

LOOK INSIDE  
FOR SOME  
PRELIMINARY  
RESULTS  
FROM OUR  
STUDIES!

Are People 2  
Accurate in  
Rating Their  
Memory?

Battle of the 2  
Sexes: Males  
vs. Females

Busyness & 3  
Routine

A Visitor from 3  
France

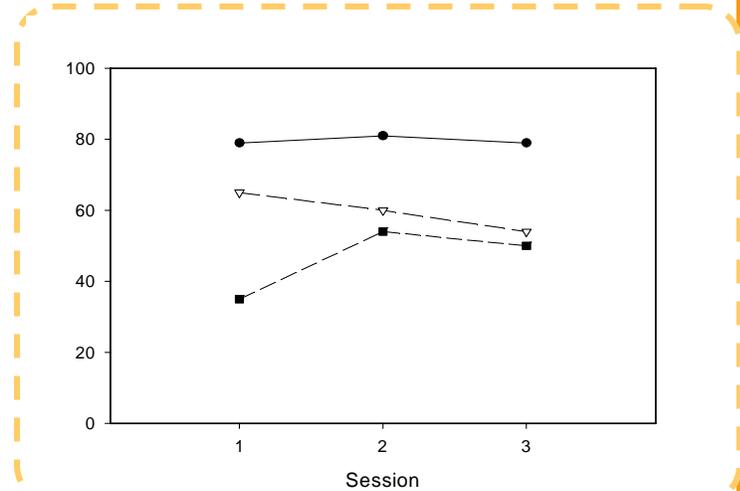
Updates on 4  
our former  
lab members

## Variability in Cognitive Scores Within People

One focus in the lab is on day-to-day fluctuations in cognitive performance. Not much is currently known about this phenomenon, but if the magnitude of daily fluctuations in cognitive functioning is large it would have several potentially important implications. For example, measurement would be imprecise if there is much variability from one assessment to another, and large amounts of daily fluctuation may turn out to be a signal of impending decline in cognitive performance.

Many of the participants in our project over the last few years performed different versions of the cognitive tests on three sessions. This allows us to assess variability or fluctuation in performance by comparing their scores across the three assessments. The adjacent figure illustrates results from three people on the word recall test in which the task was to remember lists of unrelated words. The top line represents performance from an individual who was very consistent across the three sessions, with accuracy close to 80% on each session. The bottom line represents the performance of someone whose accuracy increased from about 35% to 50% from the first to the second session, and the middle line represents the performance of someone whose accuracy decreased from 65% to 60% to 54% across the three sessions. These patterns are quite different, and they indicate that it is not simply the case that everyone improves or gets worse across sessions.

We were surprised to discover that there was considerable day-to-day variability in nearly every type of cognitive test, and that the magnitude of the variability was fairly large relative to the variation across people on any given session. Several of our findings were particularly interesting. For example, the amount of within-person variability is not



associated with the average level of performance on the test. It might have been expected that people with the highest overall levels of performance would exhibit less fluctuation from one occasion to the next, but this was not the case with these cognitive tests. We also found that the amount of variability was not related to the age of the individual, or to various personality characteristics or levels of self-reported anxiety. Again, one might have expected more variation among older adults, or among people who are low in conscientiousness or who have fluctuating levels of anxiety, but there was no evidence of this in our studies. The lack of a relation with age also suggests that the term "senior moments" may be somewhat of a misnomer because at least with respect to performance on these types of cognitive tests, fluctuations in level of cognitive functioning are as frequent in adults between 20 and 60 years of age as in adults over 60 years of age. Perhaps most intriguing, we found that "good" days on one test were not necessarily associated with "good" days on other types of tests. In other words, someone may have his or her highest score on a

memory test on the second session, but his or her highest score on a reasoning test may be on the first session and the highest score on a speed test may be on the third session. Patterns such as this suggest that the fluctuations in performance are highly test-specific, and are probably not attributable to characteristics of one's overall state such as mood or sleepiness, because they would be expected to have a similar influence across different types of tests.

Several scientific articles have been published describing these results, which can be found in our laboratory webpage ([www.mentalaging.com](http://www.mentalaging.com)) by using "guest" as the username and "cogage" as the password. Although the phenomenon of daily fluctuations in cognitive performance is not fully understood, it raises questions about the best method of evaluating cognitive functioning. For example, our results raise the possibility that measurement of cognitive ability should be more like measurement of blood pressure in that several measurements are needed to get an accurate reading.

All of us at the Cognitive Aging Lab thank you for your continued interest and participation. Your generous cooperation makes our research possible!

