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INDIVIDUAL DIFFERENCES IN THE RECALL OF REMEMBRANCES AND MEMORIA

by

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A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

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Chairman of Examining Committee

May 31, 1972
date

Executive Officer

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Prof. Max Hertzman

Prof. William King
Supervisory Committee

The City University of New York

"The thirty-five years of his conscious life made themselves immediately known to him as a chaos - a pack of snapshots in the hands of a lunatic. And who decided which snapshots were to be kept, which thrown away?"

- Aldous Huxley

"I feel that there is much to be said for the Celtic belief that the souls of those whom we have lost are held captive in some inferior being, in an animal, in a plant, in some inanimate object, and so effectively lost to us until the day (which to many never comes) when we happen to pass by the tree or to obtain possession of the object which forms their prison. Then they start and tremble, they call us by our name, and as soon as we have recognised their voice the spell is broken. We have delivered them: they have overcome death and return to share our life.

"...saying to myself, with the selfish pleasure of a collector, as I thus catalogued the illustrations in my memory, 'Just the same, I have seen some beautiful things in my life!'"

- Marcel Proust

Abstract

INDIVIDUAL DIFFERENCES IN THE RECALL OF REMEMBRANCES AND MEMORIA

by

Lane Glassman

This was a study which concerned itself with the distinction, proposed by Reiff & Scheerer (1959), between two basic forms of memory - remembrances and memoria. Remembrances are those memories which have an autobiographic index for the rememberer - they happened to him at a particular point in his past. Memoria are those memories without a personal-temporal framework, such as acquired knowledge, skills and habits. It was hypothesized that: 1) The recall of remembrances is a stable and general individual differences parameter that is independent from the ability to recall memoria; 2) A person will tend to recall one form of memory - either remembrances or memoria - better than the other.

A Memory Scale, adapted from March (1966), which elicited avowed recall for details of personal experience in both the distant and recent past, was given to 78 female college students along with a 30-item vocabulary test. Twenty

subjects were chosen - 10 from the upper quartile and 10 from the lower quartile on the Memory Scale - who were matched for their vocabulary scores in order to control for verbal intelligence. The high Memory Scale group was assumed to be high in ability to recall remembrances and the low group to be low in this ability.

These 20 subjects were then given a battery of tests for each form of memory. For recall of remembrances, they were first given a Personal TAT test in which they were required to tell a story personal to their lives for each of 10 TAT cards (cards 3BM, 7GF, 8GF, 9GF, 12F, 12BG, 13MF, 17GF, 19 and 20) and then to recall these stories. They were also given a Verbal Free Association task for 2 separate stimulus words and then asked to recall their associations. For recall of memoria, 10 different TAT cards were shown to the subjects (cards 1, 2, 3GF, 4, 5, 6GF, 7BM, 10, 13G and 14), while the examiner read a story appropriate to each card, after which these stories were recalled. Also, the Theme-List Technique (Paul, 1959), which tests for recall of a list of themes forming the plot outline of a story, was used. A neutral distracting task was interpolated between each of the tests and its recall.

Intercorrelations between scores for all tests supported the first hypothesis for the low, but not for the

high remembrance group. Statistical evidence pointed to the fact that the high group was not actually high in ability to recall remembrances. Therefore it was not surprising that the second hypothesis, with its expectation of significant differences in ability to recall remembrances and memoria between the two groups of subjects, was not supported.

Acknowledgments

I would like to express my deepest thanks ...

To my husband, David, for his limitless understanding during the most trying of times and for his genuine happiness at my achievement,

To Prof. Irving Paul for always being available in just the right way and for his unfailing sense of balance and humor,

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To Profs. Herb Nechin and Mae Lord for their gentleness and their help,

To Dr. David Friedman, who helped me to recognize the worth in myself,

And to my parents, who never doubted it.

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CHAPTER I

Introduction

There are people who can recall their past experiences in exquisite detail. They can vividly reconstruct incidents they were party to; they can recount every exchange of an extended conversation they had. In telling of a meeting with a stranger, they can describe the color of his hair, the expression on his face, the feeling they themselves had at a certain point in the conversation. And yet some of these individuals, who can so readily retrieve their past experiences with clarity and completeness, may otherwise astonish us by being unable to recall simple facts that had no personal context or relevance. The name of the main character in a novel they just finished reading is lost to them; they cannot recall telephone numbers and dates; they may read the newspaper carefully only to discover later that they cannot remember what it was they read about. They show a weakness in remembering certain kinds of facts that can be as surprising as their strength in remembering personal events. Similarly, there are others who show the opposite; who can with great ease recall facts, figures, dates and the like - impersonal pieces of information or knowledge. They can produce in an instant the name of the Secretary of State under Wilson, the year of the last economic recession,

and so forth. But when it comes to recalling a personal experience they can only give a sketchy and dry account. Their memory of a conversation is vague and has none of the richness of affect and clarity of detail that the original event possessed.

Most people, of course, do not show such a sharp cleavage in their ability to recall the past. But that does not rule out the possibility that we may be observing two kinds of remembering processes, two independent (sometimes antagonistic) abilities or memory skills. There is substantial basis in the psychological literature for postulating this distinction. And it is this distinction that the present study examines.

Individual differences in remembering

It is implied here, first of all, that individual differences do exist in the ability to remember. Experimenters such as Ebbinghaus began as early as 1885 to study memory experimentally. However, he was interested in memory as a pure factor or ability divorced from the individual qualities, interests and personality of the subject he was testing. Therefore he used nonsense syllables - meaningless clusters of letters that could have no personal relevance to anyone - as the material to be remembered. As interest in the individual

as the rememberer began to develop, however, differences in ability to recall came into focus.

It is by now a commonplace (and Galton pointed it out long ago) that people's memories are strongest for material that belongs in the sphere of their interests and attitudes. The first extensive research in this area was carried out by Bartlett in 1932. It was one of his favorite notions that remembering is reconstructing, not reviving a static copy of the original event. He felt that the later reconstruction was built on the contours of the individual's interests, attitudes, affects and goals.

Koffka (1935) discussed the differences in the availability of memory traces, thus implying that for each individual there are certain memories that are easier to recall than others. He wrote that the availability of the trace "depends upon proper connection between the trace system and the Ego. Now this connection depends upon a host of factors among which the so-called conative ones are probably of paramount importance. If a trace is derived from a process which was directly connected with a person's interests, then it will have its place in a field formed by a process of high intensity and will be in particularly close connection with the Ego system. Such traces then are favored for many reasons." (Koffka, 1935, p. 526) Rapaport (1942), in his

dynamic formulation of memory, stressed the need for an integration of affect and cognition to facilitate retention. His view of memory was not of a simple, isolated cognitive process.

Despite the fact that there has been relatively little research directed at individual differences in ability to freely recall, there is sufficient evidence to suggest that stable individual differences do exist. Bartlett (1932) studied individual differences in remembering and found them to be based on certain conative factors. However, he did not separate learning from remembering. People, after all, pay more attention to material that interests them, and they recall it better for the simple reason that they learned it better.

Paul (1959) attempted to separate strength of learning from strength of remembering. Using differing techniques - repeated reproductions of a story, repeated reproductions of a theme list, repetition of an original composition based on the theme list - he found a highly intercorrelated series of retention accuracy measures which constituted a retention ability factor quite separate from learning ability.

Aside from simple retention accuracy, individuals differ in their style or manner of remembering. These differences are the effect of individual differences in needs, interests

and attitudes. They were first investigated by Gomulicki (1956). He found differences in quality and manner of recall as well as in ability. He stated that these differences can be demonstrated "... with a degree of statistical significance that makes it perilous to ignore them when designing experiments in recall" (Gomulicki, 1956, p. 400).

Several parameters of style differences in remembering have been studied. The most extensive work has been done by Paul, specifically in the memory style he calls Importation (1959). He found a consistent tendency in certain people to fill in gaps in recall with additional material and an equally consistent tendency in others to strip away material and segregate rather than join ideas at these same gaps. The first group were known as Importers, the second as Non-Importers. In regard to the memory style of Importation, his findings "... were unequivocal in their testimony to its validity as a parameter of individual difference" (Paul, 1959, p. 144).

Singer (1966) studied differences in the manner in which people recalled a conversation in which they participated and related these differences in memory to certain personality and affective factors. She found that "... those subjects who greatly value social success and have a strong need for social approval tended to recall the conversation

in a personal and subjective way. Subjects who are independent-minded and have confidence in their own values tended to argue strongly for their point of view and to recall the conversation objectively, specifically and completely" (Singer, 1966, p. 1296). She also found that negative feelings toward the partner in the conversation led to subjectivity and inaccuracy of recall. Although the interpretation of the findings was somewhat simplistic, the results suggested consistent individual differences in memory style.

Recently, attention has been paid to differences in retention style as related to other cognitive styles. Eagle, Fitzgibbons and Goldberger (1967) found that field-independent subjects tended to remember task-relevant stimuli well while field-dependent subjects were more attuned to task-irrelevant stimuli.

Remembrances and Memoria

In the introduction, two kinds of memory were discussed: memories with a link to one's personal life, and impersonal memories - habits, facts, etc. Making this kind of distinction with respect to memory has a long and substantial history. James (1890), one of the early theorists, expressed the idea that the consciousness of the continuity of the self between the past and the present is necessary for remembrance. Here he is discussing memory which has a personal

link. Since an idea is recognized as a memory in an individual's consciousness by the accompanying experience of its having occurred in his personal past, it is logical that men such as James and Bartlett thought of remembering as dealing only with personally-dated memories. However, memory is a much broader field. It also encompasses remembered material which has no historical index in a person's life.

The difference between memories with and without an historical index was first discussed by the philosopher Henri Bergson (1896). He visualized one type of memory which imagines or "represents" and another type which repeats. Bergson exemplified the difference between these two types of memory by the experience of learning a lesson by heart. If, for example, it takes five trials to learn a lesson by heart, the student is left both with the completed and perfected memory of the lesson and with the individual memories of each of the five rehearsals. The first type of memory "repeats" the lesson. The memory of any one of the trials, however, is like an event in the student's life. It "... has none of the marks of a habit. ... Its essence is to bear a date" (Bergson, 1896, p. 90).

The most complete exposition of this difference was made by Reiff and Scheerer (1959). They distinguished between two primary forms of memory, which they called

remembrances and memoria. Remembrances are those memories which refer to an event in a person's past. They carry along with them the experience of an autobiographic index, "which is historical in personal time" (Reiff & Scheerer, 1959, p. 26). This experience has two aspects: first, the person is aware that the event he is recalling in his 'now' took place in his 'then' - "there is a dual reference in personal time"; second, the content of the remembrance has to be "historical within an autobiographic frame of reference - even if the search for a specific place or date is unsuccessful" (ibid). Finally, although remembrances are primarily experiential, their relationship to the environment can be understood if they are thought of as "... events-as-perceived-by-the-person and referred to his own autobiographic span" (p. 30).

Memoria, on the other hand, refers to those memories which have no autobiographic index. There are four categories in memoria. The first are memories without the experience of a personal-temporal index. Acquired knowledge such as vocabulary, mathematical formulae, and names fall into this category. The second group are memories which have a historical-temporal aspect, but no personal index. Included in these are historical dates which are learned but which are referred only to a general rather than to a personal

historical framework. The third category consists of habits and skills - abilities and thoughts which are automatized. The fourth group are memoria "... based upon ego apparatuses which have formed in the course of psychophysical growth. Such are perception, thought, motility, and other organismic functions..." (1959, p. 27). As Reiff and Scheerer state, "... there seems to be a relationship between the environmental context and memoria as knowledge; the information incorporated in the memoria has an impersonal character, i.e., it relates to events-as-perceived-by-the-person and refers them to the 'objective' surrounding, without special ego reference" (p. 30).

Further light can be shed on this distinction if we contrast remembering and knowing. Phenomenologically, there are some important differences between remembering and knowing. A person knows the sum of 3 and 3; he does not need to remember it. Nor, in fact, can most people remember when they first learned that 3 and 3 was 6. Remembering, in a sense, consists of knowledge to which a temporal tag is attached, and remembering is an activity which reconstructs a state of affairs which the person locates in the past. But it is also his past. Knowledge rarely feels personal (that 3 and 3 is 6 is, after all, "common" knowledge); remembering rarely feels impersonal. A sense of me-ness is usually not far away whenever we are remembering.

Research done on patients suffering from Korsakoff's syndrome has provided support for the distinction between remembrances and memoria. Krauss (1930), in reviewing studies on memory disturbances connected with this syndrome, came to the conclusion that what was lacking was not the content of the memory - the memoria - but rather its connection with the person's self - its temporal and personal index. For example, a patient was pricked with a pin. A few minutes later the experimenter approached him with a pin again and he flinched and drew back although he no longer remembered either the prick or the pain. Therefore Krauss feels that in this disease the basic impairment is that of "historical consciousness," (Reiff and Scheerer, 1959, p. 29) making it difficult for the patient to recall what have been referred to as remembrances.

In regard to remembrances, an issue has been raised both by Reiff and Scheerer and by Schachtel. This is the phenomenon called childhood amnesia. It has long been a matter of interest and speculation that most adults have virtually no memory for their early years, until about age 5 or 6. The missing memories in question here are, by definition, remembrances, since they are autobiographical. Until recently Freud's explanation that this massive memory loss is due to repression has been the popularly-accepted

one (Freud, 1938). However, in 1959 Schachtel offered another explanation. He felt that childhood amnesia occurs because "the categories (or schemata) of adult memory are not suitable receptacles for early childhood experiences and therefore not fit to preserve these experiences and enable their recall. The functional capacity of the conscious, adult memory is usually limited to those types of experience which the adult consciously is aware of and is capable of having" (Schachtel, 1959, p. 284). Therefore he feels that, due to the differing modes of experience from childhood to adulthood, the childhood remembrances are lost. However, he does not claim that they are all lost. There may well be a difference between people in ability to recall even these early autobiographic memories. Schachtel even hypothesizes that, "the more rigid, controlled, and automaton-like a person is ... the more difficult will it be for him to recover any experience that does not fit into the conventional patterns which govern his life" (p. 316).

March, in 1966, did an interesting and relevant study concerning future vs. past time orientation. She found that those groups of subjects that had either an extremely good or extremely poor memory for events in their personal past (both distant and recent past) did not perform as well on a behavioral measure of future orientation as did those subjects

who could recall a moderate amount from their past. March hypothesized that being actively involved with one's past leaves less energy to deal with planning for one's future. She saw both hypermnesia and hypomnesia as essentially the same, with the latter acting merely to defend against the former. However, even if one chooses not to interpret the phenomenon in this way, there is still clear evidence that individual differences do exist in the ability to recall remembrances.

Trace vs. schema

Beyond the purely descriptive difference, there is a basic psychological difference in the representations of remembrances and memoria and in their recall. It is obvious that a good deal, though certainly not all, of acquired memoria can be reproduced accurately. If this were not true, it would be very difficult to exist in the world because the basic outlines of reality would be different for each person and no skills or essential information about the environment would be preserved. As for those memoria that are not accurately reproduced, it has been variously shown that learning may have been interrupted or that traces may have undergone either deterioration or changes (Reiff and Scheerer, 1959, p. 38-39, 42-45). With remembrances, on the other hand, the the recall is often not merely factually inaccurate, but,

more important, changed in organization and structure. For example, a woman's memory of her wedding ten years later may focus solely on the dress she wore, ten years after that on the food that was served, and so on (Reiff and Scheerer, p. 39). Again we are confronted with reconstruction of remembrances being "understood... as a capacity for the organization and reconstruction of past experiences and impressions in the service of present needs, fears and interests" (Schachtel, 1949, p. 198).

