

Great Experiments in Psychology
Professor Rajlakshmi Guha
Centre for Educational Technology
Indian Institute of Technology Kharagpur
Module 2
Lecture No 8
Emotionality and Perceptual Defense

Hello everybody, welcome to this lecture of the 2nd week of the lecture 8 on great experiments in psychology. In today's class we shall study something very different from what we have been studying so we have been talking about memory and we spoke about Ebbinghaus and we spoke about Loftus and Palmer study where the application of memory research were on real-time and especially in the legal cells and now today in today class we are going to talk about emotion and perception.

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BACKGROUND AND CONTEXT

- A commonly held view of perception is that it is an active process, influenced by motivational, emotional and cognitive processes
- The opposite view is of a passive receipt of sensory information from and about the external world
- There are six types of motivational-emotional influence on perception: (Allport, 1955)
 - a. the value of objects
 - b. bodily needs
 - c. reward and punishment
 - d. individual values
 - e. personality
 - f. emotional connotation

PERCEPTUAL DEFENCE

(Note: Arrows from items a and f point to the 'PERCEPTUAL DEFENCE' box. A small circular portrait of a woman is visible in the bottom right corner of the slide.)

So do you think that emotion can really have any impact on what we perceive and how we perceive and how we report it? So this study was conducted by E. McGinnies in 1949 so just imagine so many years ago and he spoke about emotionality and perceptual defence. Now commonly held view of perception is that it is an active process and it is influenced by motivational, emotional and cognitive processes.

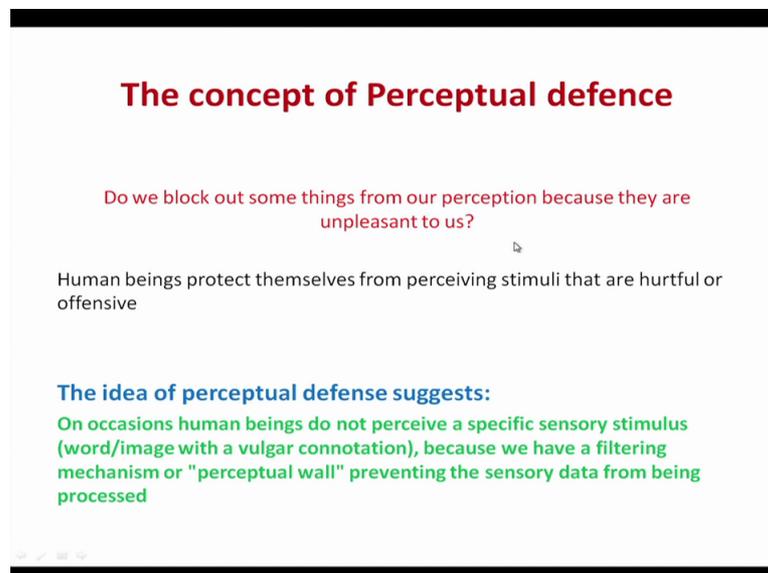
The opposite view is of a passive receipt of sensory information from and about the external world. So basically, when we are talking about perception we are actually talking about sensation with meaning so if we look at perception in this way that that is a stimulus and that when tended to that stimulus then it gives us we give it give it some meaning, so there is an

understanding component that is added onto the stimulus then we say this is a light coming from this is the light of the train but before that when it is on stimulus level we just saw the stimulus and it produced a visual sensation so this that is a light and gradually that light give us the meaning.

Now and this is how the perception was earlier studied then there was some researchers who said, that no perception is not only just how we that stimulus the individual is not passive and it is just not the stimulus being seeing and comprehended and responded to just in the objective way as so the report is not as per the stimulus only, but it is also dependent on the organism that is the individual and how he actually comprehends the stimulus.

So the understanding mechanism here differs because of the several other processes within the individual and it was seen that there are 6 types of motivational emotional influences on perception and Allport spoke about them in 1955 where he says that the 6 types of motivational-emotional influence on perception are the value of objects, bodily needs, rewards and punishment, individual values that we play that we pay to the stimulus, personality of the individual and the emotional connotation.

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The concept of Perceptual defence

Do we block out some things from our perception because they are unpleasant to us?

