

NC STATE UNIVERSITY

DEPARTMENT OF PSYCHOLOGY

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Thoughts from the Head

Welcome to my first newsletter with the Department of Psychology at NC State. Because the department faculty and students are active researchers, the focus of this first newsletter is on research.

In the just completed academic year of 2009 – 2010, the faculty published five books, 11 chapters in books, 41 journal articles, 18 papers in conference proceedings, and delivered 113 presentations and talks. So, the brief reports that are in this newsletter represent only a small fraction of the research that the department produces. In addition, the faculty submitted 25 grant proposals and received more than \$1.4 million in grant funding. The number of proposals was the highest in department history, and the amount of funding was the second most ever for the department.

But a set of dry statistics about numbers of papers and grants doesn't show the exciting nature of the research that our faculty and students do. So, the rest of this newsletter provides you with brief glimpses into the research and the people that do it. I hope that you have as much fun reading about our research as we do working on it.

Doug Gillan, Department Head

Can Gaming Slow Mental Decline in the Elderly?

(excerpt of a Time.com article by Anita Hamilton)

If you or your parents are of a certain age, then you may understand the unique terror of suddenly drawing a blank — that unexpected moment when you can't remember the name of a lifelong friend or what you had for lunch that day. There is, of course, no cure for memory loss. Yet a rapidly growing body of evidence suggests that certain behaviors may reliably slow the effects of age-related cognitive decline. Chief among them: eating right, exercising and engaging in social activities and mentally challenging tasks.



It's that last item that most interests psychologists Anne McLaughlin and Jason Allaire at North Carolina State University. The duo are part of a team that was just awarded \$1.2 million from the National Science Foundation to fund a four-year study of cognitive decline in the elderly — specifically, whether playing certain video games might help slow the effects of aging. The theory is that the strategy, memory and problem-solving skills necessary for mastering certain games may translate to benefits in the real world, beyond a glowing computer screen.

McLaughlin and Allaire's new study will follow 270 seniors as they play the Wii game *Boom Blox*. Game play involves demolishing targets like a medieval castle or a spaceship using an arsenal of weapons such as slingshots and cannonballs. While those particular skills may not seem transferable to offscreen life, McLaughlin says she and her colleagues chose *Boom Blox* specifically because it requires a wide range of real-world skills, including memory, special ability, reasoning and problem-solving.

Ultimately, the researchers hope to determine which aspects of *Boom Blox* produce the largest gains in real-world cognitive functioning, like the ability to multitask, then incorporate those elements into a new game of their own design. They will then study the effects of the new game in the same group of elderly players. "One of our main goals is to produce guidelines for producing games for older adults. Part of it is making it fun so it does not feel like work," adds McLaughlin.

McLaughlin and Allaire say they intend to identify exactly what components of video game play may help preserve mental fitness into old age. "Is it because it is novel, the level of attention required or the collaboration with other players?" asks Allaire, 35. He says he hopes that by the time he is a senior citizen, playing video games will be as commonplace for those over 65 as it is for young people today. "I think *World of Warcraft* will always be cool and kids will think their grandparents are cool for playing it," he says. They might not be too pleased, though, when Grandpa beats them at their favorite game.

Study Shows Age Doesn't Necessarily Affect Decisions

(based on a news article by Matt Shipman)

Many people believe that getting older means losing a mental edge, leading to poor decision-making. But a new study from North Carolina State University shows that when it comes to making intuitive decisions – using your “gut instincts” – older adults fare as well as their juniors.



The researchers tested groups of young adults (aged 17-28) and community-dwelling older adults (aged 60-86) – meaning they live in the community, rather than in a nursing home – to see how they fared when making decisions based on intuitive evaluation. For example, study participants were asked to choose from a list of apartments based on each apartment’s overall positive attributes. Under such conditions, young and older adults were equally adept at making decisions.

“But not every decision can be made that way,” says Dr. Thomas Hess, a professor of psychology at NC State and co-author of the study. “Some decisions require more active deliberation. For example, those decisions that require people to distinguish pieces of information that are important from those that are unimportant to the decision at hand.” And when it comes to more complex decision-making, Hess says, older adults face more challenges than their younger counterparts.

In one portion of the study, participants were given a list of specific criteria to use in selecting an apartment. That list was then taken away, and each participant had to rely on his or her memory to incorporate the criteria into their decision-making.

