

# THE ASSESSMENT OF CREATIVITY OF OLDER PEOPLE IN JAPAN AND IN THE UNITED STATES

by Keiko Ichiki

**Summary**—The purpose of this study was to determine the relationship of nationality and age to creativity scores among older women. Data were collected on 20 women with an age range of 60 to 70 in Fukuoka City, Japan and on 20 women ages 60 to 70 in York County, South Carolina. The Circles subtest of Torrance Test of Creative Thinking was used. Hypotheses concerning nationality and creativity scores and age and creativity scores were tested. Only the elaboration factor of creativity was found to be significantly related (chi-square 10.0,  $P \geq .01$ ) to nationality among these older women with the Japanese group scoring higher. Overall creativity scores and other sub-factors were not significantly related to nationality and age.

## 1. INTRODUCTION

The older people of the United States constitutes approximately 11 percent of the total population (Atchley, 1980) and the older people of Japan constitutes approximately 9 percent of the total population (Masuda and Miura, 1980). These people are in the age range of 65 years old and above. The number of older people will probably continue to increase rapidly over the next few decades. By the year 2000, the older people of the United States will constitute approximately 12.2 percent (Atchley, 1980) and in Japan will constitute approximately 15 percent of the total population. Surprisingly, by the year 2020, in Japan the number of older people will constitute approximately 22 percent of the total population (Masuda and Miura, 1980). As can be seen from the figures, older people constitute a large proportion of the population and therefore are of great concern. This increase has resulted from several factors. In the United States, the number of births has increased steadily over the past 100 years. A larger proportion of those born are now surviving to age 65 than was formerly the case. In addition, the large numbers of people who migrated to the United States in the late nineteenth and early twentieth centuries are becoming older (Botwinick, 1973). In Japan, a declining birth rate and improved medical facilities and care have resulted in the population becoming skewed toward the older end of the scale (Burks, 1981). As the number of older people has increased, their status has decreased. One result of this lowered status is that they are often taken for granted.

Dr. Reischauer at Harvard University, the author of *The Japanese*, says that "The popular generalization is that the Japanese are intellectually not very creative" (1977, p.225). One evidence he presents is that Japan has developed by imitating western technology. Another evi-

dence is that very few Nobel Prize winners are Japanese. Reischauer's view does not seem to be convincing. To examine his view we would like to assess creativity factors among old people in Japan and in the United States.

Among the aged the most frequent psychological difficulty is depression which is equated with feelings of inferiority and loss of self-esteem. Suggestions have been made that treatment for mild depression be centered around restoring the feeling of self-worth in the person (Botwinick, 1973). It is important, therefore, that all citizens strive to acknowledge one of the nation's greatest natural resources and restore to older persons' feelings of self-worth and self-esteem by involving them in activities that enable them to feel useful.

Looking at older people and their creative talents and comparing creativity among Japanese and American old people is a worth-while task that has not been examined in great detail.

In summary, the older population in both America and Japan is quite large and continues to increase. Many older people are, in a sense, cast off and stigmatized as being useless. Reischauer believes that the Japanese are intellectually not very creative. To examine his view, we would like to assess creativity factors among old people in Japan and in the United States.

### **1 · 1 Statement of the Problem**

Older people in Japan may have fewer opportunities to utilize their creative talents than American people. The problem statement of this study is the following: To identify similarities and differences in creativity characteristics between Japanese older women and American older women as measured by the Torrance Test of Creative Thinking (TTCT).

### **1 · 2 Purpose of the Study**

The purpose of this study was to compare the creativity traits in the two groups of older people. Using the Torrance Tests of Creative Thinking (TTCT), a group of Japanese older women and a group of American older women were tested in order to compare the characteristics of creativity. The researcher hopes that from the data gathered, people, especially Japanese people, will become more aware of the nature of creativity.

### **1 · 3 Definition of Variables and Terms**

During the course of this study, the following definitions of terms were used:

**older people, aged, or elderly** : people aged 60 and older.

**junior older people** : those older people aged 60 to 65 years.

**senior older people** : those older people aged 66 to 70 years.

**creativity** : a process that does not always result in a product, characterized by originality of thought and execution and measured by the Torrance Tests of Creative Thinking (TTCT). TTCT scores consist of four factors which are fluency, flexibility, elaboration, and originality.

