

Aging Technical Group

Fall 2007

Farewell Message from the Chair

Chris Mayhorn

Aging TG Chair

Associate Professor, North Carolina State University

The past two years have passed very quickly. It seems like yesterday when I sat in my office asking myself "What have I done?" after accepting the nomination to run for this position. Thanks to the kind reassurances of Darin Ellis and Wendy Rogers, I decided to move forward with the process. To my amazement, I have enjoyed every minute in this role serving the TG because it has given me the opportunity to communicate our considerable efforts and interests to the rest of the human factors community. Also, I have enjoyed the opportunity to work closely with a number of you and I believe that this extremely positive experience was due, in no small part, to the quality of collegiality and passionate interest within our subject domain that marks our small group of scholars as unique.

While it is impossible due to space considerations to thank everyone who has assisted me over the past two years, a number of individuals readily come to mind. As I mentioned, Darin's support as immediate past-chair was instrumental in the smooth transition. On a personal note, his willingness to share his experience with me was essential in filling my early days in the job with confidence. Wendy Rogers and Don Lassiter were also great mentors, who took the time to answer my questions about various job-related details ranging from philosophy to logistics. Over the years, I was blessed with an especially capable and supportive set of officers and newsletter contributors. These officers included wonderful colleagues (and now friends) such as Beth Meyer, Steve Wiker, Frank Scheiber, Rich Pak, Diana Schwerha, and Randa Shehab. Of course, the efforts of the newsletter editors (Raegan Hoeft and Jeff Hardee) have been most critical in fulfilling my duty to share information with the TG. Lastly, Anne Adams' work as the Technical Webmaster has been essential in transmitting our public persona to the remainder of the HFES community.

As Steve Wiker's description of the upcoming ATG program summary for Baltimore Annual Meeting indicates, we have a number of interesting talks scheduled that should be of interest to both veteran TGers and those new to the area. From a social standpoint, I am also excited to mention that we will

continue the tradition of holding our business meeting (scheduled from Noon until 1:30pm on Wednesday, October 3, room TBA) as an informal and intimate discussion. As usual, please remember to reserve your seat at the luncheon when you arrive on site in Baltimore at the HFES Central Registration area.

As I leave office, I am tasked with determining what metric I should use to gauge whether I was successful at performing my job as Chair. At the most basic level, I firmly believe that I should be leaving the ATG in better shape than I found it when I took office two years ago. Given the most recent reports from Lynn Strother, I can easily make this argument. Our membership has steadily increased over the past two years and now stands at 292 (5% increase from last year). For the first time in my academic career, I have used the words "Balance surplus" to describe the state of our bank account! Each year, we have recognized outstanding student members for their research contributions with the Arnold Small Award at the Annual Meetings in Orlando and San Francisco. From my attendance at the Council of Technical Groups meetings, I have heard the ATG recognized as an active group because we were one of the first few TGs to have a website (thanks to Rich Pak and Sharon Joines) and we regularly meet our newsletter quota (thanks to Jeff Hardee and Raegan Hoeft). (Continued on page 2)

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CONTRIBUTORS

Jeff Hardee
Chris Mayhorn
Dan Morrow

Diana Schwerha
Steve Wiker
All our Aging TG Paper
Authors!

As I step down from my position as Chair at the end of the upcoming business luncheon in Baltimore, I will be somewhat sad as I reflect on having served in this position. Most memorably, I enjoyed being a part of the ATG during a historic period where we celebrated the 50th Anniversary of HFES in San Francisco. We have quite a challenge ahead of us in trying to make the next 50 years as productive as the last 50. These challenges include continuing to bolster our membership as well as educating and training the next generations of scientists interested in working with aging world populations. Knowing that I leave the leadership of our organization in the capable hands of Randa Shehab, the incoming ATG chair, fills me with confidence for the future. Moreover, I am happy to report that I will have the opportunity to work with Randa in representing the interests of the ATG and the society as a whole when I begin my new position as the Chair-Elect for the Council of Technical Groups.

See you in Baltimore!

