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Increasing Memory Self-Efficacy and Strategy Use in Hispanic Elders

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Abstract

This study tested the effects of a 4-week, nine-session group intervention taught in Spanish to Hispanic older adults entitled “Quieres Mejorar Tu Memoria” (Do you wish to improve your memory?). The program was based on Bandura’s self-efficacy theory and was designed to increase memory self-efficacy and strategy use. A total of 33 older adults attending a senior center (mean--age = 69 years; education = 5 years; MMSE = 25) participated in the study. A booster session and a post-test were given at 3 months to the intervention group (n=22). At posttest the intervention reported greater confidence in preventing decline in their memories, and in particular greater use of the internal strategy of elaboration (2.99 vs. 3.41), and the external strategies of list (2.55 vs. 3.38) and note (3.27 vs. 3.75).

Keywords

Hispanic; memory improvement; depression; self-efficacy; memory strategy

Problems with memory are a concern of all older adults, particularly the fear of developing Alzheimer’s disease (O’Brien et al., 1992). However, among Hispanics this fear is particularly acute (Taussig & Trejo, 1992). In Hispanic culture, there is a generalized stigma associated with mental disorders, and any afflicted individual is considered to be “crazy.” Henderson and Gutierrez-Mayka (1992) quote Escobar and Randolph’s (1982) description of mental illness in Hispanic culture as “mal de sangre” or “bad blood.” This perception of mental illness denigrates the entire family, which shares in the responsibility for the illness.

Older adults often do not understand the difference between normal memory aging and impairment in cognitive function (Levy & Langer, 1994). This fear of memory loss may be a potent cue to engage in health-seeking behavior. There is a paucity of data, however, on whether memory improvement strategies learned by elders have long-term effects on memory performance in their everyday lives. This study, therefore tested the Cognitive-Behavioral Model of Everyday Memory (CBMEM), an eight-session (plus booster session) memory training program designed for elders at risk for declining memory performance and confidence in memory (McDougall, 1996). The results reported here are for the Hispanic version of the program entitled “Quieres Mejorar Tu Memoria” (Do you wish to improve your memory)?

Related Literature

Some elderly are more at risk than others for developing cognitive impairments and memory loss. These at-risk elderly often initially experience problems with the instrumental activities of daily living (IADLs--shopping for groceries, preparing meals, managing money, using the telephone, doing housework and taking medications). Older women are especially vulnerable to problems with the IADLs as age, depression, and memory loss increase (Lowenstein, et al., 1992, 1995). This vulnerability may be difficult to identify, however, since in preclinical dementia, cognitive decline is so small that individuals still perform within normal limits on measures of cognitive ability (Cromwell & Phillips, 1995; Sliwinski, Lipton, Buschke, & Stewart, 1996). Also, depressed mood influences the risk of developing dementia and is an important component of the disease process (Devanand et al., 1996; Feehan, Knight, & Partridge, 1991; Migliorelli et al., 1995; Weiner, 1994). Interestingly, in a recent study Small, LaRue, Komo, and Kaplan (1997) found that age and frequency of mnemonics usage were strong predictors of cognitive decline over a 5-year period.

Memory Strategies

Older adults want to improve their everyday memories in specific domains that are of 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). However, memory studies indicate that older adults have limited repertoires of cognitive strategies to retain or improve memory.

Cognitive strategies, specifically memory strategies, are broadly classified as either internal or external. Older adults use memory strategies in their everyday lives less often than younger adults (Devolder & Pressley, 1992). Older adults tend to become more dependent on external memory strategies and rely less on their own thinking and remembering ability (Herrmann & Petro, 1990; Intons-Peterson & Fourniers, 1986; McDougall, 1995a). McDougall (1995b) examined the use of memory strategies in both cognitively impaired residents of nursing homes (n=55) and cognitively intact older adults attending educational programs (n=169). 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 of effort more often. Since only the 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 difference in perception of memory capacity between the groups. Depression had a negative influence on perceptions of memory capacity and change in both groups.

When they are given appropriate instructions, older adults are capable of using cognitive strategies to improve their memory performance. Individuals must not only monitor memory demands and choose appropriate strategies, however; they must also believe they have the ability and confidence, or self-efficacy, to carry out memory tasks without undue anxiety in memory demanding situations (Bandura, 1988; Seeman, Rodin, & Albert, 1993). Self-efficacy beliefs also influence the elderly's cognitive ability (Bandura, 1993; 1997). McDougall (1994) found that many healthy elders had decreased memory self-efficacy. This led them to believe they had limited memory capacity, that they could do little to affect their memory, that anxiety and stress easily influenced their memory, and that their memory would inevitably decline with age.

