B.A.II
PSYCHOLOGY
PSYCHOPHYSICS: BASIC ISSUES

Presented by
Renu Somal
Associate Professor
Department of Psychology
Post Graduate Govt. College for Girls
Sector-11, CHANDIGARH
PSYCHOPHYSICS

• Psychophysics is the study of the quantitative relationship between environmental stimulation (physical dimension) and sensory experience (psychological dimension).
• An essential tool for studying Sensation and Perception
• The term “Psychophysics” owes its origin and name to G.T. Fechner (1801-1887) who defined it as “an exact science of the functional relations of dependency between body and mind”.

BASIC PROBLEMS

• Detection of Minimal Stimuli.
• Detection of Minimal Stimulus Differences.
• Judgment of Relations among Stimuli.
• Quantifying the ability to discern between signal and noise (Signal Detection theory).
PSYCHOPHYSICS: BASIC CONCEPTS

1. Sensitivity: The capacity of the receptor organs to respond selectively and differentially to physical stimulation.

   a) Absolute Sensitivity: Defines the limits of the organism’s capacity to respond to stimulation. It is inversely related to the minimum stimulus which can be detected reliably by a subject.

   b) Differential Sensitivity: Defines the organism’s capacity to respond to differences, both qualitative and quantitative, between stimuli. It is inversely related to the minimum difference between stimuli needed for reliable discrimination.
PSYCHOPHYSICS: BASIC CONCEPTS (CONT'D)

2. Thresholds: The line separating two kind of stimuli – those never yielding responses and those always yielding responses – can never be sharply drawn, rather, the transition from one to the other is gradual and continuous.

   a) Absolute Threshold: It is the minimum stimulus necessary for detection, also known as absolute Limen. For purpose of measurements, absolute threshold is considered as that stimulus value which yields a response 50 percent of the time i.e. on half the test trials.

   b) Differential Threshold: It is the stimulus difference that gives rise to a judgment of “different” 50 percent of the time.
3. Point of Subjective quality: One fundamental category of relational judgment is sameness versus difference. There is no necessary correspondence between physical equality of stimuli and judgments of sameness, nor between physical differences and judgments of different. In experiments on discrimination, the PSE is defined by that comparison stimulus which is most likely to result in a judgment of same.

4. Variable and Constant Errors:
   a) Variable Error: The degree to which judgments differ from trial to trial provides an index of the amount of variable error. Error here simply refers to the extent of fluctuation in judgments.
   b) Constant Error: A systematic tendency on the part of the subject toward overestimation or underestimation of the stimuli. Two frequently encountered constant errors: time error and space error.
CONCLUSIONS

• The topic of Psychophysics is critical to the study of Sensation and Perception.
• It attempts to find the lawful relationships between measurable characteristics of the stimulus on the one hand, and the reportable attributes of sensory experiences on the other.
• It provides one important experimental approach to the study of the sensory processes and judgment.