## 1 · 4 Hypotheses

There is a possibility that Japanese older people have maintained their creative ability and are as creative as American older people. The researcher was also interested in whether or not chronological age has any relationship to measured creativity. Since definitive findings were not available, the following hypotheses were constructed in the null form:

1. There is no significant difference between the overall creativity scores from the TTCT of Japanese older women and American older women.
2. There is no significant difference between the overall creativity scores from the TTCT of "Junior" and "Senior" older women.
3. (a) Fluency is not related to culture difference.  
(b) Fluency is not related to age.
4. (a) Flexibility is not related to culture difference.  
(b) Flexibility is not related to age.
5. (a) Originality is not related to culture difference.  
(b) Originality is not related to age.
6. (a) Elaboration is not related to culture difference.  
(b) Elaboration is not related to age.

## 1 · 5 REVIEW OF THE LITERATURE

What is creativity? What does it mean to be creative? Different people define creativity in many ways. There is no absolute way to define creativity and that which is regarded as creative in one culture may not be in another. Some people simply define creativity as the ability to bring something new into existence. Other may define creativity as the ability to see or to be aware and to respond. Still others define creativity as the process that results in a composition that is both new and valuable. Torrance (1962) defines creative thinking as the process of sensing gaps or disturbing, missing elements; forming ideas or hypotheses concerning them, testing these hypotheses; and communicating the results, possibly modifying and retesting the hypotheses.

Creativity can be approached in two ways. Creativity is a process as well as a product.

According to Roslansky (1970), "The creative process starts always with the seeing or sensing of a problem. The roots of creativeness lie in one's becoming aware that something is wrong, or lacking, or mysterious" (p. 20). One of the salient traits of a truly creative person is that he sees problems where others do not. Roslansky (1970) states that anything that is experienced or made by man—an idea, a work of art, a scientific theory, the design of a building—may be a creative product; but if they are to qualify as true creations they must first meet certain criteria. The first requirement of a creative product is novelty; it must be original. The second requirement, the product must be adaptive to reality. The third, the creative product must be produced. The fourth, the creative product must be an aesthetically pleasing one. The fifth, a creative product is one in which the product creates new conditions of human existence, transcending and transforming the generally accepted experience of man by introducing new principles that defy tradition and change radically man's view of the world.

There are two levels or distinct types of creativity. There is the little-understood talent-type creativity, exemplified by such unique individuals as Mozart. Such geniuses display innate capabilities characterized by a complex and unique drive. The second is the selfactualized creativity, akin to the naive creativeness of unspoiled children, a potential given to all human beings at birth (Taylor and Getzels, 1975).

Various stages of creativity, beginning in childhood, start with the eagerness to experience things. This stage can be seen in a child as he explores everything through his senses. At this point the child's imagination begins to develop. Creativity increases until the elementary years, particularly the third and fourth grades, when peer group pressure forces children to conform to the group (Torrance, 1962).

Lehman, according to Birren and Schaie (1977), was a pioneer in investigating creativity over the life span. According to Lehman, peak creative potential appears to occur in the years 35-40; the years 40-50 are comparable to the years 20-30, but the decline thereafter is both remorseless and accelerated (Birren and Schaie, 1977).

Is creativity learned? Torrance (1962) has developed a theory in which he says that creativity is learned. Torrance believes that given the right circumstances, creativity will emerge; likewise, creativity will remain submerged if it is denied proper opportunities.

Highly creative persons stress their inventiveness, independence, individuality, enthusiasm, determination, and industry, while the less creative stress virtue, good character, rationality, and concern for others. Being more self-accepting, highly creative persons are able to speak frankly and in a more unusual way about themselves (Taylor and Getzels, 1975). Creative

people are accurate, sharp observers, have high sexual drive, and are more vigorous and nervous than others; they bind high levels of tension, receive pleasure from discharging these tensions, and temporarily avoid distinction between self and object (Barron, 1969).

Creative men and women show many similarities in basic personality. It is true that each group has characteristics of its own. Creative men mathematicians are more outgoing, self-accepting, and masterful. The striking differences between creative men and women in professional status and in productivity after graduate school seem to reflect social roles and institutional arrangement more than fundamental creative traits (Rothenberg and Hausman, 1976).

There are several factors that serve to block or inhibit a person's creativeness, first among them being the failure to see a problem where one exists. He who is overly satisfied with himself or with the situation in which he finds himself will be blind to shortcomings in himself or in his surroundings. Another important factor that may hamper attempts to solve problems creatively is the amount and availability of information or knowledge pertinent to the solution. An excessive input of information makes the problem look more complex than in actuality it is (Roslansky, 1970).