Funding 101

Diana Schwerha

Coffee, tea, funding—is it part of your morning routine? What’s your funding IQ? Here are some questions to get you started:

1. What does the sign “Gone Funding” mean?
2. Who is U.R. Funded?
3. To what does the term “Fundelicious” refer?

Answers:

1. Similar to “Gone Fishing,” it is the state of being in a permanent trance while looking for funding sources so that you can support yourself next year
2. YOUR new best friend
3. Adj., as in the statement, “wow, that new NIA RFP was really fundelicious!!!!”

If you knew the answers to all of those, then you might not need to read below. If you are looking to make your life easier and want to know what the agencies are currently looking for, read on.

To start, you need to get a sense of what type of research has been funded and what’s currently being funded. There are two main databases that can help with this: the CRISP database (<http://crisp.cit.nih.gov/>) and the RADIUS database (<https://radius.rand.org/radius/index.html>). The CRISP database allows you to search for federally funded grants in the area of biomedical research (it includes many agencies but not all of them). Even more interesting is the Rand Corp. database, RADIUS, which allows you to search for ongoing or previously

funded federal research (not limited to biomedical). This database also allows you to sort by agency and download your files in either Excel or Word.

The RADIUS database cited the current federal funding levels at approximately 129B for the year 2006. Figure 1 shows the breakdown between the major departments:

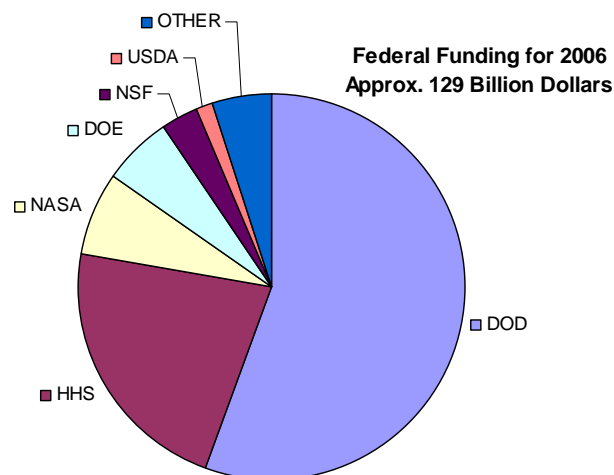


Figure 1. Federal Funding for 2006 by Department

In 2006, HHS received about 29B, and of those monies NIH received about 27.5B. NIA (the National Institute of Aging) received approximately 1B and about 900 million went for extramural research. In addition, of the 64,946 tasks/awards for 2006, 163 were for NIOSH and 2306 were for NIA (meaning that about 4% of NIH awards go to aging research). I did a quick search on RADIUS for “human factors” and aging for 2006 and came up with 3 projects—all of them funded by the NIA.

With that in mind, I called a few program managers to inquire about current priorities for funding agencies. John Haaga, Deputy Director for BSR at NIA, mentioned several areas of interest: 1) the adaptable workplace for older workers, 2) research on health and retirement and ways to bring together disparate areas of research related to that, and 3) ways that older workers can better interact with technology. Dr. Haaga also mentioned that they are interested in getting more SBIR proposals. Their website is: <http://www.nia.nih.gov/ResearchInformation/ExtramuralPrograms/BehavioralAndSocialResearch/>.

The recent change in NORA at NIOSH has also affected prioritization of research related to older workers. The new NORA uses a sector and cross-sector approach. Aging research is either related to a specific sector and funded through that area or it can relate to the new program, Occupational Health Disparities (there is no longer a Special Populations

Group; see the website:
<http://www.cdc.gov/niosh/programs/ohd/>).

In addition, aging researchers could apply for grants in other agencies, such as National Institute on Disability and Rehabilitation Research (NIDRR; <http://www.ed.gov/about/offices/list/osers/nidrr/index.html?src=mr>) or the Agency for Healthcare Research and Quality (AHRQ; <http://www.ahrq.gov/>).