However, there was considerable variation among the older adults who participated in the study – some did very well at the complex decision-making. “Older adults with a higher education did a better job of remembering specific criteria and utilizing them when they made decisions,” says lead author Tara Queen, a psychology Ph.D. student at NC State. “Ultimately, they made better choices.”

“This tells us that the effects of age on decision-making are not universal,” Hess says. “When it comes to making intuitive decisions, like choosing a dish to order from a menu, young and old are similar. Age differences are more likely to crop up when it comes to complex decision-making, such as choosing a health-care plan based on a complex array of information. But even then, it appears that any negative effects of aging will be more evident in those with lower levels of education.”

The research can be used to change the way we present information to older adults, Hess adds. Queen explains that “presenting older adults with overwhelming amounts of information is less beneficial to them. For example, different people have different priorities. Information can be broken down into categories. People could then decide which categories are most important to them, and dig down for additional information as needed.”

Queen and Hess are currently doing additional research to determine exactly how the complexity of

information being presented to older adults affects their decision-making – knowledge that could allow for more specific measures that could be used to help older adults continue to make good decisions.

The study, “Age Differences in the Effects of Conscious and Unconscious Thought in Decision Making,” was funded in part by the National Institute on Aging and the Retirement Research Foundation. The study is published in the June issue of *Psychology and Aging*.

Dr. Tom Hess is a leading expert on how aging affects memory and problem solving. Watch an interview with him by going to this link:

<http://www.youtube.com/watch?v=wGMC PAVUKZY>

Chart Junk? How Pictures May Help Make Graphs Better

(excerpted from Science Daily)

Those oft-maligned, and highly embellished, graphs and charts in newspapers and other media outlets may actually help people understand data more effectively than traditional graphs, according to new research from North Carolina State University.



Newspapers and magazines often embellish charts or graphs to draw attention to them or to highlight information. Some experts describe these graphic embellishments as "chart junk," which they argue detracts from a graph or chart's effectiveness. So, can those graphics be too distracting, making it more difficult or time-consuming to read a graph accurately? Researchers from NC State and the

University of Idaho show that the answer is yes, and no.

When people look at charts or graphs, two things happen. In the first stage, a person quickly (and unconsciously) takes in all the elements of the image at the same time. In this stage any contrasting features "pop out" at the viewer, explains Dr. Doug Gillan, co-author of the study and professor and head of psychology at NC State. In the second stage, which is slower and requires some focused attention, the viewer examines each component of the graph or chart separately.

"Imagine a bar graph showing the number of ACC championships won by each school's basketball team," Gillan says. "In the second stage the viewer is examining each bar in the graph to see which team has won the most championships."

New research shows that embellished graphs and charts may actually help people understand data more effectively than traditional graphs.

To determine whether design elements -- such as background pictures -- affect a viewer's ability to read a graph, the researchers ran an experiment using rectangular bar graphs. They tested how accurately people could read the bar graph when it was presented against three different backgrounds: a blank background, a background filled with rectangles, and a background filled with circles.

The researchers found that people were most accurate when reading the bar graph against a background filled with circles -- the contrast between the rectangular bars and the circles made the graph pop out during that first stage. People performed worse when the background was blank, and worst when the bar graph was displayed against a background that contained rectangular shapes.

In other words, background images can actually enhance one's ability to read a chart or graph -- as long as the images contrast with the chart or graph itself. If the background image is too similar, it can actually make it more difficult to read the chart or graph accurately.

Survey Says: Genetics Affect Whether We're Willing To Take Surveys

(based on a news article by Matt Shipman)

A new study from North Carolina State University shows that genetics play a key factor in whether someone is willing to take a survey.

"We wanted to know whether people are genetically predisposed to ignore requests for

survey participation,” says Dr. Lori Foster Thompson, an associate professor of psychology at NC State and lead author of a paper describing the research. “We found that there is a pretty strong genetic predisposition to not reply to surveys.”



For the study, the researchers sent out a survey to over 1,000 sets of twins - some fraternal, some identical - and then measured who did and did not respond. The researchers were interested in whether the response behavior of one twin accurately predicted the behavior of the other twin. We found that the behavior of one identical twin was a good predictor for the other, Foster Thompson says, but that the same did not hold true for fraternal twins.

Because all of the sets of twins were raised in the same household, a major distinguishing variable between identical and fraternal twin sets is that identical twins are genetically identical and fraternal twins are not.

