1978

An Exploratory Investigation of the Relationship Between Personality and Intelligence with Community-Living and Institutionalized Elderly Females

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AN EXPLORATORY INVESTIGATION OF THE RELATIONSHIP BETWEEN PERSONALITY AND INTELLIGENCE WITH COMMUNITY-LIVING AND INSTITUTIONALIZED ELDERLY FEMALES

(TITLE)

BY

Richard D. Stolp

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF

MASTER OF ARTS

IN THE GRADUATE SCHOOL, EASTERN ILLINOIS UNIVERSITY
CHARLESTON, ILLINOIS

1978
YEAR

I HEREBY RECOMMEND THIS THESIS BE ACCEPTED AS FULFILLING
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AN EXPLORATORY INVESTIGATION OF THE RELATIONSHIP BETWEEN PERSONALITY AND INTELLIGENCE WITH COMMUNITY-LIVING AND INSTITUTIONALIZED ELDERLY FEMALES

BY

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B. S. in Psych., Illinois State University, 1975

ABSTRACT OF A THESIS

Submitted in partial fulfillment of the requirements
for the degree of Master of Arts in Psychology at the Graduate School
of Eastern Illinois University

CHARLESTON, ILLINOIS
1978

Abstract

The Hand Test and the Wechsler Adult Intelligence Scale were administered to 25 institutionalized (M_{age} = 80.00) and 25 community-living (M_{age} = 72.92) elderly females to investigate personality differences between the two groups, and to explore the relationship between personality and intelligence in regard to the aged. It was discussed that the results of the present study should be interpreted with caution, since significant age and educational differences were found between the groups that may have contributed to the results. The hypothesis concerning greater personality deterioration in institutionalized subjects than in community-living subjects was given partial support inasmuch as depletion and constriction of personality appeared greater for the institutionalized subjects. It appeared that the institutionalized elderly female, more so than her counterpart, the community-living female, could be seen as an individual whose psychological energy is diminished, who is withdrawing from meaningful interaction with life, whose involvement with other people has weakened, whose deference for the rights of others has diminished and who is likely to show a greater proclivity towards organicity. It was also found that certain aspects of personality correlate significantly with certain aspects of intelligence. It appeared that the elderly female who has a keen and varied interest in, a sensitivity to, and a high degree of interaction with other people, also has a high level of intellectual functioning. On the other hand, it appeared that the elderly female who is desperately attempting to cling to reality and

who is weak in interactions with others and their enviroment has a lower level of intellectual functioning than elderly female who is strong in interpersonal relations. Suggestions for future research in the area were made.

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ACKNOWLEDGEMENTS

I want to sincerely thank my chairperson, Dr. Paul Panek, for his never ending time, patience, and wisdom in the supervision of my thesis. I want to also thank Dr. Randall Best and Dr. James Kantner for serving on my thesis committee. I feel that their excellent comments helped make a good paper, better.

I would also like to express my appreciation and love to my wife Connie. She gave much of her time and energy towards the completion of this paper.

Chapter I

Introduction

Many investigators have been concerned with the behavioral changes, both intellectual and emotional, that are concomitant with the aging process (Ames, Metraux, Rodell, & Walker, 1973). After an extensive review of the literature, both cross-sectional and longitudinal, Botwinick (1977) and Jarvik, Eisdorfer, and Blum (1973) concluded that on the whole there is a decline in intellectual ability as a part of the normal aging process. Botwinick (1977, p. 580) comments that the recent literature indicates that these declines may start later in life than once expected and they may be smaller in magnitude; they may also include fewer functions. The belief of this decline in intelligence was reinforced by the advent of the most widely used test of adult intelligence - the Wechsler Adult Intelligence Scale (WAIS) (Botwinick, 1977).

The WAIS includes a Verbal Scale and a Performance Scale. "Higher Verbal than Performance scores by elderly subjects has been called a 'classic aging pattern', because it has been demonstrated many times" (Botwinick, 1977). Doppelt and Wallace (1955) were among the first to clearly demonstrate this aging pattern when they established norms for the elderly on the WAIS. Eisdorfer, Busse, and Cohen (1959) have reported that this aging pattern holds for men and women, for whites and blacks, for socioeconomic status, and for people in mental hospitals as well as community-living residents.

Horn and Cattell (1967) organized intelligence into categories of "fluid" and "crystallized" - the latter presumably based on learned abilities, and the former based more directly on physiological structure. In their investigation they assessed various intellectual abilities (e.g. figural relations and classifications, induction, associative nonsense memory, etc.) of the elderly. Their results were compatible with the classic aging pattern found on the WAIS. Schaie (1958) gave the Primary Mental Abilities Test to over 500 subjects. This study indicated that after age 50, a systematic decline in intellectual functioning becomes apparent. Gilbert (1973) administered the Babcock Test of Mental Efficiency and found that except for vocabulary ability, there appears to be a general decline in intellectual abilities such as, retention, motor reactions, easy continuous tasks, and initial learning, as a part of the aging process.

When this apparent decline in intelligence occurs (Botwinick, 1977; Jarvik, et al. 1973), many factors that are often overlooked seem to be involved. Kleemeier (1962) found that persons may perform poorly, or show a decline, in intellectual functioning because they are often closer to death than those who are functioning well. Other studies (Schaie, Rosenthal, & Perlman, 1953; Klodin, 1977) have indicated that the slowing of response speeds in later life may contribute to the decline in intellectual functioning. Botwinick and Storandt (1974) reported that loss of memory could possibly contribute to problems in intellectual performance. Birren and Morrison (1961) reported a higher correlation between intelligence tests scores and education than these scores and age. Furry and Baltes (1973) found

that test fatigue for older people could impair their performance on intelligence tests.

Another factor that seems to influence the age-intelligence relationship is personality (Rhudick & Gordon, 1973). In a longitudinal study (Rhudick & Gordon, 1973) the WAIS and several non-projective personaltiy tests (e.g. the Minnesota Multiphasic Personality Inventory and the Leary Interpersonal Checklist) were administered to elderly subjects. The researchers concluded that variation in the intelligence scores of the elderly could mainly be attributed to personality characteristics (e.g. Dominance vs Love polarity as assessed by the Leary Interpersonal Checklist).

Many problems in assessing the age-intelligence relationship have been pointed out (Schaie & Schaie, 1977; Botwinick, 1977). Schaie (1974) called attention to the fact that all presently used intelligence tests used to assess the intellectual competence of the aged were designed for the young. "Thus, intelligence tests designed to estimate criteria relevant to the lives of old people remain to be developed and clinically validated" (Schaie, 1974). Also except for the WAIS, norms for the elderly seem to be lacking in most intelligence tests (Schaie & Schaie, 1977; Matarazzo, 1972).

A problem in the interpretation of intellectual changes of older adults revolves around the experimental designs used (Baltes, 1968; Schaie, 1965). Longitudinal designs are confounded by biased samples (i.e. selective dropout and repeated measures). Cross-sectional designs seem to underemphsize cohort and cultural effects. But even when the shortcomings of both types of designs have been considered,

certain researchers (i.e. Horn & Donaldson, 1976; Botwinick, 1977; Jarvik, et al. 1973) have concluded from their reviews of the literature that the age-intelligence correlation is apparent and that decline in intelligence does occur in later life.