This article just reviewed a few basics about the current funding situation. Best of Luck.
--Gone Funding,
Diana

Aging Technical Group Session Information

Steven Wiker

This year we received a number of interesting papers and posters for review. Approximately 80 percent of the submissions were accepted for presentation and publication in the proceedings. I would like to thank the following reviewers for their careful and timely review of papers and posters submitted this year for presentation in the Aging Technical Group's sessions:

Kari Babski-Reeves, Kristen Gilbert, Jeff Hardee, James Howard, Sharon Joines, Robert Kennedy, Lila Laux, Christopher Mayhorn, Sherry Mead, John Mendenhall, Beth Meyer, Dan Morrow, Timothy Rhoades, Frank Schieber, Diana Schwerha, Randa Shehab, John Thomas, Dennis Vincenzi, David Windell, Carryl Baldwin, Rick Barker, Neil Charness, Susan Chrysler, Sara Czaja, Robert Dewar and Darin Ellis.

Two sessions were allocated to our group this year; one on Tuesday and another on Friday. The papers are scheduled as shown in the following tables denoting authors and affiliations. I have also provided copies of the abstracts for planning purposes. Next year Diana Schwerha at Ohio University (schwerha@ohio.edu) will serve as the Technical Program Chair for Aging. I hope others will contact her to volunteer to serve as reviewers for next year's submissions. I am looking forward to our technical paper and poster sessions.

Abstracts of Papers to be Presented in Aging TG Sessions

A Survey of Mobile Phone Use in Older Adults Young Seok Lee

Mobile phone adoption by older adults is radically increasing. As a part of multiple empirical studies to improve older adults' experiences with mobile phones, a survey was conducted to investigate a number of specific aspects of mobile phone use in the older adult population including motives of ownership, usage patterns, preferences on mobile phone features, and perceived usability of their own phones. A total of 154 older adults from 20 states of the United States who owned a mobile phone participated in this study. Results indicated that participants used a few basic features of mobile phones since they used them mainly for personal communication and safety reasons. Overall, participants perceived that their current phones offered marginal 'ease of use', but they found most usability problems with understanding error messages, inputting text, and understanding user manuals. The majority of older adults (over 50%) desired a phone with basic features that include making/receiving a call, phonebook, emergency call, voice message checking, speed dial, ringer change, and clock. However, effects of age and gender were found on mobile phone usage patterns and design preferences, which suggest a need of focusing on diverse groups within the older adult population.

Reliance on Automation as a Function of Expectation of Reliability, Cost of Verification, and Age

Neta Ezer, Arthur Fisk and Wendy Rogers

The influence of trust on automation reliance has been examined during interaction with the automation, but little attention has been paid to individuals' initial expectation of automation reliability as it affects future reliance, especially when the cost of not relying on automation is known in advance. Additionally, whereas automation may help to improve the lives of older adults, their expectations of automation reliability have not been thoroughly considered. In this study, 16 older adults and 16 younger adults were asked about their expectation of the reliability of an automated counting aid and half were told that they would lose points for verifying the automation. Subsequent reliance on the decision aid was recorded. The results indicated that neither age nor the cost of verification appears to have an effect on reliability expectancy. Furthermore, predictions of reliability had a negative correlation to reliance. The findings suggest that individuals develop expectations of automation over the course of experience and interaction with automation.

What Types of Difficulties Do Seniors Encounter When Using the Internet to Make Health Care Decisions?

Thomas Kuhn, Sara Czaja, Sankaran Nair, Joseph Sharit, Chin Lee, Mario Hernandez, Tamer El-Attar

The Internet is an important source of information for health-related topics and services. Currently, however, an age-related digital divide exists, especially for lower SES minority elderly. This study examined the ability of a sample of 40 community dwelling adults aged 50-85 yrs. to use the Internet to make choices related to Medicare services. Performance data included response time, accuracy, and search behavior (based on videotape recordings) and ratings of usability. Overall the data indicate that although most of the participants were able to find the needed information many of them made errors, used inefficient search strategies, and encountered search problems. Furthermore, most of the sample indicated problems with usability and that they were frustrated interacting with the website. These findings are discussed in terms of recommendations for training and website design. The paper will also discuss how screen capture data can be used in the development of design guidelines.