One of the problems in the study of creativity is how to measure the factor. Various tests have been developed to measure creativity, but as with intelligence tests, the creativity tests are not always reliable. For example, according to Buros (1972), creative thinking may be influenced by personality and situational variables. Also, creativity tests cannot always be linked with socially valuable creative behavior.

Torrance and his colleagues have developed a battery of tests, called the Torrance Test of Creative Thinking (TTCT), by borrowing and adapting other tests. Some of the tests derived by Torrance are the "Just Suppose" tests, "Tin Can Uses" test, and "Ask-and-Guess". These are open-ended types of tests in which the subject elaborates on a question asked of him, thinks of unusual uses for an object, and elaborates on what is happening in a picture shown him (Barron, 1969). Torrance's tests measure four factors of creativity, namely, fluency, the number of ideas; flexibility, ideas that are different from those ordinarily associated with a problem; elaboration, extending an idea by building onto it; and originality, a novel or unique idea (Buros, 1972). As did Buros, Barron (1969) also sees limitations in these tests in that they may not utilize the subject's deepest thoughts, they measure creativity in fragments, and the tests are timed, therefore possibly stifling the subject's total development of his responses.

## 1 · 6 Creativity of the Japanese

Reischauer (1977) at Harvard University, the author of "The Japanese" says:

The popular generalization is that the Japanese are intellectually not very creative. No one can have any doubts about their great artistic creativeness, but their achievements in the realm of idea and philosophy do seem less impressive. No modern Japanese thinker has appeared noteworthy to the rest of the world. Japanese have made relatively few contributions to basic science, and only three or four so far have been singled out for Nobel Prizes. The Japanese industrial triumphs have been based largely on efficient borrowing or ingenious adaptation of foreign techniques rather than on independent scientific discoveries. Political thought, philosophy, and scholarship in the social sciences in Japan are to a large extent the manipulation or synthesizing of ideas derived from abroad, rather than original creative work (p. 225).

Reischauer (1977) also said that Japanese have always seemed to lean more toward subtlety and sensitivity than to clarity of analysis, to intuition rather than to reason, to pragmatism rather than to theory, to organizational skills rather than to great intellectual concepts. They have never set much store by clarity of verbal analysis and originality of thought. They put great trust in nonverbal understanding and look on oral or written skills in handling language and on sharp and clever reasoning as essentially shallow and possibly deceitful. Intellectuals as a whole tend to be isolated by their hotly defended "isms" from both the unresponsive masses and the pragmatic controllers of government and business. Westerners tend to look on the relative lack of intellectual creativity of Japanese as a sign of inferiority, but this may be only a Western cultural bias.

According to the Seidensticker (1961), the author of Life World Library Japan says that "Along with the dexterity and eagerness to learn from others goes the famous capacity for imitation. There can be no question that it exists, and that because of it the Japanese are able to economize on research. Japanese are only copiers and pirates" (p. 16). He also says that "Japanese are known as great borrowers, but they are also great preservers" (p. 105).

Cobb (1967) says "Japan, previous to the Twentieth Century, presented no opportunities for the development and expression of scientific ability" (p. 11). According to Akimoto (1961), "The other creative factor which had played a vital role in forming the peculiar Japanese culture, namely, the chronic poverty of material resources, has been the inevitable condition of Japanese life for millenniums, imposed by fate or providence, as you may choose to say" (p. 7).

According to Vogel, reported by Burks (1981) at Harvard University, the author of Japan as Number One says "Americans could learn a lot from Japan's success if they were only willing to pay attention" (Burks, 1981, p. 246). Vogel offered a masterful analysis of Japan's continued modernization long after post-war reconstruction, the country's effective organization, its skill

in adapting technological imports, its patience in marketing, and its disciplined work force. Japan could serve as a model, this time for other postindustrial powers (Burks, 1981).

According to UNESCO standards, Japan's literacy rate (99.9 percent) is the highest in the world. The total number of Japanese educational personnel including research and development (R & D), ranks second (after the United States) in the world (Burks, 1981). Also, Japanese are among the world's greatest readers of newspapers. The number of titles that the Japanese publishing industry turns out every year is among the highest per capita in the world (Seidensticker, 1961). Reischauer (1977) says "Japanese are indeed a highly educated people and in the field of mathematics, the Japanese have tended to rank first in the world" (p. 171).