Memory Improvement

Memory training programs for older adults usually rely on the teaching of mnemonics, i. e., any mental strategy or technique to learn desired material by using other, initially extraneous material to aid recall (Bellezza, 1981; Yesavage, 1985, 1988). However, older adults have problems in using mnemonic strategies in their everyday lives since the strategies are useful only on classical episodic memory tasks (Yesavage, Lapp, & Sheikh, 1989). Mnemonic training alone has no relationship to everyday memory performance though mnemonic strategies may be the focus of unifactorial memory training programs (Brooks, Friedman, & Yesavage, 1993). Therefore, investigators recommend that memory improvement training be multi-factorial, and go beyond simply teaching one or two mnemonic strategies (Dellefield & McDougall, 1996; Stigsdotter & Backman, 1989; Stigsdotter Neely & Backman, 1993, 1995; West, 1989).

Memory programs often include training in visual imagery skills to facilitate learning mnemonic techniques because it is unusual for older adults to use the techniques in their daily lives (Hayslip, Maloy, & Kohl, 1995). For example, individuals may be taught to increase the elaboration of processing of visual-image associations used in a mnemonic device. In the Hayslip et al. study, older adults remembered how to relax by using a stress inoculation technique but they did not remember how to use the mnemonic strategy. Thus, visual imagery and relaxation components appear to persist.

A review of 39 published studies of memory training with older adults documents that the elderly may improve their memory performance on episodic memory tasks (Verhaeghen, Marcoen, & Goossens, 1992). The training is most effective when carried out in groups, sessions are relatively short (less than 90 minutes), and pretraining is provided in imagery and/or relaxation techniques. These conclusions are valid only for memory performance on classical episodic memory tasks, however; nothing can be inferred about the impact of memory training on everyday memory performance, or on metamemory. Further, no studies have focused on minority elderly and those with low incomes. Clearly more research is needed in this area. It is particularly important to understand research into minority groups such as Hispanics, whose numbers in this country are rapidly increasing and who may face especially acute fears of memory loss.

METHOD

This pilot study examined the effectiveness of the Cognitive Behavioral Model of Everyday Memory. The Cognitive-Behavioral Model of Everyday Memory (CBMEM), developed by the author, is a comprehensive model of stress inoculation, health promotion, memory self-efficacy, and memory strategy training designed to improve, or maintain (prevent decline in) the everyday memory of older adults. Using a quasi-experimental pretest, posttest design, the study aims were to test the effectiveness of the CBMEM in improving the use of memory strategies, both external and internal, and improving memory self-efficacy or confidence in memory. The intervention was based on Bandura's self-efficacy theory. Classes were taught by a masters' level psychologist fluent in Spanish who had previously taught memory improvement classes with Hispanic elderly in Lima, Peru. Effectiveness was measured by examining overall memory evaluation, memory self-efficacy, and memory strategy use.

Translation

The metamemory, memory self-efficacy, health, and instrumental activities of daily living were translated into Spanish. The mini mental status and geriatric depression scales were available in Spanish versions. This was accomplished by two registered nurse clinicians proficient in

Spanish. A Hispanic (Puerto Rican) social worker from the senior center also assisted with the translation.

Back Translation

The following approaches were taken for the back translation (Taussig, Henderson, & Mack, 1992). First, the original English-language material was translated into Spanish by one bilingual person. Second, an additional bilingual person checked the original translation. Third, three bilingual persons with access to the original material back translated this translation into English. Fourth, a committee consisting of this author, the co-investigator Peruvian psychologist), and a Puerto Rican Social worker, and administrator reviewed and approved the consensus translation.

Sample

Subjects for the study were recruited in the Cleveland, OH, area and attended a Community Center for Hispanic seniors. Brightly colored flyers announcing a 4-week, nine-session group intervention taught in Spanish entitled “Quieres Mejorar Tu Memoria” (Do you wish to improve your memory?) were posted at the center. The co-investigators also gave two afternoon presentations describing the study. Potential subjects were screened for cognitive impairment with the Mini-Mental State Exam and those with a score of ≥ 17 (includes mildly impaired) were included in the study (Wilder, et al., 1995).

