

I. Introduction

Over the past few years there has been no paucity in descriptive studies of the psychological functioning of older individuals as well as a variety of both longitudinal and cross-sectional studies covering substantial portions of the adult life span. While most of these studies can and have been attacked from a methodological viewpoint (see Schaie, 1959; 1965) they do provide useful descriptive data on the state of functioning organisms at a given point in time. As a consequence, much interest has been expressed in the equivalence of sample characteristics for the different age groups included in cross-sectional studies. Particular concern is occasioned by the knowledge that older samples are frequently not representative of their population cohorts because they were obtained from institutional settings or other specialized sources. Moreover it is argued that the description of older individuals on psychological measures suffers because such subjects have lower motivation, less familiarity with and unfavorable attitudes towards psychological tests. Disabilities of older subjects with respect to speeded measures also are presumed to make evidence on age differences difficult or impossible to interpret.

These problems plague not only the researcher interested in developmental changes with advanced age but are also of concern to the practicing clinician. They make it difficult to assess the degree of pathology in an older individual since normative data on a representative population might yield no more than measures of typical pathology. A more meaningful point of reference might therefore be sought by asking the question as to the limits of optimal functioning for a population of specified age.

It might well be argued that it is much more difficult to identify individuals who are well-functioning than those who are burdened with specific dysfunctions. Nevertheless, criteria can be developed which will permit ready identification of a superior group of normal adults which would be suitable for a study of the upper limits of optimal behavior in our older population. Since we are interested in a highly specialized population it would be foolish to assume that such individuals would be representative in any sense. It is of interest therefore to describe in detail and clearly understand the social environment and the physical status of individuals whom we consider to be a criterion group for the upper limits of the population.

It has been our good fortune to have available an unusual group of subjects which meets the above strictures and on whom comprehensive data are available. The study here reported has an interesting natural history. It originated when the senior author served as executive secretary to a multi-disciplinary faculty group at the University of Washington which was interested in problems of aging. This group was approached by a group of retired professors who felt it desirable to demonstrate by intensive studies that their members still retained a high level of functioning. Consequently a comprehensive survey of

psychological, social and physical functioning was designed which would permit demonstration of optimal behavior by a group of old people who perceived themselves as still most capable but whose performance was being questioned by society.

While we shall focus the present report upon the data relevant to cognitive and personality variables we shall consider in some detail relevant physical and social background variables and consider their inter-relation with psychological functioning. This paper, however, will not enter into the methodological questions of measurement or the theoretical questions on the nature and meaning of psychological decrement with age. Instead we will address ourselves to a description of optimal limits of functioning under optimal conditions of assessment.

II. Method

1. Subjects.

All of our subjects were volunteers obtained from the membership of a retired university faculty group or from among retired academic or professional workers who had responded to appeals in newspapers published in the city in which the research was conducted. The public appeal indicated our interest in studying outstanding old persons over the age of seventy who because of their physical and mental fitness would be able to demonstrate that productive and meaningful living was possible in advanced age. The minimum requirements for initial acceptance for the study were that the prospective subject was seventy years or older, had a minimum education of a bachelor's degree, had at some time during his life been employed at the professional level, did not reside in an institution for the aged or infirm, and was in good enough physical shape to visit the project office without any help or assistance by any third party.

Before final acceptance for the project, each subject was further interviewed intensively about his motives and expectations in regard to the proposed study. It was explained that about eight hours spread over several days would be required for the physical examinations, psychological tests and interviews. At this point, every subject was given an opportunity to withdraw from the study if he wished and was rejected in those instances where the screening interviewer concluded that participation would present any physical or psychological problems. All subjects were informed that feed-back would generally be limited to reports on group performance and that they ought not to participate if they expected their participation to result in health or counseling services. These stringent restrictions in the selection of subjects would lead to the conclusion that the participating subjects were as highly motivated a group as can be obtained for the population being studied.

The final group of subjects consisted of 25 male and 25 females ranging in age from 70 to 88 years with a mean age of 76.5 years. Age means and standard deviations were approximately equal for male and female sub-groups. Clinical and laboratory examinations (some details of which will be reported later) indicated that all members of the group were in fair to superior physical condition for their age. Moreover, no significant psychiatric complaints or symptoms were noted by the examining physicians.

2. Procedure.

Four two-hour blocks of examinations were given. These consisted of a physical examination block, a social history block, and two psychological testing blocks. The four blocks were randomized and procedures within each block were also randomized to avoid systematic fatigue or other order effects. The clinical medical examination was conducted by a licensed physician and all lab tests and audiometry were conducted by qualified technicians. A trained social worker collected structured interview data, and the psychological testing was conducted by master's level clinical psychology graduate students.

The medical examination was begun by administering the Cornell Medical Index. A physical examination included assessment of the cardio-vascular, respiratory and nervous system. Superficial examination of the abdomen, skin, E E N T and skeletal areas was also made. Laboratory studies included a chest x-ray, audiometric examination, urinalysis and blood counts.

Social history and background data included structured interviews covering the material in the "Your Activities and Attitudes" (Burgess, Cavan & Havighurst, 1948) survey, a housing survey (Cohen, 1954) and a recreational fact finding inventory (Kunde, 1954).