In Japan, a group player is obviously appreciated more than a solo star, and team spirit more than individual ambition. Where the American may seek to emphasize his independence and originality, the Japanese will do the reverse. In Japan, cooperativeness, reasonableness, and understanding of others are the virtues most admired, not personal drive, forcefulness and individual self-assertion (Reischauer, 1977).

### 1 · 7 Creativity of the Americans

According to Cobb (1967), the author of *Importance of Creativity*, says "America has, during the course of the last hundred years, become the most inventive, the most creative country in the world. This creativeness has been stimulated and channeled by the vast projects of settlement, development and exploitation which the opening of the West sparked" (p. 16). Cobb (1967) also says "America is today highly creative in all the practical accessories of life. What it chiefly lacks is creativeness in the fine arts and the development of a mature and measured international intelligence" (p. 22).

### 1 · 8 Japanese Older People

Of Japan's total population of 115 million in 1978, the number of elderly numbered almost 10 million, or 8.6 percent. The number of elderly could reach 25 million, or 18 percent in the second decade of the twentyfirst century, a rate which would probably surpass those of other advanced industrial nations in the year 2015 (Burks, 1981). In January 1979, the Ministry of Health and Welfare estimated that the average Japanese lifespan had increased to 72.69 years for males and 77.95 for females, overall the longest in the world (Burks, 1981).

The 1978 White paper on National Welfare reported that the number of Japanese nuclear families consisting only of the elderly had increased from 680,000 (2.7 percent of all families)

in 1963 to 1.9 million (5.6 percent of the nation's households) in 1977. About three-quarters of Japan's over 65 population were still sharing homes with their married children (as compared with about one-fourth in the United States). Japanese observers, however, have referred to "quasi-household sharing" where the older live with the younger family members in the same house but with strictly separated living space and household accounts; and to "quasi-household separation", where the elders live separately but at a distance short enough to allow daily contact. In one case of quasi-household sharing, a young wife commented, "The privacy of each family is well guarded. I'm free from psychological warfare with my mother-in-law." Too, such quasi-household arrangements give to older people security and joy of living (Burks, 1981).

Japan's medical insurance system has been in effect since 1927. Nearly all doctors, hospitals and clinics, as well as dentists, handle medical insurance patients. As of December 1964, 98.5 percent of the entire Japanese population was covered by medical insurance programs and nearly 60 percent of all medical expenses was paid by medical insurance. Any kind of medical fee is totally free to older people whose age is over 60 and to children under 3 years old. When older people are mentally and physically impaired, they often stay at the nearest clinics or hospitals of their home which is free so that family and grandchildren can visit older people easily (Ministry of Foreign Affairs, 1967).

## 1 · 9 American Older People

Older people, those aged 65 and above, comprise 11 percent of the population of the United States (Atchley, 1980). Because of better medical facilities and care, citizens are living longer; for example, the average life span of a man is 72 years and the life span of a woman is 77 years. Older women compose a larger segment of the older population than do older men. Three out of every four wives in the United States eventually face widowhood (Cox, 1981).

In America, children tend to move away from their parents and establish independent households, moving the care of the elderly out of the children's reach. Most Americans own their homes and more than two-thirds the elderly remain in their home until death. Another 25 percent over 65 live with a child (Cox, 1981). Just over 4 percent of those in their late sixties live in institutions such as nursing homes (as compared with about 1.4 percent in Japan). But as age increased, so did the percentage. For example, 24 percent of those 85 years old or over lived in institutions (Atchley, 1980).

About 40 percent of those over 65 have long-term chronic conditions that interfere to some



degree with their daily activities. With the high costs of medical care, there are few people who can be completely safe from financial disaster (Cox, 1981).

For older people, examples of leisure activities can be church involvement, membership in social clubs, gardening, stamp collecting, reading or watching television. More than any other social institution, the church is the place where the elderly may find personal friendships to lessen their loneliness (Botwinick, 1973).

## 1 · 10 Creativity and the Aged

Much research is available on the process of creativity, but practically all the work has revolved around children and their creative abilities. As the study of gerontology grows, creative ability in older people will probably be investigated to a greater extent.