Older Adults' Health Information Needs and the Effect of the Internet

Jessica Hirth, Sara Czaja, Joseph Sharit

Internet-based health information may be particularly beneficial for older adults as this segment of the population is likely to need healthcare information and services and often experiences problems accessing needed services and care. In order to effectively design e-health tools for seniors it is important to understand their health information needs and factors that enhance or impede their ability to use the Internet. Another important issue is to determine if in fact, health information needs are satisfied to a greater extent between Internet users and non-users. This study explored these issues using six focus groups comprised of 35 adults aged 50+ (M = 69.71 years) with varying levels of Internet-based health information seeking experience. Results indicated that the adults who used the Internet were quite satisfied with finding information from this source; however non-users were also quite satisfied with the more traditional sources that they rely on for health information.

Error Extensions to GOMS Modeling: Age-Related Predictions of Error in a Mobile Phone Task

Tiffany Jastrzembski and Neil Charness

Human error is pervasive (Kirwan, 1994), and its consequences are often costly (e.g. time, money) or even deadly (e.g. Neumann, 1995). Yet, many types of human fallibility are not anomalous occurrences, but instead flow from psychological processes that normally produce correct behavior (Mach, 1905). On the basis of this rationale, it is reasonable to argue that some types of errors may be predictable (so long as

situational demands and human capabilities/limitations are properly taken into consideration) and therefore amenable to computational modeling techniques. This research seeks to incorporate and implement psychological theory of human error in GOMS models of human performance by first classifying errors under a simplified GEMS schematic (Reason, 1990), then extracting observed error probabilities from dialing and text-messaging mobile phone tasks, and finally testing model predictions in a more complex, appointment-scheduling mobile phone task. Results revealed no differences between model predictions and human production of error across all types of error classification, and models accurately predicted error rates for younger and older users based upon previously validated, age-informed processing parameters included in each age-sensitive model.

Inferences and Confidence in Warning Texts: The Role of Age and Prior Knowledge

Anne Adams, Wendy Rogers and Arthur Risk

Understanding warnings is important, regardless if prior knowledge with respect to such information exists. The goal of the current study was to investigate younger and older adults' ability to draw inferences under different conditions of prior knowledge, and how confident participants were about their decisions. Participants read two-sentence text passages, which either resembled real warnings (real) or were the opposite of real warnings (reversed). Participants evaluated whether information in a given statement was consistent (true) or inconsistent (false) with information given in a text passage. Statements either repeated information explicitly or implied in the text passage. Participants also rated their confidence in the correctness of their answer. Data showed no age-related differences in accuracy when the text passages resembled real warnings. When text passages were reversed, older adults were less accurate than younger adults, yet more confident when inferences were required.

Designing Privacy-Conscious Aware Homes for Older Adults

Kelly Caine, Arthur Fisk and Wendy Rogers

This research documents the variables that older adults consider important to maintaining privacy in a smart or aware home environment. Through structured interviews we elicited the technology preferences and privacy concerns older adults had about an aware home. We also asked participants about design considerations they thought might mitigate their privacy concerns. Results are presented along four interrelated dimensions: privacy while performing specific activities, privacy in certain rooms, privacy by regulating data storage, and privacy by distance of relationship. Findings suggest a number of steps along each of these dimensions that can be taken to design privacy conscious aware homes, but also suggest that privacy

concerns do not necessarily preclude monitoring the home environment. Importantly, participants value benefits of monitoring technology and may be willing to overlook privacy concerns in exchange for these benefits. Therefore, benefits must be maintained while also ensuring, through careful design, that aware homes preserve privacy.

Perceptions and Use of Product-Related Age Recommendations: A Case Study Involving ATVs

Stephen Young, J. Frantz, Raina Shah, Timothy Rhoades and Julia Diebol

Forty-four adults and nineteen youth participated in a study that examined responses to age recommendations related to the purchase of all-terrain vehicles (ATVs) intended for operators under age 16. Structured interviews were used to evaluate preferences under different purchase scenarios. Focus groups were also conducted to assess the factors influencing purchase decisions. Results from the interviews and focus groups showed that situational, person, and product factors influenced people's perceptions of various age recommendations and purchase preferences for ATVs. Implications regarding the design and use of age recommendations are discussed.