Projective techniques have also been used to assess behavioral and emotional changes that occur with aging. Results of projective tests administered to the elderly convey the general impression that personality tends to deteriorate with normal aging (Ames, et al. 1973). Rorschach responses of the elderly are characterized by restriction of response (Ames, 1960), rigidity of response (Eisdorfer, 1960a, 1960b) and a cautiousness in approach (Klopfer, 1946). Panek, Sterns, and Wagner (1976) and Panek, Wagner, and Avolio (1978) found that Hand Test protocols of elderly females indicated that reality contact begins to recede, and withdrawal from meaningful interaction with other people occurs. They also reported that the elderly's mode of responding becomes stereotyped and rigid; there is also an increase in dependency needs.

Chown (1968) reviewed literature involving the Thematic Apperception Test with older adults and found that as age increases there appears to be a decrease in the intensity and frequency of emotion and a decrease in achievement needs. Draw-A-Person protocols of older adults suggest deteriorating self-concept and body image, lack of integration, bizarreness, lack of proportion, and inadequate motor coordination (Gilbert & Hall, 1962; Lakin, 1956; Lorge, Tuchman, & Dunn, 1954).

On the basis of the above mentioned projective literature it appears that the personality of the elderly tends to deteriorate (e.g. Chown, 1968; Panek, et al. 1976; Ames, et al. 1973). However, many factors may be involved with the apparent personality deterioration in the aged. Lakin (1956) reported that Draw-A-Person responses may reflect cognitive and motor deterioration rather than personality deterioration. Eisdorfer (1963) suggested that performance of the elderly may be more a function of intelligence than age; therefore, studies of personality should control for intellectual level. Eisdorfer (1960a) indicated that the older adult's ability to see and hear may be responsible for the appearance of personality deterioration on the Rorschach.

As with intelligence, problems of interpretation of personality changes in older adults are also found in the types of experimental designs that are used (Baltes, 1968; Schaie, 1965). Eisdorfer (1963) suggested that the interpretation of personality changes with the elderly on Rorschach performance may be confounded by using institutionalized subjects. Many investigators (e.g. Eisdorfer, 1960a; Panek, et al. 1978; Prados & Fried, 1947; Gilbert & Hall, 1962; Panek, et al. 1976) have seperately assessed personality changes of the elderly in either institutionalized or community-living groups, but few investigators (Klopfer, 1946; Ames, et al. 1973) have compared the personality characteristics between the two groups. When studies (Klopfer, 1946; Ames, et al. 1973) have compared the two groups for personality changes, the results have been inconsistent.

Questions arise as to how effective projective techniques (e.g. Rorschach, Draw-A-Person, and Thematic Apperception Test) are in assessing the apparent personality deterioration in the aged. Neugarten (1977) contends that investigators for the most part have used instruments (e.g. Thematic Apperception Test, Draw-A-Person, Sentence Completion) of unknown reliability and validity for the assessment of the elderly individual. She also mentions (p. 1636) "Tasks or tests have been used which are themselves not meaningful to older persons so that the response set becomes an overwhelming difficulty."

The Hant Test (Wagner, 1962) may be able to overcome this "lack of meaning" found in some projective techniques. Since older adults come into contact with "hands" every day, the stimuli on the Hand Test (HT) may be more familiar to the older adult than the stimuli on other projective techniques. Norms have also been established for the HT with the elderly (Panek, et al. 1978). In addition, the HT overcomes other difficulties inherent in some projectives in that the HT requires little in the way of perceptual or motor abilities in order to respond to the test.

On the basis of the above mentioned literature it appears that the older adult shows a deterioration in emotional functioning (e.g. Ames, et al. 1973; Panek, et al. 1978) and shows a decline in intellectual functioning (e.g. Botwinick, 1977; Jarvik, et al. 1973). However, as suggested by Rhudick and Gordon (1973), the question arises

as to how the function of intelligence and personality relate to one another. Also, as suggested by the research of others (Eisdorfer, 1963; Klopfer, 1946; Ames, et al. 1973), the question arises as to how the personality characteristics of elderly institutionalized subjects relate to the personality characteristics of elderly community-living subjects. Since there is little research on the aged with regards to the relationship between personality as assessed by projective techniques and intelligence, the purpose of the present study is to investigate the relationship between these variables. To overcome many of the methodological problems and to explore the relationships of the above mentioned variables, the present study will wse the WAIS and HT.

Chapter II

Review of Literature

This review surveys two different areas of the research literature- intelligence and personality - as they relate to the aged. It has been pointed out (Schaie & Schaie, 1977) that there are many ways (e. g. performance tests, structured questionnaires, behavior observations, projective tests) to assess personality. The present study is concerned with personality characteristics of the aged as assessed by projective techniques. The present study is also concerned with intellectual functioning of the elderly as measured by various intelligence tests (e. g. WAIS, Primary Mental Abilities, etc.). A common theme among the literature with regards to intelligence and personality is that with normal aging the individual declines in intellectual ability and declines (or deteriorates) in emotional functioning. The major research question of the present study involves how intelligence and personality relate with regards to the developmental changes that occur with the normal aging process.

Intelligence and Aging

"In the study of aging, no problem has received greater attention than that of intelligence" (Botwinick, 1967. p. 1). "After reviewing the available literature.....the conclusion here is that decline in intellectual ability is a part of the aging picture" (Botwinick, 1977. p. 530). Doppelt and Wallace (1955) developed norms for older groups (55-64 years) on the WAIS. The Performance scores show greater

declines for elderly subjects than the Verbal scores; this has been called the "classic aging pattern". Regarding the aged, Eisdorfer, Busse, and Cohen (1959), explored how the WAIS related among different groups in different geographic areas. A summary of their findings indicates that the "classic aging pattern" holds for males and females, blacks and whites, better or poorer socio-economic status, and different geographic areas. An important point of their study and as also noted by Jarvik, Kallman, and Falek (1962) is that the classic aging pattern holds for both institutionalized and community-living persons.

Intellectual decline is not even because various areas of intellectual functioning are affected differently as people age (Bromley, 1966). Bromley (1966) has mentioned that Vocabulary, Information, and Comprehension are closely related aspects of intellectual functioning. Persons who do well on one of these subtests tend to do well on the others. These three subtests seem to "hold up" with age. Vocabulary, Information, and Comprehension tests mearsure intellectual attainments rather than intellectual ability. Bromley (1966. p. 182) says that, "Being able to think quickly is a sign of high intelligence and, contrary to common belief, the more intelligent person performs more quickly and more accurately than the less intelligent person on tests which measure the "rate" of intellectual output". Therefore, tests that require speed, such as Arithmetic, Picture Completion, Block Design, Picture Arrangement, and Object Assembly do not "hold" as well as the untimed subtests in regards to aging (Bromley, 1966; Botwinick, 1973). Even when the elderly

persons were given the timed subtests (i.e. Arithmetic, Picture Completion, etc.) untimed, they never reached the high performance levels of the younger subjects (Klodin, 1977).

In an interesting piece of research, Harwood and Naylor (1971) matched two elderly groups, each with a young control group on the basis of Total WAIS scores. Comparisons were then made between the groups in terms of their Verbal and Performance abilities. The Verbal scores were significantly higher in the older groups than for their respective young groups. On the other hand, the Performance scores for the elderly were significantly lower. Thus, even when groups were matched for Total WAIS scores, the "classic aging pattern" still appeared.