This difference between the two forms of memory in the possibility for faithful reproduction of content and, particularly, of structural organization suggests the primary vehicle for the one (memoria) being a memory trace and for the other (remembrances) being a schema. If a trace can be thought of as a literal facsimile laid down of the original experience, then memoria, with their possibility of being accurately reproduced, can be seen as retained by a system of traces. But how to account for remembrances? Paul, in his extensive discussion of the relationship between schema and trace (Paul in Holt, 1967) defines schema as an abstraction, simplification and articulation of experience. He contends that the motivational and affective aspects of experience play a major part in both its formation and operation. Later on he states that schema theory is particularly

appropriate for that class of remembering that involves the reproduction of meaningful experiences (i.e., remembrances), especially in view of the lack of correspondence for a schema between the experienced event and its recall, the latter having the properties of a reconstruction.

Hypotheses:

1. The recall of remembrances is a stable and general individual differences parameter. It is independent from the ability to recall memoria.

2. It is expected that a person will tend to recall one form of memory - either remembrances or memoria - better than the other. In other words, those subjects who recall remembrances well will tend to do less well when recalling memoria and vice versa.

CHAPTER II

Procedure

Any attempt to test the hypothesis has to depend largely on the population of subjects used as well as on the population of recall tasks. Memory tasks were needed that would yield objective indices of accuracy and completeness of recall, and two sets were needed; a set of tasks that would tap the recall of remembrances and a set that would tap the recall of memoria.

The subjects who were selected for this study were relatively homogeneous (e.g., in age, sex, intellectual level and so on) and the tasks were also homogeneous with respect to whether they tap remembrances or memoria. That there would be a range of individual differences on the tasks was likely, but the crucial determination was whether these differences would be relatively stable across the two kinds of memory tasks.

First, a description of each of the tasks used will be presented and then the research design will be outlined.

A) Tests for Remembrances

1) Memory Scale - The Memory Scale, adapted from March (1966), is a questionnaire with 55 items which tests avowed memory for personal events and experiences, both past and present. The questions range from early childhood through teenage years to the present. The questionnaire measures

how much available memory people have for these personal experiences. The results show how rich in detail an individual's personal memory is, but the scale has no built-in check on confabulation, false memories or false elaboration. The results are in the form of a Memory Available (avowed memory) score. One point was given for each question the subject was able to answer decisively. The total possible score is 55. For more detailed information on this scale, see the section on the results of the pilot work done on the questionnaire (Chapter III). A copy of the Scale itself can be found in the Appendix.

2) Recall of Personal TAT Stories - Certain methods were needed to determine in an objective way the ability to remember personal experiences. The first of these measures relied on recall of Thematic Apperception Test stories. The subjects were asked to make up stories for 10 TAT cards chosen from the standard TAT battery (Murray, 1943). The following cards were presented: 3BM; 7GF; 8GF; 9GF; 12F; 12BG; 13MF; 17GF; 19; 20. Since the subjects were asked to tell stories personal in nature, an attempt was made to choose TAT pictures with which this population could identify. For example, most of the pictures are of young women. The stories were written down by the examiner. This method was chosen because having the examiner record the stories herself tended to slow the subjects down and keep the stories

to a manageable length. The subjects were given the standard instructions for the TAT from Murray (1943, p. 4). Then they were further instructed to make the stories personal in nature - somehow related to their lives. These instructions helped make it their story rather than just a story. They were told:

> This is a story-telling test. I have some pictures here that I am going to show you, and for each picture I want you to make up a story. Tell what has happened before and what is happening now. Say what the people are feeling and thinking and how it will come out. You can make up any kind of story you please, as long as it is also somehow related to your life - to something that happened to you, that was important to you. The story should have some personal meaning for you. Do you understand? Now, here is the first picture.

After the stories were recorded, the subjects were given a neutral interpolated task in order to hold their attention and divert it as much as possible from thinking about the stories. This was done to minimize both recency and rehearsal effects. The interpolated task took 10 minutes, after which the subjects were again given the TAT cards, one at a time (in the original order), and asked to recall their stories in the following way:

> You will now be shown the pictures again, one at a time. I want you to repeat as much as you can remember

> of the story you made up for each picture. Please be as accurate as possible. I realize that it is very difficult to remember the story exactly, word-for-word, but be as precise as you possibly can. Do you understand? Now, begin.

This test was scored on an information unit basis. Each story was broken down into information units (Paul, 1966). The recall of the story was then compared with the original. Two points were given for an exact recall of a unit and one point for a good synonym. Therefore the total possible score for any one story was 2 times the number of information units the original contained. The actual score received for the recall of each story was divided into the total possible score for that story and the statistics were run using the resulting percentage as the basic datum.

3) Verbal Free Association Test - Both the Memory Scale and the TAT stories are rather structured tasks. Another task was needed that was more free and immediate - more intensely personal. Therefore the subjects were given a verbal free association task. The test chosen was the one used by Gardner et al. (1959) in their study of cognitive controls. In testing what they called the "Constricted-Flexible Control," the authors used a task where the subject, in a comfortable position in a darkened room, was given the following instructions:

> "I'd like you to close your eyes when we start. This isn't a test in the usual sense at all. That is, you can't be right or wrong in what you say. I am going to say a word, and after I say it you are to report everything that comes into your mind - words, sentences, thoughts, images, anything - after I say a certain word. My word is meant just to start you going, but it is not meant to limit you in any way. You are to say everything that comes into your mind. Now close your eyes and sit back comfortably."
> (Gardner et al., 1959, p. 64).

The experimenter then said the word "Dry" and had the subject associate to this word for three minutes. One encouragement was offered to the subject after a particularly long pause. The same procedure was then carried out with the word "House."

The same procedure was used in this experiment with the the following changes: After the subject had associated to a word for three minutes, she was given a ten minute concentration task and then asked to remember as much as she possibly could of her associations to the word within 5 minutes. She was given the following instructions:

> Now please repeat as completely and accurately as possible all the thoughts you reported that came into your mind when you heard the word "Dry" (or "House"). I will say the word "Dry" and then I want you to repeat the thoughts you reported as nearly as possible in the original order and with the exact words. Do you understand? Now, begin.

Both the associations and the recall of the associations were recorded on a tape recorder and then transcribed. This test was scored on an information unit basis in exactly the same manner as the Personal TAT.

B) Tests for Memoria

The tests for memoria were chosen so that they paralleled as much as possible the modes of recall required by the remembrance tasks. This was done so that the major difference between the two sets of tests would be in the form of memory required. Therefore all the tests, both for memoria and for remembrances, tap memory for extended verbal material. Also, a TAT technique was used both for memoria and for remembrances.

1) Recall of Presented TAT Stories - This technique, again, required subjects to recall TAT stories. However, in this case the stories they had to recall were read to them by the experimenter - they were not constructed by the subjects themselves. The subjects were shown ten TAT cards - different from the set of cards they were shown in the Personal TAT task. Again, the standard set of TAT cards was used and the following cards were presented: 1; 2; 3GF; 4; 5; 6GF; 7BM; 10; 13G; 14. While the subjects were looking at each card, the experimenter read a story to them that was appropriate

to that particular card. The stories were constructed in a balanced way so that there were emotional, plot and character-descriptive elements in each. The stories ranged in length from 46 to 77 information units with a mean of 54.9 information units per story. (Copies of the stories can be found in the Appendix.) The following instructions were read:

> I have some pictures here that I am going to show you. As you look at each picture, I will read you a story about that particular picture. Please look at the picture and listen very carefully while I read. I will read each story twice. Now, here is the first card. (Story is read.) Now I will repeat the story once again. Please look at the card.

Each story was read twice in succession.

After the stories were read, the subject was given a neutral interpolated task lasting ten minutes. Then the subject was shown the cards again, one at a time and in the original order, and given the following instructions:

> You will now be shown the pictures again, one at a time. I want you to repeat as much as you can remember of the story I read to you about that picture. Please be as <u>accurate</u> as possible. I realize that it is very difficult to remember the story perfectly, word-for-word, but be as precise as you possibly can. Do you understand? Now, begin.

The answers were recorded on tape and then transcribed. The data was scored according to the information unit system previously discussed.

The usefulness of such a task is that it parallels the TAT test for remembrances, so that comparisons of results on the two tests are less contaminated by factors other than the distinction between remembrances and memoria.

2) Theme-List Technique - The Theme-List Technique, developed by Paul (1959), is designed to test the way people remember extended and connected verbal material. This test was given to the subjects exactly in the way it is recommended in Paul's Manual describing the task (1966). The experimenter verbally presented to the subject a list of seven sentences or themes. These themes are loosely connected and form the plot outline of a story. Before the list was presented, the experimenter read Paul's instructions, which set up full expectational and intentional sets, as follows:

> "I am going to read you a list of themes of a story called ------- (the title of the theme-list). I would like you to listen carefully as I read this list of themes because I want you to get to know it. Later I will ask you to recall the themes from memory. I will read you each of the themes twice in succession.

> Please listen closely and get to know them. Do you have any questions? ..... O.K., let's start. There are seven themes, and I will read each one twice. The story is called --------." (Paul, 1966, p. 3.)

The themes were then read, each one twice in succession. Then the subjects were given a ten minute concentration task, similar to the tasks given with each of the other memory tests. After the concentration task, the subjects were asked to write down the original list of themes. This is the first or "learning" reproduction. The experimenter instructed the subjects:

> "Now I would like you to write out, as accurately as you can recall, that list of themes; the seven themes that I read to you. Please try to recall them as accurately as you possibly can. It's probably impossible for you to recall them word-for-word, but try to be as precise and as word-perfect as you can. Any questions? ..... Remember, be as precise as you can. Please go ahead" (1966, p. 4).

As Paul explains it, "The next task revolves around a realization of the story that is outlined by the theme-list; ... a specially prepared story (based on the themes) is presented to the subject; ... the intervening story provides for further errors of commission in the reproduction that is next obtained" (p. 2). The experimenter instructed the subjects:

> "Now I would like you to listen to the story upon which that list of themes was based. This is the story of which that theme-list is the plot outline. I am not going to ask you to recall it from memory, or anything like that. Still, it's important that you listen to it carefully. O.K.? This is the story called --------" (p. 6).

Following the story the subject gave a second reproduction of the original theme-list (in the same manner as the first reproduction). These instructions were given:

> "Now I want you to reproduce the original list of themes again. This is really a repetition of the first recall you gave. As accurately as you can now recall, please write out the list of themes that I read to you ... at the beginning. Do you understand what I want? Another recall, from memory, of the original list of themes. Any questions? Again, please be as precise and accurate as you can" (p. 6).

The Balanced Rock and The Monkey stories were used. (Copies of these stories and their theme-lists will be found in the Appendix.)

For the purpose of this study, accuracy of reproduction was scored. The reproductions were scored on an information unit basis using the system provided by Paul (the same system used for the other tests). Two accuracy scores were computed; one for each reproduction.

Reliability of Scoring

With the exception of the Theme-List Technique, all the tests described above were scored according to a system which has not been used extensively before on these kinds of material. Therefore reliability measures were computed. These measures were based on a 10% sample of the Personal and Presented TAT stories (20 stories in each case) and a 25% sample for Verbal Free Association (10 associations). The samples were chosen so that each subject and each story was represented. In this way a test was made of the scoring of an adequate cross-section of the material. The scoring of the reliability sample was done by a scorer naive as to the purposes of the study. The correlations between the two scorers are presented in Table 1.

(Insert Table 1 about here)

The score correlations for all three tests are extremely high and significant at beyond the .001 level. With the interscorer correlations this high, it is safe to assume that the scoring of the original scorer is reliable.

TABLE 1

Interscorer Reliability Measures:
Pearson Product-Moment Correlations

Test	N	r
Personal TAT	20	+.97****
Presented TAT	20	+.94****
Verbal Free Association	10	+.94****

*p of < .10
**p of < .05
***p of < .01
****p of < .001

3) Vocabulary Subtest

Wechsler (1958) defines intelligence as "... the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment" (p. 7). The different capacities involved are often referred to as ego functions, among which memory is a central one. There was a possibility, in this study, of obtaining results which were contaminated by intellectual differences among the subjects. It may be that some of the subjects would do extremely well on both the tests for remembrances and for memoria while others would do quite poorly on both due to the difference in general intelligence between the two groups and not simply in ability to recall one or the other form of memory. Therefore the population group from which the eventual sample was selected was given a 30-word vocabulary test similar to the WAIS Vocabulary Scale, on the basis of which differences in intelligence were to be controlled.

The Vocabulary subtest of the Wechsler Adult Intelligence Scale (1955 revision) was chosen as a model for a test with which to control for intelligence. It was chosen for a number of reasons. First of all, it is a measure of verbal memory and all the tests used in the study measure memory for extended verbal material. It would therefore

control for intelligence in the appropriate area. Also, correlations of the Vocabulary test with most of the Verbal subtests of the WAIS as well as with the Full Scale score are consistently high (approximately +.83 with the total score at ages 18-19 and +.84 at ages 20-34, which encompasses the ages of the subjects*) (Wechsler, 1958, pp. 98, 99). Thus, by the use of a test such as this alone a good estimate of general intelligence could be found. Lastly, such a test is fairly straightforward and simple to give and could be administered in groups.

The subjects in this study were given a mimeographed copy of a 30-word vocabulary test, with a blank space after each word, and asked to write the definitions according to these instructions:

> I want you to write the meanings of some words. Write your definition in the space provided to the right of each word. If you have a great deal of trouble with any particular word, go on to the next one. The definitions need not be long, but give the best one you can. Do you understand? Allright. Now, begin.

The test was scored similarly to the WAIS subtest and the results were in the form of an accuracy score. Each

---

*No figures are available for the correlation between Vocabulary and Full Scale scores for subjects under the age of 18.

definition received a score of 2, 1, or 0, depending upon its degree of completeness. Therefore the total possible score was 60. (A copy of the Vocabulary Test can be found in the Appendix.)

4) Concentration Tasks

The research design required eight concentration tasks to be interpolated between each test and its recall. These were used in order to distract the subject and prevent any conscious attempt to rehearse the material. Each task was designed to last approximately ten minutes. Adding the time necessary for instructions and dissemination and collection of material, approximately fifteen minutes elapsed between the test and its recall. Therefore the recall represented fifteen-minute memory. None of the concentration tasks dealt with verbal material, so that the subjects were also distracted from the mode of the test. Descriptions and copies of the concentration tasks can be found in the Appendix.

METHOD

Subjects:

Twenty female City College undergraduates were used. The choice of female subjects was due, mainly, to the fact that the examiner was female and the disturbing effects of

using an examiner of the opposite sex would be eliminated. This was particularly important in tasks (such as the TAT for remembrances) where there was a chance that personal material might be revealed. The City College undergraduate population was an available one and the questions on the Memory Scale were geared to people of this age.

The subjects ranged in age from 16 to 26 years with a median age of 19 years. There were 11 freshmen, 5 sophomores and 4 juniors in the sample. The subjects were majoring in a wide variety of concentration areas: psychology, political science, education, speech, anthropology, history, biology, computer sciences and art.

