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Everyday Memory Strategies for Medication Adherence

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Abstract

The need to manage chronic diseases and multiple medications increases for many older adults. Older adults are aware of memory declines and incorporate compensatory techniques. Everyday memory strategies used to support medication adherence were investigated. A survey distributed to 2000 households in the Atlanta metropolitan area yielded a 19.9% response rate including 354 older adults, aged 60–80 years. Older adults reported forgetting to take their medications, more so as their activity deviated from normal routines, such as unexpected activities. The majority of older adults endorsed at least two compensatory strategies, which they perceived to be more helpful in normal routines. Compensatory strategies were associated with higher education, more medications, having concern, and self-efficacy to take medications. As memory changes, older adults rely on multiple cues, and perceive reliance on multiple cues to be helpful. These data have implications for the design and successful implementation of medication reminder systems and interventions.

One aspect of memory that is important for everyday tasks is prospective memory, that is remembering to do something in the future, such as taking medications, or paying a bill at the appropriate time. Although evidence is mixed, generally older adults demonstrate difficulty with prospective memory tasks, even when the task has become habitual.^{1–3} Remembering can be enhanced if the task is well established and integrated into one's daily life.⁴ Furthermore, incorporating a plan (or strategy) at the onset of forming an intention (such as remembering to take a medication) can facilitate older adults' memory for the intention, even if the memory is delayed.⁵ Thus, context can support memory, but if distracting or unrelated, it can interfere.^{6–8} Medication regimen adherence is a relevant issue as the majority of older adults manage at least one chronic condition (often with medication), and the number of chronic conditions tends to increase with age.^(e.g., 9) Increased medication management demands and the potential for older adults to establish a well-integrated context to support their memory (through the regimen), make medication adherence an informative task in which to investigate everyday memory strategies used by older adults.

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Guiding Model

Everyday memory strategies have been thought of as compensatory mechanisms, coinciding with the model of Selective Optimization with Compensation (SOC).¹⁰ According to the SOC model, due to decreased selective attention and increased processing demands, older adults selectively adapt behavior to their changing cognitive resources and engage in strategies that will help them compensate for these changes. In the context of memory, older adults focus on their sustained memory skills (selection), improve upon these skills with practice or training (optimization), and complete their memory tasks in different ways by changing strategies or utilizing alternate memory processes (compensation).¹¹ Although older adults may use effective strategies less often¹², encouragement¹³ or training¹⁴ can lead to enhanced use of effective strategies and better memory performance.

Compensatory Methods

External memory aids, visible locations, and association strategies were frequently endorsed techniques,¹⁵ demonstrating that older adults attempt to compensate for memory declines. The Memory Compensation Questionnaire (MCQ)¹⁶ measures memory compensation strategies used in daily life. For participants of the Victoria Longitudinal Study, lower memory self-efficacy was associated with strategies such as using external reminders, devoting more time, and allocating more effort.¹⁷ Furthermore, a six-year longitudinal investigation revealed that older adults increased use of external memory aids; in particular, individuals with higher initial levels of episodic memory increased their use of external aids and devoted more effort compared to those with lower initial memory levels.¹⁸ Another study demonstrated that unimpaired older adults primarily used external strategies, whereas those with Alzheimer's disease increasingly relied on others for support.¹⁹ These studies demonstrate that older adults use strategies as compensation techniques to support everyday memory.

Research on strategy use in the context of medication adherence has found that older adults employed both internal (primarily use of mental associations) and external (use of physical objects and/or locations) strategies to remember to take their medications.²⁰ Although external strategies were among the most frequently reported, higher self-reported adherence and memory self-efficacy were associated with use of fewer external strategies.²¹ Some research has attempted to investigate use of two strategies in combination. One study of older adults with Type 2 diabetes suggested that the presence of auditory and visual cues may be related to successful medication adherence.²² Also a consistent routine, such as taking medications at the same time of day and location, may augment adherence.²³ These studies suggest implementing two compensatory strategies may help older adults incorporate medication-taking into the context of their daily lives.