Raven (1948) administered the Progressive Matrices (which is similar to the Performance scale on the WAIS) and the Mill Hill test (which is a vocabulary test) to a large variety of elderly people. Once again, nonverbal functions showed lower scores for the elderly than verbal functions.

From a review of this literature on intelligence, there appears to be a trend towards the view that intelligence declines (especially in nonverbal functions) with the normal aging process. However, much controversy centers around the reasons for the apparent decline in Performance IQ that occurs with the normal aging process. Longitudinal studies have indicated that greater declines in intelligence scores may occur because the person is closer to death (Riegel & Riegel, 1972; Kleemeier, 1962; Jarvik & Falek, 1963). This decline, attributed to a sudden drop in performance occuring within five years prior to death,

has been called "terminal drop". Jarvik and Falek (1963) found that persons who showed a "critical loss" on two or all three subtests (i.e. Arithmetic, Vocabulary, and Similarities) of the WAIS had a significantly higher mortality rate than did subjects with a "critical loss" on less than two of these subtests. In a ten-year longitudinal study, (Eisdorfer & Wilkie, 1973), intellectual functioning as measured by the WAIS was examined in 224 community volunteers in the age range 60-79 years. Out of the original 224, 98 completed the study. The analysis demonstrated that persons with initially higher WAIS scores were more likely to survive and maintain a higher level of intellectual functioning than their counterparts.

An area of concern in the age-intelligence relationship is the time in the developmental process when intelligence decline begins. Doppelt and Wallace (1955) concluded that for WAIS Full Scale IQ, it is not until the age of 70 that scores drop sharply. Schaie (1958) gave the Primary Mental Abilities Test to a large group of elderly subjects and found that after age 60 there was decline in intellectual performance. Many other studies (Bayley & Oden, 1955; Owens, 1959; Green, 1969) strongly suggest that a decline in intellectual functioning does not occur until after the age of 70. Therefore, based on this section of literature, when intellectual decline does begin, it usually occurs in later life.

Memory may also affect some of the specific functions of

intelligence that decline over the years (Botwinick & Storandt, 1974). Inglis and Canderson (1961) reported that disorders of memory may well account for poor performance on the Digit Symbol subtest of the WAIS.

In a longitudinal study of particular interest to the present investigation, Rhudick and Gordon (1973) gave the WAIS, the Minnesota Multiphasic Personality Inventory (MMPI), the Leary Interpersonal Checklist, and the Cornell Medical Index to a group of 86 elderly subjects. They found considerable variations in intellectual functioning in that 51% of the subjects declined in intelligence scores, whereas 49% increased. The authors believed that age, initial endowment, health, retirement status or other demographic variables did not seem to be associated significantly with intelligence variation over time. Instead they attributed much of the variation to personality characteristics. Subjects who improved on intelligence scores ("improvers") showed different personality characteristics (as assessed by the above mentioned non-projective techniques) than those who showed a decline on their intelligence scores ("decliners"). More specifically, "improvers" tended to be intense, forceful, and strong in interpersonal relationships (as assessed by the Leary Interpersonal Checklist); subjects whose scores declined in intelligence seemed to have more interpersonal problems such as, overconventionality and overconformity. A comparison of the "improvers" and "decliners" on all of the MMPI scales corroborates the Leary Interpersonal Checklist to the effect that the "decliners" may be experiencing more interpersonal difficulties. The "decliners"

perceive themselves to be more paranoid, more psychasthenic, and more anxious than the "improvers".

Also in the Rhudick and Gordon (1973) study and in a study by Blum, Fosshage, and Jarvik (1972) there appeared to be a greater decline in intelligence scores for men than women. This greater decline in intellectual functioning for men than women could be attributed to the fact that men have an earlier mortality rate than women (Blum, et al. 1972).

A problem in the assessment of intelligence with the elderly lies in the norms used on most current intelligence tests. Except for the WAIS, norms for the elderly seem to be lacking in most intelligence tests (Schaie & Schaie, 1977; Matarazzo, 1972). Schaie and Schaie (1977) have commented that even the current norms on the WAIS "may be" of little value in regard to assessing the aged since they are age-corrected norms based only on cross- sectional data.

Another problem in the assessment of intelligence with the elderly is the type of methodology used. The cross-sectional method may spuriously magnify the age decline and the longitudianl method may minimize it (Botwinick, 1977). Cross-sectional studies strongly support the age-intelligence decline (Botwinick, 1977). In a recent book by Jarvik, Eisdorfer, and Blum (1973), they reviewed the literature on longitudinal studies in regard to the age-intelligence relationship and they came to the conclusion that the research literature on longitudinal studies also supports the "classic aging pattern".

From the above review of literature on intellectual functioning it appears that intelligence declines with age. However, many questions remain as to what factors contribute to this apparent decline.

Personality and Aging

Many investigators have found that personality is an important aspect of the developmental changes that occur with the aging process. "Since the development of intelligence tests it became apparent that non-intellectual factors may contribue as much to test results as those "purely" intellectual factors" (Glasser & Zimmerman, 1967). Klopfer (1946) administered the Rorschach to elderly subjects and the results indicated that the older adult tends to be: (1) intellectually slower (2) more cautious and (3) more restricted in thought contact. In subsequent studies using the Rorschach, Prados and Friod (1947) found that in general there tends to be a progressive impoverishment of creative intellectual faculties with increasing age. Other studies have indicated that the older adult is characterized by a restriction of response (Ames, 1960) and rigidity of response (Eisdorfer, 1960a, 1960b).

Chown (1968) reviewed studies involving the use of the Thematic Apperception Test (TAT) with older adults. A review of the literature suggests that the elderly decrease in : (1) a feeling of mastery of the enviroment (2) achievement needs and (3) intensity of emotion. Rosen and Neugarten (1960) found that older people as compared with younger people have less energy available to the ego for responding to, or maintaining former levels of involvement in the outside world.

Draw-A-Person protocols of the elderly exhibited a deteriorated self-concept and body image, lack of integration, bizarreness, and lack of proportion (Gilbert & Hall, 1962; Lakin, 1956; Lorge, Tuchman, & Dunn, 1954).

Panek, et al. (1976) and Panek, et al. (1978) conducted investigations of the personality characteristics of the aged using the Hand Test (HT). They obtained results similar to those of other projective techniques. Using elderly females, their results indicated that the elderly become: (1) more restricted in response, (2) less achievement oriented, (3) more dependent and (4) more withdrawn from interaction with others. In addition, Panek, et al. (1978) established age norms for the elderly using the HT.

As with the Rorschach, other projective techniques such as, the TAT, Draw-A-Person and the HT, also seem to indicate that personality deteriorates with the normal aging process. However, as with intelligence, certain questions with the projective techniques used to assess personality and aging also arise. Problems lie in the fact that investigators have for the most part used tests (e.g. TAT, Draw-A-Person, Sentence Completion, etc.) that lack norms for assessing the elderly. Neugarten (1977) points out that the tasks or stimuli which have been used on many of the tests may not prove to be relevant (or have meaning) for the older adult. Another problem that has been brought to attention by Gilbert and Hall (1962) is that responses on Draw-A-Person tests may be influenced more by perceptual-motor deterioration than by personality deterioration.