Human beings protect themselves from perceiving stimuli that are hurtful or offensive

The idea of perceptual defense suggests:

On occasions human beings do not perceive a specific sensory stimulus (word/image with a vulgar connotation), because we have a filtering mechanism or "perceptual wall" preventing the sensory data from being processed

So, all these actually all these factors affect how the individual is looking at stimulus and how the individual perceives it and of these 2, 2 very important factors are related to perceptual defence. So that is the value of objects and emotional connotation, we will come to that soon. So the question that arises is do we when we are talking about perceptual defence, it is

basically whether we perceive things in a way to block unpleasant things unpleasant stimulus from entering our perception.

So the question that comes into being is do you block out some things from our perception because they are unpleasant to us? What do you think? Human beings do block out some stimuli and human beings protect themselves for perceiving stimuli that are hurtful and offensive. And the idea of perceptual defence suggest that on occasions human beings do not perceive a specific sensory stimulus that is a word or an image specially if it has a vulgar connotation because we have a filtering mechanism or a perceptual wall preventing the sensory data from being processed.

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The concept of Perceptual defence

Perceptual defence
(Postman *et al.*, 1948; McGinnies, 1949)

refers to the findings from laboratory experiments that :

**subliminally perceived words
(that is, below the threshold of consciousness)
that evoke unpleasant emotions
take longer to perceive consciously
than neutral words**

So we have a screening mechanism where we in a certain way we screened out the unwanted unpleasant stuffs from entering our senses. Now is that possible? So this theory was suggested by postman and others in 1948 and McGinnies in 1949 and it refers to the findings from laboratory experiments that suggests that subliminally perceived words subliminally perceived means that are just below the conscious level that those words evoke unpleasant stimulus emotions take longer to perceive consciously than neutral words.

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The concept of Perceptual defence

- **The value of objects refers to the phenomenon of perceptual accentuation (or sensitization)** → things that are relevant or salient for us are perceived as larger/brighter/more attractive/more valuable, and so on, than those which are not
- **Emotional connotation** → the accentuation of *negative* (anxiety-/frustration producing) stimuli
- **Recognition can occur *before* perception enters conscious awareness**



Now actually you know that this is true McGinnes showed it through his laboratory experiments and that too way back in 1949. So that when we do not wish to perceive a certain word, we may be aware of it but there is some filter mechanism that is working and we keep from our conscious self so he showed his through experiments. So the value of objects refers so as I mentioned in the first line that you know who the value of objects and the emotional connotation are 2 major factors that are important for perceptions especially for perceptual defense.

Here I will just elaborate a little on that, so the value of objects refers to the phenomenon of perceptual accentuation that this or sensitization. So whether that subject an object is important for us or has certain value to us will be seen as larger, brighter or more attractive or more valuable and so on then those which are not. So, studies have been conducted on it and a very famous study shows that you know that the size of a coin was to children who were very poor the size of the coin was larger as compared to children who were from the richer families.

So, this is so the value of the object also accentuates the size, so it is perceive less large. Similarly, other studies showed that individuals who have who are kept hungry they see the food objects food items first when they are displayed with several objects (())(7:52) there are several objects, so the spot the food object first. Also the size of the objects are larger and in fact, these studies a lot of such studies were conducted during world wars and it was seen

though the most of the studies have not been published due to the way they have been they were conducted.

But they also show that the accentuation of the object is there is a perceptual accentuation because of the value that is attain value that is added to the object per se also another important factor is the emotional connotation. So the accentuation of negative or anxiety or frustrating producing stimuli and basically so if there is any emotional connotation to a certain stimuli, there is an accentuation of that stimuli so it creates and arousal to the individuals.

So especially if they are of negative emotions. Now and recognition can occur before the perception enters the conscious awareness as I was saying that it creates and arousal and the individual is aware of that before the individual is conscious of it, now is that possible you are aware of a stimulus and you not conscious of it. Actually this is what McGinnie showed through his experiment.

And one of the ways to identify whether an individual is aware of a stimulus is through the arousal mechanism and that is through the autonomic arousal mechanism so as we basically know that a part of the brain so if you consider the two types of nervous system on the sympathetic the autonomic central nervous system and the autonomic nervous system, the autonomic nervous system that is it consists of sympathetic activation system and the parasympathetic activation system.