The psychological test battery included the Thurstone Primary Mental Abilities Test, Intermediate Form (Thurstone & Thurstone, 1947), the Wechsler Memory Test (Wechsler, 1945), and the Symbol-Gestalt Test (Stein, 1953) as measures of intellectual functions. The Edwards Personality Preference Schedule (Edwards, 1954) and the Test of Behavioral Rigidity (Schale, 1955; 1960) were used to assess personality dimensions thought to be of relevant interest. Although some of these tests are group procedures, all were administered individually to assure that no spurious low performance was reported as a function of improperly understood instructions or any of the other hazards of group testing.

The purpose of our batteries was not only to measure the performance of a superior group of old people on psychological variables, but to demonstrate that this group had the social and physical characteristics which would permit us to conclude reasonably that we were indeed measuring the optimal limits of psychological functioning in old age. In the following sections we shall therefore first describe the qualifying characteristics of our sample. Next we shall describe the comparisons of our sample on the psychological variables in relation to the performance of comparable young adults at early maturity. In all these instances we shall pay due attention to the range of behavior as well as to group characteristics.

III. Results

1. Physical Characteristics.

a. Self-Description of Physical Health. As the first step of the medical examination, all subjects completed the Cornell Medical Index. Means and Standard Deviations of number of complaints for each area questioned are given in Table 1. Areas covered include, vision, hearing, respiratory system, cardiovascular system, musculoskeletal system, skin, nervous system, and genito-urinary system. In most instances the number of complaints is quite low even when compared with normative populations in their prime. Some complaints are not even related to advanced age, but are typical of adults in general, such as the almost universally endorsed item indicating that the subject requires eyeglasses. It will be noted also that the range of complaints is not excessive and that for every region of inquiry there are at least some subjects who feel free of complaint.

The above data suggest that our subjects either experienced very little physical discomfort or, as may be more plausible, were unwilling under the conditions of our inquiry to admit a large number of physical complaints. Indeed, it might be that the complaints endorsed, particularly since most of them came from relatively few subjects, may be more related to psychological problems than to physical difficulties. If the latter is true, one would then expect little agreement between physical complaints and objectively determined disease processes. This is indeed what was found when actual physical examinations were conducted.

b. The Physical Examination. Every subject received a complete physical following the format of the State of Washington disability examination. The examining physician was then asked to make a rating of positive, questionable or negative for each of ten diagnostic areas according to a set of criteria given in Table 2. The written record of findings was then independently re-evaluated by a second physician who also made ratings for the categories requiring subjective judgment. A third judge arbitrated the few instances of disagreement.

The results of the physical examination are reported in Table 3. It is of interest that most of the identified physical problems involve the peripheral sense organs, the cardiovascular system and the finding of obesity. Nevertheless, there were three members of the group whose eyesight was normal and two who had less than 10 db. hearing loss. Additionally three individuals had only marginal visual loss and eight had marginal auditory loss. A more detailed analysis of auditory loss furthermore showed significantly more severe loss at higher than lower frequencies with more severe loss at the higher frequencies for the male subjects (also see Schaie, Baltes & Strother, 1964).

Less than ten per cent of our subjects showed positive significant findings in the respiratory, musculoskeletal, genito-urinary and nervous systems and only two questionable findings occurred for fatigability as measured by Hemoglobin and Hematocrit analyses.

The overall analysis showed that at least one significant physical symptom could be found for every subject. If a weight of two is assigned to a positive finding and a one to a questionable finding, one can then obtain a crude overall index of physical problems. This index ranged from 3 to 12 out of a possible 20 points, with a mean index of 8.1 for the males and of 6.8 for our female subjects.

There is almost no relationship between the reported physical symptoms and findings for corresponding diagnostic areas in the actual examination. The one exception is the "honest" report of a need for wearing glasses. Biserial correlations between the presence of positive symptoms and number of CMI items endorsed ranged from .04 to .15, all being nonsignificant deviations from chance at or beyond the 5% level of confidence.

The physical examination thus showed our sample to be in generally good physical condition with some sense organ impairment and cardiovascular defects being common. Subjectively, moreover, the subjects saw themselves as being in good health with relatively few complaints.

2. Social and Environmental Characteristics.

a. Demographic Characteristics. Most of the information relating to the environmental and demographic was obtained from the Burgess et. al. inventory supplemented by a housing schedule prepared by Cohen (1954). Tables 4 through 7 give the proportions within the sample for different types of family status, economic situation, sources of economic support and employment status. Most of the men were married and living with their wives, while the preponderant categories for women were single and widowed. Almost one half of the men were still employed at least part time, while only one fifth of the women were still gainfully employed. Consequently a substantial minority of the males still received economic support from present earnings, even though for both men and women pensions, income from investments and savings accounted for the primary source of economic support. Only two of the subjects were supported by their children. When queried about their economic situation all subjects indicated that they had at least enough to get along. Half of the men and four fifths of the women rated themselves as comfortably situated and one fifth of the men described themselves as well-to-do.

