Project #: G-42-646
Center #: 10/24-6-R6369-4A0
Contract#: 2 R01 AG06826-04
Prime #: 

Subprojects #: N
Main project #: 

Project unit: PSYCH
Project director(s): SALTHOUSE T A

Sponsor/division names: DHHS/PHS/NIH
Sponsor/division codes: 108

Award period: 890801 to 900731 (performance) 901031 (reports)

Sponsor amount
Contract value 145,216.00
Funded 145,216.00

Cost sharing amount
Total to date 145,216.00

Does subcontracting plan apply #: N

Title: ADULT AGE DIFFERENCES IN REASONING & SPATIAL ABILITIES

PROJECT ADMINISTRATION DATA

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Security class (U,C,S,TS) : U
Defense priority rating : N/A
Equipment title vests with: Sponsor

Administrative comments - PROCESSED INITIATION OF YEAR 4. THIS PROJECT IS A CONTINUATION OF 894-4820.
NOTICE OF PROJECT CLOSEOUT

Closeout Notice Date 08/23/90

Project No. G-42-646

Center No. 10/24-6-R6369-4A0

Project Director SALTHOUSE T A

School/Lab PSYCHOLOGY

Sponsor DHHS/PHS/NIH/NATL INSTITUTES OF HEALTH

Contract/Grant No. 2 R37 AG06826-04

Contract Entity GTRC

Prime Contract No.

Title ADULT AGE DIFFERENCES IN REASONING & SPATIAL ABILITIES

Effective Completion Date 900731 (Performance) 901031 (Reports)

Closeout Actions Required:  Y/N Submitted

Final Invoice or Copy of Final Invoice  Y  
Final Report of Inventions and/or Subcontracts  N  
Government Property Inventory & Related Certificate  N  
Classified Material Certificate  N  
Release and Assignment  N  
Other  N

Comments

Subproject Under Main Project No.

Continues Project No. G-42-610

Distribution Required:

Project Director  Y
Administrative Network Representative  Y
GTRI Accounting/Grants and Contracts  Y
Procurement/Supply Services  Y
Research Property Management  Y
Research Security Services  N
Reports Coordinator (OCA)  Y
GTRC  Y
Project File  Y
Other  N


1. Plans for next year of support.

The overall objectives for the next year are the same as those outlined in the original grant application. As previously stated, the primary aim of the proposed research is to specify how age-related limitations of working memory might contribute to lower levels of performance in several prototypical cognitive tasks assessing reasoning and spatial abilities.

2. Studies conducted.

Three projects have been completed during the last year, and reports describing the results are either under editorial review or in preparation. One project involved the Keeping Track task described in the original application. A total of 8 experiments involving 339 young adults and 206 older adults have now been completed with either the numeric or the spatial versions of the Keeping Track task. The most surprising finding of the experiments was that young and old adults were equally affected by increases in the number of processing operations to be performed. This seems to suggest that the amount of required processing may not be the primary determinant of the magnitude of age differences in working memory. In the terminology of our theoretical interpretation, it does not appear that aging alters the operational capacity of working memory, at least for several types of processing operations. A manuscript describing this project is currently under editorial review, and a portion of the results have been described in a recent conference (Shaw, Salthouse & Babcock, 1990). Further research is being planned to examine the effects of different types of processing (e.g., target or irrelevant) on the magnitude of age differences in this paradigm.

A second project involved approximately 450 adults between 18 and 80 years of age performing two sets of tasks designed to measure various components of working memory. The primary tasks were the computation span and listening span working memory tasks, and the component tasks consisted of digit span and word span tasks, arithmetic and reading tasks, and two coordination tasks requiring the performance of two concurrent activities. Multiple regression analyses revealed that increased age was associated with significantly lower scores on both working memory tasks, and that most of the age-associated variance could be eliminated by removing the linear contribution of age and speed from the age - working memory relation. An intriguing implication of this finding, which needs to be confirmed and explored further in future research, is that most of the age differences in working memory functioning may be attributable to age differences in the rate of carrying out simple processing operations. Some of the results of this project have been reported in recent conferences (Babcock & Salthouse, 1990; Salthouse & Babcock, 1989), and a manuscript is currently in preparation.
The third project completed during the past year attempted to identify the specific aspects of cognitive processing that are most affected by limitations on working memory. The primary cognitive task used for this purpose was the Cube Comparisons task, although a version of the Raven's Progressive Matrices task was also investigated. A detailed task analysis revealed that at least three types of temporary storage seemed to be required when performing these tasks, and measures were therefore developed to assess the effectiveness of each type of temporary storage. A total of 200 young adults and 145 older adults participated in five independent experiments in this project. The major results were that young and old adults were equivalent in the temporary preservation of untransformed stimulus information, but that older adults apparently were less able than young adults to preserve the information while, or after, it had been abstracted or transformed. Poorer performance by older adults in certain cognitive tasks may therefore be a consequence of an inability to maintain necessary information in a usable state for effective processing. A manuscript describing this project is currently under editorial review.

3. Human Research.

The protocols planned for the coming year are similar to those described in the previous application. Most of the proposed studies will be conducted with computer-controlled stimulus displays and response collection, but a few will involve paper-and-pencil testing materials. In both cases, the procedures and materials are very similar to those used in much previous research and do not represent any risk to the participants.


Not applicable.


CHAPTERS:


ARTICLES:

CONFERENCE PRESENTATIONS: