order to help you remember?
- 64. Do you try to relate something you want to remember to something else, hoping that it will increase the likelihood of your remembering later?
- 75. Do you make mental images or pictures to help you remember?

EFFORT

- 67. Do you try to concentrate hard on something you want to remember?

EXTERNAL STRATEGIES

LIST

- 3. Do you keep a list or otherwise note important dates, such as birthdays and anniversaries?
- 108. Do you write shopping lists?

NOTE

11. When you have not finished reading a book or magazine, do you somehow note the place where you have stopped?

25. Do you post reminders of things you need to do in a prominent place, such as bulletin boards or note boards?

94. Do you write yourself reminder notes?

PLACE

29. Do you routinely keep things in a familiar spot so you won't forget them when you need to locate them?

36. When you want to take something with you, do you leave it in an obvious, prominent place, such as putting your suitcase in front of the door?

SOMEONE

85. Do you ask other people to remind you of something?

CALENDAR

98. Do you write appointments on a calendar to help you remember them?

Biography **References**

- Bolla KI, Lindgren KN, Bonaccorsy C, & Bleecker ML (1991). Memory complaints in older adults. *Archives of Neurology*, 48, 61–64. [PubMed: 1986728]
- Bower ME (1989). Self-regulation techniques, in the elderly. *Journal of Gerontological Nursing*, 15(1), 15–20.
- Brigham MC, & Pressley M (1988). Cognitive monitoring and strategy choice in younger and older adults. *Psychology and Aging*, 3(3), 249–257.
- Brink TL, Yesavage JA, Lum O, Heersema PH, Adey M, & Rose T, L. (1982). Screening tests for geriatric depression. *Clinical Gerontologist*, 1(1), 37–43.
- Burns BJ, Larson DB, Goldstrom ID, Johnson WE, Taube CA, & Miller NE (1988). Mental disorders among nursing home patients: Preliminary findings from the national nursing home survey pretest. *International Journal of Geriatric Psychiatry*, 3, 27–35.
- Byrd M, (1986). The use of organizational strategies to improve memory, for prose passages. *International Journal of Aging and Human Development*, 23(4), 257–265. [PubMed: 3557640]
- Cavanaugh JC, Grady JG, & Perlmuter M (1983). Forgetting and use of memory aids in 20 to 70 year olds everyday life. *International Journal of Aging and Human Development*, 17(2), 113–123. [PubMed: 6671811]

- Cavanaugh JC, & Murphy NZ (1986). Personality and metamemory correlations of memory performance in younger and older adults. *Educational Gerontology*, 12, 385–394.
- Clites J (1984). Maximizing memory retention in the aged. *Journal of Gerontological Nursing*, 10(8), 34–39.
- Crum RM, Anthony JC, Bassett SS, & Folstein MF (1993). Population-based norms for the mini-mental state examination by age and educational level. *Journal of the American Medical Association*, 269(18), 2386–2391. [PubMed: 8479064]
- Cutler SJ, & Grimes AE (1988). Correlates of self-reported everyday memory problems. *Journal of Gerontology*, 43(3), S82–S90. [PubMed: 3361099]
- Dixon RA (1989). Questionnaire research on metamemory and aging: Issues of structure and function. In Poon LW, Rubin DC, & Wilson BA (Eds.), *Everyday Cognition in Adulthood and Late Life* (pp. 394–415). New York: Cambridge University Press.
- Dixon RA, Hultsch DE, & Hertzog C (1988). The metamemory in adulthood (MIA) questionnaire. *Psychopharmacology Bulletin*, 24(4), 671–688. [PubMed: 3249770]
- Greenberg C, & Powers SM (1987). Memory improvement among adult learners. *Educational Gerontology*, 13, 263–280.
- Harris JE (1978). External memory aids. In Gruneberg MM, Morris PE, & Sykes RN (Eds.), *Practical aspects of* (pp. 172–179). London: Academic Press.
- Herrmann DJ (1990). Self-perceptions of memory performance. In Rodin J, Schooler C, & Schai KW (Eds.), *Self-directedness: Cause and effects throughout the life course* (pp. 199–211). Hillsdale, NJ: Lawrence Erlbaum.
- Hultsch DE, Herzog C, & Dixon R (1987). Age differences in metamemory: Resolving the inconsistencies. *Canadian Journal of Psychology*, 41(2), 193–208. [PubMed: 3502896]
- Intons-Peterson MJ, & Fournier JA (1986). External and internal memory aids: When and how often do we use them? *Journal of Experimental Psychology: General*, 3, 267–280.
- Johnston L, & Gueldner SH (1989). Remember when? Using mnemonics to boost memory in the elderly. *Journal of Gerontological Nursing*, 15(8), 22–26.
- Lawton MP, Moss M, Fulcomer M, & Kieban MH (1982). A research and service oriented multilevel assessment. *Journal of Gerontology*, 37(1), 91–99. [PubMed: 7053405]
- Leirer VO, Morrow DG, Sheikh JI, & Pariante G, M (1990). Memory skills elders want to improve. *Experimental Aging Research*, 16(3), 155–158. [PubMed: 2090468]
- Leshner EL (1986). Validation of the geriatric depression scale among nursing home residents. *Clinical Gerontologist*, 4(4), 21–28.
- Massey JA, & Pesut DJ (1991). Self-regulation strategies of adults. *Western Journal of Nursing*, 13(5), 627–634.
- McDougall GJ (1990). A review of screening instruments for assessing cognition and mental status in older adults. *The Nurse Practitioner*, 15(11), 18–28. [PubMed: 2255423]
- McDougall GJ (1993). Older adults metamemory: Coping depression, and self-efficacy. *Applied Nursing Research*, 6(1), 28–30. [PubMed: 8439175]
- McDougall GJ (1994). Predictors of metamemory in older adults. *Nursing Research*, 43, 212–218. [PubMed: 8047425]
- McDougall GJ (1995). Memory self-efficacy and strategy use in successful elders. *Educational Gerontology*, 21(4), 357–373.
- O'Malley JM, Russo RP, Chamot AU, Stewner-Manzanares G (1985). Application of learning strategies by students learning English as a second language. In Weinstein CE, Goetz ET, & Alexander PA (Eds.), *Learning and Study Strategies: issues In Assessment, Instruction, and Evaluation* (pp. 215–230). San Diego: Academic Press, Inc.
- Parmelee PÀ, Lawton MP, & Katz IR (1989). Psychometric properties of the geriatric depression scale among the institutionalized aged. *Psychological Assessment: A Journal of Consulting and Clinical Psychology*, 1(4), 331–338.
- Perlmutter M, Adams C, Berry J, Kaplan M, Person D, & Verdonik F (1987). Aging and memory. In Schaie KW & Eisdorfer C (Eds.), *Annual Review of Geriatrics and Gerontology: Volume 7* (pp. 57–92). New York: Springer Publishing Company.

