

# SLS Newsletter

NEWS FROM THE SEATTLE LONGITUDINAL STUDY

THE PENNSYLVANIA STATE UNIVERSITY

FALL 2000

## Rate of Aging Slows Across Generations

We have all followed with great concern the debates on whether our Social Security and other pension systems will remain viable when the baby boomers reach retirement ages. Some have argued that the easiest fix would be to raise the age at which pensions are now paid. However, such a fix depends on the assumption that the next generation is able to work to later ages because the *rate* of aging has slowed. That is, while everyone shows some decline as they get older, the next generation will decline more slowly than their parents.

The fact that many older persons can continue to perform well in their jobs has led to the abandonment of mandatory retirement. We now know that there is little correlation between work productivity and chronological age. Other personal characteristics, such as health, individual motivation, and willingness to continue efforts to reduce personal obsolescence have been shown to be far more important predictors of job performance.

There have also been dramatic shifts in the United States in the level of performance on many abilities reached by successive generations. These findings suggest that today's older persons are at an advantage compared to earlier generations. Many of these gains have occurred because of medical advances and increases in educational exposure.

Data from the SLS have previously contributed to the discussion of whether mandatory retirement at any age is sensible, and we have shown that at the same ages successive generations function at higher levels on some abilities. For the first time we can now report longitudinal data over 7 years from members of our longitudinal panel *and* their adult children. Because of the long duration of our study we have been able to match the scores of parents and their adult children at approximately the same ages

We presented the new data in July at the International Congress of Psychology in Stockholm and reported that there has been not only an increase in level of performance for successive generations but also a significant slowing of the rate of aging. The data used for these analyses involves 496 SLS participants

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## Family Study Continued to 3rd Generation

Next spring we will begin to expand our study of family similarity in cognitive abilities to those members of the 3rd generation of offspring who have now reached adulthood. This study will allow us to determine whether the positive generational trend in abilities (see lead article) continues in the late baby boom and post baby boom cohorts in biologically related three-generation families. The study will also investigate impact of unique family environments in the parental and grand-parent families and in the 3rd generation's present family. There are 602 women and 637 men, who are now 22 years of age or older, at least one of whose parents and one grand-parent have been previously assessed in the Seattle Longitudinal Study. Many of these individuals represent the "children-of-the-baby-boomers" generation.

For those of you who participated in our family study we have included a form on which we would like you to list the current names and addresses of all of your children 22 years of age or older which we will use to invite them to participate in the 3rd generation study. Please return this form as soon as possible in the enclosed return envelope. Of course, your children's participation is entirely voluntary, and we will make every effort to have them tested at locations near their home wherever that may be.

## Rate of Aging Slows Across Generations

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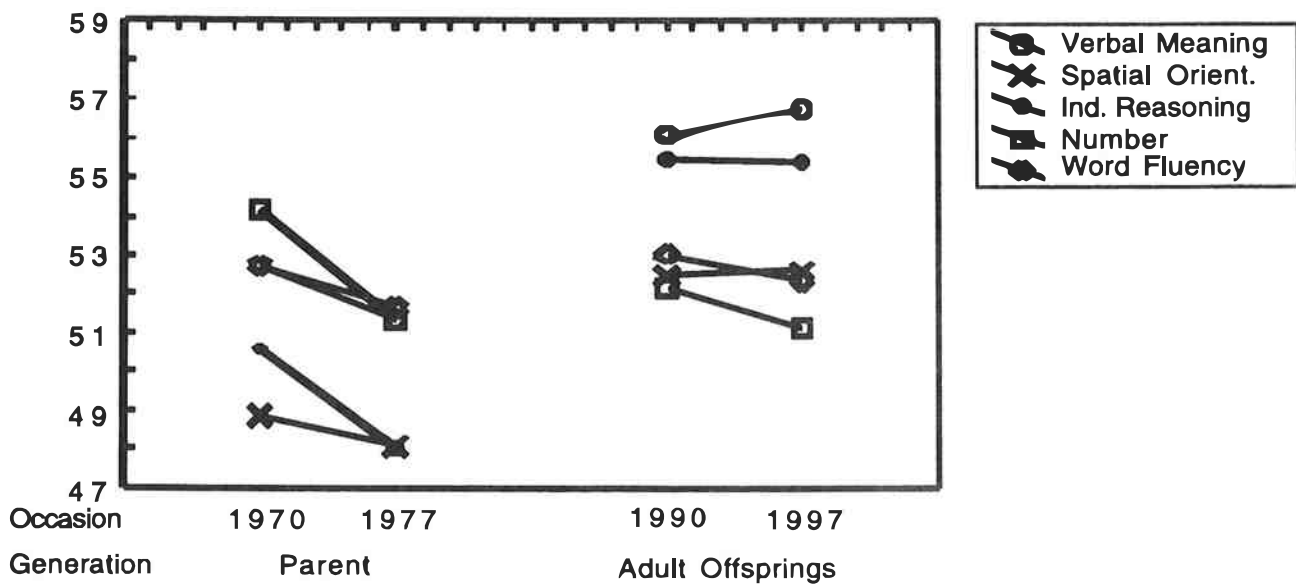
(248 parent-offspring dyads; 89 sons and 159 daughters). To obtain approximate age equivalence, we compared the 1970 and 1977 test scores of the parents with the 1990 and 1997 test scores of their adult offspring. To determine whether the generational differences differ by age level we further subdivided the data sets into three groups by average age of each pair as follows: up to 44 years of age (young adults), 45 to 59 years of age (middle-aged); and 60 years or older.