Although there has been prior research on strategies, consideration of the extent to which adults incorporate more than one compensatory technique in a regular way is lacking. Medication adherence is a particularly relevant everyday memory task because it is an instrumental activity of daily living (IADL)²⁴ essential to independent functioning. Nonadherence can lead to serious health risks as well as increased health care costs.²⁵ Thus, guided by the SOC model¹⁰, the goal of the present investigation was to focus on examining what compensation technique(s) older adults adopt to optimize or bolster everyday memory. A task-specific approach was used to investigate and describe the following: self-perceptions of when older adults forget, how often they forget, the strategies they implement to minimize forgetting, and the number of strategies utilized within the context of medication regimen adherence. Further, to achieve a better understanding of reliance upon multiple cues to support everyday memory, person-level variables, such as health status,

behaviors, and attitudes were examined. The descriptive information gained from these specific considerations can provide a starting point for professionals to determine what strategies should be encouraged to bolster adherence.

Method

Procedure

A mail survey of older residents (aged 60–80 years) in the Atlanta Metropolitan Area was administered to a list assisted age-targeted random sample of 2,000 households. We used age 60 as the minimum age to reflect the World Health Organization's designation of an older adult.^{26, 27} Survey Sampling International drew the list-assisted sample from voter registration information, magazine subscriptions, and other sources used to predict incidence of a person in a household meeting the age criteria.

Respondents were given the incentive of participating in a random sweepstakes drawing for fifty \$10.00 gift certificates to a local area restaurant. Entries were completed on a separate sheet of paper, not attached to the survey; thus, individuals could return the sweepstakes entry with or without a completed survey. A postcard reminder was mailed to each household two weeks following the initial mailing. These methods are recommended to increase response rates for mail surveys.²⁸ The protocol was reviewed and approved by the Institutional Review Board, protocol number H03147.

A cover letter described the purpose of the questionnaire, stated that participation was voluntary, all responses would remain confidential, and provided contact information for the researchers if there were questions. Respondent names were not recorded or connected to the data obtained. Thus, return of the completed questionnaire was evidence of consent. Respondents were asked to complete and return a 68-item questionnaire regarding usage of medical products. "Medical products" were defined to participants as prescription medications, vitamins, aspirin, antacids, nasal sprays, laxatives, and medicinal herbs. This term was used to encourage participants to report on all relevant products used, rather than just prescription medications, and to encompass a similar variety of products assessed previously.²⁹

Of the 2,000 original households included in the sample, 47 questionnaires were returned by the U.S. Postal Service as undeliverable, 9 individuals were reported as deceased, 5 respondents reported being outside the age range, and 1 respondent asked to be removed from the mailing list. In addition, 67 of the returned questionnaires were from respondents outside of the 60 to 80 year age range for a total of 129 ineligible households. From the 1871 valid households remaining in the sample, 373 completed questionnaires were returned making the effective response rate 19.9%. Seven of the 373 respondents did not complete the medication adherence strategies section of the questionnaire, and an additional twelve did not report any medical product usage. These respondents were not considered in the current sample reported. Therefore, data presented are for the remaining 354 respondents (95% of the valid returned questionnaires.) Given that mail surveys reportedly yield response rates of 5–10%,²⁸ this was deemed to be a good response rate, and achieved our goal of obtaining over 200 respondents; moreover, as discussed below, the sample demographics were representative of the population.

Measures

The questionnaire (available from the authors) contained four sections: (1) General background, health, and medical product usage questions, (2) Strategies used to remember to take medical products, (3) General medication behavior questions, and (4) Attitudes about remembering medications questions. The Flesch-Kincaid Grade Level for the survey

instrument was 5.8, which is under the targeted 6th grade level recommended for older adults.³⁰

Questionnaire Development—The current questionnaire was derived from the results of both a pilot³¹ and a preliminary study.³² The pilot study was guided by the SOC model, with the intent of determining what compensatory techniques (everyday memory strategies) older adults use in their daily lives to help them with the task of remembering to take their medications, and how well these strategies help them “optimize” their behavior for adhering to their medication regimens. Structured interviews were conducted with 9 older adults, and the compensatory behaviors reported were classified into six types of strategies. Three separate judges determined classification.