Particular attention was given to the housing arrangements of our respondents in recognition of the fact that this may well be an overriding determiner in facilitating or interfering continuing optimal interaction with and effective participation in the community. Table 8 gives the residential location of our sample by sex and marital status. Most of our subjects lived in homes of their own in the residential area of their city, but about one fifth were apartment dwellers. Our average subject occupied 5 1/2 rooms and had lived in the same accommodations for an average of 15.5 years (range 1 to 44 years).

When queried about the subject's satisfaction with their living arrangements, it was found that 66% were very well satisfied, and another 24% were fairly well satisfied. Subjects were also asked to indicate sources of dissatisfaction with their housing arrangements. The modal complaint seemed to be that the house was now too large, although a few complaints involved inconvenience due to location or physical arrangement which might interfere with optimal maintenance of environmental contacts. Since some degree of dissatisfaction seemed present it is of interest to note the preferred as contrasted to the actual living arrangements of our subjects. Of our 50 subjects, only three indicated a desire to live in a residence for old people and one would prefer to live with the children. The remaining 92% insisted on the desirability of independent living arrangements.

b. Interaction with the Environment. Theoretical positions concerned with the disengagement (Cumming & Henry, 1961) or the imposition of constricting restraints limiting the interaction of the aging organism (Schaie, 1962) make it desirable to describe the reported activities by our subjects which reflect environmental interaction. Tables 9 to 14 bear upon this matter. Contacts with friends apparently have decreased for a plurality of our respondents, but there is a substantial minority who report increased contacts. Almost all of our subjects maintain some contact with young people and 90% of our sample belong to at least one club or organization. Indeed more than half the sample reports membership in four or more such units. Rather active participation is indicated also by the finding that 42% of the subjects attend a meeting once a week or oftener and another 30% attend at least a meeting a month. Comparative participation with advancing age seems to be sex-linked. That is, we find almost as many women reporting increased participation as decreasing participation. On the other hand, two thirds of the men reported lessened participation while only 8% reported an increase. A final index of contact is that of church membership and attendance. Here 70% of the sample (about half the men and almost all the women) indicated church membership. Only half the sample, however, attended church as frequently as once a week.

c. Use of Leisure Time. One of the criteria for successful adjustment after retirement would seem to be the effective use of leisure time and participation into the individual meaningful non-work related activities. A special recreational fact-finding inventory (Kunde, 1954) was therefore developed which surveys such questions as the amount of time spent on various classes of leisure activities, the specific activities engaged in, the relative desirability of various kinds of recreational activities and the reasons which seem to interfere with effective use of leisure time activities.

It soon became clear that the concept of leisure time was rather meaningless for our subjects. Indeed any such use had to be carefully differentiated from the notion of total use of time which included components which during an earlier phase in the individual's life would be considered either work or leisure related. The results of our inquiries revealed that an average of 67 hours each week was spent in some purposefully aimed activity. Of this time, individual members of

the group spent from 3 to 36 hours a week on physical activities (including chores) with an average of 18.9 hours. An average of 8 1/2 hours with a range from 0 to 41 hours was spent on creative activities (whether of a professional or hobbyist import). 6.2 hours (with a range from 0 to 20 hours) were spent on social activities; 18.3 hours (range: 2 - 50 hours) on mental and cultural activities having some educational value; 2.8 hours (range: 0 - 12) on informal games; 4 hours (range: 0 - 26) on audience and spectator sports; 3.5 hours (range: 0 - 15) on devotional activities; and 3.2 hours (range: 0 - 20) on services of civic and social usefulness. Table 15 gives the average proportion of leisure time by sex of respondents given to these use of time classifications.

Participation in specific activities (a total of 43 such different activities were listed) was also tabulated. Table 16 shows the number of respondents indicating participation listed in rank order. It will be noted that while the time spent in physical activities is high, this does not represent excessive participation in organized physical activity. Much preference is shown rather for activities of a more passive kind even though incidence of participation in activities involving social interaction is high.

Among the reasons given for lack of recreational activity, men most frequently cited the lack of organized programs or facilities for older people while women indicated physical condition as the principle source of interference. For this group, inability to finance recreation or lack of friends seems of rather low relevance.

When asked to set goals for organized groups of older people, our male subjects seemed to place highest priority on service opportunities while the women rated social relationships most highly. The rank order for other activities is given in Table 17.

3. Cognitive Variables.

a. Measures of Intellectual Ability. The mental ability level of our subjects was measured with the intermediate form of the Thurstone Primary Mental Abilities Test. This instrument, although originally constructed for group testing of adolescents, has been shown previously to have adequate range of difficulty and reliability for older subjects (Schaie, Rosenthal & Perlman, 1953). Table 18 gives the PMA raw score means and standard deviations separately by sex and for the total group while Table 19 provides comparison with young adults by converting the raw score means to T-scores using Thurstone's conversion table for his 17-year-old group.