The nonprobability sample consisted of 25 (76%) females and 8 (24%) males. Subjects ranged in age from 55 to 87 years ($M = 69.48$, $SD = 5.82$). The average age of the males was 72, and of the females, 69. All participants were Puerto Rican. Twenty-three signed up for the memory training. One female subject from the intervention group died in the 3 month period following the completion of the course before the booster session. At posttest, complete data were available for the remaining 22 subjects (5 males and 17 females). Attendance was almost perfect in the intervention group. At pretest, 10 Hispanics not participating in the memory intervention at the Center were included in base-line testing to ensure that the sample was representative of the population.

Experimental Intervention

The intervention consisted of eight 1-hour sessions spread over four weeks. A ninth session was a 1-hour booster session provided at 3 months following the eighth session. Each session included lectures, group exercises and homework assignments. Important components of the intervention based on self-efficacy methodology were providing feedback on performance, practicing techniques and strategies, watching other participants, and encouraging with verbal persuasion. The goals of the intervention were to increase memory self-efficacy and the use of memory strategies by altering perceptions and beliefs about one's memory capacities, the stability or decline of memory skills, personal control over remembering abilities, and feelings of anxiety related to memory performance. The content for the course was derived from a variety of sources. The primary source was published guides for leading a memory retention course by Stern and Fogler (1987). Another source was personal experience: over the 2-year period preceding the study the first author led many multiple-session memory groups for the elderly and the second author led memory groups in Lima, Peru.

EDUCATIONAL SESSIONS

Session I: Relaxation Techniques

Stress Inoculation techniques were taught during the first phase of the intervention. Participants learned to deal with anxiety linked to general stressful situations and memory-demanding tasks. The aim was to assist participants in learning cue-controlled muscle relaxation and help them

analyze destructive self-statements and substitute more adaptive rules to solve problems. For homework the participants were asked to describe memory successes and failures and to write out specific questions they would like answered.

Session 2: How Memory Works

After introductions, participants were asked how many names they could recall, and the group discussed difficulty in remembering names. The instructor described an effective method of giving meaning to his/her name, providing visual associations.

Information on how memory works was given with emphasis on the three stages of memory: sensory, short-term, and long-term memory. The techniques of association, visualization, and active observation were illustrated, and common thoughts and feelings that occur with forgetfulness were discussed. A list of common problems and concerns was made, and group solutions to problems and reactions to the problems were identified. Participants learned other participants' names.

Sessions 3 and 4. How Memory Changes as People Age

Participants were asked if anyone could remember the names of all the participants. When there were no volunteers, the instructor asked the participants to cooperatively name as many people as possible, and demonstrated how association and visualization are effective techniques.

Four memory techniques were taught: mental elaboration, written reminders, auditory reminders, and environmental change. Participants were told to use the technique of active observation and observe something in detail everyday.

These sessions also emphasized topics such as senility and normal changes in memory with age and the distinction between normal cognitive aging and Alzheimer's Disease. Topics included: divided attention; learning new information; effort; retrieval; recall; and accumulation of knowledge.

Sessions 5 and 6. Factors Affecting Memory for People of All Ages

How memory changes with age was briefly reviewed, along with the factors that affect memory and techniques for remembering. These sessions helped people consider the impact of various factors on memory. Topics discussed included attention and distraction, negative expectations, stress, anxiety, depression, loss and grief, inactivity, lack of social interaction, lack of mental stimulation, lack of organization in daily life, fatigue, physical illness, medications, vision and hearing problems, alcohol, and poor nutrition. Examples were given for each category. Participants were asked to record memory strategies they used to remember everyday homecare tasks (IADLs) such as turning off the stove, locking the door, adding laundry soap, taking medicine, watering the plants, etc.

Session 7. Memory Improvement Techniques-Internal Strategies

Participants were asked if they had any unresolved memory problems that the group could help them solve and they discussed ways that they could work on improving their memory. The content included internal memory improvement techniques such as association, elaboration, visualization, and active observation, and rehearsal. Internal mnemonic devices described included the story method, chunking, first letter cues, creating a word, and categorization. Other methods to assist with recall included searching memory, alphabet search, and review. Examples and exercises were used for each strategy.

Session 8. Memory Improvement Techniques-External Strategies

This session covered external memory improvement techniques, such as written reminders, auditory reminders, and environmental change, e.g., use of place. General tips were given for remembering, such as “believe in yourself,” “make conscious choices,” “focus your attention,” “cut out distractions,” “allow plenty of time,” “use all senses,” “be organized,” “recognize negative influences,” “relax,” “laugh,” and “enjoy past memories.”.

