

PERCEPTION

and

AROUSAL

Perception

Sensations

are experiences associated with stimuli as yet **unassociated with** any thing **meaningful** like hearing or seeing. For all senses sensitivity to stimulus intensity is measured by the **absolute threshold** that is the minimum amount of stimulus energy that can be reliably detected or the **difference threshold** that is the minimum difference between 2 stimuli that can be reliably detected .
Sensation is often viewed as the process of detecting a signal that is embedded in noise.

Perception

Is an active creative process in which raw sensory data are organized given **meaning** for that reason different people may experience the same sensory information in radically different ways. Brain carries out 2 different kinds of processing.

The bottom-up processing in which brain combines individual elements into unified perception.

مثلا عند القراءة يقوم الدماغ بتحليل العناصر في الحروف والكلمات

The top-down processing sensory information is interpreted in the light of existing knowledge, concepts, ideas & expectation.

Study of perception

Deals with questions of how organism process & organize in coming raw sensory information in order to form **a coherent representation** or model of the world and use that representation to **solve naturally occurring problems** such grasping and planning.

Functions of perceptual system

1-Determining

which part of sensory environment to attend to. **Selective attention** is the process by which we select some stimuli while ignoring others. It is mediated by processes that occur in the early stages of **recognition** as well as by processes that occur only after messages **meaning** has been determined. Recognition of the shapes of natural objects are more complex than lines..

2-Localizing

The important stimulus in the environment, i.e. where is located?

3-Abstracting

Is the process of converting **the raw sensory** information acquired by the sensory organs like straight & curve lines into **abstract categories** that are pre-stored in memory like letters or words. The abstracted information takes less space & is therefore faster to work with than the raw information.

4-The appearance of object

Recognizing an object require **its features** like its shape and color be **correctly bound** to gather, a process that require attention.

5-Constancy

Is to keep the appearance of objects the same in spite of large changes in the stimuli receives by the sense organs . The major constancies are **colors, brightness, shape & size** & occur in all sensory modalities. It begin to develop in human being as early as 6 months of age.

Illusion or **false perception** are compelling but incorrect perception. They can be understood as erroneous perceptual hypothesis and can be explained by the perceptual systems **insistence on maintaining constancies**.

Neuroanatomy of perception

The posterior brain system select objects on the basis of location, shape or color. The anterior brain system is responsible for guiding this process of selection depending on the goals of viewer, visual cortex operate according to the principle of division of labor or effort. The region near the top of cortex mediate localization. Region near the bottom of cortex mediate recognition that of color, shape & texture modules. Animals raised in darkness suffer permanent visual impairment & animal raised with patch over one eye become blind in that eye suggesting a critical period early in life when lack of normal stimulation produce deficiency in an innate perceptual capacity.

Gestalt principles of perceptual organization

Gestalt is the German term for term for pattern, shape or form. Gestalt theorists arguing that **the wholes we perceive are often more than & frequently different from the sum of their parts.**

Figure-ground relations

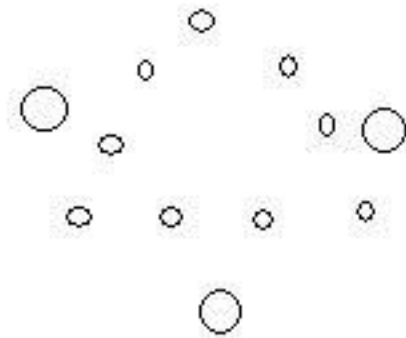
We tend to organize stimuli into central or foreground & background. In vision the **central figure** is usually in front of or on top of what we perceived as **background**. It has a distinct shape & is more striking in our perception and memory than the background.

من السهل علينا تمييز بقرة ذات لون بني في فصل الخريف حيث يكون لون العشب شبيه بلون البقرة

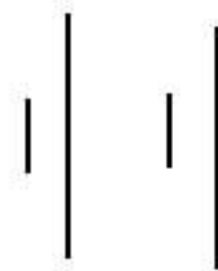
At the times what figure & what ground is not completely obvious and the same stimulus can give rise to 2 different perceptions, **one based on inner portion & the other formed by the outer portion.**

Gestalt laws of perceptual Organization

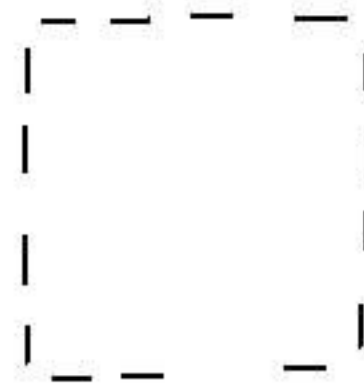
Gestalt laws of perceptual Organization that include (similarity, proximity, closure & continuity)



similarity



proximity



closure



continuity

Factors affecting perception

1-**Habituation**: Prolonged exposure to a stimulus particularly insignificant one reduce perception of that stimulus.

عند الدخول نلاحظ ان صوت اجهزة التكيف مرتفع لكن بعد دقائق من الاستغراق في المحاضرة نكاد لا نسمع صوت التكيف.

2-**Expectation**: Expectation of a specific stimulus increase possibility of its perception.

من السهل تميز وجود قميص في محل بيع الملابس اكثر من تميزه في محل بيع مواد مختلفة من ضمنها الملابس.

3-**The present emotional state**: e.g anxious person is prone for fearful stimuli.

4-**Environmental factors**; noises and darkness reduce perceptual abilities and associated with misperception (**illusion**) .