- Poitrenaud J, Malbezin M, & Guez D (1989). Self-rating and psychometric assessment of age-related changes in memory among young-elderly managers. *Developmental Neuropsychology*, 5(4), 285–294.
- Poon LW (1985). Differences in human memory with aging: Nature, causes, and clinical implications. In Birren JE & Schaie KW (Eds.). *Handbook of the Psychology of Aging* (2nd ed., pp. 427–462). New York: Van Nostrand.
- Prohaska TR, Leventhal EA, Leventhal H, & Keler MA (1985). Health practices and illness cognition in young, middle aged, and elderly adults. *Journal of Gerontology*, 40(5), 569–578. [PubMed: 4031405]
- Reisberg B, Ferris SH, DeLeon MJ, & Crook T (1982). The global deterioration scale for assessment of primary degenerative dementia. *American Journal of Psychiatry*, 139(9), 1136–1139. [PubMed: 7114305]
- Rosswurm MA (1991). Attention-focusing program for persons with dementia. *Clinical Gerontologist*, 10(2), 3–16.
- Rovner BW, German PS, Brant LJ, Clark R, Burton L, & Folstein MF (1991). Depression and mortality in nursing homes. *Journal of the American Medical Association*, 265(8), 993–996. [PubMed: 1992213]
- Rowe JW, & Kahn RL (1987). Human Aging: Usual and Successful. *Science*, 237, 143–149. [PubMed: 3299702]
- Sheikh JI, & Yesavage JA, (1986). Geriatric depression scale (GDS): Recent evidence and development of a shorter version. *Clinical Gerontologist*, 5(½), 165–173.
- Stanley B, Stanley M, Guido J, & Garvin L (1988). The functional competency of elderly at risk. *The Gerontologist*, 28(Suppl.), 53–58. [PubMed: 3169594]
- Sugar JA (1992). Memory, learning, and attention. In Birren JE, Sloane RB, & Cohen GD (Eds.), *Handbook of Mental Health and Aging*: 2nd ed (pp. 307–337). San Diego, CA: Academic Press.
- Weinstein CE, & Mayer RE (1985). The teaching of learning strategies. In Wittrock MC (Ed.), *Handbook of Research on Teaching*, (3rd ed., pp. 315–327). New York: Macmillan.
- Yesavage JA (1985). Nonpharmacological treatments for memory losses with normal aging. *American Journal of Psychiatry*, 142(5), 600–605. [PubMed: 3885762]
- Yesavage JA, Brink TI, Rose TL, Lum O, Huang V, & Adey M (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research*, 17(1), 37–49.
- Zelinski EM, Gilewski MJ, & Anthony-Bergstone CR (1990). The memory functioning questionnaire: Concurrent validity with memory performance and self-reported memory failures. *Psychology and Aging*, 5(3), 388–399. [PubMed: 2242243]