Although our subjects function well below the level they would have been expected to attain at their prime, it is of interest to note that they are still at or above the mean for the average 17-year-old on the verbal and numerical abilities. On Space and Reasoning, however, significant decrement is apparent with mean values being approximately one standard deviation below the reference group. An overall estimate of mental ability comparable to the efficiency quotient estimate obtained

from standard clinical instruments would place the mean of our group at approximately the population average for the adolescent group. The maintenance of verbal skills in particular is further emphasized by examining the range of individual scores for those of our subjects who are in the eighties. Of sixteen such individuals, ten are still above the young mean for Verbal Meaning; nine subjects exceed the comparison mean on Number and six equal or exceed the comparison mean on Word Fluency.

b. Memory. The Wechsler Memory Scale was used to determine the extent of memory deficit which might interfere with our group's effective functioning. The overall measure indicates only mild deficit with a Memory Quotient of 93 as compared with a group of young adults. Of more interest, however, are specific components of memory functions. Table 20, therefore gives the means for our group, for a group of young adults and the total number of attainable responses. Means here are for the total group since there were no significant sex differences. Although most of the differences between our sample and the comparison group are statistically significant, the more important issue is the absolute magnitude of the discrepancy. As expected, there was a substantial decrement in our group's ability to reproduce visual figures. But efficiency of paired associate learning was only slightly lowered while retention of number series and meaningful material was still close to the young average. Orientation in time and space and mental control as measured by counting and by listing the alphabet were virtually unimpaired.

c. Visual Motor Functioning. Difficulties which older people experience on tasks involving visual discrimination, and response requirements involving visual mediation are at times attributed to progressive cortical decrement particularly in the visual motor area. Stein's Symbol Gestalt test (1961) was used for this purpose. Stein's test is essentially a modification of the Wechsler Digit Symbol subtest. His symbols have poor gestalt and induce the subject to produce closure phenomena. Table 21 gives mean scores for our group and for Stein's adult (Mean age 40 years) organic and control groups.

For two of the Symbol-Gestalt measures our group is midway between the normals and organics. It appears then that there is lowering both in the speed of reproducing correct symbols as well as in the rate of improvement comparing performance in the first and third minute of the test. When the number of qualitative errors are considered, our subjects fall quite close to Stein's organic group. Of course, the findings of visual impairment shown in the medical examination may account for these results, nevertheless it seems that even in as well-functioning a group as ours, cortical changes as measured by visuo-motor functioning are likely to have occurred.

d. Behavioral Rigidity. Difficulty in optimal functioning is often related to response style as well as intellectual ability. The construct of rigidity has been interchangeably applied in the personality and cognitive spheres. Schaie (1955; 1960) has attempted to provide

operational measures of both aspects as well as to provide a measure of psycho-motor speed which is closely allied with rigid response tendency. Table 22 gives T-score means and standard deviations as compared with general population norms (Ages 21 to 70). The results here show decrement in flexibility or response speed from middle adulthood by from one half to one standard deviation. Again at least several of our subjects are still less rigid than a comparison population in its prime. It is noteworthy also that our group is less rigid in terms of "personality-perceptual" rigidity than when it comes to motor-cognitive and response speed attributes where the peripheral sense organ decrement may be particularly important.

Most decrement as compared with young groups was found on the variables of Psychomotor speed, memory and Motor-cognitive rigidity. An attempt was therefore made to adjust scores on the Primary Mental Ability for the effect of the above three variables. Adjusted means were computed and showed that when these possibly peripherally determined factors were allowed for, group means were now at about one standard deviation above the young subjects for Verbal Meaning, Number and Word Fluency. The adjusted reasoning score mean is at the mean of the young population but the Space score remains approximately one sigma below the mean of the young reference group. Further details on the method and results of the PMA score adjustment have been reported elsewhere (Strother, Schaie & Horst, 1957).

4. Personality Characteristics.

a. Need Structure. Edwards' Personality Preference Schedule (EPPS), a forced choice test designed to measure the relative strength of fifteen needs derived from Murray's list of manifest needs was used to compare our group with the status of young adults. For this special analysis, a comparison group of 25 male and 25 female graduate students with a mean age of 25 years was obtained to achieve close matching for academic background and vocational interest.

Table 23 gives means in T-scores according to Edwards' norms for both old and young professional groups. Highly significant differences occurred between the two groups on five of the fifteen needs measured by the EPPS. On three of these (need for deference, for order and for endurance) the older group had higher need scores than the younger. But need for heterosexual activity and for exhibition (or attention) was significantly lower. Also marginally significant were differences indicating lower need for dominance and higher need for abasement on the part of the older group.

Of particular interest are the needs with respect to which the older group is similar to the young graduate students. One of these is the need for achievement, which is as high in the older group as for the graduate students. This finding may of course be a function of the fact that the older group is composed of professional workers whose need for achievement has had a considerable amount of reinforcement. However, our group is no different from the young comparisons also on

need for autonomy or independence and for need of affiliation or friendships. In the needs for nurturance and succorance--the giving and receiving of affection, sympathy and help, older and young are alike. For our older group, at least, need for change or new experience is no less important than to the younger and there is no difference for need introception and need aggression.