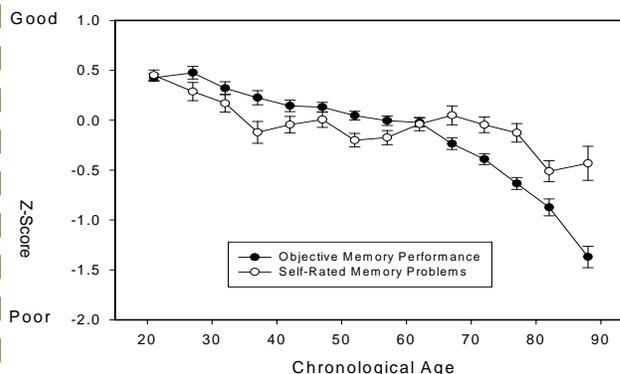
## Are People Accurate in Rating Their Memory?



Using the questionnaires that our participants complete and comparing the response on them to performance on cognitive tasks, we were able to see how accurate people are in judging their memory. As can be seen in the adjacent figure, we found that the objective and subjective assessments of memory were closely related to one another up until about age 60. However, beyond that age a discrepancy in the two types of assessments emerges, with people tending to rate their memory functioning higher than their objective memory performance.

Interestingly, we found that the people who reported many memory problems also tended to have higher levels of anxiety and depression, and that this was somewhat independent of their objective memory performance. This

finding, which is similar to reports by other researchers, suggests that self reports of memory may be more informative about an individual's mood than his or her actual memory.



### Want to learn more?

Detailed results can be found by reading articles published by lab members in psychology journals. Copies are available by logging on to the publications section of the lab web page, [www.mentalaging.com](http://www.mentalaging.com). To access these papers, use "guest" as the username and "cogage" as the password.

## Battle of the Sexes: Males vs. Females

Do males or females do better on cognitive tests? Because over 3000 people have now participated in our Virginia Cognitive Aging Project, we can make fairly precise statements about possible differences between males and females on different types of cognitive tests. For most of our tests there are little or no differences between males and females when the groups have similar levels of education. However, there are two noteworthy exceptions. As other researchers have found, males tend to do better than females at tests that require spatial visualization abilities, and females tend to do better than males in verbal memory tests.

The attached figure illustrates two spatial visualization problems of the type in which males tend to excel. These particular problems have not been used in our project, but are similar to those that have been included. The task with these problems is to assume that the shaded box represents the

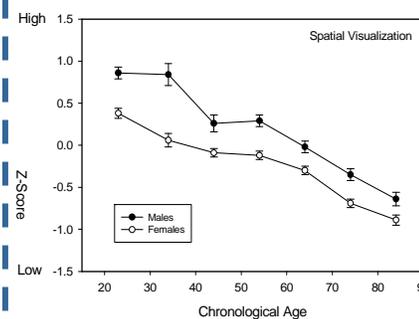
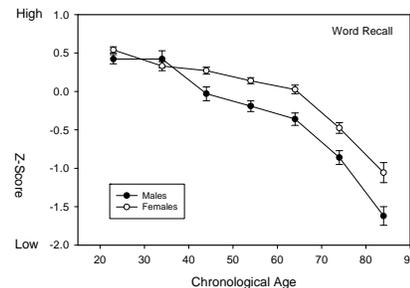
base of a box, and then to assemble the squares to make a cube and determine whether the two arrows would be pointing at one another in the assembled cube.

YES NO

indicates that males tend to do better than females on this type of test at all ages.

We used three tests to measure verbal memory, one involving memory for unrelated words, one involving memory for related stories, and one involving memory for associations between unrelated pairs of words. The pattern was similar for each type of memory, and the next figure illustrates the results for the word recall test. Notice that males and females were very similar until about age 40, and after that time females tended to do better than males.

To summarize, our results indicate that there is no simple answer to the question of whether males or females do better on cognitive tests. For most tests there are no differences, and for some, such as spatial tests, males have an advantage, but for others, such as memory for verbal information, females have an advantage.



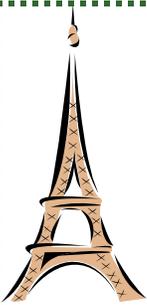
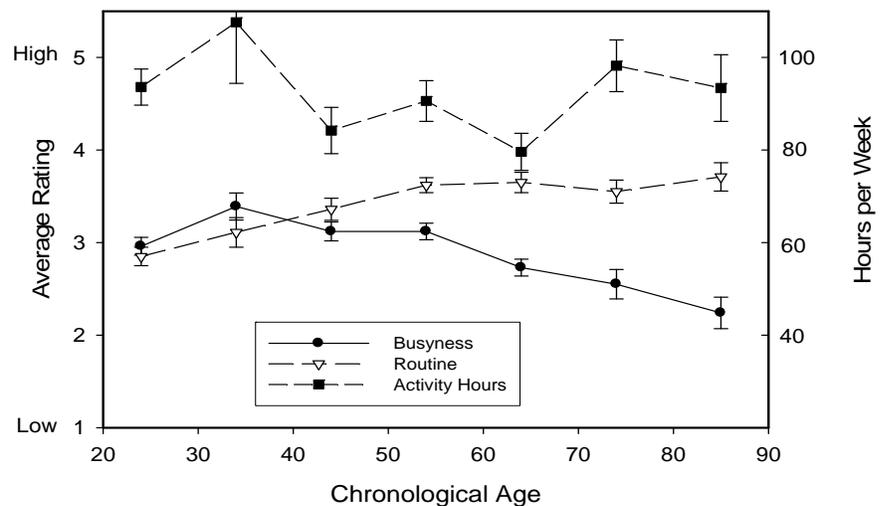
## Busyness & Routine