IMPLICATIONS FOR PRACTICE

Screening for cognitive impairment and depression with reliable and valid instruments for all elders must become a routine part of any health assessment, regardless of the setting (McDougall, 1990). Those individuals living in nursing homes also should be screened for their ability to remember and process information. Memory testing and assessment of memory complaints helps clinicians to distinguish dementia from depression and determine who may benefit from rehabilitation. Further, memory complaints can provide insight into how individuals view their own cognitive functioning, which is particularly important in individuals with depression, because they may underestimate their memory ability compared to individuals with dementia, who may overestimate their memory ability. Clinicians must cautiously determine the accuracy of severely impaired elders' self reports of their mental abilities. For those individuals with cognitive impairment, efforts at rehabilitation must be attempted so that the quality of life and the ability to participate in self care activities is increased.

Because the majority of older adults' cognitive complaints involve forgetfulness and self-reported memory problems, non-pharmacological methods must be found to enhance and improve cognitive performance in this vulnerable population (Greenberg & Powers, 1987; Yesavage, 1985). The implications for nurse practitioners relate to the cognitive health promotion intervention strategies prescribed for the older adult. If the individual is generally healthy and living in the community, then a cognitively challenging environment is a credible prescription for mental stimulation. The entire field of educational gerontology has grown exponentially into a global force since the first Elder hostel class was held in New Hampshire during the early 1970s. In 1989, some 320,000 Americans aged 50 and over were enrolled in formal college courses, and Elder hostel continues their 1-to-4-week courses. Older adults attending educational programs may, therefore, be considered to be participants in a cognitively demanding environment and, therefore, aging successfully with positive health benefits (McDougall, 1995). If lifelong learning courses or memory training programs are not available to seniors, then nurse practitioners may want to include a brief assessment of memory strategies from the Appendix in their health assessment. Older adults with a minimum of a high school education may not be aware of this information.

Those individuals with increased anxiety about their cognitive abilities should be taken seriously and tested for actual performance. While the anxiety may be a function of undue fear or unrealistic expectations of their cognitive ability, it may be related to early cognitive losses, depression, or both. Other individuals with a treatable depression may have a decrease in memory complaints if the depression is taken seriously and treated properly. The worst response to give older adults worried about their memory is to offer false reassurance and call it normal aging.

TABLE 1.**MEANS AND STANDARD DEVIATIONS OF VARIABLES**

Test	CI		NCI		F
	M	SD	M	SD	
Age	87.13	7.78	67.93	6.30	341.77 [*]
Health	7.96	2.03	10.02	1.89	47.12 [*]
Chronic illness	5.24	2.93	2.02	.98	151.93 [*]
Prescription medications	4.15	2.76	2.33	1.24	45.55 [*]
OTC medications	1.62	1.31	.56	.89	45.75 [*]
Depression	5.53	3.37	1.86	1.75	109.73 [*]

^{*} *p* .0001

TABLE 2.
MEANS AND STANDARD DEVIATIONS OF METAMEMORY VARIABLES

	CI		NCI		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
MIA SUBSCALE					
Capacity	3.12	.54	3.22	.53	1.57
Change	2.44	.55	2.84	.69	15.05*
Locus	3.14	.48	3.53	.52	24.11*
Strategy	3.25	.58	3.67	.47	29.11*

* 1000' *p*

TABLE 3.**MEANS AND STANDARD DEVIATIONS OF INTERNAL STRATEGIES**

Internal strategy	CI		NCI		F
	M	SD	M	SD	
Effort (1)	3.91	1.02	3.62	.80	4.74 *
Elaboration (4)	3.02	.80	3.29	.68	6.13 *
Rehearsal (4)	3.35	.84	3.63	.62	7.12 *
Total Internal	3.42	.67	3.47	.56	.22

* $p < .05$

TABLE 4.**MEANS AND STANDARD DEVIATIONS OF EXTERNAL STRATEGIES**

	CI		NCI		<i>F</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
External strategies					
Calendar (1)	3.22	1.61	4.24	.87	35.39*
List (2)	3.07	1.34	3.78	.97	17.83*
Note (3)	3.13	.98	3.67	.80	16.95*
Place (2)	4.03	.73	4.08	.68	.23
Someone (1)	2.31	1.20	2.79	.81	10.93*
Total External	3.15	.76	3.75	.57	38.13*

* $p < .0001$