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A STUDY OF PHYSIOLOGICAL AND PSYCHOLOGICAL CHANGE WITH AGE
PROGRESS STATEMENT, GRANT H-1558

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- Dobson
- John Hoffman
- Harold Jones
- Harold Jones
- Mary Jones
- Donald Rosenthal

- William Siri
- Mary Spilman
- Louis Stewart
- Arthur Tamplin
- George Warner
- Margaret White

the past three years the Public Health Service has supported Grant H-1558 in a study of physiological and psychological change with a purpose of the over-all study is to follow a registered population whose life for developing differences. Establishing change and differences within the same individuals may help to evaluate the pattern of the aging and some of the underlying associations of these changes. Body function is so complex regarding individual differences that this procedure for evaluating aging should be much more instructive than average trends of populations selected to give an age span. The core of material for this study is a group of adolescent children who were studied approximately 15 years ago by Harold Jones and Nathan Shock and their colleagues at the University of California. They were first evaluated and registered as a sample at age 12 and were followed routinely with regard to adolescent change until age 18. Subsequently, the sample has been kept track of and partially followed up for various purposes. The particular advantage of this study is that these men and women are now about 35 years of age and are almost entirely available for re-study. There is a background of material both of psychological and physiological parameters of measurement for the adolescent period and within this sample change with age can be estimated in terms of individual tendencies over a 23-year span of early life. As outlined in the original proposal, the study has been completed in that nearly the entire group has been evaluated by the battery of

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psy and physiological tests. The data have been organized and part of the evaluation. The task of re-evaluating the earlier measurements has been completed but is expected to be coded and evaluated during the coming year as a part of this new application. Sixty men and women have been evaluated altogether, and of these eighty are of the Harold Jones and Nathan Shock study of adolescents. While great individual differences exist for nearly all of the psychological and physiological measurements these differences do not appear to show about such common variations as height and weight. There are, however, some interesting but low-grade inter-relationships between the various measurements. The most striking differences within the group are seen with regard to evaluation of the group by smoking or non-smoking status or by the use or not of coffee and alcohol.

Preliminary to the evaluation of change with age it is instructive to consider the changes that exist within the sample associated with the use of stimulants. Certainly, the largest differences in physiological measures within the sample are associated with the use of cigarettes. It is important to consider at the same time that Harold Jones and his colleagues in a preliminary evaluation of the psychological information obtained on this sample of children have found that he has been unable to predict the use of tobacco at age 35 from any of the parameters of psychological evaluation available in his records. Also, none of the current psychological evaluations at age 35 predict use of cigarettes. More detailed evaluations of this problem will be made. The summary of evidence suggests that the physiological measurements which are discussed below are directly related to the use of stimulants. The changes are in a direction that suggest that the use of cigarettes is associated to physiological changes which would predict more extensive general disease

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among non-smokers. Preliminary results are presented in Tables I and II and are interpreted by the following interpretations:

1. Differences regarding the sample is broken into users and non-users of cigarettes. Body composition by exact measurement of body fat, body water, and bone mass (Siri method). General characteristics of body composition are very similar in males whether smokers or non-smokers. Women who smoke have on the average 4.5 lbs. more fatty substance, but this difference is not significant. Both smokers and non-smokers have the same average body composition for the non-fat residue of the body, and also have bodies of the same average physical dimensions.

2. Use of cigarettes, coffee, and alcohol is highly and positively interassociated for both sexes.
3. Smokers show a disturbance of the blood cells.
 - a) White blood cells are elevated in both male and female smokers. This elevation is significant.
 - b) Neutrophils and lymphocytes are significantly more abundant in both male and female smokers.
 - c) Red blood cells, hemoglobin, monocytes and platelets appear to be not affected.
 - d) Both male and female smokers show a striking and significant gain in the sedimentation rate of the red blood cells (Wintrobe test procedure).

These results of elevation of white cells and sedimentation rate suggest that use of cigarettes is frequently associated with inflammatory reactions which may have bearing on general health. The finds have been confirmed upon a much larger sample of smokers and non-smokers.

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