To overcome many of the methodological problems in other projective techniques, the HT has been used to assess the personaltiy characteristics of the elderly. In addition to having norms, the HT also overcomes some of the other difficulties inherent in some projectives in that it requires little in the way of perceptual-motor skills and it requires little time to administer. The stimuli of the HT may also be more familiar to the older adult in that the older adult comes into contact with "hands"everyday. This may overcome some of the "lack of meaning" that is found in the stimuli of some projective techniques.

Intelligence and Personality

Other investigators have been interested in the correlates of the intellectual and emotional aspects of behavior (Matarazzo, 1972). Even though these studies have not been concerned with aging per se, they have investigated the relationships between intelligence and personality. Blatt, Allison, and Baker (1965) found that subjects who have a high need for bodily concern, as assessed by the Rorschach, performed significantly less well on the Object Assembly subtest of the WAIS. Thus, the authors concluded that a low Object Assembly score on a subject's WAIS was indicative of high need for bodily concern.

Schill (1966) used the social introversion scale of the MMPI and found evidence that individuals with a high score of this introversion scale perform significantly less well on the Picture Arrangement

subtest relative to their Vocabulary subtest scores than those who are more extraverted on this scale. A positive relationship was found between "future extension or prospective" and the Picture Arrangement subtest of the WAIS (Dickstein, & Blatt, 1967).

It thus appears from the above mentioned studies that certain aspects of intelligence correlate significantly with certain aspects of personality.

Institutionalization vs. Community-living

Eisdorfer (1963) and Lakin (1956) have suggested that institutionalization of elderly subjects may effect the results of projective techniques in assessing personality. They caution that investigators should be careful in generalizing their results if institutionalization is not controlled for. Their caution against overgeneralization is supported by several studies (e.g. Ames, et al. 1973; Bortner, 1962; Webb, 1959; Fogel, Swagston, Zintek, Vernier, Fitzgerald, Marnocha, & Weschler, 1956) that have indicated personality differences between institutionalized and community-living elderly individuals.

Using the Rorschach, Klopfer (1946) found few significant personality differences between institutionalized and community-living elderly adults. In contrast, however, Ames, et al. (1973) found that compared with institutionalized elderly individuals, noninstitutionalized elderly individuals were more "intact". They showed greater productivity, greater perceptual clarity, more creativety, and better modulation of emotion. Ames, et al. (1973) suggest that the differences between

their findings and those of Klopfers' (1946) can be attributed to the fact that they had a better subject pool (i.e. more subjects and subjects that were matched on variables such as, sex, socioeconomic status, age, etc.).

Webb (1959) administered the Rorschach and the Tree Test to several elderly veterans and found that, the institutionalized individual differs in specific personality variables from the individual who resides in the community. The institutionalized subject can be characterized as having a greater degree of rigidity, stereotyped thinking, apathy, resignation, passivity and ego-eccentricity. Fogel, et al. (1956) also examined personality differences between institutionalized and community-living veterans and found that the institutionalized individual can be described as being more withdrawn, passive, and anxious than the community-living individual.

A study by Lieberman, Prock, and Tobin, (1968) showed that many of the effects (on self-image, interpersonal relationships, mood-tone, etc.) ascribed to living in an institution were set in motion by the decision to enter an institution. Friedsam (1961) showed that a change in living patterns (i.e. community to institution) created psychological distress for the aged.

These studies (i.e. Ames, et al. 1973; Webb, 1959; Friedsam, 1961; Fogel, et al. 1956) lend support to the notion that the institutionalized individual can be described as having greater personality deterioration than the community-living individual. However, as pointed out by Lieberman (1969), the results of many of these studies should be interpreted with caution since many of them used specialized groups (e.g. veterans).

On the basis of this review of the literature, the present study proposes to further explore personality differences between institutionalized and community-living subjects and to further explore the relationship between personality and intelligence with regards to the aged.

Hypothesis: There will be significantly more personality deterioration in institutionalized than community-living elderly subjects.

This hypothesis was derived from the research (i. e. Ames, et al. 1973; Webb, 1959; Friedsam, 1969; Fogel, et al. 1956) that indicated that changes in personality may vary between institutionalized and community-living subjects. Since many of the studies (e. g. Webb, 1959; Fogel, et al. 1956; Bortner, 1962) have used specialized groups (e.g. veterans) when investigating the personality differences between instituionalized and community-living groups, the present study will use a nonspecialized elderly population. Therefore, one purpose of the present study will be to investigate personality differences between community-living and institutionalized elderly adults.

In addition to the previous hypothesis, the present study will also explore the relationship between intelligence and personality. This part of the research was derived primarily from the work of Rhudick and Gordon (1973). These authors believed that much of the variation in the intellectual functioning of the elderly could be attributed to different personality characteristics. However, their study explored the relationship between personality and intelligence using non-projective

techniques. Therefore, the present study will assess intelligence with the Wechsler Adult Intelligence Scale and personality with a projective technique - the Hand Test.

Chapter III

Method

Subjects

The subjects consisted of 25 community-living and 25 institutionalized older female volunteers from the central Illinois area. All subjects were 65 years of age or over. The mean age of the community-living subjects was 72.92 years, with a median age of 72.67 years, and a standard deviation of 6.34. The mean age of the institutionalized subjects was 80.00 years, with a median age of 80.25 years, and a standard deviation of 6.47. The institutionalized subjects were significantly older than the community-living subjects, $t(48) = -3.91$, $p < .001$.

Females were selected as subjects for a number of reasons. First, Pocksstein (1953) has brought attention to the fact that females live longer and maintain better physical condition in later life than males. Second, Botwinick (1973) states that there are more elderly females than males since females have a tendency to live longer than males. Third, several studies (i.e. Rhudick & Gordon, 1973; Jarvik, et al. 1973; Blum, et al. 1972) have suggested that the intellectual functioning for elderly males may decline more rapidly than that of females since men have an earlier mortality rate than that of females. Therefore, females were selected due to the chance that sex differences might influence the results of the present study, and due to the difficulty in obtaining male subjects in the upper age range who are in good physical health.

Shanas (1962) has indicated that self-report is the best predictor

of actual physical health, that is, better than overall medical assessment. Therefore, subjects were selected who appeared to be in good physical health as reported by the participants and as observed by the author. All subjects were reasonably healthy, active, and alert. None of the subjects were bedridden when interviewed.

Materials

Materials selected for this study in order to assess intelligence and personality were the Wechsler Adult Intelligence Scale (WAIS) and the Hand Test (HT). The WAIS was selected for several reasons. First, the WAIS was selected because of the age norms that have been developed for assessing the intellectual functioning of the older adult (Wechsler, 1955). Second, the WAIS is also the most widely used adult Intelligence scale today (Botwinick, 1973). Third, the WAIS includes a number of subtests which allow the test to be more sensitive to intellectual changes. Fourth, the Stanford Binet, the second most widely used intelligence scale, does not have norms for assessing the elderly.