Table 24 gives the results of the analysis of variance testing age and sex differences while Table 25 gives raw score means and results of the t-tests for the sex differences within the old group. The most significant such sex differences appear for need heterosexuality where the males greatly exceed the female subjects. But the male subjects are also higher on need achievement and aggression and the female subjects are higher on need nurturance, affiliation and succorance.

One other point of interest with respect to sex differences in the need structure of our group is the fact that on eight of the needs the sex differences are larger for the older group. Terman and Miles' data have usually been interpreted to indicate that sex differences become smaller in older groups. Our data seem to show that this is not consistently the case when needs are involved.

b. Attitudinal Variables. The Burgess, et. al. inventory contains a section yielding information on the respondents attitudes towards self and the environment. Seven scales are included each of which contains seven items. Each scale was scored such that a score of four reflects average satisfaction or acceptance, while lower scores would indicate dissatisfaction and higher scores above average satisfaction. Table 26 gives means and standard deviations on these scales. The results suggest that our subjects are reasonably satisfied with their current state of health, their friendship relationships, the satisfaction they derive from their family, their feelings of economic security and in experiencing continued usefulness. Only average satisfaction is expressed with respect to their ability to carry on useful work, feelings of happiness and acceptance of religious experience. Significant sex differences occurred for satisfaction derived from the family which was higher for the male than female subjects and the acceptance of religious experience which was much lower for the males than the females.

As a final indication of our respondents' outlook on their experience, we provide in Tables 27 and 28 self-ratings of their appreciation of their life in terms of happiness and accomplishment. Only one member of the group described her life as having been unhappy and 90% of the group were at least reasonably satisfied with their lifetime accomplishment. No significant sex differences were found in this global self-description.

IV. Concluding Remarks

The results which we have reported on the assessment of a carefully selected and highly motivated sample of individuals of advanced age lends strong support to the proposition that psychological age decrements reported in the literature cannot simply be criticized or refuted by referring to low motivation or artifacts of sampling. Our group reported generally satisfying conditions of their environment and social conditions and all our subjects had attained a high level of education and related professional use of their abilities throughout their adult life. Nevertheless, the present state of psychological functioning of this highly selected group is at best at or slightly below the population average for young adults. The results of our physical and social studies suggest that this obvious decrement from peak performance is most likely related to physiological decrement particularly of a sensory nature but probably also related to general slowing down of response speed.

Psychological decrement is most apparent in functions which require visual-motor response or where speed is of importance. But some decrement is also clearly apparent in most other cognitive processes even though the range of individual differences is quite large. While there are changes in cognitive processes these are not necessarily accompanied by corresponding reduction in needs or acceptance of reduced interaction with the environment. It is perhaps the relation of continuing needs and aspirations of the older individual to the limiting conditions of his physiological apparatus and the resulting environmental constraints which require most urgent attention and further study.

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Table 1. Self-Description of Physical Health on the Cornell Medical Index

Complaint Area	Number of items	Mean Number Complaints			Standard Deviation of Complaints			Range			Number Ss with no complaint		
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Vision	6	1.72	1.80	1.76	.66	2.33	0.84	1 - 2	0 - 3	0 - 5	0	2	2
Hearing	3	.60	.40	0.51	.68	.53	0.68	0 - 2	0 - 2	0 - 2	13	17	30
Respiratory	18	1.64	1.48	1.56	2.26	1.57	1.65	0 - 7	0 - 5	0 - 7	10	11	21
Cardiovascular	13	1.72	2.08	1.90	1.18	2.46	2.07	0 - 5	0 - 8	0 - 8	5	10	15
Musculoskeletal	8	.44	1.04	0.74	.75	1.56	1.27	0 - 2	0 - 7	0 - 7	18	13	31
Skin	7	.44	.80	0.62	.69	1.05	0.91	0 - 2	0 - 3	0 - 3	17	14	31
Nervous System	27	1.20	1.44	1.32	1.47	1.89	1.56	0 - 6	0 - 5	0 - 6	11	8	19
Genito-urinary	11	2.60	3.00	2.80	1.54	2.65	2.17	0 - 7	0 - 8	0 - 8	1	6	5
Fatigability	8	.48	1.24	.86	1.09	1.72	1.47	0 - 5	0 - 6	0 - 6	19	14	33
Obesity	1	.20	0.24	.22	.40	.40	.41	0 - 1	0 - 1	0 - 1	20	19	39

Table 2. Criteria for the Evaluation of Physical Examination Data*

<u>Diagnostic Area</u>	<u>Items of Information used for diagnosis</u>	<u>Positive</u>	<u>Criteria Questionable</u>	<u>Negative</u>
Vision	Uncorrected distance vision (Snellen Chart)	20/50 or worse	20/40	20/30 or better
Hearing	Maico audiogram (range from 256-4096) max. loss	35 db. or more	15 - 30 db.	10 db. or less
Respiratory System	Chest X-ray Clin. Examination		*	
Cardiovascular System	Clin. Examination Hear, arteries, extremities, edema liver margin	*	*	
	Blood Pressure	160/95 +	150/90	145/85 or lower
	Pulse rate	90 +	80 - 89	65 - 79
Musculoskeletal System	Clin. Examination Skeletal mineralization (X-ray)		*	
Skin	Clin. Examination		*	
Nervous System	Clin. Impression			
Genitourinary System	Urinalysis: Pus Cells (males only)	16 +	10 - 15	9 or less
	Albumin	2 plus	1 plus	trace
Fatigability	Hemoglobin (male) (female)	10.9 or less 9.9 or less	11 - 11.9 10 - 10.9	12 gm or more 11 gm or more
	Hematocrit (male) (female)	39 or less 36 or less	40 - 44 37 - 39	45 - 50 40 - 45
Obesity	Abdominal examination weight	6 lbs. + normal range	* up to 5 lbs. within normal + normal range	range

* Where no criteria are given, clinical judgment was used in evaluating the presence or absence of pathological symptoms or conditions.