As many of you are aware, the “use it or lose it” hypothesis is a popular one in psychology as well as in the public sphere because it implies that individuals can delay their mental aging by remaining mentally active and engaging in cognitively stimulating activities. Although the hypothesis is clearly popular, the scientific for it is currently mixed. We decided to keep working on this hypothesis, but with a revision to the question itself. One of the critical assumptions of the original hypothesis is that there is a decrease in the amount of time spent in cognitively stimulating activities with age, but we haven’t always found that to be the case with the participants in our research. We therefore decided that rather than using the amount of time spent in activities, we would instead use the individual’s psychological experience of that activity. Our reasoning was that this might allow us to account for the difference in energy levels between individuals, since the same amount of activity may have less of an impact on “high-energy” individuals than on “low-energy” individuals. To test this hypothesis, we asked the participants in our project to

complete several questions about their engagement in different types of activities, and their perceived feelings of busyness and routine.

As can be seen in the following figure, the results indicated that with increased age there was a decrease in self-reported busyness and an increase in self-reported routine. It is probably not surprising that compared to younger participants, the older participants in our project reported spending more time reading and engaging in activities like crosswords and gardening, and less time in activities such as supervising other people or using a computer. However, an

unexpected finding was that higher reports of busyness were associated with higher levels of anxiety and depression, which suggests that high levels of self-reported busyness may not necessarily be a desirable characteristic. However, the findings most relevant to our revised mental stimulation hypothesis were negative, in that there was not a significant relationship between self-reported busyness and level of cognitive functioning. We still believe that there is probably some validity to the “use it or lose it” hypothesis, but our results have not yet been consistent with several predictions from this hypothesis.



## A Visitor From France

This summer, we were privileged to have a visitor from France, Andrea Soubelet, – a second year Ph.D. student from Toulouse, France, who came here to work with Dr. Salthouse to further her research in cognitive aging. She earned her undergraduate degree from the

University of Toulouse. She is most interested in the role of cognitive stimulation as a potential moderator of cognitive aging. While here, she analyzed previously collected data on a project about the relationship between busyness and routine. The results of her study can be seen above. We wish her all the best!



## Where are they now?



**Cris Rabaglia** (Research Assistant, 2004, Lab Coordinator, 2005- 2006 )

After working as a research assistant at the Cognitive Aging Lab in 2004 upon completing her as an undergraduate degree at the University of Virginia, Cris worked as the Lab Coordinator for two more years. She has now moved on to life as a graduate student at New York University where she is pursuing a Ph.D. in cognition and perception.



**Jing Fang** (Research Assistant, Summer 2004- Summer 2007)

After nearly three years working in the Cognitive Aging Lab as an undergraduate student, Jing graduated from the University of Virginia this past spring and has now moved on to pursue a career in medicine. She is now attending the University of Virginia School of Medicine .



**Kevin Petway** (Research Assistant, 2005-2007, Lab Coordinator, 2007)

Kevin worked at the Cognitive Aging Lab as a research assistant throughout his fourth year. Following graduation, he became assistant to the Coordinator, and then Coordinator in his last few months with the lab. He has relocated to Long Beach, California where he is currently working under Jack McArdle at the University of Southern California. He hopes to attend a graduate school to study either Industrial Organizational Psychology (I/O) or Human Factors Psychology.



**Stacey Wichern** (Research Assistant, Summer 2006—Summer 2007)

Stacey worked with the lab as a research assistant for the past year. She graduated from the University of Virginia this past spring and has now moved to Fort Collins, Colorado, where she hopes to get a position as a research assistant in one of the psychology labs at the University of Colorado. In the future, she hopes to attend graduate school in psychology.



*Updates on  
a few  
familiar  
faces:  
Where  
some of our  
lab members  
are now and  
what they  
are doing.*

## Interested in participating again?

We are currently not conducting the part of our research that follows previous participants over time. Breaks in data collection allow us to have time to analyze the data and publish our findings.

We will begin working with previous participants again in May of 2008, so keep an eye out for word from us then, or give the lab a call at that time to let us know you are interested!

Contacting the lab:

Email:

[cognitiveaginglab@virginia.edu](mailto:cognitiveaginglab@virginia.edu)

Phone:

434-982-6320