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BACKGROUND AND CONTEXT...

- A commonly used indicator of autonomic activity is the Galvanic Skin Response (GSR); this measures the skin's resistance to electricity, which decreases as anxiety is raised through increased sweating
- In the subception effect, enough information is transmitted to the autonomic nervous system (ANS) to determine different levels of GSR; but insufficient information reaches the brain centres responsible for correct verbal identification



The so that sympathetic activation system is primarily responsible for the arousal mechanism and the autonomic activity of the sympathetic activity can be objectively understood through a objectively measured through a galvanic skin response recorder. So basically measures the skin's resistance to electricity so 2 electrodes are placed on the fingers and it actually measures the skin resistance that is which decreases as anxiety is raised and there is more sweating.

So if you wish to understand the autonomic arousal or the arousal of the individual as I said the awareness we go back a little the awareness can be measured through arousal and arousal can be measured through the GSR or the galvanic skin response recorder. So that basically McGinnies, this was already being used to understand autonomic activities and McGinnies plan to use this. So when we are talking about the subsection effect or basically in of stimulus that is creating an awareness just below the conscious level, there the enough information is transmitted to the autonomic nervous system to determine different level of GSR so there is a physical awareness of the stimulus but there is not a conscious awareness. So is that possible?

Yes that the body is aware of the stimulus, but so the stimulus has created a sensation which has created because of the emotional connotation, it has created a certain amount of triggering response and the body is aware of the stimulus, but consciously there is no verbal identification of the stimulus, so the individual is not verbally aware of the stimulus. So let us see this is possible.

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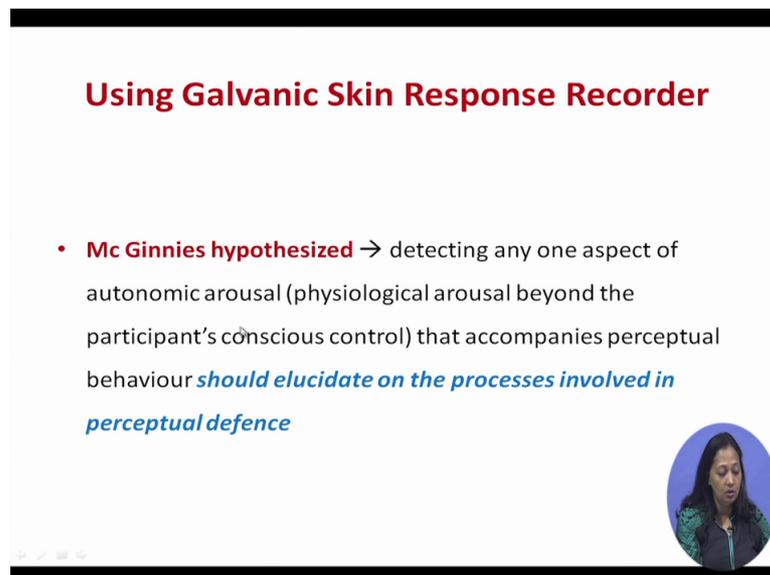
McGinnies wished to explore the question

**How is a
raised or lowered recognition threshold
for harmful stimulus objects achieved
before the observer
discriminates them and becomes aware
of their threatening character?**



So McGinnies basically wish to explore the question how is a raised or lowered recognition threshold for harmful stimulus objects achieved before the observer discriminates them and becomes aware of their threatening character? So what is he trying to say? That how is an raised or lowered recognition threshold, so something that is below is higher or is below the threshold, so that is the point of understanding or say the point from where we are aware consciously so before that if there is just below the threshold if there is if there is a stimulus object, does that create how is that recognised and before the subject before the individual actually becomes aware of the threatening character of the stimulus. So say a word so McGinnies actually use words so say there is a word which is unpleasant, so how early is it noticeable and is it noticeable on the arousal level while it is not noticeable in the verbal level, so is that possible?