The goals of the preliminary³² study included validation of the compensatory behaviors identified in the pilot study, and investigation of self-reported adherence in a variety of different conditions (such as when individuals are in their normal routines, versus out of their normal routines). This again incorporated the SOC model because in addition to assessing the compensatory behaviors, the preliminary study also considered how well older adults were reportedly able to “optimize” their compensatory behaviors in different situations.

General background—The first section (13 questions) comprised demographic information of age, gender, education, marital status, and ethnicity. Chronic conditions, physical limitations, and health locus of control were also assessed (9 questions). Participants completed detailed information on the medical products currently used (9 questions). A pharmacy technician categorized the medications into prescription and over-the-counter.

Medication adherence strategies—Participants were first asked the general question, “Do you use strategies to help you to remember to take your medical products? (yes/no)” If yes, they were asked to describe the strategies. This question was posed to participants prior to answering questions on specific strategies because, although older adults may employ compensation techniques in their daily lives, they may not refer to them as “strategies” or be familiar with this term in this context. Furthermore, this open-ended format was used to determine if older adults reported strategies not assessed in the questionnaire.

Participants then answered questions about their use of 7 different strategies (selected based on prior research^{31,32}): pill caddy, association, external physical reminder, location, mental planning, physical pain, and visibility. Participants were provided with the strategy definitions in Table 1. They then endorsed whether they used each strategy. If the strategy was positively endorsed, participants indicated how frequently (rarely to always) they rely on this strategy, and the degree to which they find the strategy helpful (slightly helpful to extremely helpful) when in their normal routines and when out of their normal routines. Participants could endorse using more than one strategy. All questions relating to frequency were responded to by selecting a response on a 5-point Likert-type scale.

Medication behavior questions—This section contained 15 questions focused on lifestyle behaviors involving medical products that may be associated with medication adherence. The first 8 questions concerning frequency of forgetting to take medications, possible reasons for forgetting, and engaging in behaviors to remind oneself of the correct regimen were responded to on a 5-point Likert-type scale. The anchors provided were “Never (1)”, “Sometimes (3)”, and “Always (5).” A sample question is “How often do you forget to take your medication when you are in your normal routine?” Three questions of particular interest queried forgetting to take medication when (a) in normal routine, (b) away

from home for more than one day, for example when traveling, and (c) out of normal routine, such as an unexpected visit from a friend (internal consistency=0.81). How often people reported forgetting was also assessed. One question stated, “On average, how often do you forget to take a medication?” Response choices included: never, once every six months, once every three months, once a month, once a week, and once a day. The remaining 6 questions probed frequency of specific behaviors that may be associated with forgetting (e.g., going out to dinner, traveling), perceived frequency of forgetting in various situations, and personal responsibility for medication taking.

Attitudes about remembering medications—Items in this section included the importance, motivation, anxiety, and perceived efficacy of one's memory for medications. There were 14 questions derived from the Metamemory in Adulthood Questionnaire.³³ Responses were obtained on a 5-point Likert-type scale. A sample question is “I am highly motivated to remember to take my medications.” Two composite scores were formed representing anxiety and efficacy, as indicated in Table 2, with internal consistency provided.