Procedure:

The examiner administered both the Memory Scale and the Vocabulary test to eleven undergraduate sections of Introduction to Psychology. The students were first asked if they were willing to volunteer more time to be in the study if they were asked. It was explained that the subjects would be paid $2.50 per hour for further participation. Those who were willing were given the two tests in a group situation. The tests were administered as previously described. The subjects were asked to write down on both answer sheets a telephone number where they could be reached

and a name by which they could be identified on the phone. The examiner explained that this was done to protect their anonymity while making it possible for them to be contacted if they were needed further.

When the pretesting was completed, the tests taken by the female students willing to participate further were scored. (The subjects had been asked to indicate their gender on the answer sheets.) On the basis of these scores, two groups were selected. A high and a low group on the Memory Scale were chosen and the groups were matched, subject by subject, for their vocabulary scores. In this way the intelligence range (as measured by the Vocabulary test) was the same for each group. More and more classes of subjects were tested until it was possible to identify matched groups which fell in the upper and in the lower quartiles, respectively, of the Memory Scale distribution. This matching became possible after 11 classes had been tested. The total N from which the high and low groups were selected was 78.

The aim of the selection procedure was to secure two groups of subjects on which to conduct the further tests. The selected groups consisted of 20 subjects altogether - 10 subjects who fell in the upper quartile on the Memory Scale and 10 subjects who fell in the lowest quartile. The decision to limit each group to 10 subjects was based on

feasibility considerations. All further testing was individual. It required two testing sessions for each subject and each session lasted at least two hours. It seemed feasible, then, to test no more than 20 subjects with this procedure.

The Memory Scale scores for the original population tested ranged from 18 to 51 (out of a total possible score of 55), with a mean of 36.21 and a standard deviation of 7.01. The Vocabulary scores ranged from 0 to 45 (out of a total possible score of 60), with a mean of 21.72 and a standard deviation of 10.95. The high group had a range of 42 to 48 (mean = 44.6; SD = 2.11) on the Memory Scale. On the same test, the low group had scores from 18 to 31 (mean = 26.3; SD = 3.44). Each group had an identical range of Vocabulary scores (11 to 42) with a mean of 24.10 and a standard deviation of 10.57.

The ages of the subjects in the high group ranged from 17 to 26 years with a median age of 19 years. There were 4 freshmen, 4 sophomores and 2 juniors in the group. These subjects were majoring in art, psychology, biology, speech, political science, education and computer sciences. The low group had an age range of 16-21 years with a median age of 17.5 years. The group was composed of 7 freshmen, 1 sophomore and 2 juniors. Five of the subjects had not yet chosen

a concentration area while the others were majoring in psychology, English, anthropology, elementary education and biology.

Each subject was tested in two sessions, as stated above. Each session consisted of one administration of each of the tasks in the study. In other words, in each session the subject was given 5 Personal TAT cards, the Verbal Free Association Test for one stimulus word, 5 Presented TAT cards and one Theme-List. Thus for each subject the following data was collected: 10 Personal TAT stories with recall; 10 Presented TAT story recalls; 2 complete Verbal Free Association Tests; 2 complete Theme-Lists. Also, some demographic material was collected (i.e., age, year of school, major subject).

Session I

Chances were that at some point in the procedure the subjects would get the idea that the examiner was consistently asking them to remember their productions, which may have cued them to start memorizing. Therefore this was handled directly by attempting to enlist their cooperation at the very beginning. Each subject was told, at the start of the first session, that she was going to be given a series of memory tasks, but that the data would be useless if she

made any special efforts to aid her in remembering. Therefore she was asked to cooperate by not making a special effort to remember. Also, the subjects were told the purpose of the concentration tasks throughout and were asked to let themselves be fully distracted by them. The first session began with the following instructions:

> I am going to give you a number of different tasks to do. As you will soon realize, each of these is a memory task. However, the data will be useless if you make any special effort to aid you in remembering. In other words, approach the tasks as though you will not be asked to recall them afterwards. Do you understand? The session will take about two hours and there will be a five minute break in the middle. We'll begin now.

The session then proceeded in the following order:

A) Collection of demographic data

B) 1. Presented TAT - Cards 1, 2, 3GF, 4 & 5.

2. Serial 7's

3. Recall

C) 1. Verbal Free Association - "Dry"

2. Crossing-Out Consonants - page 1

3. Recall

D) 1. Theme-List - "The Balanced Rock"

2. Adding columns of numbers - page 1

3. Reproduction of Themes - I

4. Reading of story

5. Reproduction of Themes - II

E) 1. Personal TAT - Cards 3BM, 7GF, 8GF, 9GF, & 12F

2. Crossing-Out Vowels - page 1

3. Recall

Presented TAT was given before Personal TAT in the first session so that the subjects could have a concrete example of the way in which they should structure their personal stories later (e.g., a complete story with a beginning, a middle and an end).

Session II

The following instructions were read at the beginning of Session II:

> Today you will do the kind of tasks you did last time. As in the first session, please try not to make any special efforts to aid you in remembering.

The session then proceeded in the following order:

A) 1. Personal TAT - Cards 12BG, 13MF, 17GF, 19 & 20

2. Adding columns of numbers - page 2

3. Recall

B) 1. Theme-List - "The Monkey"

2. Crossing-Out Vowels - page 2

3. Reproduction of Themes - I

4. Reading of story

5. Reproduction of Themes - II

C) 1. Verbal Free Association - "House"

2. Number Series

3. Recall

D) 1. Presented TAT - Cards 6GF, 7BM, 10, 13G & 14.

2. Crossing-Out Consonants - page 2

3. Recall

The subjects were paid ($2.50 per hour) at the end of the second session.

CHAPTER III

Pretest of Memory Scale

In their book, Memory and Hypnotic Age Regression (1959), Reiff and Scheerer discuss two basic forms of memory -- the recall of remembrances and the recall of memoria. Memoria includes facts, habits, skills - memories without an historical context in a person's life. Remembrances include the details of events in one's life - people, places, conversations, emotional states. The authors further break down remembrances into those memories which are under an individual's voluntary control and those which are involuntary. They go on to list the avenues, or modes, of remembrances for both the voluntary and involuntary types.

One of the voluntary modes which seemed most feasible for use in testing the ability to remember was the following: "Recall, e.g., who was present at my last birthday party" (Reiff & Scheerer, 1959, p. 33). It appeared that a series of questions of this type - tapping a person's memory of actual events and experiences in his own life - would be one useful and direct way to measure remembrance ability. Judith March (1966) developed a Memory Scale for use in her dissertation which was composed of direct questions about memory for life experiences. The scale contained 50

questions which ranged from items about early childhood (e.g., "What was your favorite game when you were 6 years old?") to teenage years (e.g., "What was the name of the person with whom you had your first date?") through contemporary experience (e.g., "Where did you buy the shoes you are now wearing?"). The questionnaire's primary emphasis was on memory for early childhood rather than for contemporary events. March gave the questionnaire to a group of graduate students, with the following instructions:

> "Below are 50 questions pertaining to past events in your life ... You may not remember the answers for a number of the questions. If you know the answer, write it in the space provided. If you are guessing or estimating, put a parenthesis around your answer. If you do not know the answer, write DK in the appropriate space."

The questionnaire therefore gave a measure of "avowed recall for details of past experience, with no check for accuracy of recollections. Avowed recall per se was assumed to reflect the value subjects placed upon retaining aspects of the past in their present lives" (March, 1966, p. 2141).

First, a word about what effect the lack of a check for accuracy must have on using this questionnaire as a measure of ability to recall <u>remembrances</u>. It is sufficient at this point to say that what was being measured <u>by this particular test</u> is the quantity of ideas and memories of this

type - of the individual's personal past - which color a person's inner experience. In other words, does an individual have the experience of connection with and interest in happenings from his personal life history? Other tests were used to determine the degree of accuracy in recall of this type.

Revision of March questionnaire

For purposes of this study, the March Memory Scale was revised in the following manner:

1) The original questionnaire consisted of 50 questions, with an emphasis on items dealing with early childhood experience. Twenty-five original questions dealing with events in recent personal history were added to the questionnaire. (Items such as: "What was the last present you received and who gave it to you?")

2) The original questionnaire was given to a group of graduate students in 1966. There were several items included dealing with historical events which could not be in the memory span of the younger (18-20 years of age) subjects used in this study. Therefore 5 of the original questions were eliminated and replaced by similar but more appropriate items (e.g., "Where were you on V-J Day?" was replaced by "What time of day was it when you heard that Senator Robert Kennedy had died?").

3) Included in the 25 original questions that were just added concerning recent memory were 4 questions dealing with memory for feeling states (e.g., "What was the most recent news item you read or heard about that made you cry?"). This type of question was not represented in the original questionnaire.

The above changes in the original produced a 70-item questionnaire - approximately equal in emphasis on early childhood and on contemporary memory.

Purposes of the pre-test

1) The primary purpose of the pretest was to improve the quality and effectiveness of the questionnaire; to eliminate or improve items based on statistical evidence, observations, and comments from the subjects themselves.

a) To this end, a "Comments" section was added at the end of the scale and subjects were given the following instructions:

> Below are seventy questions pertaining to past events in your life. Some of these events happened long ago, some recently. Some will be easy to answer and some will be difficult. You may not remember the answers for a number of the questions.
>
> If you know the answer, write it in the space provided. If you are guessing or estimating, put a parenthesis around your answer. If you do not know the answer, write DK in the appropriate space. Please answer all of the questions in one of these 3 ways.

> Please put a checkmark next to any questions that took you longer to answer than most of the other questions. Indicate at the end about how long it took you to do the entire questionnaire.
>
> At the end there is a space for your comments. Please indicate any suggestions or criticisms you have about the questionnaire as a whole and the specific questions. I need your help in trying to improve the questionnaire.

b) Also, each item was inspected to see whether it discriminated sufficiently to warrant its inclusion in the final questionnaire. In this way, less useful items could be eliminated and the scale could be made shorter.

c) Items which took a longer time to answer than other items (i.e., because of the complicated estimations involved in answering them) could be eliminated on the basis of comments by subjects.

d) Items whose meanings were unclear due to unfortunate wording could be rewritten.

e) Items which were generally not applicable could be eliminated.

2) Frequency distributions could be made and examined to determine the way in which the scores clustered and the groups formed.

3) Scores for questions dealing with early memory could be correlated with scores based on memory for teen-age years and with scores for memory of contemporary events to determine whether there was a strong enough relationship to warrant looking at these types of memory as containing a common factor in the population tested.

4) In the major part of the study only female subjects were used. However, in this pretest, male subjects were tested in class along with their female counterparts. The results for each group are presented separately.

METHOD

Subjects: Two sections of Psychology I at City College were used. Most of these undergraduate subjects were sophomores. There were 42 subjects in all - 26 males and 16 females. (This final percentage of males and females was by chance, not by design.)

Procedure: The subjects were given the questionnaire during a normal class period. The experimenter read the written instructions out loud with the class (See Instructions under "Purposes of the pre-test" - I, a) and any questions were answered. The fact that the subjects' help was very important in improving the questionnaire was stressed. The subjects were told that the scale was being given anonymously,

so they could feel free to answer questions openly. They were asked only to indicate on the questionnaire whether they were male or female.

Scoring: There were 70 items on the questionnaire. Each item was given 1 of 4 possible scores: Memory Available (according to the subject); not certain; don't know; doesn't apply. Memory Available were those answers the subject felt sure of; not certain were those answers about which the subject felt he was guessing or estimating; don't know - subject couldn't remember the answer at all; doesn't apply - for questions dealing with experiences the subject had never had.

In addition, the questions were divided into 3 groups; those dealing with early childhood memories, those dealing with memories of later childhood and teenage years, and those dealing with recent memory. The number of answers scored memory available was totalled for each subject for each category.

RESULTS AND DISCUSSION:

Results for female subjects:

1) Using the results to improve the questionnaire.

   a) Comments from subjects - These proved almost entirely useless, as most subjects either left the Comments section blank or wrote something

like, "Very interesting - good luck!" Subjects also did not bother to indicate which particular questions (if any) took them longer to do than most of the others.

b) Inspection of separate items to discover the degree to which they discriminated. All items were inspected separately for male and for female subjects. The female subjects were used as the criterion group by which to judge the usefulness of the items since it was intended that only female subjects be used for the dissertation itself. There were 15 items on which either 16 or 15 female subjects scored memory available (in other words, either all or all but one of the sample). These items were therefore eliminated from the questionnaire due to their evident lack of usefulness for this sample. The questions to be eliminated are the following: 1, 12, 14, 26, 27, 34, 35, 36, 42, 44, 49, 53, 64, 65, 66.

There were no questions found that were useless in a negative direction - in other words, questions which did not discriminate sufficiently because so few subjects got them correct.

c) Several questions were rewritten somewhat to make their meaning clearer. The subjects consistently indicated the questions that were unclear (11, 26, 36, 52).

d) There were no items that were found to be generally not applicable (i.e., items dealing with memories which were not part of the life experience of many or most of the subjects). The highest number of not applicable scores for an item was 5 for #8.

2) The means and standard deviations for each kind of score and for total time for the female subjects are presented in Table 2.

(Insert Table 2 about here)

DISTRIBUTION OF SCORES

Female Group

68
65
64
59
58
51
51
44
44
44
44
43
43
40
37
30

TABLE 2

Means and Standard Deviations of test scores and total time for the female group

	Memory Available	Guesses	DK	Doesn't Apply	Time
Mean	49.06	8.63	11.13	1.19	23' 45"
SD	10.92	5.78	5.85	.83	6' 14"

Above is the distribution of memory available scores. It is noticeable that, in this sample, the scores seem to cluster or form groups. Five subjects fell within the range of 30 to 43 and four scored 44 (a 15 point range). Then there is a 13 point break (between 45 and 57) in which only two subjects scored, after which a group of five subjects fell within an 11 point range from 58 through 68. In other words, the subjects tended to cluster in high and low groups, not in the middle range. The Memory Scale was useful in dividing these subjects into opposite groups according to their ability to remember this kind of material.

3) The items on the questionnaire were divided into 3 groups; those dealing with events in childhood (Group A), with events in high school (Group B) and with contemporary or recent experience (Group C). The childhood group was composed of 24 questions (1, 2, 4, 8, 9, 15, 17, 19, 20, 21, 24, 28, 29, 32, 33, 36, 38, 39, 49, 51, 60, 62, 66, 67). The high school cluster contained 10 questions (10, 16, 25, 41, 53, 55, 56, 57, 68, 69) and there were 36 questions on contemporary events (3, 5, 6, 7, 11, 12, 13, 14, 18, 22, 23, 26, 27, 30, 31, 34, 35, 37, 40, 42, 43, 44, 45, 46, 47, 48, 50, 52, 54, 58, 59, 61, 63, 64, 65, 70). The number of responses scored memory available were summed for each subject for each group. Correlations were made between the different

groups and the results appear in Table 3.

(Insert Table 3 about here)

An additional correlation was done between the sum of the scores for Groups A & B and the score for Group C in order to test the relationship between memory for events in the past in general and memory for contemporary events.

In this sample, there seems to be a common factor running through the ability to remember personal experiences, whether in the distant or recent past, or in the present. The only correlation which stands out as different from the others is the one between ability to recall experiences from high school years and ability to recall recent experience. However, the difference is not great enough at this point to speculate on the reason for its occurrence.