Wayne, cited by Hulicka, (1977) has said that scholarly productivity was maintained at a high level through the 60's with only a slight decline in the 70's. Also scientific productivity was maintained at a high level through the 60's. However there was a marked decline in the 70's. In addition, artistic productivity declined progressively from a peak in the 40's to a relatively low level in the 70's (Hulicka, 1977).

Decline with age for many functions may not be seen before ages 50 or 60, and even then the decline may be small. However, for other intellectual functions, particularly those involving speed or response of nonverbal, perceptual-manipulative skills, decline may be seen before then (Birren and Schaie, 1977). Human beings produce their best work when they are producing their largest volume of work. Lehman, cited by Birren and Schaie (1977) says "Intellectual capacity and its possible decline with age, may be important but cannot be the whole story" (Birren and Schaie, 1977, p. 622).

Another study shows that people who perform relatively well when young will also perform relatively well when old. However, the performance level when young is no yardstick of whether age decline will be great, small or neither (Birren and Schaie, 1977).

Another element that has some influence on creativity is problem solving. Botwinick (1978) says "Problem solving takes the form of publically recognized creativity. If problem-solving ability declines with age, it might be expected that creativity does too" (p. 258). While the ability to solve problems depends upon a variety of cognitive abilities, Botwinick (1973) concluded that cognitive ability declines with age. Elderly people have greater difficulty than younger people in solving laboratory problems, largely because these problems require abstract. Older adults prefer the more concrete tasks and work in a more concrete fashion than younger

adults. Education plays a role in the preference for the concrete such that the greater the education of the older person, the less the tendency to prefer and to think in concrete terms. Some evidence also exists that people who are very superior intellectually, and who can solve difficult problems, show no age decline until relatively later in life—not before age 70 (Botwinick, 1978).

In the discussion of creativity and its relation to old age, Lehman, noted by Torrance (1962), has said that age itself does not decrease creativity in older people, but the factors accompanying age are responsible for the decrease. Along with a decline in physical vigor and energy in old age, sensory capacity and motor precision seem to decline. All of these elements pertain to creative ability and therefore must affect it. Older people may be less motivated, inflexible and may strive less for achievement (Torrance, 1962).

A most important dimension to the reported decline in creativity with age is the great extent of individual variation. Many creative contributions throughout the ages have been made very late in life (Botwinick, 1978).

Finally, one can say that creativity is more apt to persist into late life and creativity can be retained and regained regardless of age. Even though age is not a barrier, adults must keep their minds active, life-loving, and problem-solving.

In summary, there is no absolute way to define creativity and that which is regarded as creative in one culture not be in another. Some American people say that the Japanese are intellectually not very creative but this may be only a Western cultural bias.

Late life is the time when an individual is best equipped to be creative. He has lived his life, gathered much information and knowledge and has a marvelous resource bank to draw on for his creative interests.

## 2. PROCEDURE

A correlational design was used in this study to determine if creativity is related to race or nationality and also to determine if creativity is related to age. The TTCT was administered to 40 older women, 20 Japanese and 20 American. Since the researcher is living in America, she asked her mother, living in Japan, to assist in data collection. The Japanese older women were tested individually by the researcher's mother. The American older women were tested by the researcher. After all of the older women were tested, the tests were scored and the chi-square statistical test was applied to the scores to determine the significance of relationships between variables.

## 2 • 1 Sample

The population from which the sample was drawn consisted of all people over 60 years of age in Fukuoka City, Japan and York County, South Carolina.

The subjects for the Japanese sample are 20 middle class, active senior citizens of whom seven were employed and 13 not employed outside the home. They are residents in Fukuoka City, Japan. The subjects for the American sample are 20 middle class, members of four different churches who were at the time residents in Rock Hill, South Carolina. Once the American sample had been selected, the researcher visited the churches approximately six different times to administer the TTCT to the subjects individually or in a group. The researcher proceeded by explaining the Circles test and then administered the test. This same process was utilized the six times testing was performed.

## 2 • 2 Method of Data Collection

Two kinds of data were required for this project. Minimal personal information was collected from the respondents. Specifically, they were asked to record their age. The second type of data consisted of the creativity scores.