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Using Galvanic Skin Response Recorder

- **Mc Ginnies hypothesized** → detecting any one aspect of autonomic arousal (physiological arousal beyond the participant's conscious control) that accompanies perceptual behaviour *should elucidate on the processes involved in perceptual defence*



So McGinnies hypothesised that detecting any one aspect of autonomic arousal that accompanies perceptual behaviour should highlight or elucidate on the process involved in perceptual defence. So where is the defence mechanism starting, where are we plotting the stimulus, so from entering our perception?

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Using Galvanic Skin Response Recorder

Taking GSR as a measure of autonomic arousal,

McGinnies predicted that:

- 1 There will be a significant change in GSR in reaction to visually presented stimuli (words) with emotive connotations before the participant is able to report the exact nature of the stimulus compared with stimuli without such connotations
- 2 The mean recognition threshold for the words with emotive connotations will be significantly higher than for words without emotive connotations (i.e. it will take longer to recognize 'emotional' words)

The higher recognition threshold for emotional content represents the concept of perceptual defence



So taking GSR as a measure of autonomic arousal McGinnies predicted that there will be a significant change GSR in reaction to visually presented stimuli with emotional or emotive connotations before the participant is able to report the exact nature of the stimulus compared with stimuli without such connotations.

So basically was what he is trying to do, that there will be he is he is hypothesising that the GSR will record the arousal before the individual actually identifies the word. The mean recognition threshold for the words with emotive connotation will be significantly higher than for words without emotive connotations so that is, it will take time it will take more time to recognize the emotional words, so that is because of the perceptual defence working it will take more time to break that defence and enter into our consciousness though the individual will be aware of that word earlier.

So the higher recognition threshold for the emotional content represents the concept of perceptual defence as you will understand that it is taking longer time to enter into our conscious level because it is being obstructed so because of the perceptual defence the unpleasant stimuli is not being able to get into consciousness.

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METHOD/DESIGN

- **Laboratory experiment:** A repeated measures design
- **Sample size:** 16 participants (8 male and 8 female undergraduates from an elementary psychology class)
- **2 experimental conditions:** presented with 18 words (11 neutral, 7 emotionally toned)
- **IV** – Stimulus words
- **DV** – mean GSR and mean recognition threshold



Now how would you do that in an experiment? So McGinnies created a repeated measures design and he was going to do that experiment over to check out the results and he chose 16 participants from his elementary psychology class and two experimental conditions they were presented to, so he presented with 18 words 11 neutral and 7 emotionally tone and what was he measuring, he was measuring the galvanic skin response and the mean recognition threshold, so how long did it take for the individual to recognize the words okay.

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Method

The words were presented via a tachistoscope, which allowed controlled variation of exposure time, starting at 0.01 seconds. Each participant sat in front of the tachistoscope, with electrodes strapped to both palms for measuring GSR. Each participant's threshold was first determined for four trial words, by exposing the word once at 0.01 seconds, once at 0.02 seconds, and so on, until it was correctly identified



Stimulus words used in order of presentation to each participant
Critical or emotional words are shown in bold.

apple	katex*
dance	broom
rape	stove
child	penis
belly	music
glass	trade
river	birth
where	clear
lemp	batch

* A form of sanitary towel.

And the independent variable in this case was the stimulus words themselves so of which 11 were neutral words and 7 were emotionally tone words, so these are the words as you can see many of them have a connotation a sexual connotation related to it and these words were

presented so with by the help of a tachistoscope. I have just tried to provide picture of the tachistoscope, this is of course from another experiment primarily Sperry's experiment and this I could not find an image of McGinnies tachistoscope so if you perhaps may find it through the search engines. So what was the method followed, the words were presented by a tachistoscope, tachistoscope was very frequently used in psychology experiments before the computer came into being.

So it was a way to present words on a screen for a certain amount of time, so the there was a control of time was could be done and for the exposure of the stimulus, so the word were presented by a tachistoscope, which allowed controlled variation of exposure time, starting at .01 seconds. Each participant sat in front of the tachistoscope with electrodes strapped to both palms for measuring the GSR galvanic skin response.

So basically it would be measured of the arousal. Now each participant's threshold was first determined for 4 trial words by exposing the words once at 0.01 seconds, once at 0.02 seconds and so on until it was correctly identified. So basically in it was seen that whether they could actually identify the words, neutral words so these were trial words at 0.01 seconds and 0.02 seconds, then the real experimental words of the experiment, the experimental stimuli were shown.

