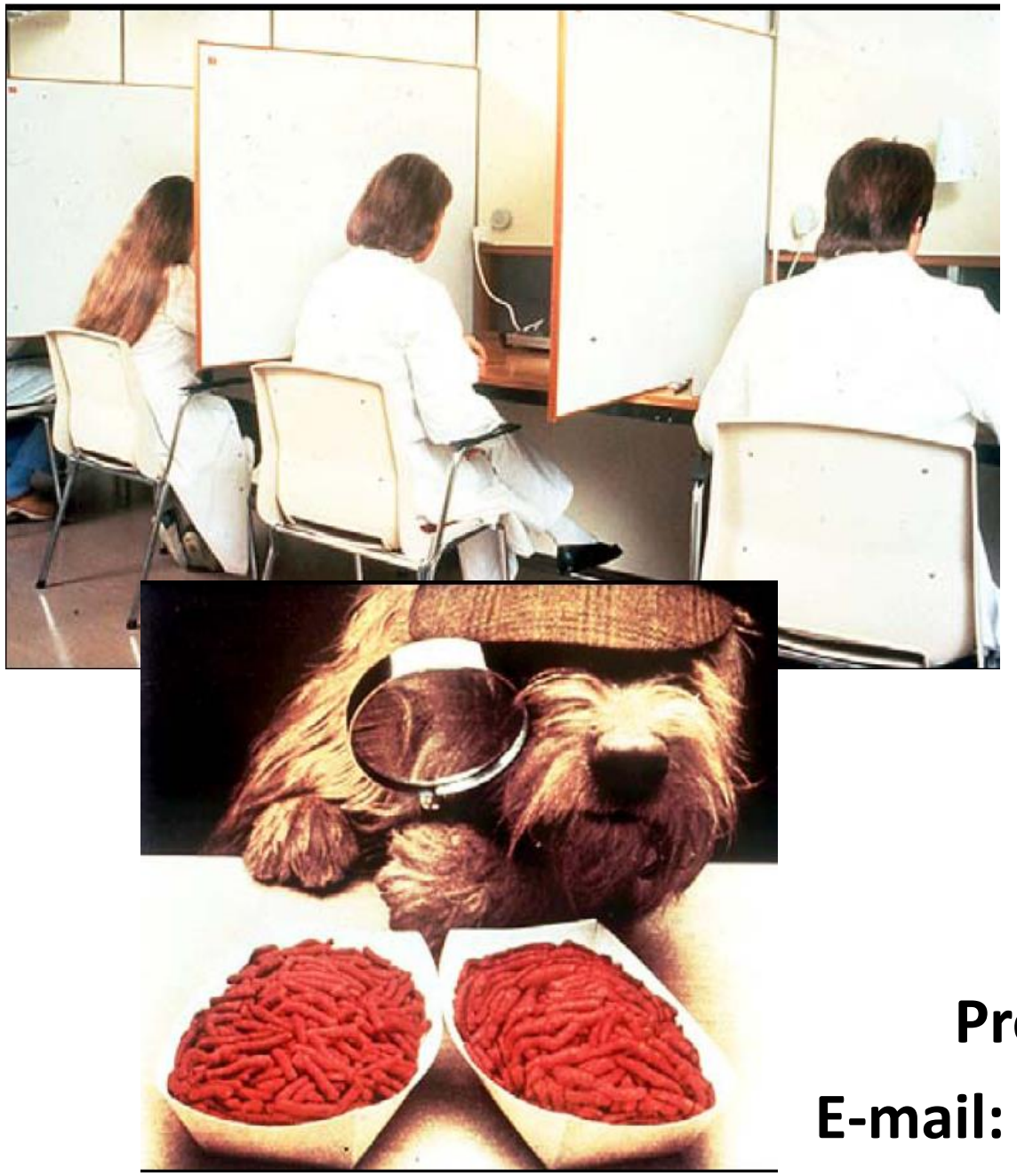

FDE443 SENSORY ANALYSIS

Lesson-12

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Sensory Thresholds

Perception at Threshold and Above

- ✓A threshold is not a constant for a given substance
  - ✓It is a constantly changing point on the sensory continuum from nonperceptible to easily perceptible.
- ✓A threshold is an edge or a boundary
  - ✓What is the bare minimum we can sense?
- ✓ Our thresholds change with moods and the time of the biorhythm, and also with hunger and satiety.
- ✓Thresholds are the limits of sensory capacities.