Participants

A summary of respondent demographic data is provided in Table 3. Participants ranged in age from 60 to 80 years, and were generally well educated. The gender distribution included more males than females, which represents a higher proportion of males than in the general older adult population. Because households were randomly selected, if a married couple was living in the household, the survey was addressed to the male, thus likely contributing to the high male response rate. The ethnic distribution in the sample was comparable to recent data from the Census Bureau and the Centers for Disease Control and Prevention.^{34, 35} Over 90% ($n=322$ out of 354) of respondents identified themselves as primarily responsible for their own medication usage. Data on medications and chronic conditions are provided in Table 4. These prevalence rates of chronic disease correspond to recent national data.^{35, 36}

Analyses

In order to address the questions of interest, the data were first analyzed descriptively. A series of frequency distributions were employed to examine the following: 1) perceived forgetting behavior as a means to understand everyday memory failures; 2) the number and type of compensatory strategies employed for medication regimen adherence; 3) perceived helpfulness of compensatory strategies in different contexts (e.g., in and out of normal routine). A hierarchical regression analysis was utilized to investigate predictors of number of strategies used in order to understand what individual characteristics may be associated with use of multiple strategies.

Results

Forgetting Behavior

Within the Medication Behavior section of the survey over 50% of the sample reported forgetting: 54% in their normal routine, 53% out of routine such as traveling, and 57% out of routine such as an unexpected visit. Approximately 64% of the sample reported forgetting at least once every six months, 41% every three months, and 28% up to once a month. Examination of specific activities that may lead to forgetting revealed that unplanned, out of routine activities resulted in the highest reported frequency of forgetting (see Figure 1).

Strategy Use

Do older adults use strategies?—When participants responded to the general question about strategy usage, 43% positively endorsed using strategies, whereas 50% answered “no” (7% did not respond). Of those who reported not using strategies, 29% did not endorse any of the strategies later listed; however, 71% proceeded to endorse at least one strategy.

When assessing the 7 strategies presented, 16% (n=56) did not endorse using any of the strategies; the remaining 84% (n=298) did. Approximately 17% (n=60) relied on one strategy; 26% (n=93) reportedly employed two strategies, 20% (n=71) endorsed three, and the remaining 21% (n=74) used four or more strategies to help them remember to take their medications.

What strategies do older adults use?—The location strategy was the most frequently endorsed, with 61% (n=266) responding that they used this strategy. The visibility and association strategies were endorsed by 43% (n=153) and 40% (n=142) of respondents, respectively. Use of a pill caddy was endorsed by 36% (n=128) of the sample. Mental planning was used by 23% (n=82) of respondents. Only 11% (n=39) and 7% (n=25) reported use of physical pain and external reminders, respectively.

Do older adults perceive the strategies they use to be helpful?—For the four most frequently endorsed strategies, between 65 and 70% of users reported them to be extremely helpful when in their normal routines (70% location; 66% visibility; 65% association; 70% pill caddy). However, when out of their normal routines, 63% of pill caddy users still reported this strategy to be extremely helpful, whereas the other strategies were less likely to be reported as extremely helpful: location (37%), visibility (34%), and association (30%).

What individual characteristics are associated with number of strategies endorsed?—A hierarchical regression analysis was used to investigate the individual characteristics associated with number of strategies employed to remember medications (see Table 5). Those who reported using four or more strategies were combined into one group for all analyses.

The first step investigated the association of demographic (education) and medication (number of prescription medications and number of over-the-counter products) variables with strategy usage. Both medication variables ($p<.05$) were positively associated with increased number of strategies endorsed ($R^2=.13$). Education level emerged as significant in Step 3, with higher education associated with endorsement of more strategies.

The second step added reported forgetting behavior, which included the three items referring to instances of forgetting in routine, out of routine such as traveling, and out of routine such as an unexpected visit. Together, forgetting behaviors were associated with number of strategies endorsed ($R^2=.07$); however, only forgetting when out of normal routine such as traveling was significant ($p<0.001$). Forgetting when in normal routine was $p<0.08$ at this step but was significant at Step 3 ($p<.05$) and in the final model.

The third step incorporated medication attitudes, specifically the anxiety and efficacy composites. Both composites were significant ($p<0.001$), and accounted for an additional 4% of the variance in number of strategies endorsed.