The eighth session were also a review of all previous sessions. Individuals were asked to discuss their beliefs about aging and its effects on cognitive ability, and give an example of one internal and one external strategy. They discussed ways that they worked on improving their memory in the future. A summary of the course highlights was presented and participants were reminded to return in 3 months for an additional class.

BOOSTER SESSION-3 MONTHS

At the booster session, participants were asked if they had any unresolved memory problems that the group could help them solve and discussed ways that they might work on improving their memory. The session revisited internal memory improvement techniques such as association, elaboration, visualization, and active observation, and rehearsal. Examples and exercises were used for each strategy. This session also revisited external memory improvement techniques, such as written reminders, auditory reminders, and environmental change, e.g., use of place.

Data Collection

Time two data collection was accomplished at the end of the booster session where participants filled out the metamemory strategy and the memory-efficacy scales.

Instruments—Data were collected using Spanish versions of all instruments. They consisted of the Geriatric Depression, the Mini-Mental State, the Metamemory in Adulthood (MIA), the Memory Efficacy (ME), Health status, and Instrumental Activities of Daily Living (IADL) scales.

The Metamemory in Adulthood Questionnaire (MIA) (Dixon, Hultsch & Hertzog, 1988) is a measure of the memory components of knowledge, beliefs, and affect. The MIA consists of 108 statements, with responses rated on a 5-point Likert scale. The 7 subscales measure strategy, task, capacity, change, anxiety, achievement, and locus. *Strategy* is knowledge of one’s remembering abilities such that performance in given instances is potentially improved; it includes reported use of mnemonics, strategies, and memory aids (+ = high use). *Task* is knowledge of basic memory processes, especially the knowledge of how most people perform (+ = high knowledge). *Capacity* is the perception of memory capacities as measured by predictive report of performance on given tasks (+ = high capacity). *Change* is the perception of memory abilities as generally stable or subject to long-term decline (+ = stability). *Anxiety* is the rating of the influence of anxiety and stress on performance (+ = high anxiety). *Achievement* is the perceived importance of having a good memory and of performing well on memory tasks (+ = important). *Locus* is the individual’s perceived personal control over remembering abilities (+ = internal locus).

In the MIA, internal strategies are determined by 9 Likert-type questions related to rehearsal (4), elaboration (4), and effort (1). Rehearsal strategies for basic learning tasks usually involve repeating the names of items in an ordered list. 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. An example of an elaboration strategy is “When you try to remember people you have met, do you associate names and faces?”

External memory strategies in the MIA include a total of 9 Likert-type questions related to the use of calendars (1), lists (2), notes (3), place (2), and someone (1). An example of a note question is, “When you finish reading a book or magazine, do you somehow note the place where you have stopped?” An example of a place question 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 a calendar question is “Do you write appointments on a calendar to help you remember them?” An example of a person question is “Do you ask other people to remind you of something.”

The MIA’s psychometric characteristics have been examined with community-dwelling, middle-aged, and older adults. Cronbach alphas for the seven subscales are reported as .79 to .92. Dellefield and McDougall (1996) in a memory improvement study reported Cronbach’s alphas ranging from .84 to .93. In the present study, Cronbach’s alphas for the scales varied considerably, from Achievement, .47; Anxiety, .83; Capacity, .75; Change, .68; Locus, .37; Strategy, .83; and Task, .44. Intercorrelations between the MIA subscales range from extremely low, -.05, to moderate, .60 (Dixon, et al., 1988).

Memory evaluation was determined with one question, “How good is your memory now?” from the Memory Efficacy scale (Lachman, 1987). The quality of subjects’ memory was rated on a 7-point scale from 1, “very poor” to 7, “excellent.”