Investigating the Dynamic Accommodative Characteristics of the Aging Eye With the Control of the Intensity and Chromaticity of Light

Wen Shi, Thurmon Lockhart

The age-related accommodation loss of the human eye impairs aging people's life. A study was conducted to preliminarily investigate the dynamic accommodative characteristics of the eye for different age groups under various intensities and chromaticities of light. 4 younger (20-29 years of age), and 4 older (60-69 years of age) participants were recruited, and the accommodation of their eyes was recorded and analyzed dynamically via the modified Shin-Nippon SRW-5000 autorefractor. The laboratory experiment was designed to assess accommodation in a simulated condition where the participant needed to alternate from viewing outside to reading the dashboard with signals of different light intensities (2 levels: 100 and 20 cd/m²) and light chromaticities (2 levels: red vs. blue). The results of the study indicated that aging, light intensity, and light chromaticity all had an impact on the dynamic accommodative characteristics of the eye. The implications of the study are discussed.

Identification of Aging Effects on the Control of Upright Stance Using a Local Maximum Wavelift Transform Method

Hongbo Zhang and Maury Nussbaum

The purpose of this study was to investigate aging effects on the mechanisms of postural control during upright stance, and specifically the use of

proprioceptive feedback on this control. Thirty-two healthy individuals participated, equally divided among younger (19-22 years) and older groups (54-68 years) and genders. Experimental trials involved several sessions of quiet stance on a firm surface with eyes closed. Center of pressure (COP) data were obtained from a force platform and processed using a new local maximum wavelet transform method. The critical time interval (CTI) derived from this method was proposed to describe the activation period of proprioceptive function, which is mainly influenced by the proprioceptive feedback loop. A reduced CTI was assumed to indicate poorer control based on proprioceptive input. Results showed that younger participants' CTI significantly increased from the first experimental session to consecutive experimental sessions in both the mediolateral (ML) and anteroposterior (AP) directions. However, older participants' CTI did not exhibit significant differences between the first and the consequent experimental sessions in either direction. This result suggests that the adaptability of proprioceptive function was impaired with age. Younger adults' CTIs were significantly larger than those of older adults in both ML and AP directions, indicating that among older adults stance control based on proprioceptive function was significantly impaired due to aging.

Of Mice and Pen: Effects of Input Device on Different Age Groups Performing Goal-Oriented Tasks

James Kravitz

Convertible tablet PCs can use a pen or a mouse for input. The pen is better suited than the mouse for some tasks because of its interaction properties, and research has shown it may ameliorate age-related decrements in performance. This study compared the pen and mouse on a series of realistic tasks for older (55-69) and younger (18-30) adults. Precision tasks were better served by the mouse, while ballistic tasks with strong analogs to real-world actions were served equally well by the pen or the mouse. Older adults were slower than younger adults on both devices, but contrary to the research hypothesis, no benefits were observed specifically for older adults with the pen. This study reinforces findings regarding the importance of task demands when selecting input devices. Younger adults seemed more willing than older adults to embrace the pen.

Pre-Exertion Perceptions of Musculoskeletal Overexertion Injury Risk: An Assessment of Age, Gender, Anthropometric, and Lifting Task Factors

Steven Wiker and Viviana Baggio

Manual materials handling safety training programs typically encourage workers to make judgments regarding manual material handling risk prior to making attempts to perform the task. The objectives of this effort were to determine if: a) perceptions of MMH

tasks are consistent with consensus-based lifting hazards, and b) judgments are materially affected by observer age and or gender. Photographs of orthogonally varied levels of horizontal and vertical origin and final position of a 20 Kg box lift at 0.2, 2 and 5 lifts per minute were presented to 50 males and 50 females who were distributed among age decades between 20 and 70 years. Subjects were asked to rate their perceived risk of musculoskeletal injury using magnitude estimation methods. Results showed that subjects, regardless of age, were unable to spatially perceive consensus-based biomechanical indexes of musculoskeletal hazard; this finding held regardless of age group, gender, stature, body mass, prior safe lifting practices training, or history of low back injury.

Check Out APA Division 21

Dan Morrow, Division 21 membership chair
dgm@uiuc.edu
(217) 244-8757

Dear ATGers:

I am writing to encourage you to join a group of researchers interested in applying experimental psychology theories and methodologies to issues of real world concern: the Division of Applied Experimental and Engineering Psychology (Division 21 of APA). Joining our group will enrich your professional, intellectual, and social life!