Results for Male Subjects

1) Using the results to improve the questionnaires.

   a) Comments from subjects - The comments from the male subjects proved as unenlightening as those from the female subjects.

   b) Inspection of separate items to discover the degree to which they discriminated. Although the male sample was not used as the criterion group on the basis of which

TABLE 3

Pearson Product-Moment Correlations
between test item groups
for the female group

Groups Correlated	Correlations
AXB	+.82****
AXC	+.89****
BXC	+.68***
A&BXC	+.86****

*p of < .10
**p of < .05
***p of < .01
****p of < .001

to make item changes, the items were inspected nonetheless. As it turned out, the same trend prevailed for the male sample as for the female sample. On each of the questions to be eliminated (based on the fact that 15 or 16 female subjects scored memory available on these items), all or almost all of the male subjects scored memory available. (No less than 23 our of 26 subjects.) Also, no questions were found that were useless in a negative direction - where almost no subjects got them right - in the male group.

c) There were no items that were found to be generally not applicable (i.e., items dealing with memories which were not part of the life experiences of many or most of the subjects). The highest number of not applicable scores for an item was 7 for #8.

2) In Table 4 are the means and standard deviations for each kind of score and for total time.

(Insert Table 4 about here)

TABLE 4

Means and Standard Deviations of test scores and total time for the male group

	Memory Available	Guesses	DK	Doesn't Apply	Time
Mean	42.19	9.27	16.96	1.58	20' 51"
SD	7.53	6.69	6.87	1.82	6' 15"

DISTRIBUTION OF SCORES

Male Group

53
53
52
50
49
49
48
47
46
46
46
44
44
43
43
42
41
38
38
38
35
32
32
31
31
26

The scores in this distribution do not fall into high and low groups as clearly as those in the female sample. However, there is a cluster of 5 subjects falling in the 5 point range between 31 and 35 on the low end and there is an even larger grouping of 8 subjects falling in the 5 point range between 46 and 50 in the upper end of the scores. Also, there is a smaller range of scores than there is in the female group although the trends are the same. It is

also clear from the means in Tables 2 and 4 that the male group scored lower in overall number of memory available responses, the mean for the males being 6.87 lower than the mean for the females. Therefore, in this group of City College students, the males tended to have less facility in remembering past experiences in general than the females. Also, the ability to remember these kinds of experiences seemed to be less of a consistent factor for the males than for the females.

3) In Table 5 are the correlations done between groups (of questions) A (events in childhood), B (events in high school) and C (recent events). The groups of questions were identical to those analyzed for the female sample and the same correlations were done.

(Insert Table 5 about here)

There seems to be a common factor running through ability to remember personal experiences for the male group as well as for the female group. The correlations, while significant, are lower than those for the female group.

Pre-test of Shortened Questionnaire

After the 15 non-discriminatory items were deleted from the questionnaire, it was tested in the revised form to see whether its effectiveness was retained. The instructions were as follows:

TABLE 5

Pearson Product-Moment Correlations
between test item groups
for the male group

Groups Correlated	Correlations
AXB	+.58****
AXC	+.53***
BXC	+.40**
A&BXC	+.53***

*p of < .10
**p of < .05
***p of < .01
****p of < .001

> Below are fifty-five questions pertaining to past events in your life. Some of these events happened long ago, some recently. Some will be easy to answer and some will be difficult. You may not remember the answers for a number of the questions.
>
> If you know the answer, write it in the space provided. If you are guessing or estimating, put a parenthesis around your answer. If you do not know the answer, write "DK" in the appropriate space. Please answer all of the questions in one of these 3 ways.

Subjects: The female students (N=36) from four sections of Psychology I at City College were used. (These were not the same subjects used in the former pretest of the questionnaire in its 70-question form.)

Procedure: The subjects were given the questionnaire during a normal class period. The experimenter read the written instructions (see above) out loud with the class and any questions were answered. The subjects were told the scale was being given anonymously, so they could feel free to answer questions openly.

Results and Discussion:

No problems of administration or comprehension of questions occurred.

1) The means and standard deviations for each kind of score are presented in Table 6.

(Insert Table 6 about here)

Below is the distribution of memory available scores.

Distribution 1 (memory available score out of a total of 57 possible points)

56
50
50
50
50
49
49
48
48
47
47
44
43
41
41
41
40
39
38
38
37
36
36
36
36
36
36
35
34
33
31
30
30
28
23
19

TABLE 6

Means and Standard Deviations of test scores for shortened questionnaire

	Memory Available	Guesses	DK	Doesn't Apply
Mean	39.58	7.22	7.56	2.64
SD	8.36	4.84	5.83	2.39

In this sample, as in the samples tested on the longer version of the questionnaire, the scores seem to cluster in high and low groups. Between 30 and 36, a range of 6 points on the lower end, 12 subjects score. Between 47 and 50, a range of 4 points on the upper end of the scale, 10 subjects fall. Between those 2 groups (37 to 46), in a range of 10 points, 10 subjects fall. Therefore the shortened form of the Memory Scale was useful in dividing the subjects from this population into opposite groups.

2) The items on the Scale were again divided into 3 groups: those dealing with events in childhood (Group A), with events in high school (Group B), and with contemporary or recent experience (Group C). The childhood group was composed of 20 questions (1, 3, 7, 8, 12, 14, 16, 17, 18, 21, 23, 24, 27, 28, 30, 31, 40, 48, 50, 52). The high school cluster contained 9 items (9, 13, 22, 33, 43, 44, 45, 53, 54) and there were 26 questions on contemporary events (2, 4, 5, 6, 10, 11, 15, 19, 20, 25, 26, 29, 32, 34, 35, 36, 37, 38, 39, 41, 42, 46, 47, 49, 51, 55). Correlations were computed between the different question groups and the results appear in Table 7.

(Insert Table 7 about here)

TABLE 7

Pearson Product-Moment Correlations
between test item groups for
shortened questionnaire

Groups Correlated	Correlations
AXB	+.79****
AXC	+.70****
BXC	+.48****
A&BXC	+.66****

*p of < .10
**p of < .05
***p of < .01
****p of < .001

In this sample, as before, there seems to be a common factor running through the ability to remember personal experiences. The levels of significance for these correlations are consistently higher as a group than those for the previous samples on the longer questionnaire (although those correlations were also quite significant). Therefore it suggests that this Memory Scale is testing a memory ability which operates without being greatly affected by the relative distance of the event remembered from the present moment.

CHAPTER IV

Results

The initial analysis concerns the hypothesis that the recall of remembrances is a stable individual differences parameter. The scores for all tests given to the subjects were intercorrelated separately for the high and low remembrance groups. The results for the high group appear in Table 8 and for the low group in Table 10. Table 9 presents the statistically significant differences between the correlations for the high group. Since it is obvious by inspection that there are no significant differences between the correlations for the low group, no difference scores are presented.

(Insert Tables 8, 9 and 10 about here)

The hypothesis requires for its support that the intercorrelations among the remembrance tests and among the memoria tests be higher than the intercorrelations between the two types of tests. The findings support the hypothesis for the low group, but not for the high group. From Table 10, it is clear that, with the exception of the Memory Scale, the remembrance tests are highly and significantly correlated

TABLE 8

Pearson Product-Moment Correlations between all mean accuracy test scores for the high remembrance group (N=10 pairs)

		Remembrance Tests			Memoria Tests	
		Personal TAT	Verbal Free Association	Memory Scale	Presented TAT	Theme List
Remembrance Tests	Personal TAT		+.56*	-.53	+.76**	+.88****
	Verbal Free Association	+.56*		-.28	+.34	+.53
	Memory Scale	-.53	-.28		-.37	-.46
Memoria Tests	Presented TAT	+.76**	+.34	-.37		+.74**
	Theme List	+.88****	+.53	-.46	+.74**	

*p of < .10
**p of < .05
***p of < .01
****p of < .001

Ranges of scores for above tests:

Test	Range	Possible Total Score
Personal TAT	54.90% - 76.80%	100%
Verbal Free Association	36% - 85.50%	100%
Memory Scale	42 - 48	55
Presented TAT	30.60% - 62.90%	100%
Theme List	11 - 40	50

Correlations (and all further statistics) were run with the "dk" score of the Memory Scale and the second Theme List Accuracy score, but they did not differ markedly from the results obtained using the "Memory Available" score of the Memory Scale and the first Theme List Accuracy score. The latter results are the ones presented in all tables.

TABLE 9

Significant Differences between Pearson Product-Moment Correlations for the high remembrance group (N= 10 pairs)

Correlations Compared	r_1	r_2	z
Personal TAT x Verbal Free Association with Personal TAT x Theme List	+.56	+.88	1.42*
Personal TAT x Memory Scale with Personal TAT x Presented TAT	-.53	+.76	3.00***
Personal TAT x Memory Scale with Personal TAT x Theme List	-.53	+.88	3.72****
Verbal Free Association x Memory Scale with Verbal Free Association x Theme List	-.28	+.53	1.66**
Presented TAT x Memory Scale with Presented TAT x Theme List	-.37	+.74	2.53***
Theme List x Memory Scale with Theme List x Presented TAT	-.46	+.74	2.74***

*p of < .10
**p of < .05
***p of < .01
****p of < .001

All comparisons not presented are non-significant.

TABLE 10

Pearson Product-Moment Correlations between all mean accuracy test scores for the low remembrance group (N=10 pairs)

		Remembrance Tests			Memoria Tests	
		Personal TAT	Verbal Free Association	Memory Scale	Presented TAT	Theme List
Remembrance Tests	Personal TAT		+.75**	+.62*	+.30	+.30
	Verbal Free Association	+.75**		+.37	+.36	+.35
	Memory Scale	+.62*	+.37		+.35	+.15
Memoria Tests	Presented TAT	+.30	+.36	+.35		+.60*
	Theme List	+.30	+.35	+.15	+.60*	

*p of < .10
**p of < .05
***p of < .01
****p of < .001

Range of scores for above tests:

Test	Range	Possible Total Score
Personal TAT	52.30% - 73.20%	100%
Verbal Free Association	47.50% - 79%	100%
Memory Scale	18 - 31	55
Presented TAT	38.20% - 55.20%	100%
Theme List	18.50 - 28	50

with each other (upper left section of table). The same is true for the correlations among the memoria tests (lower right section). Moreover, as predicted, the correlations between the remembrance and the memoria tests are consistently low and statistically non-significant (upper right or lower left section of the table). These findings are in line with the hypothesis. However, the differences between the significant intercorrelations (those among the remembrance and the memoria tests) and the non-significant intercorrelations (between the two types of tests) fall short of statistical significance.

A word should be said here about interpreting the above results - particularly those that are non-significant. In his extensive analysis of the power of tests, Cohen (1969) concludes that the size of the N is one of the most important determinants of the power of a test. As he states, "The larger the sample size .. the smaller the error and the greater the reliability or precision of the results. The further relationship with power is also intuitively evident; the greater the precision of the sample results ... the greater the probability of detecting a nonnull state of affairs" (Cohen, 1969, p. 7). In other words, the greater the sample size, the greater the power. Both the correlations themselves and the tests of the significance of the

differences between them were performed with 10 pairs, which is a relatively small N. It is therefore important to keep in mind that the statistical power of the test may not have been great enough to detect significant differences. For example, in the case of the significance of the difference between two correlations with an N of 10 pairs, the power value of the test to detect a large difference (defined by Cohen as $r_1-r_2 = .30$) at the .05 level of significance is .15 and at the .01 level is .05. Thus, there is only a 15% chance of detecting a real difference between the correlations significant at the .05 level and only a 5% chance at the .01 level (1969, pp. 119, 121).

In sharp contrast to the low group, the results for the high group do not support the hypothesis. It is clear from Table 8 that, although the intercorrelation between the memoria tests is high, it is no higher than some of the intercorrelations between the remembrance and memoria tests. The same holds true for the intercorrelation between the remembrance tests of Personal TAT and Verbal Free Association. In addition, all correlations between Memory Scale and the other remembrance tests are negative, which suggests that this test fails to share a common trait with Personal TAT and Verbal Free Association for this group. In fact, as the results in Table 9 indicate, none of the significant

differences between the correlations for the high group are in the expected direction except for the comparison of the memoria intercorrelation with the intercorrelations of Memory Scale and the memoria tests. This is not surprising because, as stated above, Memory Scale did not behave in the same way as the other remembrance tests.

The second hypothesis states that an individual will tend to recall one form of memory better than the other. The study was designed to test this hypothesis by setting up two groups, one that scored high and the other low on the Memory Scale. The high group was expected to do better on the remembrance tests and the low group to do better on the memoria tests. Since the subjects were matched for intelligence, a matched pairs analysis was performed first. The Sign Test was used to determine whether the differences were significant and in the expected direction. The results are presented in Table 11 for the remembrance tests and in Table 12 for the memoria tests.

(Insert Tables 11 and 12 about here)

The results fail to support the hypothesis. For Personal TAT, where the high group was expected to score higher than the low group, the scores for two cards (Card 8GF and Card 9GF) are significant at beyond the .10 level in the

TABLE 11

Results of Sign Tests for remembrance tests
(N=10 pairs)

	plus for high group / plus for low group	
Personal TAT		
Card 3BM	4 / 6	
Card 7GF	7 / 3	
Card 8GF	8* / 2	
Card 9GF	8* / 2	
Card 12F	5 / 5	
Card 12BG	5 / 5	
Card 13MF	4 / 6	
Card 17GF	5 / 3	
Card 19	4 / 6	
Card 20	5 / 5	
Overall Scores:	55 / 43	Z = 1.11
Verbal Free Association		
"Dry"	3 / 7	
"House"	4 / 6	
Overall Scores:	7 / 13	Z = 1.12

*p of < .10
**p of < .05
***p of < .01
****p of < .001

TABLE 12

Results of Sign Tests for *memoria* tests

	plus for high group / plus for low group	
Presented TAT		
Card 1	4 / 6	
Card 2	6 / 4	
Card 3GF	4 / 5	
Card 4	7 / 3	
Card 5	6 / 3	
Card 6GF	5 / 4	
Card 7BM	6 / 4	
Card 10	8* / 2	
Card 13G	3 / 7	
Card 14	3 / 5	
Overall Scores:	52 / 43	Z = .82
Theme List		
"Balanced Rock"	5 / 5	
"Monkey"	6 / 4	
Overall Scores:	11 / 9	Z = .22

*p of < .10
**p of < .05
***p of < .01
****p of < .001

expected direction. Otherwise, however, the overall results are inconclusive. The same holds true for Verbal Free Association. As for the memoria tests, only one of the findings approaches statistical significance (Presented TAT - Card 10; $p < .10$), and it is not in the predicted direction.

Several vain attempts were made to see whether a change in the method of analysis would yield any conclusive results. First, the data were analyzed for each pair separately across all tests (using the Sign Test). Next, the pairs were rematched according to similarity of Vocabulary scores and again analyzed. The results in both cases do not differ from the results presented in Tables 11 and 12.

The previous Sign Tests on the paired data for Personal TAT and Verbal Free Association had been performed on the "percentage of information units correct" scores for each subject for each story. These scores were derived by dividing the "possible points" by the "points received." This was necessary because the subjects told their own stories (for Personal TAT) or gave their own associations (for Verbal Free Association) that they were then required to recall. The total amounts to be recalled differed because it was impossible to control the absolute length of the subject's own production. Therefore it is of interest to see whether the pairs differed on absolute length of original production.