Memory Self-Efficacy was operationalized with the Memory Efficacy (ME) questionnaire (Lachman et al., 1987), a Guttman scale consisting of four questions. The ME questionnaire is derived from Bandura’s self-efficacy method and is designed to obtain predictions from older adults regarding self-efficacy level (SEL) and strength (SEST). Two memory concerns are emphasized: Maintenance skills to prevent decline and use of strategies. Subjects make performance predictions regarding self-efficacy level (Yes or No), and strength and confidence in each performance prediction from 10% to 100%

Functional ability was operationalized as Instrumental Activities of Daily Living (IADL) and measured by the IADL scale (Lawton & Brody, 1969; Lawton, Moss, Fulcomer, & Kleban, 1982; Lawton, 1988). The IADL items are complex skills and since they require combinations of tasks to complete, the responses are very specific. The interviewer-administered instrument has a total of eight items which include home management activities such as using the telephone, going shopping, preparing meals, cleaning the house, doing the laundry, providing transportation, taking medications, and handling money. Response formats range from a minimum of three (finances, laundry, and medications), to four (cooking, shopping, and telephone), to five (housekeeping and transportation). The instrument has been tested in community residents with highest and minimal competence. An alpha reliability of .91 has been reported (Lawton, 1988).

Depression was operationalized with the short version of the Geriatric Depression Scale (GDS) (Yesavage et al., 1982). The 15 item instrument has a YES/NO response format. Scores range from 0 to 15, with a score ≥ 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 coefficient alpha in this sample was .77.

Health status was operationalized using the Health Scale, a subscale of the Multilevel Assessment Instrument (Lawton, Moss, Fulcomer & Kleban, 1982). Subjects rate the quality of their health using a 4-point response format with higher scores indicating better health. Total scores range from 4 to 13. Anchors are “better” to “not so good” and “excellent” to “poor”. Lawton et al.(1982) reported an alpha coefficient of .76 and test-retest correlation of .92.

Procedure—A ten-minute presentation was given by the investigators to enlist volunteers, answer questions, and discuss concerns about the nature of the study. After the presentation, research assistants had a one-to-one discussion with participants and center staff assisted with verbal translation. After sufficient explanation in Spanish, informed consent was obtained by having potential subjects sign a consent letter. A researcher administered the MMSE face to face.

Data collection occurred over four months in face-to-face interviews. Subjects in the experimental group completed the questionnaires before the first class and during the first two weeks of class. Subjects in the comparison group were tested one time with face-to-face interviews and completed instruments in the Center during the four weeks the intervention took place. All subjects were assured of confidentiality and told that the findings would be aggregated. Subjects were paid with grocery coupons (Total value = \$50) for participating in the study. The questionnaires were administered to subjects by three masters'-prepared nurse data collectors and the co-investigator (2 data collectors spoke Spanish). At the conclusion of each week of class, subjects were paid \$10, with a final lump sum payment of \$10 for a total of \$50 paid to each subject in the experimental group and \$10, paid to each subject in the comparison group after completing the interview. At the 3-month booster session subjects were tested at the end of the class.

Results

The comparison group was tested one time; and results are reported to show differences in those who participated in the memory intervention and those who did not. Males had significantly $F(1, 29) = 4.44, p < .05$ more years of education (7.5 vs. 4.7); but also had significantly $F(1, 29) = 4.41, p < .05$ higher depression scores (6.5 vs. 3.7). There were no gender differences on cognitive function (MMSE scores); however females scored on average lower than males (24 vs. 27). At baseline, the comparison group used significantly more external strategies (3.73 vs. 3.26) than the intervention group. In particular, the group scored higher on the use of the external strategy of someone (3.60 vs. 2.75) $F(1, 28) = 6.69, p < .05$. There were no differences in internal strategy scores between groups. At baseline, there was a significant $F(1, 28) = 12.275, p < .005$ difference in transportation ability (IADL-F) between the experimental and additional (4.40 vs. 3.10) group; the latter group was more homebound than the experimental group. There were no other differences in IADLs between experimental and other group. There were no differences in perceived health, total IADLs, memory efficacy, and metamemory (achievement, anxiety, capacity, change, locus, task, and strategy (external and internal)).

Pearson correlation coefficients were calculated among study variables for the experimental group. The level of significance was set at .05 and to achieve significance a coefficient had to be at least .3598 for $df = 21$.

Age was inversely related to cognition ($r = -.50$) and depression ($r = -.57$). However, age was positively related to internal strategies at posttest ($r = .42$). Cognition was positively correlated with education ($r = .51$). Cognitive function was inversely related to posttest use of internal strategies ($r = -.39$). Depression was inversely related to memory evaluation ($r = -.47$). Pearson correlations were inverse between memory evaluation and total strategies at posttest ($r = -.36$), internal strategies at posttest ($r = -.46$), and external strategies ($r = -.36$). However, memory efficacy was positively related to health ($r = .39$).

