

LOOK INSIDE
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PRELIMINARY
RESULTS
FROM OUR
STUDIES!

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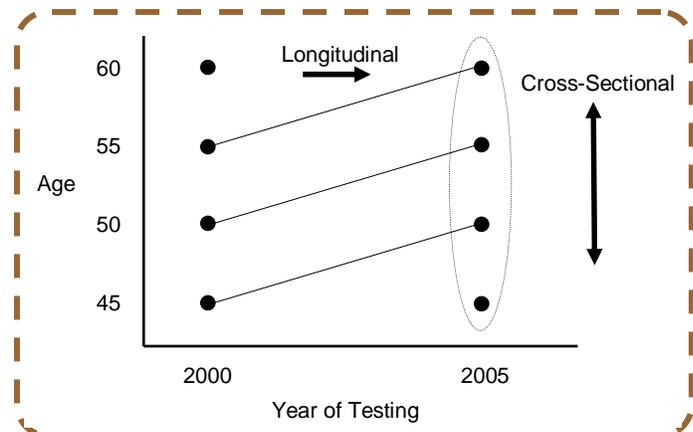
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Longitudinal Testing Underway

Over 600 of our participants from the past 6 years have now returned for a second full round of testing. Research on aging is typically done in two ways: longitudinal research involves comparing the same people at different ages by following the same individual at different points in time as he or she ages, while cross-sectional research compares people of different ages at the same point in time (see graphical representation of these two research designs at above right). Each type has benefits and drawbacks, and there is healthy discussion in the scientific literature about which method is the most informative way to uncover the trends associated with aging.

Our research is unique in that we can make both cross-sectional and longitudinal comparisons—for each of the past six years, we have tested cross-sections of people aged 18 to 98 on a variety of cognitive tasks. We are now following those cross-sections over time, which will allow us to compare the differences between, for example, different people who are 50 versus



55 years of age, and the changes that occur as an individual ages from 50 to 55.

Past research with these two types of comparisons has exhibited an interesting discrepancy. Cross-sectional trends tend to show a decrease in performance on different cognitive tasks with age, while longitudinal comparisons often show increases in performance over a few years. Some researchers have interpreted these results to mean that cross-sectional comparisons are misleading, and that longitudinal results somehow show the “true” course of aging. Our lab, however, is investigating the hypothesis that these higher scores seen over time in longitudinal research actually represent benefits of prior experience on those

particular tests, and that these “practice effects” may actually be offsetting any age-related declines that could be occurring. This hypothesis would have the implication that longitudinal comparisons may in fact underestimate true age trends because there are significant benefits of practice or prior experience. These analyses are still in progress, but initial results suggest improvements associated with prior testing can be as large as the differences expected over 10-20 years of normal aging. A practical implication of this research may be that continuing to be active could help resist cognitive decline.

Working Memory



Most of the people who participated in our research in 2006 performed tasks designed to measure what is known as working memory. Two working memory tasks were performed, both of which required simultaneous storage and processing – either remembering letters while performing arithmetic, or remembering dot positions while deciding

whether patterns are symmetrical. These tasks are designed to be somewhat similar to the experience of looking up a telephone number, and then trying to answer a question before dialing the number. As with other measures of cognitive functioning, increased age was associated with somewhat lower performance on both of these types of tasks. However, another

interesting result from this research is that individuals' performance on different types of reasoning tests, such as determining which pattern is best completion of missing cell in a matrix, is highly related to performance on the tasks of working memory. We are currently trying to understand why this is the case.

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. To access these papers, use "guest" as the username and "cogage" as the password.

Memory for three types of stimuli

If you participated with us in the summer of 2005, you may have been part of a project investigating memory for different types of material. One of the most commonly reported complaints as people get older is a decline in memory, especially for things like names. The purpose of this project, which was conducted as Karen Siedlecki's doctoral dissertation, was to determine whether different types of information, verbal, spatial, and figural, exhibited

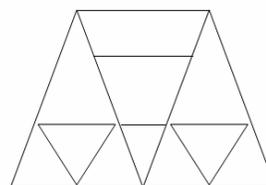
similar relationships to age. Participants were shown three types of material: a series of words, a series of line drawings, and a series of dots displayed in different positions on a 5x5 grid. Memory was tested with reproduction, recall, and recognition tests. The results indicated that the same people tended to perform well on all three types

of test. In other words, people who were good at remembering one type of information also tended to be better than average at remembering the other types of information. Further, each type of information showed a similar relationship to age, which suggests that aging may have effects on memory in general, rather than modality-specific memory.

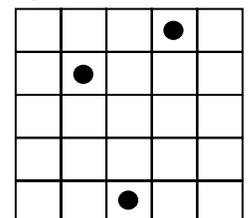
Word List

- Horse
- Desk
- Green
- Summer...