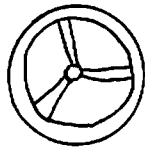
## 2 • 3 Torrance Test of Creative Thinking

The Torrance Test of Creative Thinking (TTCT) is a series of tests that were developed by E. Paul Torrance for the purpose of assessing creative thinking. Two forms of the test consist of the verbal test that measures fluency, flexibility, and originality and the figural test that measures fluency, flexibility, originality, and elaboration. This test was recommended by Torrance to be used in research studies of cognitive functioning, remedial programs, new educational programs, individualized instruction, and for measuring individual students' potentials. The TTCT can be administered either individually or in a group situation. The tests are scored by hand. The tests are Torrance's invention and tend to be eclectic rather than based on a theory of creativity. The TTCT is not a measure of all the important aspects of creative thinking but measures certain aspects of it. The test may be given to persons from kindergarten age through adulthood (Buros, 1972). No special training is needed to administer the test (Covington, 1982).

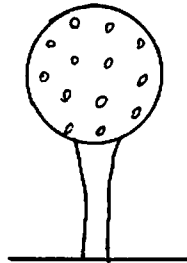
Instructions for CIRCLES TEST:

In 10 minutes see how many objects you can make from the circles on the pages attached. A circle should be the main part of whatever you make. With pencil or pen add lines to the circles to complete your picture. Your lines can be inside the circle, outside the circle, or both inside and outside the circle. Try to think of things that no one else in the class will think of. Make as many things as you can and put as many ideas as you can in each one. Add labels or titles, if the identity of the object is not clear.

Examples:



Steering  
Wheel



Golf Ball  
on tee

Fig. 1. Torrance Test of Creative Thinking— 1
















Age _____	Code _____	
		
		
		
		
		
		

Fig. 2. Torrance Test of Creative Thinking— 2

## 2 · 4 TTCT Scoring

The overall creativity scores of the TTCT consist of a summary of four subscores. These are fluency, flexibility, originality, and elaboration. Fluency is the total number of units or ideas of the respondent, for example, the total number of circles used in the circle tasks. In those very few instances in which a subject used more than one circle for one idea, only one fluency point was assigned.

Flexibility incorporates the change of frames of reference in items. While scoring this section, the researcher assigned items to categories. For example, wheel and tire would be assigned to one category and while the subject would get two points for fluency, she would only be assigned one point for flexibility. In like manner, moon and sun would be assigned to one category and only one flexibility point would be assigned.

Elaboration, "building onto the basic idea to make it more interesting and to tell more of a story" (Torrance, 1962, p. 47) is the third factor of creativity. In scoring this section, a respondent who made a face from a circle, for example, would receive points for elaboration if she drew eyes, ears, or a nose. Another example of elaboration would be a circle made into a clock. The subject would receive points for elaboration by drawing the hands and number of the clock.

Originality, "thinking of an interesting idea no one else in the (group) will think of" (Torrance, 1962, p. 47) is the fourth element of creativity. In scoring this section, every idea given on the tests was written down and a tally mark placed beside it everytime the same item reappeared. After all items were written down and tallied, the researcher assigned five points to any idea appearing only once, three points to any idea appearing twice, and one point to any idea appearing three times. For example, with these particular respondents only one person gave crab as an idea on the Circles test and therefore received five points for originality for that particular response. Other examples of responses that received no originality scores were face, flower, and clock. A subject would have received fluency, flexibility, and elaboration points but no originality points. Originality was therefore statistical originality or uniqueness of a given response.

2 · 4 · 1 **Validity** : There is always a problem of establishing the validity of an instrument, especially for factors that are as elusive as creativity and imagination. According to Buros (1972), "the studies do suggest that the test does measure behaviors consistent with the literature on creative behavior" (p. 837), but there was also two criticisms of the TTCT. Much work on examining the predictive validity of the test needs to be done, and the TTCT needs somehow to show its connection with reality and that it is predictive of socially valuable

creative behavior. Buros (1972) states that the TTCT is useful for further research of creativity but that it should probably be used with a great deal of assessing an individuals' creative potential without better norms, a link with real-life creative behavior, and studies of predictive validity.

**2 · 4 · 2 Reliability :** Creative thinking may be affected by situational and personality variables, and motivational conditions can be anticipated to influence test-retest reliability. As a result, test-retest reliabilities range from .50 to .93 over one- to two-week periods and from .35 to .73 over three-year periods. According to Buros (1972), "the diversity of studies and samples suggests that the scales have adequate reliability" ( p. 837).

In summary, the TTCT was chosen for this particular study because it measures four factors of creativity in a relatively simple and quick method. Another reason for the selection of the TTCT is that it was seldom used on older people to the researcher's knowledge although it is appropriate for any age. The TTCT has sufficient evidence of reliability and validity for the present investigation.

