Chapter-IV
Design and Methodology

The present investigation was conducted in two phases. The initial phase was the selection phase and the second phase was the experimentation phase.

Selection Phase:

Sinha's Self Analysis Inventory to be administered, to a group of approximately 150 students of University college, Rohtak for identification of low and high anxious subjects.

Experimentation Phase:

A 2x2 factorial design to be employed to study the independent and interactional effects of two independent variables, noise and anxiety on visual perception.

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<th>No Noise</th>
<th>Noise</th>
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<td>Low</td>
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<td>High</td>
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Sample:

A sample of 150 under-graduate students was selected from the University college, Rohtak, on random basis and
Sinha's Self Analysis Inventory was administered. On the basis of the test scores twenty high and twenty low anxiety students were selected. They were then randomly assigned to the no noise and noisy conditions such that 10 low anxiety and 10 high anxiety subjects were assigned to each condition.

Instrumentation:

The following tools were employed in the present investigation:

a) Sinha's Self Analysis Inventory.
b) White noise.
c) Perceptual Task.
d) Pneumograph.
e) Psychogalvanoscope

Sinha's Self Analysis Inventory:

This test has been constructed on the basis of the symptoms of anxiety reported by patients who visited the Institute of psychological research and service, Patna University, for psychological assistance. A few items from the existing tests of anxiety were also incorporated after such modifications as where considered necessary. Initially 315 items were prepared in Hindi. These items were given to five judges and finally 90 items were selected. The test-retest reliability was 0.85. The internal consistency reliability of the test was found to be 0.92. The coefficient of validity, which was computed by calculating the coefficient of correlation between scores on Comprehensive Anxiety Test and Taylor's Manifest Anxiety scale was .62, (p < .001).
The test booklet has been placed at Appendix-I.

White Noise:

An independent variable which was to be varied in the two conditions was noise. The investigator played a pre-recorded tape of white noise through a Phillips cassette recorder at the same volume for all the subjects in the noise condition. White noise was used instead of other environmental sounds because the investigator required a uniform sound which did not have any characteristic of its own.

White noise is the resultant, ambiguous hiss-like, sound produced when sound waves of different frequency are mixed up in such a manner that they have the same amount of energy output. It is known as white noise, because it is analogous to white light. The noise produced from the exhaust of an airjet is a very good example of white noise that spectrum. Although this noise can be recorded from the air field, the spectrum is difficult to maintain due to variations in engine ejection, distance of the recording equipment from the exhaust and environmental sounds.

The noise played in the present investigation was recorded from an electronic white noise generator.

Perceptual Task:

A detection task, involving recognition, was employed
to measure the sensitivity of the students. Forced choice method was adopted. Two lists of English words, which are used in daily life, were prepared. List I consisted of 100 words (of 4 or 5 alphabets) while List II consisted of 100 pairs of words. Each pair had one word from List I and the second was a new one. The position of the old and new words were varied.

Pneumograph:

A pneumograph was used to measure the rate and depth of respiration of the subjects. It consisted of a thick rubber tube, 10 cm long, with a diameter of 4 cm, which was closed at one end and attached to a small metal tube at the other. This metal tube was connected with a rubber tube which in turn could be connected with a tambour. The pneumographic tube had a number of grooves. Thus when the tube was stretched the grooves opened and the volume of the tube increased. There was a chain by which the pneumograph could be tied around the subject.

The tambour (Marey’s) had a circular metal cup with a small metal tube. The cup was covered with a thin rubber membrane, stretched and tied so that the membrane acted as a diaphragm. The metal tube was fixed at one end of a rubber tube, the other end of which was attached to the pneumograph, such that an air-tight chamber was developed within the tambour, rubber tube, and pneumographic tube.

The recording was done on a smoked drum, fixed on a
kymograph which was set at the speed of 1 rotation in 8 minutes.

Psychogalvanoscope:

A psychogalvanoscope (Photographic Plate-I) was used in the present investigation to measure changes in skin conductivity, which in turn, provides the information about the level of arousal of the subject.

It was a rectangular metal cabinet (31.5x24.5&15.5 cm) with a semicircular, pointer type, display meter. The meter scale was from -30 to +30, with the zero point in the centre. The apparatus had an integrated circuit and operated on four, six volt batteries, housed inside the cabinet. The operating panel consisted of three slide switches: on-off, low-high sensitivity and manual-automatic. It also had three balancing knobs: coarse balancing, fine balancing and sensitivity fine. Two electrodes, (which were taped around the finger of the subject while measuring GSR) were to be placed into circuit, while measuring the GSR.

The sensitivity switch was set at low sensitivity and the sensitivity fine at 1. The coarse balancing knob was moved to the extreme counter clockwise position and the fine balancing knob was fixed mid-way between the two extreme positions.

For measuring GSR, the index finger of the subject was coated with cardiographic jelly and the electrodes were taped firmly around it. The deviation of the meter reading
was reduced by moving the coarse and fine balancing
knobs, so that the pointer moved back at zero. After
balancing the subject at zero, the experiment was started
and the deviations (indicating change in skin conductance)
were recorded at regular intervals i.e. 10 responses.

Methodology

Installation

The apparatus was set up in a room where the
chances of disturbance were minimum. Two memory drums,
were placed at a distance of 88 cm so that the List, I
or II, could be exposed. The memory drum were set at a
speed of 4 sec/exposure. The psychogalvanoscope and kymograph,
with the tambour were placed near the memory drums in such
a way that a subject seated before the memory drum could
not see the recordings. A response board, consisting
of two press button switches was also placed in front of
the memory drum. The switches were connected to two bulbs
(red and white) which were placed in front of the experi­
menter's seat, for recording of the subject's response.

Procedure:

The subject was seated in front of the memory
drum and the following instructions were given:

"This is a simple experiment in which your
visual sensitivity is being measured. Your
ability to memorize or your intelligence is not being measured. Some simple english words which are used in daily life will be shown to you one by one through this opening in the memory drum. Observe the words carefully. After showing all the words, I will change the list. You would find that now there are two words instead of one. One is on the right end of the window and the other on the left. In each pair, one of the word is from the list shown to you earlier. If the word on the left is an old word, press the left hand switch and if the old word is on the right side, then press the right hand switch. But you will have to do this quickly and keep your concentration on the task because every pair will appear for only 4 seconds. I would also be measuring your respiration and change in skin conductance during the experiment. For obtaining these two physiological measures, I would tie a belt around your abdomen/chest and two electrodes around your index finger. If anything, regarding the experiment, is not clear, please ask me now. (In some cases the instructions were given in Hindi. The Hindi version of the instruction is placed at Appendix B).
As the first subject was a chest breather, the pneumographic belt was tied around his chest, the electrodes were taped to his index finger and his G.S.R. was balanced at zero (as explained earlier). After giving the 'ready' signal the memory drum was started.

Initially List I was shown to the subject. After the exposure of List I it was removed and List II was placed on the memory drums. The 'ready' signal was given and the memory drum was started. Simultaneously, the tape recorder was switched on and the pointer of the tambour was placed in contact with the smoked drum. The responses of the subject were recorded on a previously prepared response sheet. GSR was also recorded after regular intervals i.e. 10 responses. The above procedure was repeated with the remaining 39 subjects except that white noise was played only in the case of (10 low anxiety and 10 high).

On the basis of the responses, the sensitivity of each subject was calculated. These sensitivity scores, average GSR and rate and depth of respiration (rate and depth) have been tabulated in Appendix D.

The obtained results have been reported and discussed in the next chapter.