Table 3. Results of Physical Examination

	Males			Females			All Subjects		
	<u>Pos.</u>	<u>Quest.</u>	<u>Neg.</u>	<u>Pos.</u>	<u>Quest.</u>	<u>Neg.</u>	<u>Pos.</u>	<u>Quest.</u>	<u>Neg.</u>
Vision	24	0	1	20	3	2	44	3	3
Hearing	22	3	0	17	5	2	39	8	2
Respiratory System	3	5	17	1	4	20	4	9	37
Cardiovascular System	10	10	5	16	4	5	26	14	10
Musculoskeletal System	3	7	15	1	4	20	4	11	35
Skin	4	8	13	3	3	19	7	11	32
Nervous System	4	1	20	1	0	24	5	1	44
Genito-urinary System	3	4	18	0	1	24	3	5	42
Fatigability	0	1	24	0	1	24	0	2	48
Obesity	7	3	14	10	3	12	17	6	26

Table 4. Family Status

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Single	4%	40%	22%
Married	76%	12%	44%
Married but separated	8%	4%	6%
Widowed	12%	44%	28%

Table 5. Economic Situation

	<u>Male</u>	<u>Female</u>	<u>Total</u>
can't make ends meet	0%	0%	0%
enough to get along	28%	20%	24%
comfortable	52%	80%	66%
well-to-do	20%	0%	10%
wealthy	0%	0%	0%

Table 6. Sources of Economic Support

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Present Earnings	40%	16%	28%
Social Security	12%	12%	12%
Pension from former occupation	68%	60%	64%
Aid from children	4%	4%	4%
Insurance or Annuities	4%	36%	20%
Investments and Savings	60%	64%	62%

Table 7. Employment Status

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Working full-time	4%	4%	4%
Working part-time	40%	16%	28%
Not working	56%	80%	68%

Table 8. Residential Location

	Male					Female					GT
	S	M	M-S	W	T	S	M	M-S	W	T	
Business District	0	0	0	0	0	0	0	0	2	2	2
Rooming House Dist.	0	0	0	0	0	0	1	0	0	1	1
Apartment House Dist.	0	3	1	0	4	2	1	1	2	6	10
Small Homes District (less than 6 rooms)	0	5	1	2	8	4	1	0	4	9	17
Large Homes District (more than 6 rooms)	1	11	0	1	13	4	0	0	3	7	20
Total	1	19	2	3	25	10	3	1	11	25	50

S - Single; M - Married; M-S - Married, but separated; W - Widowed; T - Total
 GT - Grand Total for both sexes

Table 9. Contact with Friends

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Less than at 55	11 - 44%	10 - 40%	21 - 42%
About same	9 - 36%	6 - 24%	15 - 30%
More than at 55	5 - 20%	9 - 36%	14 - 28%

Table 10. Contact with Young People

	<u>Male</u>	<u>Female</u>	<u>Total</u>
None	1 - 4%	2 - 8%	3 - 6%
A few times a year	10 - 40%	6 - 24%	16 - 32%
Once or twice a month	5 - 20%	13 - 52%	18 - 36%
About once a week	5 - 20%	3 - 12%	8 - 16%
Every day	4 - 16%	1 - 4%	5 - 10%

Table 11. Membership in Clubs and Organizations

	<u>Male</u>	<u>Female</u>	<u>Total</u>
None	3 - 12%	2 - 8%	5 - 10%
One organization	6 - 24%	3 - 12%	9 - 18%
Two organizations	3 - 12%	2 - 8%	5 - 10%
Three organizations	1 - 4%	3 - 12%	4 - 8%
Four or more	12 - 48%	15 - 60%	27 - 54%

Table 12. Attendance at Club Meetings

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Never	6 - 24%	3 - 12%	9 - 18%
Less than once a month	3 - 12%	2 - 8%	5 - 10%
Once or twice a month	9 - 36%	6 - 24%	15 - 30%
Once a week	5 - 20%	8 - 32%	13 - 26%
Twice a week or more	2 - 8%	6 - 24%	8 - 16%

Table 13. Time Spent on Club Activities as Compared with Age 55

	<u>Male</u>	<u>Female</u>	<u>Total</u>
More time	2 - 8%	9 - 36%	11 - 22%
About same	6 - 24%	8 - 32%	14 - 28%
Less Time	17 - 68%	8 - 32%	25 - 50%

Table 14. Frequency of Church Attendance

	Male			Female			Total		
	<u>Mb</u>	<u>NMb</u>	<u>T</u>	<u>Mb</u>	<u>NMb</u>	<u>T</u>	<u>Mb</u>	<u>NMb</u>	<u>T</u>
Never	3	9	12	3	2	5	6	11	17
Less than once a month	1	1	2	1	0	1	2	1	3
Once or twice a month	0	1	1	0	1	1	0	2	2
Once a week	8	1	9	18	0	18	26	1	27
Twice a week or more	1	0	1	0	0	0	1	0	1
Total	13	12	25	22	3	25	35	15	50

Mb - Church member; NMb - non-member; T - Total

Note: All respondents were either Protestants or had no religious preference.