5-**Individual factors** like febrile illness, hearing loss, visual disturbances interfere with perception.

sensory impairment (hearing loss, visual impairment) is associated with development of **hallucination** that is related to impaired sensory modality.

Arousal

Arousal is the establishment & maintain of an awake state, appear to require at least 3 brain regions the ascending reticular activating system, the intralaminar nuclei of thalamus & the cerebral cortex.

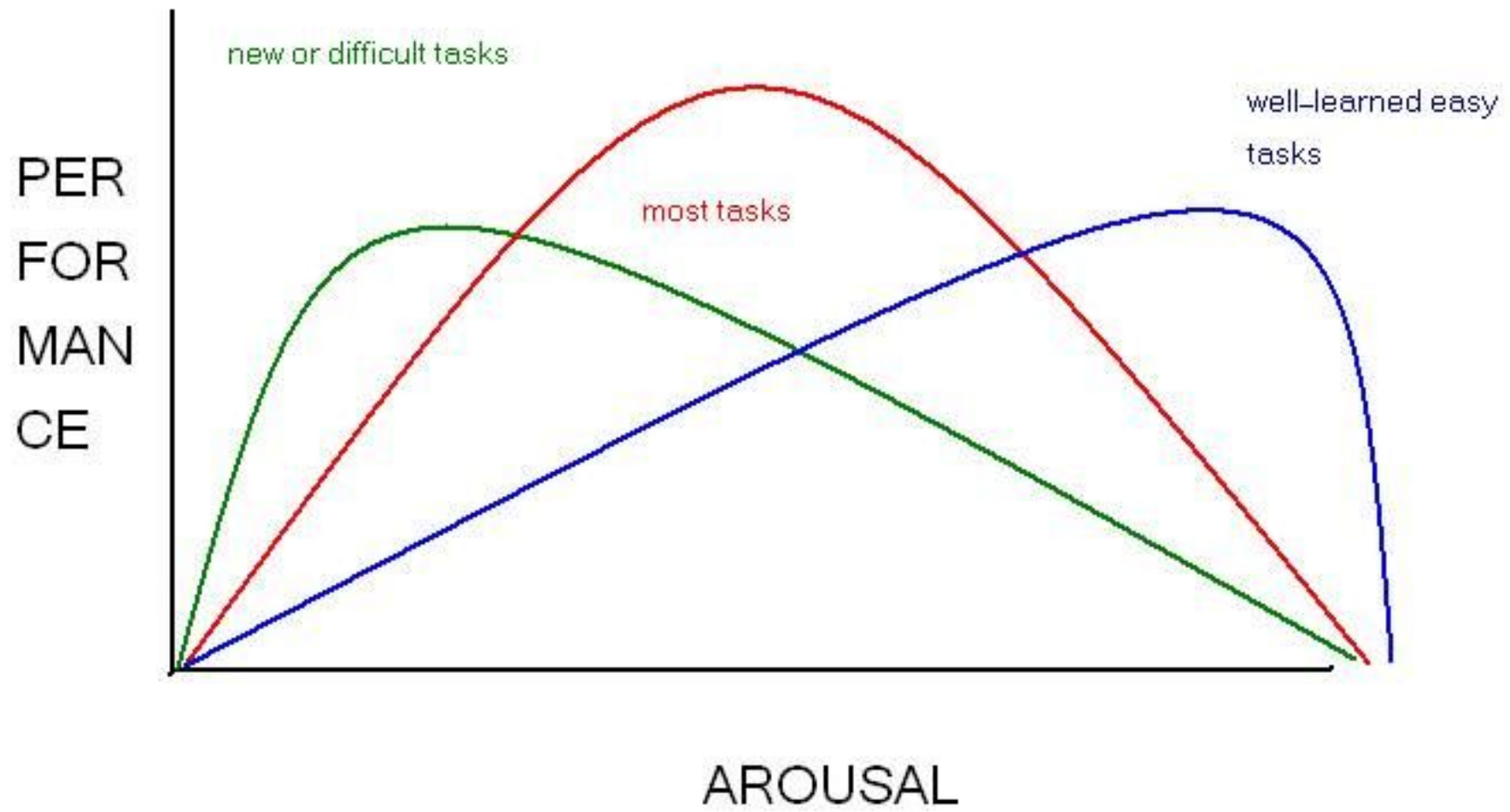
Heightened arousal have a role in aggression enhancement.

Heightened Physiological arousal stemming from diverse sources as participation in a competitive activities, vigorous exercise & exposure to provocative films.

Sexual arousal is induces by thinking about sexual topics or seeing of erotic materials like pornographic films or magazines.

1- **Yerkes-Dodson law**

Show the relation between arousal & performance quality. **Easy tasks** can be performed efficiently **even under high** level of arousal like tying your shoe. we perform **most tasks** at greatest efficiency under **moderate** levels of arousal like driving of car. so too much arousal make you too anxious behind the wheel. **New or difficult** tasks are performed most efficiently at **low** level of arousal like learning of psychology.



2-Fear and arousal •

Autonomic nervous system •

Fear result in dilatation of pupils, tachypnea, dryness of mouth, tachycardia , increased blood pressure, increased gastric acidity, nausea with or without vomiting, tremor of hands, sweating& increased frequency of micturition.

Fight, flight or freeze response (syndrome) •

When we become frightened our bodies automatically react in one of 3 protective ways **flee**, **fight** or **freeze** &choosing the correct option may enhance our chances of survival. •

Lie detection •

the polygraph measures changes in arousal level. Heart beat that may indicate lying is unreliable because other factors can cause physiological changes that can register as arousal. •