



Aging Research News



THE OFFICIAL NEWSLETTER FOR RESEARCH VOLUNTEERS OF THE ADULT VOLUNTEER POOL

DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF TORONTO

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Thank you to all of our research volunteers!

We would like to extend our thanks to all of our volunteers and to share with you some information about the studies you may have recently participated in. Since our humble beginnings at the start of the century, the Adult Volunteer Pool volunteer program has now grown to include over 5000 active volunteers who have participated in close to 400 different studies. Your time and commitment has been an invaluable contribution to the progress of our research.

Over the past several years, our research has focused on various aspects of cognition (e.g., memory, learning), social attitudes, and more recently, neuropsychology as people grow older. On many occasions, you have asked us about our research and the results that we have obtained. While it has often been too early for us to answer those questions definitively, we have tried to summarize some of our results in this newsletter (see reverse). We hope that this newsletter will provide you with a better understanding of our research and our department's contribution to the field of psychology, and that you will find it to be as interesting as we do.

We are continuously looking for new volunteers to participate. If you have any friends or family between the ages of 50 and 80 who would be interested in becoming research volunteers, please have them contact us. Please also call us if you have recently moved, changed phone numbers, or believe your personal information has changed. Once again, we would like to thank you and hope you enjoy this edition of our newsletter.

Directions to the Psychology Department

- To 100 St. George St. from the St. George subway station:

Exit through the St. George St. exit (not the Bedford Rd. exit). Turn left and walk south on St. George St. past Bloor St. and Harbord St. The building will be on your right.

Aging Research News is designed to keep our volunteers up to date on news and research at the University of Toronto. Questions or comments can be addressed to:

**Department of Psychology
c/o Adult Volunteer Pool
University of Toronto
100 St. George Street, Room 4020
Toronto, ON, M5S 3G3**

Tel: (416) 978-0905

E-mail: adultpool@psych.utoronto.ca

Web: adultvolunteerpool.psych.utoronto.ca

FACULTY PROFILE

Dr. Morris Moscovitch: Moscovitch Lab



As we age, we find it more difficult to make fine discriminations among items. A common observation is that we may have difficulty distinguishing one spoken word from another that sounds like it, such as between “fore” and “sore”. The same type of effect occurs in every other sensory modality including vision, smell, touch and taste. Why should this be the case? One reason is that our sensory organs deteriorate with age. Another is that certain brain mechanisms are needed to accentuate differences between similar items so that we can distinguish them without difficulty. This process, termed “pattern separation”, is implemented in different brain regions, but it has been studied extensively in the hippocampus, a region of the brain crucial for memory. Because the

hippocampus also deteriorates with age, particularly in people at risk for cognitive impairment, we were interested in knowing whether older adults had more difficulty than younger adults in distinguishing among items in memory as much as they do for items they perceive.

Marilyne Ziegler, Zhongxu Liu, Sara Pishdadian, Shayna Rosenbaum and I examined this idea in two domains: spatial and object/animal. In the spatial domain, we asked people to judge from their memory which of two locations in Toronto was closer to a third. In the easy condition, which required little pattern separation, we asked, for example, whether City Hall or the ROM is closer to the CN Tower. In the hard condition, which required a great deal of pattern separation, we asked whether City Hall or the AGO is closer to the CN Tower (AGO is). In the object domain, we asked people to judge which animal is closest in size to another animal. In the easy condition, we asked whether a bee or a robin is closest in size to a squirrel. In the difficult condition, we asked whether a bee or an ant is closest in size to a squirrel.

Using functional neuroimaging of the brain, Ziegler, Zhongxu Liu and I found that the hippocampus is implicated in making these decisions. The more difficult the decision, especially the spatial ones, the more active is the hippocampus, suggesting it has to work harder to implement pattern separation processes. Everyone found the hard condition to be more difficult, but only the older adults who were at risk for cognitive impairment were especially affected by it, as we predicted.

These results indicate that the ability to discriminate between similar items in memory is relatively preserved in healthy older adults if the memory, such as for familiar locations and objects, depends on well-learned, prior knowledge. Only older adults at risk for cognitive impairment suffer.

Do you have any feedback on your experience with us today?

If you have any questions or concerns about your participation in today’s experiment, please contact the Adult Volunteer Pool by phone or email (see front), or visit our website at

www.psych.utoronto.ca/users/adultpool

