CHAPTER II

METHOD AND PROCEDURE

Subjects

The subjects were eighty children of chronological age
4 through 15 years and twenty adults ages 20 - 21 years old, from
a rural area in northeast part of Thailand. A description of the
rural area was provided in Appendix A. There were five age groups
with each group consisting of ten males and ten females. The
subjects ages 4 - 5 had not yet attended school, while children
ages 7 - 8 and 10 - 11 were in school. The subjects ages 14 - 15
and 20 - 21 had left school. All of the two oldest subjects
finished at least pratom four and almost all of them were farmers.
The subjects from the school were selected at random from all
children in the school. The younger and older subjects were
volunteers from the village. The headmaster of the school had
requested the villagers to participate in the study.

Table I described the age and educational level of the
subjects.

Table I

Age and Educational Level of Rural Subjects

Age group	N	Mean of Age	S.D. of Age	Mean of Education year	S.D. of Education year
4 - 5	20	4.95	0.22	0.00	0.00
7 - 8	20	7.75	0.44	1.70	0.66
10 - 11	20	10.35	0.48	3.90	0.64
14 - 15	20	14.35	0.48	4.30	0.98
20 - 21	20	20.60	0.50	4.70	1.95

Stimuli and test materials

Test materials described by Wagner[1] were adapted from
Hagen's.[2] The stimuli consisted of a set of seven white stimulus
card measuring 1½ X 3 inches, with each card containing two black
and white pictures of a particular object and a particular animal
pasted on one side of the card. These pictures were taken from
Thai children's books. The same animal was always paired with the
same object : Elephant - tree, cat - shirt, duck - hat, fish - house,
dog - motor-cycle, turtle - airplane, pig - shorts. Pretesting

[1] Wagner, loc.cit.

[2] Hagen, loc.cit.

established that the pictures used could be labeled correctly by subjects of all the ages. Each set of two pictures were arranged above one other on each card; three with the animals (dog, turtle and pig) above, and four with the objects (tree, shirt hat and house) above.

Fourteen sets of these seven stimulus cards were constructed and arranged in a fixed randomized order. Each set had its own separate test packet. In each packet, following the seventh stimulus card, was a special probe card (consisting of a single animal or object, to test for one of the seven serial positions – this was the "central" (short - term memory) task. Two index cards measuring 4 X 6 inches, one containing all seven animals in a circular design, the other containing seven objects in a circular design were used for pretest stimulus recognition before the central task and as a part of the incidental memory task. Two additional packets of single animals and single objects were used as probe stimuli in the incidental memory task. These test material are provided in Appendix B. For the practice session, an equivalent but smaller set of different stimuli were used, consisting of three animals (bird, crab and horse) and three objects (chair, shirt and car). A white cloth was used as the testing surface, and was placed on a table or desk top.

Procedure

The subjects were tested individually using the procedure

of Wagner.[3] All subjects were tested for central and incidental memory with the same task stimuli. The materials were balanced such that animals were central and objects were incidental for half the subjects, and the reverse for the other half of the subjects. The central task consisted of location a particular central stimulus among a series of seven that were briefly presented to the subject, and then placed face down in front of the subject. Each subject was tested for central memory recalls 14 times.

The experimenter seated the subject at a table opposite her. The experimenter began the practice trials by saying in Isarn dialect:

"We are now going to play a game with some animals and objects which you know very well. Before we play the real game, we are going to play a practice game in order to know whether you understand the game. Do you know these objects and these animals ? Now, the idea of this game is to remember where each of these animals (or objects) is, as I place them down in front of you. Then I am going to show you an animal (object) and you must point out, but not turn up, the card where that animal (object) is in the row. I will then tell you whether you were correct or not, and I will prove it by showing you where the animal (object) is

---

[3]Wagner, loc.cit.

located. Remember it is necessary to remember only where the animals (objects) are. The objects (animals) are not important."[4]

The experimenter went through six trials with the practice game. The experimenter explained if necessary, what was meant by "animal" or "object". If the subject got three or more correct responses, the experimenter proceeded the central task. If the subject made fewer than three correct responses, he was dropped from the experiment. For the present study 2 out of 22 subjects from the 4 - 5 year old subjects were dropped. No subjects were dropped from older age groups.

Then the experimenter continued::

"Well, now I know you understand the idea of the game. The real game has the same idea, but the animals and objects will be different. Also, there will be seven cards, not just three. Now I want you to tell me the name of all these animals and objects. Now you know all the animals and objects to be used in the real game. As in the practice game, only remember where the animals (objects) are. I will give you a piece of candy if you make one correct answer."[5]

Before the beginning of the experiment, all subjects had to recognize and label all the objects and animals in the task.

---

[4] Wagner, loc.cit.

[5] Wagner, loc.cit.

In the experiment, the experimenter accepted the name of a stimulus named in both central Thai language and Isarn dialect such as; ga:ŋgeiŋ (central Thai) and sa:ŋ (Isarn) for shorts. During naming, the animals and objects were presented in separate groups, where the central stimuli (e.g. animals) were always named first. On each central task trial the experimenter presented seven cards to the subject by holding each card in view for approximately two seconds and placing it face down in a row on the table in front of the subject. The row was begun on the subject's left and extended to his right. In fourteen test trials the stimulus cards were randomed, so that each stimulus (animal or object) was tested twice, but in a different serial position each time. Each serial position was probed equally by two different stimuli (one animal or one object). Appendix D provides the record sheets for the test.

After completion of the fourteen central task trials, the subject was tested for incidental memory by being asked to recall which animals went along with which objects, on the basis of information from the previously shown animal - object pairing in the central task. The experimenter began the incidental memory task as follows:

"Good! Now the game is going to change. Do you remember that each card had an animal and an object on it ? I want you to tell me which of these objects (animals) was accompanied by this animal (object). Do as well as you can. I will tell you the correct answers and after we have finished the game, I will give you a piece

of candy for each correct answer."[6]

The subject was tested on all seven stimuli (objects or animals) for incidental memory task.

After testing the incidental memory, each subject was asked to fill up the questionnaire about the subject's background which are presented in Appendix D.

Scoring Procedure

Central task scores were defined as the total number of animals (objects) correctly located on the fourteen trials and number of correct answers for each serial position.

Incidental task scores were defined as the number of correct pairings out of the seven possible pairs.

Statistical Methods

Statistical methods used in this study were as follows :

1. Arithmetic means, standard deviation and proportion correct were computed on the central task scores for each age group and by serial positions, and on the incidental task scores for each age group.

2. Two - way analysis of variance was performed in order

---

[6]Wagner, loc.cit.

to find out differences among age groups and among serial positions

and to examine the interaction between age and serial position.

3. One - way analysis of variance were performed to

examine the differences on central memory scores within each age

group and for primacy, recency and middle positions of all subjects.

4. T - test comparisons were performed on central task

scores to compare the differences between age groups and the

differences between males and females, differences on the performance

for primacy, recency and middle positions.

5. One - way analysis of variance on incidental task

scores was calculated to find out differences among age groups.

6. T - test comparisons were performed on incidental task

scores to compare differences among age group and differences

between males and females.

7. Correlations were calculated to examine the relationship

between the performance on central and incidental task scores for

each age group.