External Memory Strategy—It was expected that subjects in the intervention group would improve their use of memory strategies. There was no significant difference in the use of total strategies from pre- to posttest. There was also no difference in the use of total external strategies from pre-to posttest. In particular, there were significant increases in the use of lists

(2.55 vs. 3.38) $F(1, 21) = 6.96, p < .05$) and notes (3.27 vs. 3.75) $F(1, 21) = 7.38, p < .05$) from pre to posttest. There were no differences in the use of the other external strategies of calendar, place, or someone.

Internal Memory Strategy—There was no difference in the use of total internal strategies from pre- to posttest. However, there was a significant $F(1, 21) = 5.86, p < .05$ increase in the use of the internal strategy of elaboration (2.99 vs. 3.41).

Memory Self-Efficacy—It was expected that subjects receiving the intervention would increase memory self-efficacy from pre- to post-testing. The intervention group significantly increased (55.91 vs. 67.55) on one of the four items measuring “I know how to keep my memory from going downhill as I age” $F(1, 21) = 4.149, p < .05$). There was no change from pre test to post test on general memory evaluation.

Discussion

The 4-week group intervention plus one booster session 3 months later significantly improved the use of the internal strategy of elaboration and the external memory strategies of list making and note taking by Hispanic older adults. Participants also improved in their beliefs that they could prevent decline of memory with age. This study had limitations. Memory performance was not determined, there was no control group, and the Spanish versions of the metamemory and memory self-efficacy instruments were used for the first time.

The most surprising finding of this study was the significant increase in the use of elaboration, an internal memory strategy. The internal strategies are more complicated to learn than the external strategies, and older adults often find it difficult to produce and remember visual images (Yesavage, 1989). Elaboration strategies for basic learning tasks include forming a mental image or sentence relating the items in one category to another. When McDougall (1995b) examined the use of memory strategies in three age groups of older adults attending educational programs, the 65-74 year old group ($n=90$) scored on average 66 on the strategy scale, although they had 12 years of education. The Hispanic elders in the current study had an average age of 68 years with 6 years of education scored lower ($M = 61$) on the strategy scale. However, they learned to use memory strategies during the classes, and maintained them at three months following the intervention. Burack and Lachman (1996) found that when older adults made lists, their performance on recall tasks significantly improved. Even though memory performance was not tested and level of education was low the older adults in this study maintained their gains in strategic domains at three months.

Dellefield and McDougall (1996) in a 2-week, four-session group memory-improvement study significantly increased both metamemory and memory performance in the treatment group. In particular, their perception of control (locus) in memory-demanding situations was strengthened and their perception of decline in memory (change) over time was diminished. Those individuals with depression had significantly lower metamemory scores than those without depression; however, there was no difference in memory performance between the depressed and non-depressed subjects. In this study depression was inversely related to age ($r = -.57$) and overall memory evaluation ($r = -.47$).

Depression is a substantial problem in the Hispanic elderly community. Gallagher-Thompson et al. (1997) reported that 20% of her sample ($N=119$) of Mexican-American women scored above the cut-off of 4 or greater on the GDS. Depression was inversely related to education ($r = -.39$). Men in the study were significantly ($p \leq .05$) more depressed than their female counterparts (6.5 vs. 3.7). The men were also on average three years older and had poorer health (7.6 vs. 9.4). Gender differences with men scoring lower than females, although not significantly so, were also found in total IADL scores, memory self-efficacy, memory capacity

(decreasing) and memory change (worsening). Yet, the three additional years of education seemed to have a buffering effect such that men scored higher on use of the internal memory strategies (effort, elaboration, and rehearsal), total memory strategies, and overall cognitive ability. At posttest the males continued to score lower on memory self-efficacy and use of external strategies. However, they scored higher at posttest on all internal strategies (effort, elaboration and rehearsal).

Investigators have hypothesized that the cognitively impaired elderly will use memory strategies more often than the elderly with depression (Gilewski, Zelinski, & Schaie, 1990). This hypothesis was partially supported in the current study. The correlations between strategies and cognition were significant ($r = -.39$), whereas the correlations between strategies and depression were not significant. Individuals with greater cognitive impairment used more internal memory strategies at posttest.