Sign Tests were done for the "possible points" for each Personal TAT story, for each Verbal Free Association and for the overall scores. The results appear in Table 13.

(Insert Table 13 about here)

The results of this analysis show no overall significant difference between the low and high groups in amount of total production on these tests.

In addition to analyzing the data according to the matched-pairs method, a more general analysis was done comparing the mean scores of the high and low groups. The t-test was used to test the significance of the differences between the means. The results of these analyses are presented in Tables 14, 15, 16, 17 and 18.

(Insert Tables 14, 15, 16, 17 and 18 about here)

In order for the hypothesis to be supported, the high group would have to score significantly higher than the low group on Personal TAT and on Verbal Free Association. Likewise, the low group would have to score significantly higher than the high group on Presented TAT and on the Theme List.

It is clear from the results presented in Tables 14, 15, 16 and 17 that the hypothesis fails to receive any

TABLE 13

Results of Sign Tests for "Possible Points"
in remembrance tests
(N=10 pairs)

	plus for high group / plus for low group	
Personal TAT		
Card 3BM	7 / 2	
Card 7GF	4 / 6	
Card 8GF	5 / 5	
Card 9GF	6 / 4	
Card 12F	3 / 7	
Card 12BG	7 / 3	
Card 13MF	5 / 5	
Card 17GF	6 / 4	
Card 19	5 / 5	
Card 20	2* / 8	
Overall Scores:	50 / 49	Z = 0
Verbal Free Association		
"Dry"	6 / 4	
"House"	5 / 5	
Overall Scores:	11 / 9	Z = 0

*p of $<$.10
**p of $<$.05
***p of $<$.01
****p of $<$.001

TABLE 14

Differences between high and low groups on mean accuracy scores for Personal TAT Card-by-card and overall differences (N=20)

	Mean		SD			
Card No.	high	low	high	low	diff.	t
3BM	57.60	58.70	10.38	17.18	1.10	.16
7GF	61.00	58.90	10.56	9.95	2.10	.43
8GF	69.20	60.40	13.67	9.89	8.80	1.57
9GF	68.20	58.90	11.85	9.61	9.30	1.83*
12F	63.90	56.00	13.23	9.81	7.90	1.44
12BG	67.10	71.40	16.34	9.00	4.30	.69
13MF	72.90	73.70	11.31	7.02	.80	.18
17GF	68.10	65.70	9.14	8.20	2.40	.59
19	66.50	72.60	11.47	11.25	6.10	1.14
20	68.40	72.00	11.23	11.51	3.60	.67
Overall Scores:	66.29	64.83	12.77	12.56	1.46	.81

*p of < .10
**p of < .05
***p of < .01
****p of < .001

TABLE 15

Differences between high and low groups on
mean accuracy scores for
Verbal Free Association
Separate associations and overall differences
(N=20)

	Mean		SD			
Association	high	low	high	low	diff.	t
"Dry"	52.90	55.30	16.19	9.45	2.40	.38
"House"	61.60	65.10	15.09	10.69	3.50	.57
Overall Scores:	57.25	60.20	16.24	11.21	2.95	.65

*p of < .10
**p of < .05
***p of < .01
****p of < .001

TABLE 16

Differences between high and low groups on mean accuracy scores for Presented TAT Card-by-card and overall differences (N=20)

	Mean		SD			
Card No.	high	low	high	low	diff.	t
1	37.90	39.10	9.84	8.57	1.20	.28
2	46.40	47.20	12.23	11.39	.80	.14
3GF	34.80	34.80	9.25	4.98	.00	0
4	47.80	45.20	11.62	9.23	2.60	.53
5	49.40	49.40	10.64	8.39	.00	0
6GF	60.00	55.10	10.49	9.86	4.90	1.02
7BM	50.80	46.10	11.03	9.22	4.70	.98
10	52.60	49.40	6.96	7.02	3.20	.97
13G	51.80	54.50	9.30	9.00	2.70	.63
14	42.10	46.00	17.15	10.34	3.90	.58
Overall Scores:	47.36	46.68	13.19	10.73	.68	.40

*p of < .10
**p of < .05
***p of < .01
****p of < .001

TABLE 17

Differences between high and low groups on mean accuracy scores for Theme List Separate themes and overall differences (N=20)

	Mean		SD			
Story	high	low	high	low	diff.	t
Balanced Rock	21.20	20.60	9.75	5.35	.60	.16
Monkey	27.30	25.70	11.57	5.22	1.60	.38
Overall Scores:	24.25	23.15	11.12	5.87	1.10	.38

*p of $<$.10
**p of $<$.05
***p of $<$.01
****p of $<$.001

TABLE 18

Comparison of the differences between the standard deviations on the overall mean accuracy test scores

Test	high	low	F-ratio
Personal TAT	12.77	12.56	1.03
Verbal Free Association	16.24	11.21	2.10***
Presented TAT	13.19	10.73	1.51**
Theme List	11.12	5.87	3.58****

*p of < .10
**p of < .05
***p of < .01
****p of < .001

support at all from the data. One difference, that on Card 9GF for Personal TAT, is significant at beyond the .10 level in the predicted direction. However, since this is only one card out of ten, the result can be attributed to chance.

Looking at the F-ratios in Table 18, it is clear that for all tests except Personal TAT, there are significant differences between the variances of the two groups. Further, the differences are all in the same direction. All variances except those for Personal TAT are significantly greater for the high group than for the low group. This difference between the groups has an implication similar to differences mentioned earlier in the discussion of the intercorrelations. That is, the low group behaves more like a homogeneous group statistically than does the high group - in this case it has a smaller variance. Previously, it was seen that the low group behaved more homogeneously in their intercorrelations (Tables 8, 9 and 10) than the high group did.

A more sensitive analysis was performed comparing the results of Personal TAT and Presented TAT. According to the hypothesis, the high remembrance group was expected to score higher on Personal than on Presented TAT, to score higher than the low group on Personal TAT and lower than the low group on Presented TAT. In order to see more clearly why the hypothesis was not supported, an analysis of variance*

*The test performed was the Two-Factor Analysis of Variance with Repeated Measures. (Winer, 1962)

was performed, with groups - high and low - as one factor and tests - Personal and Presented TAT - as the other. These two tests were chosen because they are the most comparable - they are parallel story tests with the main difference being the teller of the story. The results are presented in Table 19.

(Insert Table 19 about here)

The data reveal that the primary influence on the difference in scores is the test given. One test - Personal TAT - produces significantly higher scores across both groups than Presented TAT does. This main effect is significant at beyond the .001 level.

The main effect for groups is not significant. This indicates that these groups did not differ in their relative ability on the two tests, which they would be expected to do according to the hypothesis.

The interaction between groups and tests is also not significant. This finding further contradicts the hypothesis, as a relationship was predicted between the test and the group.

With respect to Personal TAT and Verbal Free Association, two distinct types of production emerged. One was a more-or-less objective, tight-knit, factual story or group of associations with a discernible beginning, middle and end. The other was a rather vague, loosely organized group of

TABLE 19

Results of Analysis of Variance of experimental groups (high and low) and tests (Personal and Presented TAT)

Source of Variation	Sums of Squares	df	Mean Sums of Squares	F-ratio
Between Subjects				
Groups (high and low)	11.45	1	11.45	.12
Subjects within groups	1738.93	18	96.61	
Within Subjects				
Tests	3437.32	1	3437.32	135.33****
Groups x Tests	1.52	1	1.52	.06
Tests x Subjects within groups	457.16	18	25.40	

*p of < .10
**p of < .05
***p of < .01
****p of < .001

descriptions, emotional impressions or feeling states. These two types of productions were compared to see if there was a difference between them in accuracy of recall, but no significant differences were found.

It is also possible that any real difference between the two groups could have been masked by the grouping together of the data from the first and second testing sessions. Perhaps the expected results could have been found, for example, in the first testing session, with the second session masking any differences by virtue of practice effects. Therefore a separate analysis was done for each of the testing sessions. The results are presented in Table 20.

(Insert Table 20 about here)

As is apparent in Table 20, separate analyses of the two testing sessions bring to light one significant difference from the results obtained by analyzing the sessions together.

The groups used in this study were matched on Vocabulary scores as a general measure of verbal intelligence. The question arises whether there was a relationship between the Memory Scale and Vocabulary scores in the population from which the groups were chosen, whether performance on the Memory Scale was intelligence related.

TABLE 20

Comparison of differences between mean accuracy scores for high and low groups on all tests for first and second testing sessions

Session 1

Test	Group	N	Mean	SD	diff.	t
Personal TAT	high	10	63.98	12.77		
	low	10	58.58	11.75	5.40	.83
Verbal Free Association	high	10	52.90	16.19		
	low	10	55.30	9.45	2.40	.38
Presented TAT	high	10	43.26	12.24		
	low	10	43.14	10.29	.12	.05
Theme List	high	10	21.20	9.75		
	low	10	20.60	5.35	.60	.16

Session 2

Test	Group	N	Mean	SD	diff.	t
Personal TAT	high	10	68.60	12.34		
	low	10	71.08	9.95	2.48	.67
Verbal Free Association	high	10	61.60	15.09		
	low	10	65.10	10.69	3.50	.57
Presented TAT	high	10	51.46	12.83		
	low	10	50.22	9.97	1.24	.53
Theme List	high	10	27.30	12.19		
	low	10	25.70	5.50	1.60	.38

*p of $<$.10
**p of $<$.05
***p of $<$.01
****p of $<$.001

Therefore Memory Scale and Vocabulary scores were correlated for the original group of subjects. An insignificant r of -.22 was obtained.

It is clear that no significant relationship exists between the subjects' scores on the Memory Scale and their general verbal intelligence as measured by the Vocabulary subtest. Therefore the selection of the groups was not influenced by this possible bias.

The Vocabulary scores for the selected sample - the high and low groups - were then correlated with all other test scores. The results appear in Table 21.

(Insert Table 21 about here)

As the results in Table 21 indicate, performance on certain tests is intelligence related for the high group but not for the low group. The most significant finding is a correlation of +.65 between Vocabulary and Presented TAT for the high group (p .05). Vocabulary is also correlated positively with Personal TAT for this group (r = +.55; p .10). In other words, performance on these tests for the high group is clearly related to memory as a factor of intelligence - perhaps rather than to ability to recall either remembrances or memoria. For the low group, on the other hand, no significant correlations occur between Vocabulary

TABLE 21

Pearson Product-Moment Correlations between Vocabulary scores and all other test scores for high and low groups (N=10 per group)

Scores Correlated	high	low
Vocabulary x Personal TAT	+.55*	-.37
Vocabulary x Verbal Free Association	+.25	-.14
Vocabulary x Presented TAT	+.65**	+.19
Vocabulary x Theme List	+.41	+.20

*p of < .10
**p of < .05
***p of < .01
****p of < .001

scores and other test scores. Their performance may then be considered with more confidence a function of the particular form of memory being tested.

CHAPTER V

DISCUSSION

Discussion of Results

This study has basically one major hypothesis - that the recall of remembrances and the recall of memoria are separate and relatively independent traits or abilities. A second hypothesis - that individuals will show a greater facility for recalling one or another of these forms of past experience - necessarily follows from the first hypothesis. For, if we are dealing with separate traits, it is quite inevitable that individuals will differ on them. The second hypothesis, however, predicts not merely significant differences but also substantial ones. It is based on the idea that there may be a complementary relationship between the two traits; so that an individual who is strong in one is at the same time weak in the other.

The findings provide some support for the major hypothesis. All test scores were intercorrelated with all other test scores for the high and low remembrance groups separately. For the low group, the expected results were found. That is, the intercorrelations among the remembrance tests and among the memoria tests were higher than the intercorrelations between the two types of tests. However, the

differences between the intercorrelations among the memoria and among the remembrance tests and the intercorrelations between the two kinds of tests did not attain a high level of significance. This may be attributable to the relatively small N which lowers the power of the test.

The results for the high group differ markedly from those for the low group. No distinct pattern emerged in the intercorrelations. For example, the intercorrelation between the memoria tests was high, but no higher than some of the intercorrelations between the memoria and the remembrance tests. So, although the recall of remembrances tended to behave as a trait separate and independent from the recall of memoria for the low group, no such trend was present for the high group. And herein lies the problem. The bulk of the evidence questions the fact that this group was really a 'high' remembrance group, or, for that matter, any kind of distinct 'group' at all.

To begin with, this group was defined as high in ability to recall remembrances on the basis of their Memory Scale scores. For the low group, as expected, the Memory Scale scores are positively related to the scores on the other remembrance tests. For the high group, however, this trend reverses itself and we find that performance on the Memory Scale is negatively related to performance on the other

remembrance tests. In other words, for the high group, the Memory Scale measures something other than ability to recall remembrances. Therefore this group becomes specifically not a high remembrance group.

Then what are these people, if not a high remembrance group? And why did they get such high scores on the Memory Scale, particularly since, unlike the low group, they did not behave as a group on the other memory tests? It is possible that their willingness to definitely commit themselves to their answers on the Memory Scale was due to their being 'acquiescent'. It has long been recognized that reliable response styles or sets exist in test-taking, particularly on scales with a 'true-false' structure (Cronbach, 1946; Messick and Jackson, 1961). One common response set is that of acquiescence, where the subject tends to answer 'true' or 'agree' - to acquiesce - whether this reflects his genuine feelings or not. For these people, agreeing is seen as socially desirable and expected and they answer in order to please. On the Memory Scale, the subjects in the high group may have felt that it was expected of them to give a definite answer. So they did, whether they were sure of it or not. Their score, then, ceases to be a measure of the accuracy of their recall and becomes, rather, a response to an interpersonal situation.

The variances of the high group on all tests other than the Memory Scale were quite large - significantly greater, in fact, than those of the low group on all but Personal TAT. On these tests, the high group acted not like a group at all, but more like ten separate individuals. Their scores did not tend to cluster together. This is a further indication that what we have here is not a group that shares a common ability on the remembrance-memoria dimension.

The above qualities of the high remembrance group may shed light on certain other findings. First of all, the second hypothesis - that any individual would tend to recall one form of memory substantially better than the other - is not supported by the data. It was expected that the high remembrance group would do better on the remembrance tests than the low group and that the latter group would tend to do better on the memoria tests than the former group. None of these expected differences were found. In fact, there were no significant mean differences between the groups at all. However, if the high remembrance group is neither high in remembrances nor a group at all, it is impossible to say that a real comparison was made between subjects on either end of the remembrance continuum. It becomes a contest with only one opponent. Therefore the lack of significant

differences between the two groups does not necessarily negate the hypothesis. It is, rather, that the hypothesis was not tested.

Another finding of interest is the high positive correlation between the Vocabulary scores for the high group and both their Personal and Presented TAT scores. For this group, but not for the low group, performance on both kinds of TAT tasks is highly related to intelligence (specifically verbal intelligence as measured by the Vocabulary test). As we have seen, the low group performed in a statistically homogeneous fashion with respect to both the intercorrelations between the tests and the variances for each test. The high group, however, performed in a heterogeneous way and, as a result, no common ability on the remembrance-memoria continuum can be assumed for them. Therefore what might have determined recall accuracy for these subjects is memory ability as one of the ego functions comprising intelligence. The brighter they were, the better they did, regardless of which form of memory was being tested. Whereas for the low group, performance on a particular task is more likely connected to the form of memory being tested.