Members work at the interface of society and technology, with diverse interests that include selecting and training workers to fit job requirements, exploring the cognitive underpinnings of effective instruction, designing technologies to fit work practices, examining how skill can compensate for age-related differences in cognition, and reasoning in the legal system. Members work in industry, government, and academia.

So, why join Division 21?

- ❖ You will find many opportunities to interact with colleagues with similar professional interests. We are a small, collegial group with many ways to become involved in division governance and leadership. Your opinion and ideas will matter!
- ❖ Opportunities include the Division program at the annual APA meetings, which offer an excellent mix of paper and symposium sessions, as well as less formal poster sessions. Recent meetings have included talks by Wendy Rogers, Don Norman, Paul Slovic, Chris Wickens, and Phil Ackerman; next year will showcase Robert Helmreich, Ray Nickerson, and Rob Gray. Each year we go out to a neighborhood restaurant (on the Division) in lieu of a hotel reception—a great

way to meet new colleagues and renew friendships.

- ❖ In addition to the annual APA meeting, the division has a mid-year meeting and is planning a second small-scale meeting focused on up and coming issues, such as next-generation aviation systems.
- ❖ Annual awards are given for outstanding contribution to Applied Experimental and Engineering Psychology, early career achievement, and a dissertation award.
- ❖ Of course, we offer a newsletter, web presence, and listserv. More exciting is that membership includes subscription to the *Journal of Experimental Psychology: Applied*, APA's premier journal publishing wide-ranging research on applied experimental psychology.
- ❖ We are especially interested in helping students and fledgling professionals. For example, we are expanding our successful mentoring program, in which senior colleagues provide guidance to and interact with new professionals.

There are two ways to join. First, become a member of APA and join Division 21 at the same time at <http://www.apa.org/about/division/memapp.html>. Second, join Division 21 as an affiliate member, without joining APA, by contacting me. Division dues are only \$32, whether you join through APA or as an affiliate member, and \$15 for students.

We look forward to seeing you at upcoming meetings of Division 21! If you have any questions about joining, don't hesitate to contact me.

Calendar of Events

51st Annual Meeting of the Human Factors and Ergonomics Society

Baltimore, Maryland
October 1-5, 2007
<http://www.hfes.org>

International Conference on Supporting Group Work

Sanibel Island, FL
November 5-7, 2007
<http://www.acm.org/conferences/group/conferences/group7>

International Conference on Aging, Disability and Independence

St. Petersburg, Florida
February 21-23, 2008
<http://www.icadi.phhp.ufl.edu/>

Gerontechnology 2008

Pisa, Italy
Presented by the International Society for Gerontechnology
<http://www.gerontechnology.info/>

52nd Annual Meeting of the Human Factors and Ergonomics Society

New York, NY
September 22-26, 2008
<http://www.hfes.org>

17th Congress of the International Ergonomics Association

Beijing, China
August 9-14, 2009
<http://www.iea2009.org>

Aging Technical Group Officers

TG CHAIR

Chris Mayhorn
Associate Professor
North Carolina State University
chris_mayhorn@ncsu.edu • (919) 513-4856

TG CHAIR ELECT

Randa Shehab
Associate Professor
University of Oklahoma
rshehab@ou.edu • (405) 325-3721

SECRETARY/TREASURER

Richard Pak
Assistant Professor
Clemson University
richpak@clemson.edu • (864) 656-1584

PROGRAM CHAIR 2007

Steve Wiker
Associate Professor
West Virginia University
steven.wiker@mail.wvu.com • (304) 293-4607 x3733

PROGRAM CHAIR ELECT 2008

Diana Schwerha
Assistant Professor
Ohio University
schwerha@ohio.edu • (740) 593-1577

NEWSLETTER EDITOR

Jeff Hardee
Graduate Student
North Carolina State University
jbhardee@ncsu.edu

TECHNICAL WEBMASTER

Anne Adams
Graduate Student
Georgia Institute of Technology
anne.adams@psych.gatech.edu