Table 15. Average Proportion of Leisure Time Spent on Various Types of Activity

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Physical activities	28.4	31.5	30.1
Creative activities	13.0	12.5	12.7
Social activities	8.0	10.3	9.2
Activities having educational value	28.7	26.9	27.7
Audience and Spectator activities	8.3	4.0	6.0
Informal games	4.2	4.2	4.2
Civic and Social services	5.2	4.4	4.8
Devotionals	4.2	6.2	5.3

Table 16. Participation in Specific Activities in Order of Frequency
(Number participating)

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Reading	25	25	50
Radio listening	24	23	47
Chores	21	25	46
Visiting	21	25	46
Attending lectures	20	22	42
Clubs	19	22	41
Dinners	18	23	41
Meetings	16	19	35
Concerts	16	18	34
Church services	14	20	34
Card games	17	16	33
Walks	15	16	31
Parties	14	15	29
Scripture reading	11	18	29
Gardening	15	12	27
Theatre	15	12	27
Movies	15	12	27
Sport events	16	9	25
Discussions	11	14	25
Community work	12	11	23
Writing	12	11	23
Church work	9	14	23
Outings	12	7	19
Forums	7	11	18
Crafts	8	9	17
Television	11	3	14
Checkers	8	4	12
Lodge meetings	6	4	10
Billiards	7	0	7
Music	2	4	6
Chess	5	1	6
Prayers	4	2	6
Golf	3	0	3
Horseback riding	3	0	3
Fishing	2	1	3
Arts	2	1	3
Hymn singing	2	1	3
Croquet	1	1	2
Hunting	2	0	2
Dancing	1	1	2
Dramatics	0	1	1
Bowling	0	0	0

Table 17. Rank order of purposes which organization for older persons should serve in the opinion of the respondents.

	<u>Male</u>	<u>Female</u>	<u>Total</u>
Recreational sports	5	7	6.5
Service opportunity	1	2	1
Informal education	6	4	5
Religious emphasis	7	5	6.5
Health improvement	2	6	4
Fellowship	3	3	3
Social relationships	4	1	2

Table 18. Raw Score Means and Standard Deviations on the Primary Mental Abilities Test

Variable	Males		Females		Total Group	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Verbal Meaning	30.68	6.20	35.60	12.22	33.14	9.91
Space	15.20	8.06	10.80	7.64	13.00	8.09
Reasoning	8.72	4.89	11.36	5.47	10.04	5.30
Number	26.52	10.67	23.28	10.40	24.90	10.56
Word Fluency	43.76	11.51	47.80	13.51	45.78	12.58

Table 19. Means Converted into T-Scores as Compared with a 17-year-old Normative Population

<u>Variable</u>	<u>Males</u>	<u>Females</u>	<u>Total Group</u>
Verbal Meaning	46	50	48
Space	40	38	39
Reasoning	42	44	43
Number	55	51	53
Word Fluency	49	53	51

Table 20. Mean Performance on the Sub-tests of the Wechsler Memory Scale

<u>Subtest</u>	<u>Total Possible</u>	<u>Norm Group 20-29 Year Olds</u>	<u>Superior Old Group</u>
Current Information	6.00	5.96	5.72
Orientation	5.00	5.00	4.86
Mental Control	9.00	7.50	7.46
Logical Memory	23.00	9.28	8.52
Digit Span Forward	8.00	7.04	6.86
Digit Span Backward	7.00	5.26	5.04
Visual Reproduction	14.00	11.00	7.90
Associative Learning	21.00	15.72	13.64

Table 21. Mean Scores on Stein's Symbol Gestalt Test

<u>Scoring Variable</u>	<u>Superior Old Group</u>	<u>Organics (N=60)</u>	<u>Controls (N=120)</u>
Correct symbols in 3 minutes	42.72	29.92	50.08
Number of qualitative errors	1.68	1.62	0.63
Improvement	1.08	.45	2.16

Table 22. Means and Standard Deviations for Factor Scores on the
Test of Behavioral Rigidity (General Population Norms)

	Male		Female		Total	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Psycho-motor Speed	39.16	5.51	43.64	7.50	41.40	6.90
Personality- Perceptual	44.84	6.35	43.64	5.90	44.24	6.10
Motor-Cognitive Rigidity	44.08	6.25	42.76	7.83	43.42	7.04
Composite	42.60	4.25	43.36	5.39	42.98	4.82