**2 · 4 · 3 Design :** This research study utilized a correlational design. Following selection of the instrument, the Torrance Test of Creative Thinking, two organized groups from which the samples could be drawn were identified. An active group of senior citizens were identified in four different churches for the American sample. Permissions were obtained to interview persons in churches and a procedure was developed to assure confidentiality of the subjects. Once data were obtained, these were put in a secure place with only code numbers used on the instruments.

Appointments were made to administer the tests to the American groups in June 1982. The test was administered individually or in a group. The subjects who were in Japan were tested on an individual basis by appointment during the time period of May 1982 to June 1982. Following completion of the data collection, the instruments were scored and analysis was done during July 1982.

## **2 · 5 Method of Data Analysis**

The chi-square statistical test was the selected method for analysis of the raw scores obtained from the testing. This particular statistical test was chosen because it is a measure of associations between two or more nominal level variables; the variables in the present study, nationality and age respectively, were assessed for relationship with overall creativity. The five percent level of significance was chosen for rejecting or failing to reject the null hypotheses.

Each of the four factors ( fluency, flexibility, elaboration, and originality ) from which the overall creativity scores were derived and assessed, was compiled according to their age and national origin.

### 3. FINDINGS

The chi-square statistical test was used to test the hypotheses of this study. The five percent level of significance was selected as the basis for rejecting or failing to reject an hypothesis. The findings based on statistical treatment of the null hypotheses will be enumerated below.

Hypothesis 1 : There is no significant difference between the overall creativity scores on the TTCT of Japanese older women and American older women.

In testing this hypothesis, the overall creativity scores were ranked from lowest to highest (42 to 141) with notations as to which ones were Japanese older women and which ones were American older women. The median was then found and those above the median considered low achievers in creativity and those scoring below the median considered high achievers in creativity. The chi-square statistical test was computed and a value of 3.6 with one degree of freedom was obtained. This was not statistically significant. Results indicated that nationality was not significantly related to either high or low creativity scores.

Hypothesis 2 : There is no significant difference between the overall creativity scores on the TTCT of junior and senior older women.

In testing this hypothesis, the ages of the respondents were placed in order from youngest to oldest. The ages ranged from 60 to 70 years of age with a median of age 65. When the median was found, the respondents above the median ( ages 60-65 ) were designated as junior older people and those respondents below the median ( ages 66-70 ) were designated as senior older people. The chi-square statistical test was then computed on data concerning age of respondents. A value of 3.2 with one degree of freedom was obtained. It was not statistically significant at the .05 level. The findings revealed that being a junior or senior older person was not significant with regard to the overall creativity scores.

Attention was then turned to the assessment of the specific factors that compose the overall creativity score. These factors are fluency, flexibility, elaboration, and originality. Hypotheses addressed to this possible relationship were the following:

- 3 a Fluency is not related to culture difference.
- b Fluency is not related to age.

4 a Flexibility is not related to culture difference.

b Flexibility is not related to age.

5 a Originality is not related to culture difference.

b Originality is not related to age.

6 a Elaboration is not related to culture difference.

b Elaboration is not related to age.

Individual chi-square tests were computed on the "a" parts of the above hypotheses which dealt culture difference. The results are presented in Table 1.

**Table 1.** Relationship of TTCT Components to Culture Difference

	$\chi^2$	Significance
Fluency	0.4	N.S.
Flexibility	0.4	N.S.
Originality	0.4	N.S.
Elaboration	10.0	0.01

N.S. : Not significant

The null hypotheses concerned with fluency, flexibility, and originality were not related to culture difference. With respect to elaboration, a chi-square statistic of 10.0 was obtained which was statistically significant at the .01 level. Therefore, this null hypothesis was rejected with a conclusion that there was a relationship between culture difference and the tendency to score lower on the elaboration factor. The Japanese women put a great deal more detail into their drawings and consequently scored significantly higher on the elaboration factor.

**Table 2.** Relationship of TTCT Components to Age

	$\chi^2$	Significance
Fluency	0.8	N.S.
Flexibility	0.8	N.S.
Originality	3.2	N.S.
Elaboration	3.2	N.S.

The null hypotheses which state that there are no significant differences between scores on the individual components of creativity and age of the respondent cannot be rejected. According to these results, there was no relationship between the scores on the individual parts of the TTCT and age of the respondent.