Understanding survey response behavior is important because managers and people who study organizational behavior rely on survey data to better understand issues ranging from leadership to job stress. We need to get representative data in order to form accurate conclusions, Foster Thompson says, for science and for business practice.

A lot of research has been done to evaluate how surveys can be written or presented to encourage participation, Foster Thompson adds. Much less work has been done to evaluate the personal characteristics of potential respondents - and the

role those characteristics play in determining whether someone will actually fill a survey out.

The research raises a number of additional questions, but basically we want to know why or how genetics affect people’s predisposition to take surveys, Foster Thompson says. Is the linkage between genetics and survey response explained by personality, attitudes toward employers, or something else entirely?

The paper, Genetic Underpinnings of Survey Response, will be published in a forthcoming issue of the *Journal of Organizational Behavior*. The paper was co-authored by Dr. Zhen Zhang of Arizona State University and Dr. Richard Arvey of the National University of Singapore.

Day By Day: Why We Forget To Take Our Medicine, And What We Can Do About It

(based on a news article by Matt Shipman)

For many people, remembering to take a daily medication can be the difference between life and death. Yet, people forget all the time. Now a landmark study from North Carolina State University has found that changes in daily behavior have a significant effect on whether we remember to take our medication – and that these changes influence older and younger adults differently. That’s good news, because it means there’s something we can do about it.



“We’ve found that it is not just differences between people, but differences in what we do each day, that affect our ability to remember to take medication,” says Dr. Shevaun Neupert, an assistant professor of psychology at NC State and lead author of a paper describing the research.

“This is the first time anyone has looked at the effect daily changes in how busy we are affects our ability to remember medications. We also learned that these changes in daily behavior affect different age groups in different ways.

“For example, young people do the best job of remembering to take their medication on days when they are busier than usual,” Neupert says. “But older adults do a better job of remembering their medication on days when they are less busy.” The researchers evaluated study participants who were on prescribed daily medications. The participants were divided into two groups: younger adults (between the ages of 18 and 20) and older adults (between the ages of 60 and 89). For both age groups, the researchers found that participants were more likely to remember to take their medications on days when they performed better than usual on “cognition” tests – which evaluate memory and critical thinking.

“We found that cognition is an important factor in remembering medications,” Neupert says, “but that how busy we are is also important.” This has very real applications for helping people remember to take medications that can be essential to their health and well-being.

“We’ve found such a disparity between young and old adults, that it’s clear we need to tailor our messages to these two groups,” Neupert says. “For example, it is important for young people to stay busy and be active. That will help them remember to take their medications. However, we need to let older adults know that need to be particularly vigilant about remembering medication on days when they expect to be busier than usual.”

The study, “Age Differences in Daily Predictors of Forgetting to Take Medication: The Importance of Context and Cognition,” will be published in a forthcoming issue of *Experimental Aging Research*. It was co-authored by Neupert, NC State graduate student Taryn Patterson, former NC State undergraduate Agnes Davis and Dr. Jason Allaire, an associate professor of psychology at NC State. The research was funded by a gift from Vasudha Gupta.

The Final Word: Faculty Awards In Recent Years

Dr. Frank J. Smith, Professor of Psychology was awarded the Jackson Rigney International Service Award the NC State chapter by the Sigma Iota Rho (The Honor Society for International Studies). The award is given in recognition of outstanding research and scholarship through international collaboration.

Dr. Rupert Nacoste has been the CHASS nominee for the UNC Board of Governors’ Teaching Award five different times, most recently for 2009 – 2010. This university award, coordinated by the Office of the Provost, is the most prestigious award given to faculty for teaching excellence.

In recent years, **Dr. Chris Mayhorn, Dr. Jason Allaire, Dr. Adam Meade, and Dr. Shevaun Neupert** were named Outstanding Junior Faculty members for the College of Humanities and Social Sciences at NC State University. This award recognizes the assistant professor in the College judged to have the most significant professional accomplishments during the first years of his or her career at NC State.

Dr. Denis Gray was named Alumni Distinguished Graduate Professorship Award for 2007 at NC State University. This award recognizes outstanding graduate level teaching at North Carolina State University.

Dr. Amy Halberstadt was named Alumni Distinguished Undergraduate Professor for 2006-2008 at NC State University. Alumni Distinguished Undergraduate Professors must have provided distinguished service in undergraduate teaching at NC State for at least 7 years, must be members of the Academy of Outstanding Teachers, and must additionally be identified by students, alumni, and departmental and college faculty as excellent for their outstanding contributions as teachers.