The final model included education, number of prescription medications, number of over-the-counter products, forgetting behavior in normal routine and out of normal routine such

as traveling, and the anxiety and efficacy composites. All variables were significant ($p < 0.05$) and together accounted for 24% of the variance in number of strategies endorsed.

Discussion

Guided by the SOC model, the current study focused on the compensatory behaviors associated with medication adherence, specifically strategies. Older adults did report forgetting to take medications, even though taking medications is a part of their normal routine. The majority reported using more than one compensatory technique to aid medication adherence. The individual level variables of number of medications, education, and efficacy and anxiety regarding remembering were all positively associated with increased number of strategies used.

Forgetting behaviors

Prior research has demonstrated that older adults perform better on prospective memory tasks when the task has social importance³⁷ or when emotionally valenced cues are used.³⁸ As medication adherence is important to one's health, this is a task that should have high emotional salience and social importance to older adults. Unlike other optional activities, older adults cannot selectively ignore this activity or choose not to perform it.

Considering the highly educated, seemingly high functioning sample, the 28% who reported forgetting to take their medications at least once a month is likely an underestimate of the prevalence in the older adult population, as prior research comparing subjective and objective adherence data found that older adults overestimated adherence.³⁹ The present data complement prior research indicating that older adults continue to have trouble with prospective memory tasks, even when the task becomes habitual.¹⁻³

Forgetting was most often reported when older adults encountered unexpected or unplanned activities in their daily lives, consistent with prior findings that older adults were more likely to forget to perform an intended action if there was a delay due to an interfering task.^{2,40} Relating these findings to the SOC model reveals that because interfering activities or situations occur less frequently than daily activities, older adults have difficulty optimizing. Thus, their compensation techniques are practiced less often, which may explain why the older adults reported their strategies to be less effective when out of their normal routines. Older adults need different memory supports to improve adherence when encountering the diverse array of events and activities in daily life.

Specific compensatory behavior usage

The pattern of most frequently endorsed strategies complements previous research on everyday memory strategies,^{15,17,20} and extends it in two ways. First, use of multiple compensatory strategies in one particular everyday memory task, medication regimen adherence, was investigated, and second, specific strategies associated with that task in a large community-dwelling sample were assessed.

The participants perceived that they were successfully using strategies in their daily lives, but they also realized that the strategies were not infallible, as reflected in their perceptions of helpfulness in and out of normal routine. Thus, older adults should be encouraged to adopt combinations of strategies to help them optimize their performance in this everyday memory task when in and out of normal routine as this may reduce prospective memory errors by constructing a more distinct or unique memory record.⁴¹

Use of multiple compensatory behaviors

The current study clearly demonstrated that older adults create situations where they rely on multiple cues. The positive association of number of medications with number of strategies employed could be an indication of medication regimen complexity. It may be necessary for older adults to incorporate more strategies as number of medications increase. Medications can vary with frequency of dosage, and time of day that the medication is taken; this may make more or fewer demands on everyday memory, possibly influencing compensation techniques.

Number of strategies endorsed also increased as frequency of forgetting out of routine increased. There are two plausible explanations. First, use of multiple strategies may establish a context in which the strategies are well-integrated into the task of remembering to take medications, but may create a sequence or combination of cues that is difficult to transfer to situations outside of the normal routine. Alternatively, because older adults report forgetting more out of their normal routine, they could be attempting to use more strategies to compensate for their memory failures. It is also plausible that because non-routine events occur less frequently, this provides less opportunity to practice, ultimately leading to difficulty optimizing.