The HT was selected because it contains current norms for evaluating the personality characteristics of the aged (Panek, et al. 1978). The HT consists of 10 cards, nine depicting hands in various positions and one blank. The subjects are asked to explain what the hand is doing while the examiner records the responses verbatim (Wagner, 1962). Because of its design the HT has several advantages (Panek, et al. 1976). One advantage is that, since elderly persons come into contact with hands in various positions everyday, the stimuli of the HT should be relevant to older adults. Another advantage

is that the HT can be administered in a relatively short time (about 10 min.). The short administration time should overcome the fatigue effects that can occur when more lengthy projective techniques are administered. One final reason for selecting the HT was that there is little recorded research comparing the responses of community-living and institutionalized elderly adults of the HT.

Procedure

Community-living subjects were obtained by making inquiries at various organizations, such as, senior citizens clubs, churches, etc., and by making door to door inquiries at individual homes. The institutionalized subjects were acquired from local nursing homes. The subjects were not informed of the purpose of the testing but were asked to volunteer in a research project for a small stipend ($10.00). The community-living subjects were tested at their homes or their organizations; whichever they preferred. The institutionalized subjects were tested in a quiet place at their nursing homes.

A short informal visit with each subject before the testing session began was used to establish rapport. Each subject was tested individually. The HT was given first to each subject according to standard instructions by the author. The HT was given before the WAIS to all subjects so that the results of the personaltiy test would not be confounded by anxiety and/ or fatigue effects that could possibly result from the WAIS.

Immediately following the administration of the HT, the WAIS

was given to the subject according to standard instructions by the author. If a subject had personal needs (i.e. the restroom, a drink of water, etc.) to attend to during the administration of the WAIS, the subject was allowed the needed break only after she had completed the subtest upon which she was working.

At the end of each testing session the author visited a few minutes more with the subject and asked the subject if she had enjoyed the testing. If the subject enjoyed the testing the author asked her to refer any other females to him that might be interested in participating in the research project.

None of the subjects were informed of their results on the HT or the WAIS until the entire research project had been completed.

Chapter IV

Results

The means, medians, and standard deviations for HT protocols for both institutionalized and community-living groups can be observed on Table 1. The hypothesis concerning greater personality deterioration in institutionalized females than in community-living females was given partial support as can also be seen in Table 1. Using the Mann Whitney U test, there were significant differences between the groups on five of the 26 HT variables. These HT variables were Dependence ($p < .03$), Emulation ($p < .05$), Interpersonal ($p < .05$), Withdrawal ($p < .03$), and number of Responses ($p < .001$).

Table 2 presents Spearman (rho) correlations between the HT variables and the subtests of the WAIS when considering all ($n = 50$) of the elderly females. Dependence was significantly correlated with WAIS Information ($r = .43$, $p < .01$), WAIS Comprehension ($r = .44$, $p < .01$), WAIS Arithmetic ($r = .29$, $p < .05$), WAIS Similarities ($r = .24$, $p < .05$), WAIS Vocabulary ($r = .30$, $p < .05$), WAIS Picture Completion ($r = .27$, $p < .05$), WAIS Block Design ($r = .36$, $p < .01$), WAIS Picture Arrangement ($r = .30$, $p < .05$), WAIS Verbal IQ ($r = .38$, $p < .01$), WAIS Performance IQ ($r = .32$, $p < .05$), and WAIS Full Scale IQ ($r = .38$, $p < .01$).

Communication was significantly correlated with Picture Arrangement ($r = .34$, $p < .01$). Other significant correlations were

Table 1

Personality differences between community-living and institutionalized subjects

	Groups							
	Community-living			Institutionalized			Mann Whitney U	Significance level
	M	Mdn	SD	M	Mdn	SD		
Variables								
AFF	.96	.85	.94	.72	.39	.94	262.00	NS
DEP	.76	.71	.78	.36	.19	.64	216.00	.03
COM	1.24	1.11	1.05	1.20	.94	1.23	296.00	NS
EXH	.28	.19	.46	.28	.10	.74	282.00	NS
DIR	.80	.57	.91	.64	.39	.86	281.50	NS
AGG	.64	.63	.64	.36	.19	.64	232.00	NS
INT	4.74	4.63	2.05	3.56	3.40	2.29	216.50	.05
ACQ	.80	.39	1.08	.36	.16	.76	243.00	NS
ACT	3.60	3.65	1.92	3.76	3.33	2.52	303.50	NS
PAS	.96	.71	1.10	.56	.61	.51	263.50	NS
ENV	5.52	5.40	2.43	4.68	4.00	2.63	250.00	NS
TEN	.36	.19	.64	.20	.13	.41	282.00	NS
CRIP	.56	.33	.77	.48	.33	.65	302.00	NS
[illegible]	.12	.06	.60	.04	.02	.20	312.00	NS
MAL	1.00	.69	1.19	.72	.56	.84	283.00	NS
DES	.32	.16	.69	1.12	.39	1.92	237.50	NS
FAIL	.28	.13	.14	.52	.33	.71	249.00	NS
BIZ	.00	.00	.00	.00	.00	.00	000.00	---a
WITH	.56	.24	.96	1.64	.89	2.33	209.50	.03
R	11.60	11.25	2.06	10.08	9.96	1.26	157.00	.001
AIRT	10.34	9.10	5.76	10.41	8.40	5.83	305.00	NS
HL	21.24	13.75	17.89	21.45	16.90	17.26	309.00	NS
PATH	2.20	1.88	1.98	4.00	2.24	4.57	254.00	NS
EML	.08	.04	.28	.84	.19	1.97	247.00	.05
REP	.44	.28	.71	.68	.39	.99	276.00	NS
AOS	-1.52	-1.29	1.61	-1.28	-1.25	1.62	289.00	NS

Note:

AFF = Affection

DEP = Dependence

Table 1

(Continued)

COM = Communication

EXH = Exhibition

DIR = Direction

AGG = Aggression

INT = Interpersonal

ACQ = Acquisition

ACT = Active

PAS = Passive

ENV = Enviromental

TEN = Tension

CRIP = Crippled

FEAR = Fear

Mal = Maladjustive

DES = Descriptive

FAIL = Failure

BIZ = Bizarre

WITH = Withdrawal

R = Response

AIRT = Average Initial Reaction Time

HL = Highest minus lowest IRT

PATH = Pathological

EML = Emulation

REP = Repetition

AOS = Acting Out Score [b]

[a] A significance level was not obtainable to the BIZ response category because none of the subjects gave a BIZ response.

[b] AOS = (Direction + Aggressiion) - (Affection + Dependence + Communication)

Table 2

Spearman RHOs between HT variables and WAIS subtests for all subjects[1]