Table 23. Mean T-Scores on the Edwards Personal Preference Schedule
(Transformed by Edwards' College Norms)

	Superior Old Group		Graduate Students	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
Achievement	53	51	56	54
Deference	64	64	46	46
Order	63	65	48	45
Exhibition	43	41	52	47
Autonomy	51	56	55	63
Affiliation	49	51	51	49
Intracception	50	48	49	50
Succorance	45	48	48	46
Dominance	44	43	48	47
Abasement	51	50	46	45
Nurturance	49	51	48	48
Change	51	45	52	52
Endurance	62	64	51	51
Heterosexuality	31	28	50	58
Aggression	49	48	50	49

Table 24. Analysis of Variance of Sex and Age Differences on
the Edwards Personal Preference Schedule

Variable	Age		Sex		Interaction		Error
	s ²	F	s ²	F	s ²	F	
Achievement	46.24	2.25	289.00	14.08**	0.36		20.53
Deference	1142.44	111.89**	38.44	3.76	0.64		10.21
Order	1474.56	96.95**	1.44		40.96	2.69	15.21
Exhibition	198.81	15.98**	34.81	2.80	1.21		12.44
Autonomy	15.21		12.25		13.69		22.70
Affiliation	0.36		207.36	11.71**	12.96		17.71
Introception	3.61		100.41	4.30*	13.69		23.33
Succorance	51.84	3.09	169.00	10.09**	0.64		16.75
Dominance	98.01	4.55*	320.41	14.86**	0.01		21.56
Abasement	116.64	4.60*	112.36	4.43*	1.44		25.34
Nurturance	22.09	1.09	246.49	12.20**	7.29		20.20
Change	77.44	3.60	5.76		27.04	1.26	21.51
Endurance	1108.89	61.40**	2.89		1.69		18.06
Sex	4316.49	26.76**	102.01		161.29	7.07**	22.81
Aggression	4.84		237.16	14.79**	1.00		16.04
Consistency	0.09		6.25	1.97	0.09		3.17

* Significant at or beyond 5% level of confidence.

** Significant at or beyond 1% level of confidence.

Table 25. Means and Standard Deviations on the
Edwards Personal Preference Schedule

	Total		Male		Female		$t_{m/f}$
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	
Achievement	15.04	4.20	16.68	3.95	13.40	3.85	2.97**
Deference	17.06	3.39	16.52	3.33	17.60	3.43	1.13
Order	16.48	3.69	15.96	3.79	17.00	3.58	0.97
Exhibition	11.40	3.70	11.88	4.21	10.92	3.14	0.92
Autonomy	15.06	4.74	15.04	5.59	15.08	3.83	0.03
Affiliation	16.28	4.65	14.48	4.68	18.08	3.93	2.64*
Introception	16.18	4.58	15.84	4.62	16.52	4.61	0.44
Succorance	10.02	4.47	8.64	3.97	11.40	4.60	2.27*
Dominance	12.90	5.04	14.68	5.20	11.12	4.28	2.65*
Abasement	13.62	5.32	12.44	5.27	14.80	5.20	1.59
Nurturance	15.28	4.62	13.44	4.95	17.12	3.47	3.04**
Change	15.48	4.57	15.76	4.54	15.20	4.68	0.43
Endurance	19.58	3.65	19.28	3.10	19.88	4.17	0.58
Sex	4.56	4.67	6.84	5.16	2.67	7.13	3.92**
Aggression	11.04	4.09	12.48	4.10	9.60	3.59	2.64*
Consistency	11.96	1.47	12.24	1.59	11.68	1.31	1.36

* Significant at or beyond 5% level of confidence.

** Significant at or beyond 1% level of confidence.

Table 26. Positive Attitudes towards Self and Environment
Expressed on Burgess Attitude Scale

	Total		Male		Female		t _{m/f}
	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Health	4.38	1.23	4.52	1.16	4.24	1.31	0.80
Friends	4.98	1.02	4.92	1.16	5.04	0.89	0.41
Work	3.96	1.18	4.12	1.17	3.80	1.19	0.96
Economic Security	4.52	0.95	4.52	1.12	4.52	0.76	0.00
Religion	4.16	1.93	3.44	2.22	4.88	1.27	2.82**
Usefulness	4.46	0.95	4.44	0.96	4.48	0.96	0.15
Happiness	4.00	1.07	4.24	1.02	3.76	1.10	1.60
Family	4.72	0.76	5.00	0.76	4.44	0.65	2.80**

** Significant at or beyond 1% level of confidence.

Table 27. Self-rating of Respondent's Life in Retrospect

	Male		Female		Total	
Very happy	10	40%	10	40%	20	40%
Moderately happy	11	44%	8	32%	19	38%
Average	4	16%	6	24%	10	20%
Unhappy	0	0%	1	4%	1	2%

Table 28. Self-rating of Respondent's Accomplishment in Life

	Male		Female		Total	
Well satisfied	8	32%	6	24%	14	28%
Reasonably satisfied	14	56%	17	68%	31	62%
Dissatisfied	3	12%	2	8%	5	10%