On the other hand, when in their normal routine, older adults reported fewer instances of forgetting as number of strategies endorsed increased. It is possible that older adults create situations in their normal routine with plenty of cues so that they do not forget their medications, hence leading to fewer reported instances of forgetting. The use of multiple cues may also create a situation wherein older adults are forced to pay more attention to their habitual task of taking medication, thereby making this action more distinctive and memorable.⁴¹

Medication attitudes were also related to number of strategies. Prior research revealed that adults with lower confidence and memory efficacy tended to perform more poorly on memory tasks,⁴² and use of external aids was associated with lower memory self-efficacy.¹⁷ Although the current study did not measure memory ability, it extends prior research by assessing use of multiple strategies. Older adults who endorsed items related to anxiety and self-efficacy regarding medication adherence were likely to use more strategies. Prior research showed that conscientious adults engaged in positive efforts to bolster everyday memory¹⁷ and utilized more efficient strategies to compensate for memory losses.¹⁸ Further, compared to middle-aged adults, older adults believed that with more effort they could control their memory⁴³; older adults who realize and accept age-related changes in memory may adapt by compensating and using strategies to support their memory abilities.

Implications and future directions

Remembering to take medications is important to older adults not only because it is a reflection of their memory, but it can also ultimately affect their health and independence. Thus, the finding that lower instances of forgetting when in normal routine, and concern and motivation about medication adherence were associated with use of more strategies, suggests that older adults are trying to select, optimize, and compensate for their memory changes in multiple ways.

This research can serve as a starting point for older adults, researchers, and medical professionals in highlighting compensatory strategies that may be used to facilitate medication regimen adherence. Using the SOC model as a guide, selectively optimizing behavior is an essential first step. The association of concern and self-efficacy towards medication taking and use of more strategies highlights that tasks with social importance and/or emotional valence may enhance prospective memory in older adulthood.^{37,38}

The older adults in the current study reported using multiple strategies, and perceived them to be more helpful when in their normal routines. Using combinations of strategies may not only result in more attention to the task of medication adherence, but could also possibly result in a more distinctive memory trace, thereby reducing prospective memory errors, enhancing optimization of their selected task (medication adherence). Additionally, the present data provide guidance for the design of interventions and technologies to support medication adherence in terms of strategies, the nature of the support needs, and contexts of use. Finally, the current study concurs with prior research on contextual relevance⁸ that different supports are needed when older adults are out of their normal routines. Further investigation of context, especially when daily routines vary is an important consideration for future research.

Limitations

The limitations to the current study can also serve as a guide for next steps. First, medication adherence was exclusively measured subjectively, and may underestimate the severity of adherence difficulty prevalent in the older adult population; incorporation of objective measures would strengthen validity. Second, although number of medications or medical products used was assessed, the complexity of the medication regimen that was adhered to was not, and compensatory behaviors may vary as a function of medication regimen complexity. Finally, obtaining a broader sample, particularly in terms of educational attainment and health status would improve the generalizability to the wider population of older adults. Of particular note is the cognitive or mental status of the older adults. In the current study, the cognitive status of respondents was unknown. Future research might also collect data from an additional person (e.g., family member, spouse, caregiver) to validate forgetting rates. Potential gender differences in compensatory behaviors utilized, instances of forgetting, and the association between individual characteristics and strategy use should also be investigated. Lastly, although this questionnaire was piloted to aid development, continued use would help provide information on reliability and validity. Attention to these limitations could improve knowledge regarding strategy use, older adults' abilities or limitations in optimizing compensatory behaviors, and overall generalizability to the larger older adult population.

Conclusion

In conclusion, use of compensatory strategies to help manage medication adherence is undoubtedly important, as is emotional salience of the task. Future research can focus on which combinations of strategies would be most efficacious for older adults when in and out of their daily routines. It is important to keep in mind that that compensatory behaviors in these two contexts may vary. In addition, investigating how those who do not use strategies to adhere to medication regimens is of interest; nonadherence and/or selective adherence are possibilities, as are personal beliefs about health and disease management.⁴⁴

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Figure 1. Percentage of respondents reporting forgetting of medications in different contexts during the past month or past year.