Thresholds-Classification

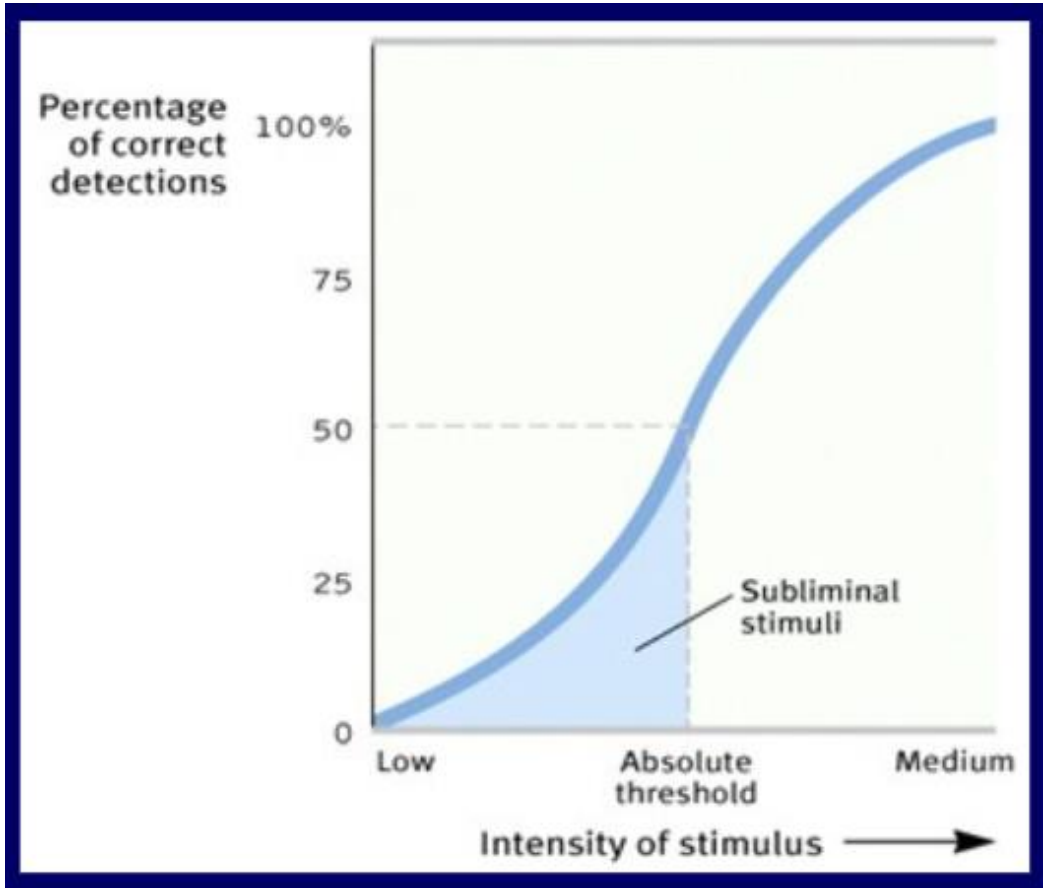
- ✓The *absolute threshold*
- ✓The *recognition threshold*
- ✓The *difference threshold*
- ✓The *terminal threshold*

Absolute threshold (detection threshold)

- ✓The lowest stimulus capable of producing a sensation
  - ✓the dimmest light
  - ✓the softest sound
  - ✓the lightest weight
  - ✓the weakest taste

Absolute threshold (detection threshold)

✓The minimum stimulation necessary for a person to detect a particular stimulus 50% of the time



Recognition threshold

- ✓The level of a stimulus at which the specific stimulus can be recognized and identified.

- ✓In serial increasing concentrations of sucrose solutions:

  - ✓ sensation from “water taste or pure water” to “a very mild taste”

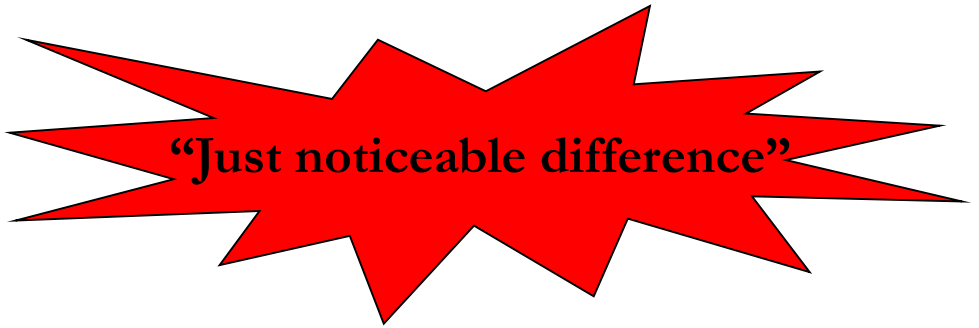
  - ✓ as the concentration of sucrose increases, a transition will occur from ‘‘a very mild taste” to ‘‘mild sweet.”

  - ✓The level at which this second transition occurs is called the *recognition threshold*.

Difference threshold

- ✓The extent of change in the stimulus necessary to produce a noticeable difference.

- ✓It is usually determined by presenting a standard stimulus which is then compared to a variable stimulus.



Terminal threshold

- ✓Magnitude of a stimulus above which there is no increase in the perceived intensity of the appropriate quality for that stimulus

- ✓Above this level, pain often occurs.

Scaling Techniques

Scaling techniques

- ✓Scaling techniques involve the use of numbers or words to express;
  - ➢the intensity of a perceived attribute (sweetness, hardness, smoothness) or
  - ➢a reaction to such attribute (e.g., too soft, just right, too hard)
- ✓If words are used, the analyst may assign numerical values to the words (e.g., like extremely = 9, dislike extremely = 1) so that the data can be treated statistically.