While we found slowing of rate of aging at all ages, the data for individuals over age 60 are particularly impressive. In the Figure on this page we show comparisons of 7-year age

changes for the older and younger generation for five cognitive abilities. These are the first five tests which you have taken every time you participated in our study. They are Verbal Meaning (the scope of your active recognition vocabulary), Spatial Orientation (the ability to rotate spatial concepts in your mind; e.g. Map reading); Inductive Reasoning (the ability to figure our rules and principles); Number (the ability to deal with numbers, and Word Fluency (the scope of your active vocabulary). above 60 years.

You should note in particular that the younger generation performs at a higher level on all of the abilities except number. But more importantly while there was a decline over seven years for all five abilities in the older generation, the younger generation shows stability or gain for three of the five abilities (Verbal Meaning, Spatial Orientation and Reasoning.).

### Change over 7 Years



#### HELP KEEP US UP TO DATE

If you have moved or changed your name please contact our office at 281-4050, write us at 180 Nickerson, Suite 206, Seattle, WA 98109, or e-mail us at [slnick@u.washington.edu](mailto:slnick@u.washington.edu)

Research Grant R37 AG08055 from the National Institute on Aging. K. Warner Schaie, Principal Investigator; Sherry L. Willis, Co-Investigator.

## Using Strategies in Cognitive Training

Since 1984 over 500 participants in the Seattle Longitudinal Study have been involved in cognitive training. There have been three waves of cognitive training with new participants being trained in 1984, 1991, and 1998. In addition, some participants received booster training sessions in 1991 and/or 1998. Participants were trained on one of two abilities, inductive reasoning and spatial orientation ability. These two abilities show relatively early age-related decline beginning in the mid-sixties, on average. Over two-thirds of participants had significant improvement on tests of the ability on which they were trained. In addition, approximately forty-percent of participants who had shown previous decline, improved as a result of training to the extent that their performance after training was equal to or greater than their performance fourteen-years previously. Finally, when participants were reassessed seven-years after training, there were some residual effects of training!

We have recently looked at specific factors that were associated with training improvement. One important factor seems to be using the cognitive strategies that were emphasized during training. On inductive reasoning ability, this involved making marks on the problem that helped one to identify the pattern used to solve the task; one made slashes, tic marks, and underlined parts of the problem. In spatial training, one practiced turning the paper to study the spatial orientation of the drawing and then tried to do this mentally, rather than physically turning the page. One also gave a name to the drawing.

We have found that participants who received training on one of the abilities were much more likely to use the strategies for that ability than participants trained on another ability - use of strategies increased as a result of training. More importantly, increased use of strategies was related to improving one's performance on the ability trained. Participants who used the strategies more frequently also showed greater improvement on tests of the ability. So learning and using cognitive strategies does help in doing cognitive tasks

and older adults can be taught to use these strategies. Some adults think that doing difficult mental tasks involves sheer brain power, like muscle strength. However, both in physical and mental training, there are "tricks" or strategies that can be learned to improve one's performance physically and mentally. It's smart to use cognitive strategies!

## Survival and Its Relation to Cognitive Abilities and Change

For many years there has been interest in whether changes in cognitive ability are related to survival and/or mortality. Of course, if cause of death is an accident, then there is no reason to expect a change in cognitive functioning prior to the accident. However, most individuals die of a chronic disease and sometimes of very old age.

Recent work in the Seattle Longitudinal Study has examined questions such as: Are individuals who perform poorly on cognitive tests more likely to die in the next few years? Is a *decline* in cognitive functioning associated with subsequent death? The first question focuses on level of cognitive functioning (test score); the second question focuses on change in test scores across time. Finally, there

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From left to right: Front row, Charles Fick, tester; Walter Eden, assistant office manager; Dr. K. Warner Schaie, project director; Back row: Robin Dunlap, office manager and site coordinator; Holly Overman, tester; Sara Rosen, tester.

**Survival, Cognitive Abilities and Change**

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is the question of whether it is general intelligence or specific cognitive abilities that might be related to a higher incidence of mortality? To examine these questions, SLS participants' performance over the previous seven years was studied for a group of survivors and a group of decedents. The survivor and decedent group were matched for age, educational level, and gender.

How speedily one responds (i.e., perceptual speed) is related to mortality. Individuals who are slower in terms of speed on cognitive tasks and whose speed decreased even further over seven years were more likely to be in the decedent group. However, the relationship between cognition and survival was not just a matter of perceptual speed. After taking into account the effects of

speed, we again compared the survivor and decedent groups for level of functioning on certain cognitive tasks and for declines in performance over seven years.

*Declining* in cognitive functioning over seven years appeared to be a more important predictor of who was in the survivor versus decedent groups than individuals' *level* of performance (test score). An important finding was that decline in only certain abilities, rather than global intelligence, was related to a greater likelihood of being in the decedent group. Specifically, decline in abilities such as vocabulary, spatial orientation and reasoning were associated with a greater likelihood of being in the decedent group. These are important and useful findings, but it is also important to note that not all individuals who experienced decline on one of the abilities died - the data suggest only that the likelihood of being in the decedent group increases with a decline in these abilities.

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**Address Correction Requested**