Variables	WINFO	WCOMP	WARIT	WSIM	WDS	WVOC	WDSOM	WPC	WBD	WPA	WOA	WVIQ	WPIQ	WFSIQ
AFF	-.18	-.01	.09	.13	-.16	-.12	.13	-.05	-.06	-.02	-.09	.00	-.01	-.01
DEP	.43**	.44**	.29*	.24*	.24	.30*	.23	.27*	.36**	.30*	.25	.38**	.32*	.38**
COM	-.01	.20	-.07	.06	.10	.25	.23	.22	.26	.34**	.14	.12	.26	.20
EXH	-.14	.03	-.14	.02	.08	-.11	-.12	-.04	-.02	-.01	-.07	-.02	-.03	.00
DIR	.14	.40**	.15	.24	-.05	.41**	.23	.18	.17	.20	.17	.23	.28*	.29*
INT	.25	.50***	.13	.33**	.11	.44**	.34**	.32*	.35**	.39**	.24	.35**	.40**	.43**
ACQ	.27*	.25	.18	.36**	.13	.19	.12	.22	.15	.15	.28*	.21	.06	.16
ACT	-.15	-.18	.08	.01	-.01	-.08	-.04	-.13	-.12	-.24	.05	-.05	-.08	-.09
PAS	-.08	.01	.10	.13	.04	-.12	.15	-.05	.08	.00	.02	.04	.15	.12
ENV	-.06	-.09	.15	.09	.04	-.06	.05	-.05	-.06	-.14	.09	.00	-.05	-.04
TEN	.02	.00	.05	-.03	.16	-.07	.11	-.05	-.08	.11	-.01	-.03	-.05	-.04
CRIP	-.08	-.12	-.15	-.05	.00	-.16	.04	-.15	-.16	-.08	-.09	-.08	-.13	-.12
FEAR	-.02	.27*	.05	.15	-.13	.06	.04	.05	.06	.06	.03	.07	-.04	.04
MAL	-.03	-.03	-.09	-.01	.09	-.14	.06	-.11	-.09	.04	-.03	-.05	-.11	-.10
DES	-.16	-.40**	-.38**	-.40**	-.21	-.48**	-.37**	-.35**	-.34**	-.31*	-.37**	-.38**	-.35**	-.39**
FAIL	-.11	-.14	-.07	-.14	-.05	-.15	-.20	-.09	-.06	-.13	-.07	-.11	-.04	-.08
BIZ	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
WITH	-.20	-.39**	-.34**	-.41**	.14	-.45**	-.37**	-.32*	-.26	-.28*	-.32*	-.38**	-.27*	-.35**
R	.24	.25	.20	.32*	.10	.19	.37*	.23	.22	.24	.23	.24	.26	.26*
AIRT	-.17	-.20	-.02	.01	.20	-.01	-.14	-.11	.00	-.04	.01	.03	.00	-.02
HL	-.18	-.12	.17	.05	.30*	.03	-.07	.02	.07	-.08	.08	.08	.01	.04
PATH	-.15	-.30*	-.25	-.28*	-.07	-.40**	-.22	-.25	-.16	-.17	-.23	-.28	-.19	-.25
EML	-.06	-.21	-.18	-.24	-.21	-.20	-.21	-.05	-.08	-.09	-.19	-.24	-.09	-.17
RSP	-.23	-.26	-.15	-.35**	-.15	-.19	-.16	-.13	-.20	-.23	-.43**	-.27*	-.24	-.27*

Note.

WINFO = WAIS Information

WCOMP = WAIS Comprehension

WARIT = WAIS Arithmetic

Table 2

(Continued)

WSIM - WAIS Similarities

WDS - WAIS Digit Span

WVOC - WAIS Vocabulary

WDSOM - WAIS Digit Symbol

WPC - WAIS Picture Completion

WBD - WAIS Block Design

WPA - WAIS Picture Arrangement

WOA - WAIS Object Assembly

WVIQ - WAIS Verbal IQ

WPIQ - WAIS Performance IQ

WFSIQ - WAIS Full Scale IQ

Means, medians, and standard deviations for WAIS protocols for both groups can be found in Appendix A.

[1] $n = 50$

*$p < .05$

**$p < .01$

***$p < .001$

Direction with Comprehension (r = .40, $p < .01$), Vocabulary (r = .41, $p < .01$), Performance IQ (r = .28, $p < .05$), Full Scale IQ (r = .29, $p < .05$); Interpersonal with Comprehension (r = .50, $p < .001$), Similarities (r = .33, $p < .01$), Vocabulary (r = .44, $p < .01$), Digit Symbol (r = .34, $p < .01$), Picture Completion (r = .32, $p < .05$), Block Design (r = .35, $p < .01$), Picture Arrangement (r = .30, $p < .05$), Verbal IQ (r = .35, $p < .01$), Performance IQ (r = .40, $p < .01$), Full Scale IQ (r = .43, $p < .01$); Acquisition with Information (r = .27, $p < .05$), Similarities (r = .35, $p < .01$), Object Assembly (r = .28, $p < .05$); number of Responses with Similarities (r = .32, $p < .05$), Digit Symbol (r = .37, $p < .01$), Full Scale IQ (r = .28, $p < .05$); and High Low with Digit Symbol (r = .30, $p < .05$).

Negative correlations between HT variables and subtests of the WAIS were found between Description and Comprehension (r = -.40, $p < .01$), Arithmetic (r = -.33, $p < .01$), Similarities (r = -.40, $p < .01$), Vocabulary (r = -.48, $p < .001$), Digit Symbol (r = -.37, $p < .01$), Picture Completion (r = -.35, $p < .01$), Block Design (r = -.34, $p < .01$), Picture Arrangement (r = -.31, $p < .05$), Object Assembly (r = -.37, $p < .01$), Verbal IQ (r = -.38, $p < .01$), Performance IQ (r = -.35, $p < .01$), Full Scale IQ (r = -.3[illegible], $p < .01$); Withdrawal with Comprehension (r = -.39, $p < .01$), Arithmetic (r = -.34, $p < .01$), Similarities (r = -.41, $p < .01$), Digit Symbol (r = -.37, $p < .01$), Picture Completion (r = -.32, $p < .05$), Picture Arrangement (r = -.28, $p < .05$), Object Assembly (r = -.32, $p < .05$), Verbal IQ (r = -.38,

$p < .01$), Performance IQ ($r = -.27$, $p < .05$), Full Scale IQ ($r = -.35$, $p < .01$): and Repetitions and Similarities ($r = -.35$, $p < .01$), Object Assembly ($r = -.43$, $p < .01$), Full Scale IQ ($r = -.27$, $p < .05$).

Chapter V

Discussion

Caution should be used when interpreting the findings of the present study for two basic reasons. First of all, the institutionalized group was significantly older than the community-living group. Secondly, the community-living subjects had a higher education level than the institutionalized subjects, $t(48) = 2.06$, $p < .05$. Both of these significant differences between the groups may have partially (or totally) accounted for the results of the present study. Therefore, keeping the above mentioned shortcomings in mind, it appears at best that the present findings only lend support to the hypothesis concerning greater personality deterioration in institutionalized elderly females than in community-living elderly females.

When using the Hand Test manual (Wagner, 1962) in order to help interpret the research data, certain inferences can be made concerning personality differences between the institutionalized and community-living females. It appears that the institutionalized elderly female, more so than her counterpart, the community-living elderly female, can be seen as an individual whose psychological energy is diminished (Responses), who is withdrawing from meaningful interaction with life (Withdrawal), whose involvement with other people has weakened (Interpersonal), whose deference for the rights of others has diminished (Dependence), and who is likely to show a greater proclivity towards organicity (Emulation).

These findings lend support to the conclusions reached by Ames, et al. (1973) who have described the institutionalized elderly adult as being less "intact" than the community-living adult. The findings of the present study are also congruent with the findings of other investigators (i. e. Webb, 1959; Fogel, et al. 1956) who have characterized the institutionalized elderly individual as being more withdrawn, apathetic, and passive than the elderly community-living individual.