One finding of interest is that all subjects, regardless of group, scored higher on Personal TAT than on Presented TAT. As we can see from the results of the analysis

of variance, differences in scores are accounted for by the test taken, not by the differences between the groups or by any interaction between these two parameters. This consistent phenomenon of better performance on Personal TAT is reminiscent of the point of view of investigators such as Gomulicki (1956), Bartlett (1932) and Schachtel (1959). They all felt that what a particular individual remembers is based on his personal tie to the material. Is he interested in it? Does it gibe with his strongly-held beliefs and attitudes? Is it important or meaningful to his life? If these are the requirements for remembering, then it would make sense that a memory which is specifically personal by definition (i.e., "Tell a story that is personal to your life.") would be recalled more easily than one that is not designed to be personal. Therefore from the outset the cards would be stacked against recalling Presented TAT and for recalling Personal TAT.

Another interesting finding is that there was no significant difference in the disparity between recall of Personal and Presented TAT for the <u>high</u> and <u>low</u> groups. Both groups had a similar superiority of performance for the recall of personal memories. Thus, not only is there a general tendency in this sample to recall personal better than non-personal stories, but it is an even tendency over the two groups.

How do we explain this consistent superiority in recall of personal stories? The subjects were asked to construct a story around an incident in which they took some part. Either they were to have directly experienced it as a participant, or, at the very least, to have read it in a book or seen it in a movie as an interested observer. In any case, the basic framework of the story was to have been something they remembered and with which they were familiar. Therefore the Personal TAT stories were memories to begin with - memories that were available to the subjects. When asked to recall the stories, they were actually being asked to again recall memories they had already recalled. Their ultimate score on Personal TAT can then be seen as based upon the degree to which they could recall the exact words and phrasing of the story - its basic idea was already available to them.

The Presented TAT stories, on the other hand, were new to the subjects. Aside from any associations they may have had to the material, it was for the most part unfamiliar to them and was certainly not in its original form a memory that they had recalled. Therefore, taking into consideration the greater availability of and familiarity with the material for Personal TAT, it would make sense that these scores are higher.

The subjects' original experience with the stories they told, plus their willingness to tell those particular episodes, poses a further problem. The very fact that a subject tells a certain story means that it is available to her. It does not provide, however, any general picture of how much total personal memory is available to her. That is to say, a subject in a low remembrance group could conceivably get the same score on Personal TAT as a subject in a high remembrance group while still having a much slimmer overall store of personal memories. All that is clear is that each subject is reasonably good at reproducing the ten stories that she was originally able to tell.

Limitations of the Study and Implications for Future Research

To begin with, this study has two obvious limitations. Both have been previously discussed. The first is the necessarily small sample size used. Although an N of 20 has certainly been able to yield interesting trends, the power of the statistical tests used would have been greatly increased if the number of subjects was higher. In that case, there would have been a greater probability for any differences that really exist to emerge. It would be interesting to repeat this study under conditions where one had the manpower necessary to test a much greater number of subjects.

The second obvious shortcoming of the study is somewhat more difficult to correct than the first. That is the problem of choosing a high remembrance group that lives up to its definition. The Memory Scale does not seem to be a reliable instrument for measuring a true high group. Better criteria would have to be found. Most important, whatever test one ultimately chose should have a check for accuracy of response so that it could act as a stricter measure of memory availability.

An interesting question arises about the use of high and low groups in a study of personal memory. March (1966), who originated the Memory Scale for use in her study, found that those subjects who had either an extremely high or an extremely low score on this test of personal memory did not perform as well on a behavioral measure of future orientation as the middle group did. She felt that both extreme groups were 'stuck' in the past in a way that hindered present functioning. If this is so, then it is possible that a clearer picture of an overall memory style phenomenon would be found if the middle group was studied rather than the very high and very low groups. The use of the former might eliminate the confounding effects of the latter's distorted relationship to time and memory.

Another major design issue is the time elapsed between original production and subsequent recall. In this study, 15-minute memory was used. Therefore this was a study of short-term memory of remembrances and memoria. Bartlett (1932) had subjects reproduce a story they read after 15 minutes, and then at increasingly longer intervals. He found that, as the length of the interval increased, the story became more personally stylized and less like the original. As Schachtel (1959) explained, "Memory is a distance sense ... and - to an even greater degree than the other two distance senses, vision and hearing - less immediately related to its objects than the proximity senses of smell, taste and touch, and more influenced and molded by the categories of the mind" (pp. 291-292). These statements suggest that any memory phenomenon becomes more pronounced with time. It may be that the results in this study would have shown clearer differences if the time between original production and recall had been longer. As time has a chance to strip a memory of the details irrelevant to the rememberer, his true style of recall might become clearer. If any study of this kind is attempted in the future, it should certainly include a measure of recall at several time intervals from the original production - a day, a week, a month, and so on.

It would be instructive to follow the course of a memory for a particular person over time.

Reiff and Scheerer (1959) stressed the necessity for remembering of a sense of continuity of the self between the 'now' and the 'then' in personal history. To recall a remembrance, one must be conscious of looking from one's present to a specific point in one's past. In the case of Personal TAT, this necessary condition was certainly met. A subject recalled a story 'now' which concerned events that took place 'then' in her past because the stories were required to be about her personal history. Verbal Free Association, however, may not have presented a comparable situation. In the latter test, the subject recalled an event which took place only 15 minutes into her past (although some of her associations may have echoed events that took place longer ago). Can '15 minutes ago' be far enough away from the present to provide an experience of the past, of 'then'? This difference between Personal TAT and Verbal Free Association may question the latter's appropriateness as a test of remembrance ability.

If future research finds the hypotheses in this study to be supported, then a whole spate of intriguing questions must be answered. Why should one person's life be colored by the presence of remembrances, while another's reality is

that of facts and dates set in an arid and bare framework of details from his own past? Are those on the extremes of the remembrance-memoria dimension totally different from one another or do they have important features in common which distinguish them from the majority in the middle? What are the personality correlates of the differing abilities to recall memoria and remembrances?

Some of the most interesting thoughts about these questions come from a man who devoted his life to the recapture of remembrances - Marcel Proust. At the end of his lifelong work, The Remembrance of Things Past (1934), Proust attempts to understand the effect of the recall of remembrances on himself. In so doing, he hints at the lure that recapturing the past may have for certain people. He himself, when in the grip of a memory, would momentarily lose the gnawing fear of death that haunted him throughout his life. In experiencing both the past event and the present impression that had recalled that event, he felt himself in both eras at once and therefore outside the grip of time. "... at that moment the person within me was a timeless person, consequently unconcerned with the vicissitudes of the future" (Proust, 1934, p. 995). It may be that a desperate attempt to hold on to one's past serves to stave off a fear of dying and losing that life altogether. This theory casts

an interesting light on March's finding (1966) that subjects either very high or very low in remembrance ability tend to have a weak orientation to the future.

Another point Proust makes is that in recapturing the past, a person can recapture his self. When recalling an incident that occurred when he was six years old, he not only reexperiences the details of that incident, but he sees them through the eyes of that six-year-old who was himself. For a person whose sense of self in the present is flimsy and elusive, a continuing reexamination of the past may serve as a means to discover and construct an identity. "And my inner self of today is merely an abandoned quarry which believes that all the marble it contains is uniform and monotonous, but out of which each remembrance, like a Greek sculptor, carves innumerable statues" (1934, p. 1006). Without a sense of self, the present may seem boring and meaningless and only the past valuable. The search for the past becomes an attempt to regain a lost paradise.

A more optimistic evaluation of the ability to recall remembrances comes from Schachtel (1959). He feels that only those people who are not bound by rigid, narrow schemata for categorizing their experiences are able to recall events from their personal past in full and rich detail. According to this view, people low in ability to recall remembrances would

tend to have more rigid schemata for classifying events in their lives and a more barren and utilitarian experience of that life.

These thoughts only begin to suggest a fascinating and complex line of research that should be carried out if people are indeed found to differ in their ability to recall remembrances and memoria.

APPENDIX A

Original and Revised

Forms of Memory Scale

Below are seventy questions pertaining to past events in your life. Some of these events happened long ago, some recently. Some will be easy to answer and some will be difficult. You may not remember the answers for a number of questions.

If you know the answer, write it in the space provided. If you are guessing or estimating, put a parenthesis around your answer. If you do not know the answer, write "DK" in the appropriate space. Please answer all of the questions in one of these 3 ways.

Please put a checkmark next to any questions that took you longer to answer than most of the other questions. Indicate at the end about how long it took you to do the entire questionnaire.

At the end there is a space for your comments. Please indicate any suggestions or criticisms you have about the questionnaire as a whole and the specific questions. I need your help in trying to improve the questionnaire.

- -

1. On what street was your grammar school?

2. When you were 12 years old, who was your favorite movie actor?

3. What was the last movie you saw that made you cry?

4. What time did you have to go to sleep when you were six years old?

5. Where did you put your keys last night when you came home?

6. How many of your professors smoke? (the ones you have this semester)

7. What time of day was it when you heard that Senator Robert Kennedy had died?

8. How old were you when you got your first two-wheel bicycle? (If you never had one, say so.)

9. What was the name of your 3rd grade teacher?

10. At what age did you go out on your first date?

11. Whom did you eat lunch with last Sunday?

12. What was the number of the last telephone call you made and to whom was it? (If the last call was an unfamiliar number you were calling for the first time, give the one before that.)

13. How did you hear about Nixon winning the Presidency?

14. In what order did you put on your clothes when you got dressed this morning?

15. What well-known poems did you learn by heart in grammar school?

16. How tall were you when you were 13 years old?

17. Who was your mother's closest friend when you were in grammar school?

18. What was the most recent news item you read or heard about that moved you to anger?

19. At what age did your first baby tooth fall out?

20. How and where did you spend the summer of 1958?

21. How old were you when your parents began to leave you at home by yourself in the evening?

22. When is your best friend's birthday?

23. What specifically did you have for supper three nights ago?

24. Which of the books that your parents read to you when you were young did you like best?

25. How much did you earn the first time you got paid for doing some kind of work?

26. What was the last movie you saw? Was it in color or in black and white?

27. When was the last time you took medication and what kind was it?

28. What was the name of your first friend?

29. What was the name of your favorite teacher in grammar school?

30. Who was the last performer you saw on television who really made you laugh?

31. What color dress, blouse or sweater were you wearing three days ago?

32. How old were you when you were allowed to cross the street by yourself for the first time?

33. What was your favorite game when you were six years old?

34. What was one of the things you talked about the last time you spoke to your mother or your father? (indicate which)

35. What was the last present you received and who gave it to you?

36. On what street did you live when you were five years old and how old were you when you moved?

37. Was the last new person you were introduced to male or female?

38. What was your favorite toy when you were four years old?

39. What was the name of the doctor your family used when you were seven years old?

40. The last time you were sad or depressed, how long did it last?

41. What was the name of the person with whom you had your first date?

42. In the last class you attended, what was the professor wearing?

43. How long did you wait to be seen the last time you visited a doctor?

44. Where did you buy the shoes you are now wearing?

45. Exactly how old is your mother?

46. What time did you go to sleep last Thursday night?

47. When was your house or apartment last painted? (month & year)

48. What time did you go to sleep on the last election night?

49. What was the name of your best friend when you were in the 6th grade?

50. Think of the last restaurant you ate in. What color were the walls painted?

51. What was the name of your favorite TV program when you were about nine years old? (If you didn't have a TV, then your favorite radio program.)

52. What is the official name of the first class which you attend in each school week?

53. How many terms of Mathematics did you have in High School?

54. Where did you get the pen or pencil you are now using?

55. What was the name of your first college English course text book?

56. How old were you when you were first allowed to stay out after 9 o'clock at night?

57. What was your High School average?

58. How much money did you spend yesterday?

59. What magazine did you buy in October?

60. At what age did you learn to play cards?

61. What was the general topic of your last dream and when did you have it?

62. What was your favorite subject in grammar school?

63. When was the last time you used an umbrella?

64. What size gloves do you wear?

65. What is the room number of the room you are in?

66. How did your father spend most of his time at home when you were about ten?

67. How old were you when you joined your first club or organization?

68. What was the name of your High School song?

69. What was the first article of clothing you bought for yourself?

70. How much was your most recent bill from the cleaners?

About how long did it take you to complete this part of the questionnaire?

- - - - - - - - - - - - - - - - - - - -

Comments:

Thank you very much for your kind cooperation.

Below are fifty-five questions pertaining to past events in your life. Some of these events happened long ago, some recently. Some will be easy to answer and some will be difficult. You may not remember the answers for a number of the questions.

If you know the answer, write it in the space provided. If you are guessing or estimating, put a parenthesis around your answer. If you do not know the answer, write "DK" in the appropriate space. Please answer all of the questions in one of these 3 ways.

- -

1. When you were 12 years old, who was your favorite movie actor?

2. What was the last movie you saw that made you cry?

3. What time did you have to go to sleep when you were 6 years old?

4. Where did you put your keys last night when you came home?

5. How many of your professors smoke? (the ones you have this semester)

6. What time of day was it when you heard that Senator Robert Kennedy had died?

7. How old were you when you got your first two-wheel bicycle? (If you never had one, say so.)

8. What was the name of your 3rd grade teacher?

9. At what age did you go out on your first date?

10. Whom did you eat lunch with last Tuesday?

11. How did you hear about Nixon winning the Presidency?

12. What well-known poems did you learn by heart in grammar school?

13. How tall were you when you were 13 years old?

14. Who was your mother's closest friend when you were in grammar school?

15. What was the most recent news item you read or heard about that moved you to anger?

16. At what age did your first baby tooth fall out?

17. How and where did you spend the summer of 1958?

18. How old were you when your parents began to leave you at home by yourself in the evening?

19. When is your best friend's birthday?

20. What specifically did you have for supper three nights ago?

21. Which of the books that your parents read to you when you were young did you like best?

22. How much did you earn the first time you got paid for doing some kind of work?

23. What was the name of your first friend?

24. What was the name of your favorite teacher in grammar school?

25. Who was the last performer you saw on television who really made you laugh?

26. What color dress, blouse or sweater were you wearing three days ago?

27. How old were you when you were allowed to cross the street by yourself for the first time?

28. What was your favorite game when you were six years old?

29. Was the last person you were introduced to male or female?

30. What was your favorite toy when you were 4 years old?

31. What was the name of the doctor your family used when you were 7 years old?

32. The last time you were sad or depressed, how long did it last?

33. What was the name of the person with whom you had your first date?

34. How long did you wait to be seen the last time you visited a doctor?

35. Exactly how old is your mother?

36. What time did you go to sleep last Thursday night?

37. When was your house or apartment last painted? (month and year)

38. What time did you go to sleep on the last election night?

39. Think of the last restaurant you ate in. What color were the walls painted?

40. What was the name of your favorite TV program when you were about 9 years old? (If you didn't have a TV, then your favorite radio program.)

41. What is the official name of the first class which you attend in each school week? (e.g., "Development of Western Civilization.")