Other investigators have recommended that the memory improvement training be multi-factorial to include multiple strategies and imagery in order to facilitate the maintenance and application of these strategies to their everyday lives (Brooks, Friedman, & Yesavage, 1993; Stigsdotter & Backman, 1989, Stigsdotter Neely & Backman, 1993, 1995; West, 1989). This study goes beyond those recommendations and tested a new model the CBMEM and included not only those suggested recommendations, but also memory self-efficacy and health promotion. These additional components have relevance for the aging population. This pilot study provides evidence that elderly Hispanics with low education and poverty level incomes can make gains in using memory strategies as well as confidence in their ability to prevent further decline in their memories. Eventhough participants' overall evaluation of their memories had not changed, they increased strategic behaviors which boosted their memory self-efficacy and confidence in being able to prevent further decline with age.

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Table 1
Means and standard deviations of demographic variables

	(n=10)COMPARISON		(n=23)EXPERIMENTAL		P
	X	SD	X	SD	
Age	72.40	6.06	68.15	5.42	NS
Education	6.00	3.94	5.10	3.29	NS
Health	9.00	2.58	9.10	2.13	NS
Depression	3.90	.32	3.75	.55	NS
Cognition	25.00	4.11	24.60	3.69	NS

Table 2
Means and standard deviations of instrumental activities of daily living

	(n=10)COMPARISON		(n=23)EXPERIMENTAL		p
	X	SD	X	SD	
Telephone-A	3.90	.32	3.75	.55	NS
Shopping-B	3.10	.88	3.35	.81	NS
Food Preparation-C	3.40	.70	3.50	.89	NS
Housekeeping-D	4.40	.70	4.55	.76	NS
Laundry-E	2.40	.70	2.60	.68	NS
Transportation-F	3.10	1.10	4.40	.88	.002
Medications- G	3.00	.00	3.00	.32	NS
Finances-H	2.90	.32	2.75	.44	NS
Total IADL	26.20	2.30	27.90	2.47	NS

Table 3

Means and standard deviations of memory variables

	(n =10)COMPARISON		(n=23)EXPERIMENTAL		p
	X	SD	X	SD	
Acheivement	3.99	.27	3.84	.38	NS
Anxiety	3.92	.47	3.44	.69	NS
Capacity	3.48	.58	3.68	.70	NS
Change	2.24	.46	2.44	.45	NS
Locus	3.50	.57	3.52	.32	NS
Strategy	3.64	.36	3.40	.54	NS
Task	3.87	.26	3.72	.33	NS
Memory Evaluation	5.00	.82	4.95	1.57	NS
Memory Efficacy Avg	64.60	18.20	63.00	23.72	NS

Table 4
Means and standard deviations of memory strategy variables

		(n =10)COMPARISON		(n=23)EXPERIMENTAL		
		X	SD	X	SD	p
INTERNAL						
Effort		4.30	.68	3.85	1.46	NS
Elaboration		3.34	.68	2.99	.80	NS
Rehearsal		3.53	.69	3.43	.73	NS
Internal-Total		3.55	.50	3.26	.68	NS
EXTERNAL						
Calendar		4.40	.52	4.30	.80	NS
List		3.25	1.28	2.50	1.08	NS
Note		3.53	.65	3.27	.64	NS
Place		4.25	.49	3.73	.85	NS
Someone		3.60	.84	2.75	.85	.015
External-Total		3.73	.43	3.26	.47	.012
p ≤ .05						

Table 5
Means and standard deviations of memory strategy and confidence variables at T1 and T2 (3 months)

	(n =22)EXPERIMENTAL		(n=22)EXPERIMENTAL		P
	X	SD	X	SD	
Prevent Decline	55.91	26.67	67.55	19.00	.054
Maintain Memory	53.18	38.10	53.18	28.01	NS
Strategies General	74.10	28.90	77.27	23.94	NS
Strategy-Someone	70.46	30.47	76.82	15.85	NS
Efficacy Total (Avg)	63.46	22.61	68.71	16.07	NS
Memory Evaluation*	4.94	1.39	4.50	1.55	NS
Effort	3.86	1.39	3.44	.97	NS
Elaboration	2.99	.76	3.41	.77	.025
Rehearsal	3.42	.70	3.55	.48	NS
Internal Total	3.26	.65	3.48	.59	NS
Calendar	4.27	.77	4.00	1.20	NS
List	2.55	1.03	3.38	1.10	.015
Note	3.27	.61	3.75	.91	.013
Place	3.75	.81	3.75	.87	NS
Someone	2.77	.81	2.50	1.16	NS
External-Total	3.27	.45	3.56	.63	NS
Strategy Total	3.30	.49	3.52	.52	NS