In regard to the relationships between certain aspects of personality and certain aspects of intelligence, many highly significant correlations appeared. Interestingly, the most significant positive correlations of the present study were found between the Interpersonal variable of the HT and the WAIS, and between the Dependence variable of the HT and the WAIS. Except for three subtests of the WAIS (i. e. Information, Arithmetic, and Digit Span), the Interpersonal variable was significantly correlated with the rest of the subtests of the WAIS, and except for three of the subtests of the WAIS (i. e. Digit Symbol, Digit Span, and Object Assembly), the Dependence variable was also significantly correlated with the rest of the subtests of the WAIS.

It appears that the elderly female who has a keen and varied interest in, a sensitivity to, and a high degree of interaction with other people (Interpersonal), also has a high level of intellectual functioning (WAIS Full Scale IQ). In the same respect, the elderly female who has a high degree of awareness of, and concern with the rights and privileges of others (Dependence), also has a high level of overall

intellectual functioning (WAIS Full Scale IQ).

When considering specific relationships, some of the highest correlations of the present study can be found between the Interpersonal and Dependence variables of the HT and the Comprehension subtest of the WAIS. Also, both the Interpersonal and Dependence variables correlated significantly with the Picture Arrangement subtest of the WAIS. One apparent reason that might account for these high correlations, is the fact that both Comprehension and Picture Arrangement subtests contain stimuli that are concerned with social interaction (Sattler, 1974). In other words, the Comprehension and Picture Arrangement subtests of the WAIS and the Interpersonal and Dependence variables of the HT, correlated highly because all of these variables (including the subtests) are concerned with social interaction.

Though the Direction variable of the HT only correlated with a few subtests of the WAIS (i. e. Comprehension, Vocabulary, Performance IQ), it did correlate significantly with overall intelligence (WAIS Full Scale IQ). Thus, it appears that the elderly female who has a need to direct, control, and dominate others (Direction), also maintains a high level of overall intellectual functioning (WAIS Full Scale IQ).

As with the Direction variable, a similar finding occurred with the Response variable of the HT. That is, the Response variable only correlated significantly with two of the subtests of the WAIS (i. e. Similarities and Digit Symbol). However, the Response variable also

correlated significantly with WAIS Full Scale IQ. Therefore, it appears that those elderly females who have an abundance of psychological energy (Response), usually score higher on the Total WAIS, than those who lack an abundance of psychological energy.

A common theme among the Interpersonal, Dependence, and Direction variables of the HT, is that they all involve interactions with other people. Therefore, as indicated by the findings of the present study, it appears that the elderly female who is strong in interpersonal relations, has a higher level of intellectual functioning than the elderly female who is weak in interpersonal relations. The findings of the present study are in tentative agreement with the longitudinal research of Rhudick and Gordon (1973) who also found that elderly subjects who are strong in interpersonal relations have (or maintain) a higher level of intellectual functioning than those who are weak in interpersonal relations.

Significant negative correlations occurred most frequently between the Description variable of the HT and the various subtests of the WAIS, and between the Withdrawal variable of the HT and the various subtests of the WAIS. Significant negative correlations were found between all but two of the subtests (i. e. Information, and Digit Span) of the WAIS and the Description variable. This seems to indicate that an individual who is desperately attempting to cling to reality by sacrificing spontaneity and individuality (high number of Description responses), is low in overall intellectual ability. Also

as mentioned by Wagner (1962), Description responses are commonly found among organics and mental retardates. Therefore, an interesting hypothesis might be that those elderly females who have a high number of Description responses and low WAIS protocols, are experiencing an onset of problems that are organic in nature.

Significant negative correlations were found between the Withdrawal variable of the HT and all but three of the subtests (i.e. Information, Digit Span, and Block Design) of the WAIS. According to the Hand Test Manual (Wagner, 1962) the Withdrawal variable is considered to almost be the antithesis of the Interpersonal variable. Therefore, keeping this in mind, the converse of the relationship between the Interpersonal variable of the HT and overall WAIS performance seems to follow, namely, those subjects who are weak in interactions with others and their environment (high number of Withdrawal responses), have a lower level of intellectual functioning.

When considering specific subtests of the WAIS, some of the highest negative correlations were found between Vocabulary and the Description and Withdrawal variables of the HT. Also, the Similarities subtest of the WAIS had a significantly negative correlation with the Description and Withdrawal variables of the HT. One possible interpretation for these high correlations may be attributed to the fact that the Vocabulary and Similarities subtests are highly dependent upon language ability and a general fund of information (Sattler, 1974). It may be that the elderly individual who is trying to cling to reality (Description) and who has withdrawn from meaningful interaction with life (Withdrawal), lacks the needed abilities

in order to perform well on these specific subtests. Also, those who performed poorly on the Comprehension subtest of the WAIS, also had a high number of Withdrawal responses on the HT. Those who are starting to withdraw from meaningful interaction with life are probably lacking in the social interactions that are needed in orader to perform well on the Comprehension subtest.

Although the Repetition variable of the HT failed to correlate significantly with many of the subtests of the WAIS, it did correlate significantly (in a negative direction) with WAIS Full Scale IQ. It might be tentatively inferred that those elderly individuals whose thinking has become stereotyped (Repetition), function at a lower intellectual level than those with less stereotypical thinking.

It should be kept in mind when interpreting the results of the present study, that there were significant age and educational differences between the community-living and institutionalized groups. As mentioned earlier, these significant differences may have partially accounted for the results of the present study. Before specific conclusions concerning personality differences between institutionalized and community-living elderly individuals can be made with the HT, future research will have to be conducted in this area that controls for subject variance. That is, subjects should be matched on variables such as age, intelligence, socio-economic status, etc.

In conclusion, keeping the previously discussed shortcomings in

mind, the findings of the present study tentatively lend support to the hypothesis concerning greater personality deterioration in institutionalized than community-living elderly adults. In regard to the elderly, it was also discussed that certain aspects of personality correlate significantly with certain aspects of intelligence. It appears that the elderly female who is strong in interpersonal relations, also has (or maintains) a higher level of intellectual functioning than those individuals who are weak in interpersonal relations.

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APPENDIX A

Table 3

Means, medians, and standard deviations for WAIS protocols

	Groups					
	Community-living			Institutionalized		
Subtests	M	Mdn	SD	M	Mdn	SD
WINFO	11.28	11.75	3.04	7.64	7.75	2.40
WCOMP	12.48	12.88	3.55	8.20	8.14	2.77
WARIT	10.24	10.67	3.31	6.52	6.88	2.08
WSIM	11.28	11.75	3.22	5.76	6.33	3.66
WDS	9.56	9.88	2.60	8.16	7.42	2.67
WVOC	12.44	13.25	3.43	10.44	9.67	2.77
WDSOM	7.00	6.88	1.87	2.92	2.41	2.43
WPC	8.56	8.57	2.73	5.56	5.81	2.50
WBD	8.52	8.88	2.65	5.16	3.09	5.00
WPA	6.64	6.43	1.91	3.56	3.88	2.47
WOA	8.44	9.00	3.02	4.64	4.13	2.68
WVIQ	118.48	118.00	16.23	101.00	104.63	9.54
WPIQ	112.52	113.25	13.14	94.28	93.00	12.57
WFSIQ	116.64	119.00	14.51	97.96	98.25	9.94

APPENDIX B

Spearman (RHO) correlations between HT variables and WAIS subtests for the community-living subjects