42. Where did you get the pen or pencil you are now using?

43. What was the name of your first college English course text book?

44. How old were you when you were first allowed to stay out after 9 o'clock at night?

45. What was your high school average?

46. How much money did you spend yesterday?

47. What magazines did you buy in August?

48. At what age did you learn to play cards?

49. What was the general topic of your last dream and when did you have it?

50. What was your favorite subject in grammar school?

51. When was the last time you used an umbrella?

52. How old were you when you joined your first club or organization?

53. What was the name of your High School song?

54. What was the first article of clothing you bought for yourself?

55. How much was your most recent bill from the cleaners?

APPENDIX B

Vocabulary Test

Write the meanings of the words below in the spaces provided. If you have a great deal of trouble with any particular word, go on to the next one. The definitions need not be long, but give the best one you can.

- -

1. MERIT

2. FASCINATE

3. INDICATE

4. IGNORANT

5. FORTIFY

6. RENOWN

7. NARRATE

8. MASSIVE

9. HILARITY

10. SMIRCHED

11. SQUANDER

12. CAPTION

13. FACILITATE

14. JOCOSE

15. APPRISE

16. RUE

17. DENIZEN

18. DIVEST

19. AMULET

20. INEXORABLE

21. SERRATED

22. LISSOM

23. MOLLIFY

24. PLAGIARIZE

25. ORIFICE

26. QUERULOUS

27. PARIAH

28. ABET

29. TEMERITY

30. PRISTINE

APPENDIX C

Presented TAT Stories
(with information units indicated)

TAT - Card 1

This boy's/ father/ is a well-known/ violinist./ His main/ ambition/ in life/ is to be a great/ musician,/ as proficient/ as his father,/ but he doubts/ that he could be/ that talented./ He has only/ had/ a few/ lessons/ and, as he sits/ gazing at/ the violin,/ he wonders/ whether he should/ give up/ the whole/ idea./ He is feeling/ very/ discouraged./ The task/ he has set for himself/ seems/ impossible./ However,/ he pushes himself/ to continue/ studying/ and, after many/ years/ of hard/ work,/ he becomes/ a greater/ violinist/ than his father/ ever was./

TAT - Card 2

This girl/ was raised/ by her aunt/ and uncle/ on their farm./ As a child/ she loved/ everything/ about the farm./ However,/ when she entered/ high school,/ she began/ to read/ books/ and dream/ of the world/ outside/ of her home town./ She wanted/ to go off/ to college/ in the big/ city/ and sent away/ her application./ But/ now,/ looking at/ her aunt/ who is about/ to have/ a child/ and her brother/ working/ hard/ in the fields,/ she begins/ to feel/ guilty/ about not staying/ and helping them./ When she tells them/ of her plans,/ however,/ they are delighted/ that she knows/ the kind/ of life/ she wants/ to lead./

TAT - Card 3GF

This girl/ has been caring for/ her mother,/ who is seriously/ ill./ For the past/ two/ weeks,/ she has had to be nurse,/ housekeeper/ and cook/ for her family./ She has not complained,/ has/ not even had time/ to think./ But/ her mother/ has become/ pale/ and weaker./ The girl/ finally/ breaks/ under the strain/ and rushes out of/ her mother's/ bedroom/ in tears./ She is frightened/ that her mother/ may/ never/ recover/ and angry/ at fate/ for having brought/ such/ unhappiness/ to her family./ After another/ few/ days/ of discouragement,/ however,/ her mother/ begins/ to improve/ and eventually/ recovers./

TAT - Card 4

This man/ is a mining/ engineer./ He/ and his wife/ live/ in a mining/ camp/ in the northwest./ He came/ home/ a few/ minutes/ ago/ to find/ his wife/ very/ upset./ She didn't want/ to tell him/ what/ was bothering her/ at first,/ but/ she finally/ let him know/ that his foreman/ had insulted her/ earlier/ in the day./ He is rushing out/ of the house/ in a rage,/ ready/ to start/ a fight./ His wife/ is pleading with him/ not/ to go,/ to forget about/ what/ she told him./ She is afraid/ that he will lose/ his job/ and they need/ the money/ badly./ He doesn't listen to her/ and runs off/ down/ the street./

TAT - Card 5

This woman/ has been widowed/ for one/ year./ Her children/ are grown/ and she now/ lives/ alone/ in the big/ house./ She had gone up/ to her bedroom/ several/ minutes/ ago./ While/ taking/ her nightgown/ out of the drawer/ she thought/ she heard/ a noise/ downstairs./ She became/ apprehensive/ and frightened./ She quietly/ walked/ down the stairs,/ her heart/ in her throat./ She looks into/ the living room/ and sees/ a vase/ shattered/ on the floor/ and her cat/ next to it,/ looking/ very/ innocent/ as if/ to deny/ his mistake./

TAT - Card 6GF

This man/ and woman/ have been married/ for almost/ 3/ years./ He comes/ home/ one/ evening/ in a very/ strange/ mood./ He is silent/ and brooding./ His wife/ is nervously/ sitting/ on the couch,/ when/ he suddenly/ comes up/ behind her./ He tells her/ that he had seen her/ downtown/ that afternoon/ with her old/ boyfriend./ He demands/ an explanation./ She is stunned/ at first,/ but/ then,/ realizing/ how/ jealous he is,/ she is forced/ to explain to him/ that her old/ boyfriend/ is in the sporting/ goods/ business/ and he was merely/ helping her/ get/ her husband/ a set/ of golf/ clubs/ as an anniversary/ present./ He is ashamed of/ his lack/ of trust,/ particularly/ since/ his wife/ was only/ thinking of him./

TAT - Card 7BM

The man/ on the right/ recently/ graduated/ from law school/ and has started/ working/ in a large/ firm./ He is involved/ in a very/ difficult/ case/ now/ and must/ appear/ in court/ to defend/ his client/ tomorrow/ morning./ He does not trust/ his own/ ability/ and is afraid/ that he will make/ a fool/ of himself/ in the courtroom./ He has come/ for advice/ to one/ of the senior/ partners,/ a kindly/ and experienced/ man./ The partner/ tells him/ that he was/ just as/ frightened/ before/ his first/ courtroom/ appearance/ and gives him/ some/ good/ advice/ on the case./ The young man/ is delighted/ to find/ that, as a result,/ he does/ very/ well/ the next/ day/ and wins/ the case/ for his client./

TAT - Card 10

This man/ and woman/ are celebrating/ their 50th/ wedding/ anniversary./ Their friends/ and relatives/ had made/ a surprise/ party/ for them./ They were/ very/ delighted/ when/ they found out/ and spent/ an enjoyable/ evening./ But/ they were/ secretly/ looking forward/ to the moment/ when/ they could be/ alone,/ to recall/ their life/ together./ They reminisced/ about the hard/ times/ they had had,/ how/ she had to help/ support them/ while/ he went/ to law school/ at night,/ the joy/ their children/ brought them./ Their eyes/ met,/ they smiled/ and embraced./

TAT - Card 13G

This girl/ has recently/ graduated/ from high school./ Her family/ is poor,/ but/ they sacrificed/ so that/ she could/ stay/ in school/ and get/ her diploma./ She found/ a job/ immediately/ after/ graduation/ and felt/ very/ happy/ when/ she handed over/ a large/ part/ of her first/ paycheck/ to her mother/ to help/ support/ the house./ It is now/ one/ week/ later/ and she has/ just/ been told/ by her boss/ that he is laying her off/ because/ business/ is bad./ She is walking/ slowly/ up the stairs/ in her building,/ wondering/ how/ she can/ face/ her mother,/ feeling/ very/ ashamed./ She tells/ her mother/ what/ happened/ and feels/ much/ better/ when/ her mother/ reassures her/ - tells her/ that they have/ some/ money/ saved/ and that she shouldn't/ have/ any/ trouble/ getting/ another/ job./

TAT - Card 14

This man/ has/ just/ moved/ to New York/ City/ from/ the small/ town/ in Ohio/ where/ he was born./ He is a musician,/ a pianist,/ and has come/ to New York/ to study/ music/ and to try/ to start/ his career./ This is something/ he has dreamed of/ for/ many/ years/ and he is having/ trouble/ believing/ that it is/ actually/ happening./ He has taken/ a room/ at the YMCA/ and, after/ a night/ of tossing/ and turning,/ wakes up/ at dawn/ and looks over/ the city./ He is filled with/ a sense/ of joy,/ and also/ fear,/ at the thought of/ what/ lies/ ahead/ for him./ After/ 3/ years/ of hard/ work,/ he begins/ to make/ a name/ for himself./

APPENDIX D

Theme-lists and Stories

Theme-lists and Stories:

I. THE BALANCED ROCK

Theme one: Indian / braves / are playing / at testing / their strength

Theme two: The winner / is vain / and boastful

Theme three: A stranger / appears / who is mocked / and challenged

Theme four: Great / weights / are lifted / with ease

Theme five: He / turns into / a Stone / Giant

Theme six: The boys / are reprimanded / and shamed

Theme seven: A rabbit / hops away

. . . . . .

A group of young Indian braves, the youngest was ten and the oldest just thirteen, were playing games to compare their strength and endurance -- to see who could endure submerged in water the longest, who could stand on his head the longest, whose athletic prowess was the greatest. The games were played to test their mettle, for he who surpassed all others would be their leader for the year.

The swimming contests had been won by Bright Star, and he had won the bow and arrow games as well. Fleet of foot, he had outdistanced all others in the races, and there now remained only the tests of strength. The tall and husky winner was very vain, so certain was he of his victory, and his words were proud and boastful. "Hoh! There is no brave in all the land that can overthrow Bright Star in weight lifting," he shouted boastfully.

"Those are very vain words, proud winner," called a small voice. "Remember, when you boast you must perform the deeds of which you speak. So has the Great God said."

At that moment the young Indian boys were amazed to see that a stranger had appeared among them. He was small and meek, his clothes were tattered and torn. Laughing and mocking, the boys crowded around him. They jeered at the small and frail youth who had appeared from nowhere, and Bright Star mocked him with an insult, and then challenged him to a contest. The small stranger accepted the proud winner's challenge, and then the contest began.

Bright Star moved a heavy stone and picked it up shoulder high with utmost ease. The stranger moved a larger stone and lifted it head high. Bright Star struggled with a big and heavy boulder, and he pushed it over his head. The boy moved a still greater weight with graceful ease, and he threw it into the air. Bright Star panted and gasped over another stone, but he was helpless to move it. Now the small stranger lifted great weights so heavy that none had ever thought to try to move them. And gradually, with every step, he grew larger and larger until he turned himself into a great rock-like giant -- he gradually turned into the great Stone Giant himself, mightiest of the Stone Gods. Then he placed a huge boulder on top of another one, balancing it there with utmost ease.

The boys were badly frightened, and they stood awestruck and shamed as the great God disappeared from sight and in his place stood the meek, frail stranger. The frightened boys did not laugh now, but hung their heads in shame when he sternly reprimanded them in a gently scolding voice.

"Never judge by appearance alone. Never speak idle words of the great things you can accomplish. Live up to this lesson, and you will be leaders among men, as well as among boys."

The frightened boys listened to the reprimand with downcast eyes. When at last they raised their eyes, there was no frail and tattered little stranger before them, but just a little white rabbit hopping away down the trail. When the little white rabbit had hopped away from them and disappeared, the Indian braves returned to the village chastened and awestruck. Bright Star was in their midst and not in the lead. There would be no leader among them that year.

. . . . . .

II. THE MONKEY

Theme one: The general / had polished / his medals / that spring / morning

Theme two: Nursery rhymes / filled / the air

Theme three: The children / circled round / begging for / music

Theme four: A coin / rolled among / their feet

Theme five: The lady / heard / the frenzied / scramble

Theme six: A hairy / paw / scooped it up

Theme seven: Tears / were seen / on the animal

. . . . . .

The sun was bright that beautiful spring morning, and the fat costumed general had on his brightly polished medals. Not in vain had he spent an hour, early that beautiful morning, vigorously polishing up his funny medals, for they sparkled proudly on his big round chest. The fat general stroked the tips of his waxed mustache, and when he bowed low to the ladies and nursemaids in the park all of his sparkling funny medals clanked and jangled.

He waved to the little children, whose merry nursery rhymes filled the fresh air with gaiety. How he loved their merry nursery rhymes'. And how they loved his red and green uniform, his funny-shaped medals, and best of all his little shriveled monkey. The little children rushed up and made a big circle round him, hopping up and down with excitement, and loudly begged him to make the martial music from his magic music box. They begged so loudly for the martial music because they wanted to march round him in a big circle, and they wanted to see the little animal, with its shriveled face like an old man's, scurry around gathering up the rolling coins and dropping them into his little cup.

Suddenly, a big gold coin rolled among their dancing little feet. This was no mere penny, this was a large shiny thing with a rich gold color. The blind lady who had thrown it did not count on the mad frenzy that would follow. The blind old lady was surprised to hear such a mad scramble for a coin that she thought was a large copper penny. The fat organ grinder caught sight of the gold coin, and what a lot of money it seemed to him -- what a nice new uniform it would buy. The children saw it too, and what a wonderful plaything it seemed to them -- how nice it would be to hold and rub it.

So imagine the mad frenzy that took place on that beautiful spring morning! A large gold coin rolling helter-skelter among the little feet of the children; a fat red-faced general with all his funny medals jangling and clanking; and all in a mad scramble to catch the coin. And meanwhile the little monkey stood chained to the organ, and followed the gold coin with his great staring eyes. Who knows what he thought of the big shiny thing? Who knows how he yearned for it?

As though it was guided by his big eyes, the gold coin rolled straight to the little beast, and he quickly scooped it up with his long hairy paw. He scooped it up so quickly that the children did not see him do it. But the fat organ grinder did. And, without a 'by your leave', he snatched the coin out of the long hairy paw, kissed it greedily, and stuffed it deep into his pocket.

The little children laughed and screamed. But a great sound of weeping and wailing was suddenly heard. Everyone looked around to see who was crying, but it had already stopped. And there on the cheeks of the little animal were seen two huge tears slowly falling from his large eyes. One huge tear fell from each eye of the poor little animal. Imagine, a monkey weeping!

The little children stopped their laughter and were sad. Even the fat organ grinder felt a pang of something. But only for a moment; and soon he waved goodbye, and continued through the park to find a new group of little children to entertain.

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APPENDIX E

Concentration Tasks with Instructions

Concentration Tasks:

1. Serial 7's

In this task, the subject was given a blank sheet of paper, a pen and the following instructions:

> On the piece of paper I have just given you, I want you to write the number 1,000 at the top and then subtract 7 from that and write the answer below it. Continue to do this so that each succeeding number is 7 less than the number above it. For example, at the top you will have 1,000, then below it 993, then below that 986, and so forth. Keep going until I tell you to stop. I am giving you this task so that you can be distracted and not try to remember the stories you were just told. Please concentrate and let yourself be distracted. Do you have any questions? O.K., begin.

The subject was asked to stop after ten minutes had elapsed.

2. Crossing-Out Consonants

The subject was given a sheet of paper covered with rows of upper case letters presented in random order. The paper was placed so that the subject saw the letters upside-down. The following instructions were read:

> I have given you a printed page of letters which I have purposely placed so that you see them upside-down. Keeping the page in this upside-down position, cross out all the consonants and only the consonants. Start at the beginning and go across the rows slowly until I tell you to stop. Again, let yourself be distracted. Do you have any questions? Allright, begin.

Again, the subject was stopped after ten minutes. There were two different sheets of consonants. One was used in the first testing session and the other in the second session.