Table 1

Description of Medication Adherence Strategies

Strategy	Description
Pill Caddy	This method uses a pill caddy to help remember to take medical products correctly. A pill caddy is a medication organizer or any other device used to store medications (not in their original bottles).
Association	This method relies on using an activity or event to help you remember to take medical products. For example you take your medication every time you eat breakfast. Or you watch a certain TV show, brush your teeth, or drink a glass of water every time you take your medication.
External Reminder	This method uses physical reminders to remind you to take your medical products. For example, you may set a wristwatch alarm to go off when it is time to take a medication. Or you may place a sticky note on the bathroom mirror to remind you to take a medication before bed. NOTE: You should not base responses for this section on your use of pill caddies.
Location	For this method medication is kept in a consistent location that may or may not be visible . The location is used to help you remember to take your medication. For example, you may always keep your medical products in the kitchen pantry, in a medicine cabinet, or in a medicine bag. Note: Pill caddy does not count as a location. BUT, if you keep the pill caddy itself in a certain location to help you remember to take medication correctly, please indicate below.
Mental Planning	This method involves thinking ahead about when you will take your medical product(s). For example, in the morning, you may plan when the medication should be taken during that day. OR, throughout the day, you may mentally repeat to remember the medication(s). The planning makes it easier to remember to take the medication during the day.
Physical Pain	The method uses how you physically feel . For example, you do not think about your medication unless you feel pain or physical discomfort.
Visibility	This method uses placing medical products in a highly visible place . This is so you will notice the medications and be reminded to take them. For example, you may place your medications on top of a night stand, in the middle of the kitchen table, or next to a dinner plate. NOTE: The visibility of this location is important, not the location.

Note. Participants were provided with these exact strategy descriptions in the survey.

Table 2Medication Attitude Questions derived from the Metamemory in Adulthood questionnaire³⁴

Statements responded to on Scale from 1 (Never) to 5 (Always)	Efficacy Composite ^a	Anxiety Composite ^b
When I am upset I find it harder to remember to take my medications.		X
I am good at remembering how to take my medications.	X	
I am uneasy when I have to rely only on my memory to take my medications.		X
When I am anxious I have difficulty remembering to take my medications.		X
Statements responded to on scale from 1 (Strongly Disagree) to 5 (Strongly Agree)		
The older I get the harder it is to remember to take my medications.		X
I am good at remembering to take my medications.	X	
I am highly motivated to remember to take my medications.	X	
I can remember to take my medications as well as when I first started taking medications regularly.	X	

Notes: "X" indicates that the item was included in the composite variable.

^aInternal Consistency = .77;

^bInternal Consistency = .71

Table 3

Summary of Respondent Demographic Data

Variable	Mean/Frequency(SD)
Age (range 60–80)	68.75(5.74)
Gender	
Male	62%
Female	36%
Education (High School/GED; some College)	95%; 65%
Ethnicity	
African American	13%
Caucasian	85%
Other (American Indian/Alaskan, Multi-racial, no response)	2%

Table 4

Medication and Health Data

Medications & Health Issues	Range	Mean	Standard Deviation
Number of Prescription Medications	0 – 12	3.37	2.40
Number of Over-the-Counter Products	0 – 16	1.54	1.84
Number of Chronic Conditions	0 – 6	0.84	1.11

Table 5

Summary of Hierarchical Regression Analysis Predicting Number of Strategies Endorsed

	Step 1	Step 2	Step 3	Final Model
Education & Medications				
Education	0.08	0.09	0.12 *	0.12 **
Number of prescription medications	0.28 ***	0.27 ***	0.27 ***	0.27 ***
Number of over the counter medications	0.22 ***	0.18 ***	0.18 ***	0.17 **
Forgetting Behavior				
Forget in normal routine	---	-0.11	-0.13 *	-0.12 *
Forget out of routine, traveling	---	0.28 ***	0.27 ***	0.29 ***
Forget out of routine, unexpected visit	---	0.08	0.03	---
Attitudes				
Anxiety attitude composite	---	---	0.23 ***	0.24 ***
Efficacy attitude composite	---	---	0.15 *	0.14 *
R ²		0.07	0.04	0.00
R ²	0.13	0.20	0.24	0.24

Note:

*
p < .05,**
p < .01,***
p < .001