Visual Patterns



Spatial Positions



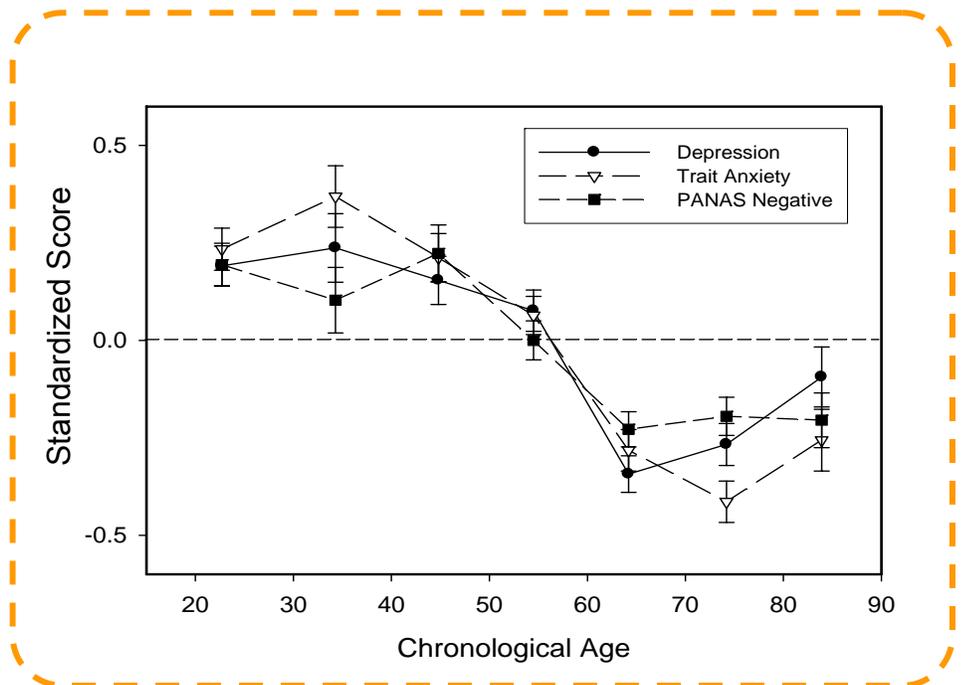
There is more to life than cognition

Although the major focus of this research project is on changes in cognitive functioning, we also asked our research participants to complete a variety of questionnaires to determine whether individual difference characteristics such as personality, attitudes, and the types of activities in which one engages serve to moderate the age trends in cognitive functioning. Three of the questionnaires yield measures of what is referred to as negative affect, because they are designed to assess depression, anxiety, and negative mood. Perhaps surprisingly, our research suggests a decrease with age in this type of negative affect, particularly beginning around age 60. This pattern is illustrated in the figure to the right, with the scores in standardized units that represent the relative positions in the distribution of all individuals. With these particular variables, higher scores correspond to higher levels of depression, anxiety, and negative mood. We also have some measures of positive affect, based on questionnaires about how satisfied one is with one's life and positive mood, and they reveal the opposite pattern, with an increase beginning around age 60.

These results are noteworthy in two respects. First, unlike measures

of cognitive and physical functioning, these findings suggest that with increased age there are improvements in overall mood and one's outlook on life. And second, also unlike the case with other types of measures, these age-related changes are not continuous throughout life but appear to be particularly pronounced around age 60. Because these results are based on a sample of 1,880 adults, we are confident that they are real, although it is possible that they

are specific to the types of people who participate in our research. However, we are still trying to find a compelling explanation for the finding that, contrary to some assumptions, the period in adulthood from 60 on appears to be associated with lower levels of depression, anxiety, and reports of negative mood. If any of our readers has a hypothesis that could account for this finding we would be glad to hear from you at cognitiveaginglab@virginia.edu.



How do our participants spend their time?

One of the questionnaires the participants in our research were asked to complete was designed to get an idea of the types of activities in which people engaged, and the perceived cognitive demands of those activities. Our goal was to determine whether people who reported spending more time in cognitively demanding activities would exhibit higher levels of cognitive functioning and slower rates of age-related cognitive declines. The results based on over 1200 adults were only partially consistent with this hypothesis, but

some of the findings from the activity questionnaire are interesting and are reported below.

For example, the two most frequently reported activities were using a computer (an average of 14.3 hours per week) and watching television (an average of 11.4 hours per week). Using a computer was rated as moderately cognitively demanding, with an average rating of 3.5 on a scale from 1 for low to 5 for high, but watching television was rated as having very low cognitive demands (i.e., an average rating of 2.0). Some of the activities with the

highest rated cognitive demands were working on crossword puzzles, playing chess or other strategy games, and playing bridge, but these activities were not performed very frequently, with averages of 1.5, 0.7, and 0.9 hours per week, respectively. We were surprised to find that there was a very small relation between the number and types of activities in which people engaged and the relations between age and performance on our cognitive tests, and we are currently thinking about why this is the case.

Where are they now?



Karen Siedlecki (Graduate Student 2002- 2006)

After working towards her PhD with research in the Cognitive Aging Lab, Karen graduated in May of 2006. She is now working at Columbia University in a post-doc position with Columbia's medical school, continuing her research on aging and memory.



Kristina Caudle (Research Assistant, Summer 2003 and Summer 2006)

After nearly three years working in the Cognitive Aging Lab as an undergraduate student, Kristina has moved on to life as a graduate student at Dartmouth College in New Hampshire. Beginning research towards a PhD in the neuroscience, Kristina is currently using brain imaging techniques to investigate spatial navigation in humans. She is enjoying graduate school, but misses chatting with participants at the Cognitive Aging Lab!



Lauren Malone (Research Assistant, Spring and Summer of 2006)

If you participated in the last year, you may recognize Lauren Malone, a cheerful RA who is now pursuing work at George Washington University. Lauren is using her undergraduate training in psychology to work towards a Masters Degree in Organizational Management.



Julia Siegel (Research Assistant, Summer 2004 and Summer 2005)

Julia graduated from UVA in the Summer of 2006 and is now working as a Research Assistant for Mount Sinai's Department of Geriatrics and Adult Development in Manhattan. As a research assistant, Julia is administering different tests and questionnaires to patients as part of the department's research on palliative care. In the future, she hopes to attend medical school.



*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 2007, 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!

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