A X E E Y U I H U J I K N R E S E A C A A E I B I O M E E X Y Y E A U S

C I I E X B H A I E K J M O O B E I T Y H A C E I J W R S A E X I O O P

R T I Y O O K H N I E S A A E W H I O T V U B A E X T P H I O U A X L V

E E S G I H B O I M A J O H H L P O O E A W X U U R U T Y B O I N H E C

V I O B Y U H U I T R D S I N O A E U I N J M V E A D I O E C Y G A R E

Q W E R B T Y U I O P A S D F G H I J O K I L A Z X C E R T Y U J I O K

Z W E R F T G E J U Y I O H I L I O I K Y A E S E E I H T G A E I D O U

S W D E F R G T H Y U U J I I O A E L P D W C R V T U B U U U N I O A E

B E S A A U J T G Y O I O A E D C F E C R U I A E E I O S W D E F R Y U

C E V T N U I O A M U L P A W F E D C T G V U J I J O L I O A W S V R Z

A Q S R V R A E U H U I Y I U G R D T I O A W E W S A A E C R T I U O S

X W F D S A E S E U J I K S W F R G T C I J U O K A W S E E D F U I A C

X W E E A S Z D T H Y I U J I O S X W A A E D R G Y U H B I J I O U S X

Q U I O J Y H R E S E A W D R I O L U H J Y U Y S A E W D C X F T U I O

C E F A T U J E S I O K Y G R D E A W C E F U I O P J Y G R D E S V F R

W A S E D R F E E U J I K I I O T Y T U I N O I M N V E E A G H T E C T

E V F E E S A D U I O J K Y G T H R D F E S A A W X R F T Y U U I O P K

S C D E E R U J U I O K Y G B T F E S W W Å S D E F R E E G T Y U J I I

S S W F E E U H I H U O J I A A E U I O I O K L J U Y H T S E E A W D C

V E E B N G H B I O L M E S A A E C V I O N I N U B E D C T V U I S V E

D E S E E U J I I K O A W S E D R E E S U J I K O O I U Y T U U I E D V

W X D E E S A A E U J I I O K T U I O D E E S C F G B Y U U I O H U J T

W A S W W E R F T G Y U U H J I K O L O I U V E V T V U N U I O M E A X

S E E A R D F T Y U I O R S D E E A S R E E U I J I O K Y H U I I A W S

W E A A S E E D U J I K O O L I I J U I O D C R T Y U U J I I O K A Q E

W S A E R T Y U I O P A S D F G R Y H U U U J I K L Z E X A E C V B N T

Q A E D R T Y U U I O K U J I K L V F R E D C A A S E R E S A A E R Y U

E A S D E E R T U I Y H I I O K L I J M H T F R E E S A W E E S A U J I

C E S W X E E Y U I J U I K M T U I W E C R D A E S C U I J O I K I L Y

C E D S W E E R T U I J I K O L U I I O P D S E E D A C D E R T Y G B E

A X E E U I J I L P M T Y I E A S C D W F T G N I O L E E A S U I E C W

Q W E R T Y U I O P A S D F G H J K L Z E A X E I U M N B I O P O C D E

E E U I O J K H N T F V G E A S W D R E Y H Y U I O J K L T U X W E A D

W S D E T F Y U I O I K L A E S D R T Y U H J Y C R D E S W A A E U I O

X D E E S D F T Y U U I O J M H U I O L J Y T C V B S E A E D R F T A X

E V R T I U J K O L R S D C V E S A A E U I J K I L O P T Y E Y A S D V

W S X E D C R E F V T D G E S A Y H U I O J K I K O L P E D R B T F J T

F E A C A D Y U J I B H T F R E D C G H B I O L O I U W D E S A E C R E

A S E R Y U H U I K O L H U I M R E S A E D E R T B V N C M X J H I E A

Q X W C E S T B Y N U M I O I U Y T R E W A S E S A D F R E A S C F T U

C V G T Y I U O L K M E A S W E S C T Y U I K O I U Y G F V B N R E A O

X V F E S A Y U I K O A E D F R B N J H G O H E R T F Y G H U J I K O P

A Q S W D E F R G T H Y J U K I L O P Z A X E C A E U V I O N M U I E A

W S E R A V B G F Y U K H I O L P U J I O N M E S C E T A W E D T G U I

B C N V Y R U T I U O R E A I K U I H G D W E F R C G Y L F E A S U E F

A W S E D G F H T U Y J I L K O P A X A C V E S Y U I K M H Y U B E A W

D E S A R T Y U H J I K L O Y H N J K A S W E R D E V F T G U J H N M I

O I U Y T R E W Q L K J H G F F D S A E S R D F T G Y H U J I K I O L P

E C F B R B Y V H U N J M I O K L A W S E D X C V T G Y H U J K N B F E

W A S E D R F T V G Y J U I K O I U H M G F D E R S C A W E X F T H U I

O I U Y M N B U J H G T V C F R E D X S A Q W E A S U I O P L K J H F D

E S D R V F G T H Y U J I K L O P M K H U I J T F E H V M Y K L O I U Y

D W X A F C R V G T Y U I H J K L O I U Y T G F D S A P O I M U I R D S

G L O I U J K M N T B Y V W A X D V E R C T U G N L Y U I O A S D C E X

W X D F B U E S R D T Y U I O L A S W C D R T G H Y U I O J I O M N T F

A S W E R S E R C F B G V Y U I J H N M K L O I U Y G B F V R D C E S A

W X E C R V T B Y N U M I K O L P A S D E D R F T G Y H U J I K O K U I

P O I U Y T R E W A S D F L K J H F D S A M H N U J B K I U R E S A W D

E R T Y U I H J K L A S D C V F G B H Y U I O K M J H Y T R E S A W C E

3. Crossing-Out Vowels

This concentration task is similar to the preceding task except that, in this case, the vowels rather than the consonants are crossed out. Again, there were two different forms of this task, one used in the first testing session and the other in the second. The instructions were:

> I have given you a printed page of letters which I have purposely placed so that you see them upside-down. Keeping the page in this upside-down position, cross out all the vowels and only the vowels. Start at the beginning and go across the rows slowly until I tell you to stop. Please permit yourself to be distracted during this task. Any questions? O.K., begin.

A U L M V B E E S F T G V E I G O P E R F R A X A T Y W E N L C U B G

Q W E R T Y U I O P A S D F G H J K L Z X C V B N M Q E T U O A D G J L

Z C B M W R Y I P S F H K X V N A C E T Y X Y H D B N E Y U E O P W C B

E S F V G H U I Y J O L W A X V E S H V J K I S E T Y U G B V E Q Z E X

S W R G T C U I F S E O U G N L S X R I O E F B M S R U D G Y I O V N

X E Y U I O K J H G F D S A Q X C V N B V C X S F A F W F E T D T Y U I

W D R T G Y U J B V S X Q U I O P L K J P O I U Y T G F R D E E X V C B

S X U U G T O L E S D R T U I O M N B V C X Z L K J H G F D S A P O I U

Y T R E W Q L K J H G F D S A M N B V C X Z P O I U Y T R E W Q A D G J

L Q E T I P Z C B M W R Y I P S F H K X V N Q A Z W S X E D C R F V T G

B Y H N U J M I K O L P Z A Q X S W C D E V F R B G T N H Y M J U K I L

A S C E T F Y J N I K O P S W X R D E E T G U I J K O L Y F E V B N R D

X W C E V R B T N Y M U K I L O P Z Q A S D S A F G H G F J K L K J V R

X W S F D E R G T Y V B U J H N U I K D S F A Q C Y N R V G T I K D I A

X S C D V F B G N H M J K L A W S E D R F T G Y H U J I K O Q E W R E T

X C V Y J U K I L O Q W E W Q R Y T U O I P I A D S D G F G J H J L K C

X W E D S F G R T Y V H B N J U K I O L S X C V B E B D T U I H N R V G

E F G H Y B V W K L M U Y B N O P C V X A S G J Y I K L P E T R V M I O

A D S F D G F H G J H K J L Z C X V C B V N B M Q E W R E T R Y T U Y I

P I O U I Y U T Y R T E R W E Q L J K H J G H F G D F S D A M B N V B C

V X C Z Q Z A W X S E C D R V F T B G Y N H U M J I K L O P Q S A W E F

D R T H G Y U K J I O L P A X Z S D V C F G N B H J M K L S F D H R V Y

S V E D G T C H N U I K J C E F N I O P J K L Q W E R T Y U I O P A S D

F G H J K L Z X C V B N M P O I U Y T R E W Q L K J H G F D S A M N B V

C X Z S T V E C Y U N F I O H L W S E F T B E X C T J Y I B P N R S C W

A X S W R G V H E D B H N U K I O L F B N Y M U I F D W C G T N Y U I L

D X R G V H M Y I N D W U I O K L G F D S A V C X Z N Y J I M O L E S W

C E V R B T N Y M U K I G Y H U J B R X C S E D F G W Z A D S E F R T Y

S W C E V R F D S G T H U J I D C X N T U I G V B Q S E D R F T G Y V A

X C V B N M S D F G H J K L Q W E R T Y U I O P P D S A H G F L K J B X

S V F C G N B H J M K I U T F E S X E C R S D F G H G F W A S E R T Y

W V H N J M K L Y G B E I D F G K H J L P I O R W S F E T D Y V G N W

K M K N H V H B R U T Y I O P S D E F E H Y N E V T M I N Y B U H F G D

B F Y U M H K I W A C D G B N U J I L F G B V T N H Y U J M I K A X E

A Z E C W F R T V G Y N H U M J I K O B E X W D F C G R B Y H M U N A C

S D C F V G B H N J M K E C R V T B Y G U B I M W Z E X R C T V Y B U N

A D S F D G F H J G K H L J P I O U I Y D E X T E R W E Q A S F D G F H

Q W E R T Y U I O P A S D F G H J K L Z X C V B N M S A F D H G K J L K

W X R V T H U I O J I A S D F G E R D C R V T B Y G F U M I Q S D X R G

C R V Y J D G Y U N W X E S R V Y J A I P W C R B S F Y H U M Y U S E B

S W G R F C U I M Y O F R H W A X B C F G V J M E R T Y G F D E W V R U

Q C E G T U J I O N R C T G F B Y J I L O A S W D E F V T B Y N U M I X

S F H K A D G J L Q E W R E T R Y T U O I A D Z C S X E C R V T B U M K

A W Z E C R B Y U M H G I K O S W C D T H U N J B V E X S W V E D C T N

F C R B Y H M U N I K S X E D T H G V Y U N J I K W S A X D E V R T F Z

I H Y F D S W R C B G U N H K I M O L Z P Y E A D N I 9 B M C Z E Y I Q

D S A R E W Q I U Y T K J H G M N B V C X Z E X R C T V Y B U N I M O L

E G H T Y V U N J I K G C W S X D F B G Y N U I O J M G Q Z E X D F V C

T B Y G V U H N J I K M E S C D R F V T G B H Y U J N I K M O L Q A Z E

E V X R H Y N U J M I L O A S W D R F C V G T H Y N U J I O W X D B E C

S W C E D T G R F H T U J I K A W D E G C V B Y U I O S D F V G B H N J

Q E W R E T R Y T U Y I U O P A D S F D G F H G J H K J L Z C X E C S Z

D F C G R Y A V R B Y H N U J I K O L E D C F G B H N J K E W X E S H T

R C F B H J K L A W S E D F R H T G C V B B W E S E D Y H U U J I K O S

X S E F D R C K U N J T G Y H F R V B T Y U G H J I K L O E S W F R G T

W X Q W E R T Y U I O P A S D F G H J K L Z X C V B N M P O I U Y T R E

W Q L K J H G F D S A M N B V C X Z Q E W R E T R Y T U Y I U O I P A D

S F D G F H G J H K J L Z C X V C B V N B M Q Z W X E C R V T B Y N U M

A D S F D G F R F T G Y H U J I K O L P A Q S W X C V F D S W E R T G F

4. Adding Columns of Numbers

The subjects were given a sheet of paper with long columns of numbers printed on it. These were addition problems to be worked on until the subjects were asked to stop (after 10 minutes). The columns were long and consisted of two, three and four digit nunbers. There were two forms of this test also. These were the instructions:

> On this page are columns of numbers. I want you to add these columns until I tell you to stop. Again, concentrate on the addition problems and let yourself be distracted. Any questions? Allright, begin.

Add the following columns of numbers:

124	649	342	7759	3354	53426
385	453	908	3024	7064	95847
980	231	671	4450	5532	36455
675	869	98	7632	4038	70856
346	16	413	9270	3271	3329
232	975	3	658	9765	60874
143	870	44	46	7056	36351
768	65	327	135	6578	98423
			7089	9213	568
			5	8564	31589
			667	3546	2200
			5531	4423	32308
			9986	9876	57323

5078	36	30297	706	22198
3295	525	6854	852	10956
75	309	7721	775	44679
401	221	46563	901	35346
34	11	33768	438	22176
4098	402	90556	227	90788
3321	227	21	756	75634
6944	867	32435	968	82843
3329	342	24318	547	90621
1056	907	87695	907	89465
546	16	3341	324	21345
2206	5	6654	528	56343
78	32	43	564	89678
3540	786	88	221	45326
8875	121	5	328	89756
337	443	4698	767	33546
605	89	5487	230	10405
9622	576	7905	449	98930
3208	24	239	375	35640

Add the following columns of numbers:

34	654	43056	7653	78906
26	382	22108	1021	33219
12	241	30328	6259	4456
5	90	62678	3307	44236
46	467	90807	8789	23117
78	324	44563	4324	60234
93	109	24500	8890	435
65	534	64578	4531	602
16	223	98708	5500	11
33	574	33265	4655	408
49	338	44785	2218	6
8	25	62853	6611	3378
40		36951	7019	40675
23		21055	9335	90897
90				5644
				20236
				37586

5674	30584	576
3029	96253	304
3354	90788	556
67	35421	700
2010	311	377
5542	24336	242
8906	46559	952
4563	20306	121
1324	4451	675
458	3038	908
3346	25	355
8906	394	534
3038	23653	633
6	791	785
45	2311	909
3476	4376	388
8890	22689	
642		

5. Number Series

This task consisted of completing several series of numbers. The subjects were read the following instructions:

> I want you to complete the series of numbers on this page. Try to figure out the pattern of the numbers in each line and add the numbers that should be next in the series. Fill in as many blanks as there are at the end of each line. Concentrate and let yourself be distracted. Do you understand? Now, begin.

Complete the following series of numbers:

1) 1, 3, 5, 7, 9, __, __,

2) 2, 5, 7, 10, 12, 15, 17, 20, __, __.

3) 1, 11, 20, 28, 35, 41, __, __.

4) 1, 2, 3, 5, 8, 13, 21, 34, __, __.

5) 1, 2, 5, 6, 17, 18, 35, 36, 71, 72, __, __.

6) 5, 9, 14, 18, 23, __, __.

7) 4, 7, 8, 14, 12, 21, __, __.

8) 1, 3, 2, 6, 3, 9, 4, 12, __, __.

9) 1, 3, 5, 7, 11, __, __.

10) 3, 4, 8, 9, 18, 19, __, __.

11) 35, 34, 30, 29, 25, 24, __, __.

12) 2, 4, 6, 3, 5, 7, 10, 12, 14, __, __, __.

13) 1, 2, 4, 3, 5, __, __, __

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