#### 4. SUMMARY AND CONCLUSIONS

The purpose of this study was to compare creativity scores from the TTCT in two groups of older people. Japanese women and American women. Another purpose of the study was to determine if the age of the respondents had any effect on their creative ability.

One subtest of the Torrance Test of Creative Thinking designed by Torrance (1962) were used to assess creativity. This test was the Circles test. The overall creativity score was obtained by compiling the scores from the subtest.

The subjects were 20 Japanese older women in Fukuoka City, Japan. They ranged in age from 60 to 70 years. The remainder of the sample consisted of 20 American older women in Rock Hill, South Carolina. They ranged in age from 60 to 70 years.

The creativity tests were scored by hand by the researcher. Chi-square analysis were computed. The .05 level of significance was used as the basis of rejecting or failing to reject the null hypotheses.

The major hypotheses dealt with the relationship between creativity scores and nationality and between creativity scores and age of the respondent. Additional hypotheses dealt with the components of creativity scores and their possible relationship to age and culture difference.

Overall creativity was not found to be related to nationality nor to the age of the respondent. When the individual components of creativity were tested, the chi-square results showed that the factor of culture difference was significantly (.01) related to the elaboration scores. Fluency, flexibility, and originality were not significantly related to culture difference and age of respondent.

The conclusion was that creativity and nationality were not significantly related in the sample used. Creativity and the age of the respondent do not seem to be related.

Some suggestions for further research of creativity and older people could involve expanding the sample and considering a male sample since these subjects were all female. Another suggestion could be the relationship of employment outside the home to creativity. Would one likely find any differences in creativity when women who have interacted extensively in the world outside the home are compared with those who spend the major portion of their lives within the house.

The interesting thing we found between Japanese and American older women was their creative traits are similar even though Reischauer said Japanese are not creative. Another interesting observation, although not treated statistically, was the domesticity factor. Specifically reviewing the responses on the circles test, I noticed an unusual number of Japanese responses

were kitchen, cooking, or home-related items: for example, many women drew a pan lid, teapot, hand mirror and fan. After reviewing the results, one might speculate that Japanese women spend a great deal of time inside the home for housework. They spend at least two hours preparing supper and one and a half hours washing the dishes. Scrubbing the house everyday is a common occurrence in Japan, especially among old aged people. Compared to Japan's responses, many American women drew a ball, a smiling face, a sunflower and balloon. Very few American women drew domestic items.

The trait of creativity appears to persist into later life when good health is present. It is especially important then that attention be given to older people, both Japanese and American and that time and activities be arranged to increase their creative activity.

## REFERENCES

- Akimoto, S. : Exploring the Japanese ways of life (Japanese) , Tokyo, Tokyo News Service (1961)
- Atchley, R. C. : The social forces in later life, California, Wadsworth Publishing (1980)
- Barron, F. : Creative person and creative process, New York, Holt, Rinehart & Winston (1969)
- Birren, J. E., and Schaie, K. W. : The psychology of aging, New York, Van Nostrand Reinhold (1977)
- Botwinick, J. : Aging and behavior, New York, Springer Publishing (1978)
- Burks, A. W. : Japan: Profile of a postindustrial power, Boulder, Col, Westview Press (1981)
- Buros, O. K. : The seventh mental measurements yearbook, Highland Park, N. J., The Gryphon Press (1972)
- Cobb, S. : The importance of creativity, Metuchen, N. J., The Scarecrow Press (1967)
- Covington, N. R. : Personal communication, May (1982)
- Cox, F. D. : Human intimacy: Marriage, the family and its meaning, New York, West Publishing (1981)
- Masuda, N., and Miura, F. : White paper of the aged (Japanese) , Tokyo, Sekibunsha (1980)
- Miki, T. : The Japan of today (Japanese) , Tokyo, Shumposha (1967)
- Reischauer, E. O. : The Japanese, Cambridge, Mass., Harvard University Press (1977)
- Roslansky, J. D. : Creativity, Wood Hole, Mass., North Holland Publishing (1970)
- Rothenberg, A. : The creativity question, Durham, N. C., Duke University Press (1976)
- Seidensticker, E. : Life World Library: Japan, New York, Time Incorporated (1961)
- Taylor, I. A., and Getzels, J. W. : Perspectives in creativity, Chicago, Aldine Publishing (1975)

Torrance, E. P. : Guiding creative talent, Englewood Cliffs, N.J., Prentice-Hall (1962)