Scales used in Sensory Analysis

✓ Three types of scales are in common use:

1. *Category scales*

2. *Line scales*

3. *Magnitude estimation (ME) scales*

Scales used in Sensory Analysis- *Category scales*

- ✓*Category scales* are limited sets of words or numbers, constructed to maintain equal intervals between categories.
- ✓A category scale from 0 to 9 is perhaps the most used in descriptive analysis, but longer scales are often justified.
- ✓Sometimes a 100-point scale is justified, e.g., in visual and auditory studies.

Unipolar scales

✓Numeric category scale

Please taste the sample coded 658, and indicate how firm it is by placing a tick in the appropriate box below.

Not firm Very firm

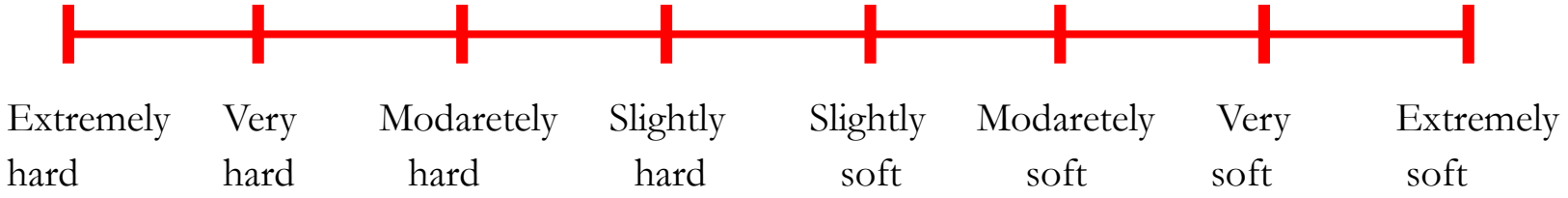
0	1	2	3	4	5	6	7	8	9

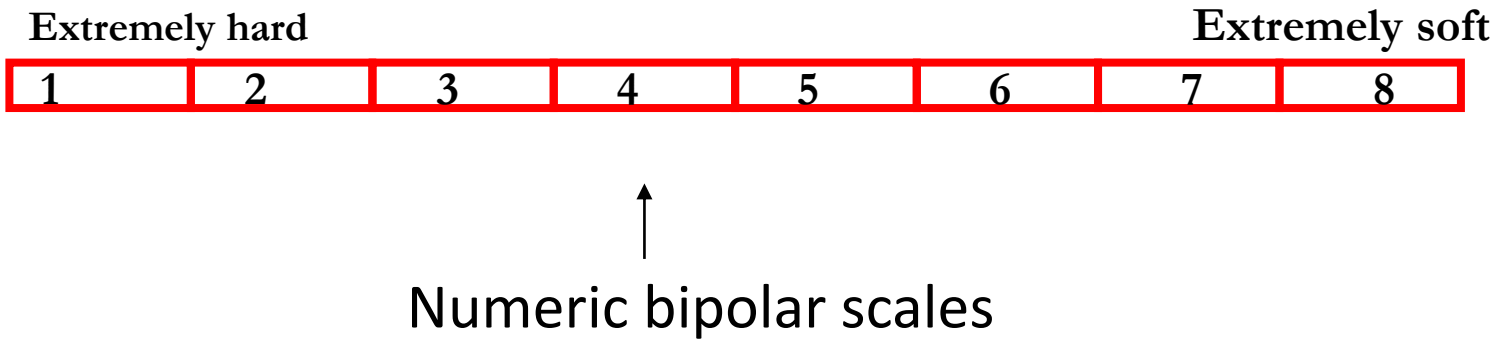
✓Verbal category scale

Please taste the sample coded 943, and rate the sweetness intensity by placing a tick in the appropriate box below.

Not sweet	Slightly sweet	Moderately sweet	Very sweet	Extremely sweet

✓Bipolar scales: opposite types of stimuli are used to anchor the end points.





Numeric bipolar scales

Scales used in Sensory Analysis- *Line scales*

- ✓*Line scales* utilize a line 15 cm long on which the panelist makes a mark
- ✓Line scales are almost as popular as category scales.
- ✓Their advantage is that the intensity can be more accurately graded because there are no steps or “favorite numbers”;

Scales used in Sensory Analysis- *Line scales*

✓A simple scale can have general anchors:

None - Strong

✓Or a scale can be anchored using bipolar words (opposites):

Smooth - Lumpy

Soft - Hard

✓Attributes perceived via the chemical senses in general use a *unipolar intensity scale* (None–Strong).

✓For appearance and texture attributes, *a bipolar scale* is best.

Example: Line scales used for sesame crackers

Appearance

Color

Light Dark

Flavor

Saltiness

None Very salty

Sesame taste

None Very strong

Taze fırınlanmış tadı

Stale Very fresh

Scales used in Sensory Analysis- *Hedonic scales*

- ✓A well-known scale for affective measurement is the 9-point hedonic scale.

- ✓Variations of this rating scale exist, comprising fewer categories and the absence of the middle category.