Variables	WINFO	WCOMP	WARIT	WSIM	WDS	WVOC	WDSOM	WPC	WBD	WPA	WOA	WVIQ	WPIQ	WFSIQ
AFF	.09	-.18	.01	.10	.04	-.04	.02	.01	-.28	-.02	-.16	.11	-.02	.08
DEP	.47**	.49**	.31	.28	.33	.40*	.29	.49**	.47**	.53**	.46**	.47**	.46**	.52**
COM	.02	.22	.02	.00	-.20	.04	.42*	.17	.34*	.47**	.09	-.06	-.20	.03
EXH	-.17	-.24	-.18	-.20	-.24	-.28	-.32	-.24	-.16	-.36*	-.43**	-.24	-.33*	-.35*
DIR	.41*	.57**	.23	.46**	-.18	.47**	.32	.18	.07	.32	.07	.39*	.22	.40*
AGG	.36*	.32*	.39*	.21	.19	.20	.22	.28	.08	.21	.06	.43**	.33*	.48**
INT	.46**	.55**	.33*	.36*	.00	.38*	.43*	.38*	.27	.53**	.06	.45**	.35*	.49**
ACQ	.22	.36*	.12	.30	.10	.25	-.07	.12	.08	.07	.14	.12	-.10	.06
ACT	-.09	-.43*	-.15	-.10	.04	-.12	-.39*	-.25	-.34*	-.51**	-.10	-.12	-.21	-.21
PAS	-.15	-.30	.12	.06	-.07	-.15	-.10	-.30	-.15	-.36*	-.30	.02	-.11	.03
ENV	-.15	-.40*	-.13	-.12	.08	-.66***	-.56**	-.38*	-.41*	-.56**	-.27	-.18	-.40*	-.29
TEN	-.22	-.14	-.09	-.19	.05	-.13	.02	.05	.08	.03	-.02	-.22	-.09	-.15
CRIP	-.17	-.04	-.24	-.13	-.30	-.29	-.05	-.28	-.20	-.31	-.24	-.21	-.21	-.21
FEAR	.09	.28	-.10	.11	-.58**	.29	.13	.09	.20	.33*	.00	.06	.03	.04
MAL	-.16	-.05	-.29	-.20	-.15	-.17	-.09	-.13	.04	-.05	-.12	-.24	-.17	-.23
DES	-.30	-.30	-.52**	-.20	-.14	-.43*	-.17	-.39*	-.24	-.23	-.13	-.35*	-.16	-.30
FAIL	-.13	.06	.14	-.06	.04	.05	.07	-.05	.06	-.13	.30	.11	.22	.15
BIZ	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
WITH	-.28	-.19	-.36*	-.26	.00	-.28	-.11	-.22	-.07	-.21	-.04	-.19	-.02	-.13
R	.06	-.06	-.12	.00	-.11	-.10	-.06	-.11	-.11	-.09	-.44**	-.00	-.07	-.00
AIRT	-.13	-.38*	-.04	-.02	-.04	-.22	-.28	-.31	-.05	-.08	-.13	-.15	-.10	-.17
HL	-.13	-.19	.29	.00	.33*	-.09	-.09	-.02	.18	-.08	-.13	.01	.04	-.02
PATH	-.41*	-.17	-.34*	-.33*	-.11	-.31	-.04	-.24	.07	-.23	-.02	-.27	-.02	-.18
EML	-.13	-.29	-.14	-.22	-.23	-.29	-.10	-.01	-.07	.24	-.01	-.19	-.16	-.09
REP	-.16	-.18	-.30	-.29	-.04	-.19	-.25	-.19	-.15	.00	-.39*	-.23	-.27	-.18

*p < .05
**p < .01
***p < .001

APPENDIX C

Table 5

Spearman (RHO) correlations between HT variables and WAIS subtests for the institutionalized subjects

Variables	WINFO	WCOMP	WARIT	WSIM	WDS	WVOC	WDSOM	WPC	WBD	WPA	WOA	WVIQ	WPIQ	WFSIQ
AFF	.19	-.17	.13	-.03	-.40*	-.39*	.06	-.19	-.10	-.28	.26	-.22	-.25	-.29
DEP	.16	.13	-.06	-.11	.07	-.01	-.11	-.26	.04	-.20	-.32	.08	-.13	-.04
COM	-.13	.34*	-.30	.14	.35*	.52**	.22	.30	.25	.38*	.07	.27	.38*	.42*
EXH	-.37*	.26	-.42*	.08	.31	.08	-.21	.00	.01	.26	-.02	.03	.16	.18
DIR	-.27	.43*	-.17	-.05	.06	.24	.29	.09	.22	.08	.02	-.10	.35*	.18
AGG	.05	.42*	-.07	.20	.04	.60***	.21	.39*	.24	.20	.28	.23	.35*	.36*
INT	-.14	.47**	-.29	.13	.15	.37*	.21	.12	.28	.20	.07	.16	.36*	.36*
ACQ	.11	-.27	.00	.14	.09	-.55**	-.13	-.05	-.06	-.01	.25	.05	-.19	-.11
ACT	-.20	-.15	.36	.07	-.11	.03	.15	-.14	-.09	-.18	.24	.01	-.11	-.11
PAS	-.17	-.02	-.10	.07	.17	-.10	.30	.05	-.30	.31	.06	-.08	.36*	-.14
ENV	-.18	-.27	.28	.06	-.11	-.03	.16	-.09	-.09	-.13	.34*	-.05	-.11	-.15
TEN	.18	.07	.04	-.07	.21	-.08	.02	-.33*	-.37*	.01	-.17	-.03	-.18	-.13
CRIP	-.01	-.11	-.20	-.13	.20	-.05	-.05	-.09	-.23	.09	-.02	-.03	-.08	-.08
FEAR	-.20	.32	.19	.29	-.23	-.16	.04	.04	.00	-.13	.11	.04	-.16	-.01
MAL	.02	.02	-.08	-.02	.21	-.17	-.02	-.23	-.34*	.03	-.07	-.03	-.20	-.14
DES	.22	-.29	-.05	-.32	-.21	-.44**	.46**	-.17	-.26	-.25	-.27	-.17	-.31	-.27
FAIL	.03	-.17	-.04	-.02	.03	-.30	-.09	.05	.06	.05	-.13	-.14	-.02	-.08
BIZ	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99	.99
WITH	.18	-.38*	-.04	-.26	-.15	-.54**	-.38*	-.13	-.14	-.14	-.24	-.26	-.25	-.28
R	-.01	.07	.12	.02	-.13	.21	.16	.00	-.01	-.10	.41*	.02	.01	.02
AIRT	-.23	-.04	-.04	.03	.46**	.28	-.06	-.05	.02	-.08	-.06	.19	.02	.09
HL	-.22	.07	.15	.10	.35*	.19	-.05	.10	.00	-.10	-.07	.25	-.08	-.08
PATH	.18	-.32	-.05	-.19	-.03	-.49**	-.35*	-.13	-.19	-.04	-.24	-.19	-.23	-.22
SML	.25	.04	.02	.00	-.10	-.09	-.11	.14	-.11	-.03	-.04	-.12	.09	-.04
REP	-.23	-.19	.17	-.36*	-.25	-.07	.10	.08	-.09	-.31	-.39*	-.24	-.07	-1.7

*p < .05
**p < .01
***p < .001