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Method

The words were presented via a tachistoscope, which allowed controlled variation of exposure time, starting at 0.01 seconds. Each participant sat in front of the tachistoscope, with electrodes strapped to both palms for measuring GSR. Each participant's threshold was first determined for four trial words, by exposing the word once at 0.01 seconds, once at 0.02 seconds, and so on, until it was correctly identified



Stimulus words used in order of presentation to each participant
Critical or emotional words are shown in bold.

apple	knife*
dance	broom
rape	stove
child	penis
belly	music
glass	trade
river	fish
where	clear
sleep	bat

* A form of sanitary towel.



Instructions...

Before the experiment began, participants were told that they would be shown words which they might not be able to recognize at first. They were instructed to report whatever they saw or thought they saw on each exposure, regardless of what it was.



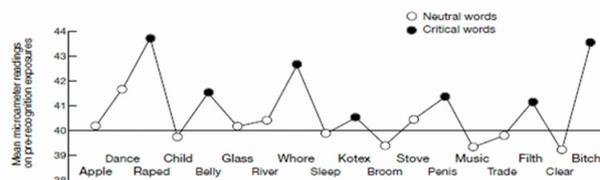
So as you can see most of the critical words are relating to vulgarity or relating to taboo words in society. So the instructions were, before the experiment began the participants were told that they would be given words they would be shown words which they might not be able to recognize at first. They were instructed to report whatever the saw or thought they saw on each exposure. Mind you, it is for 0.01 seconds, regardless of what it was so they were just supposed to report what they saw what they thought they saw.

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RESULTS

Emotionality (hypothesis 1)

Emotionality was significantly greater during pre-recognition exposures of the critical than of the neutral words

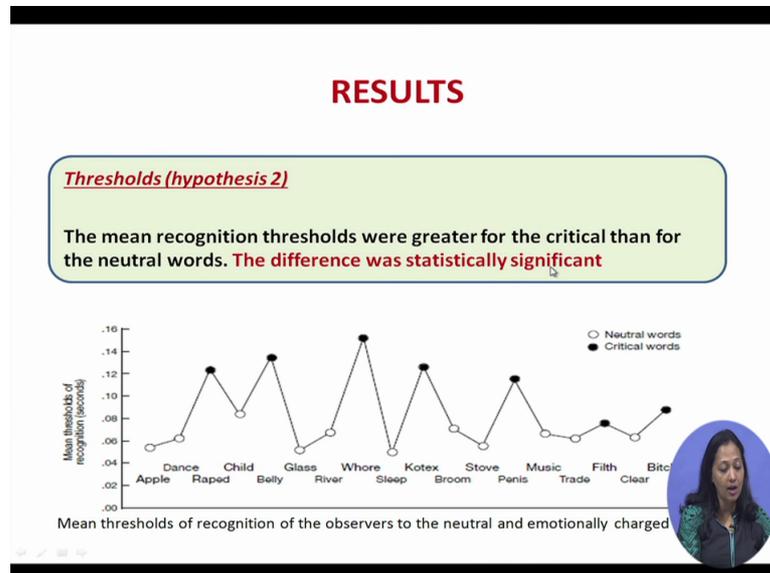


Group averages of galvanic skin response to neutral and critical words during pre-recognition exposures

So result show that emotionality was significantly greater during pre-recognition exposure of the critical than of the neutral words, so there was an arousal in the higher arousal for the critical words, so that is for the more vulgar words. It was seen that the GSR showed a higher reading as compared to the non neutral words of the non-vulgar words or the non-taboo

words if we put it like this. So as you can see these are the higher recordings and these are all related to the non-taboo words sorry taboo words.

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The second hypothesis was about the threshold were the mean recognition threshold were greater for the critical than the neutral words. So it took more time to actually understand what the critical words was, so it took more time as you can see it took more than 12 seconds to understand that the word shown was raped as compared to apple which was a neutral word. On the other hand, like similar with whore or belly, so whore it took the longest time so it took more than 0.14 seconds to actually understand that this word was whore as compared to the say, glass or sleep. Now, if you see that this is also whore is also a 5 letter word sleep is also a 5 letter word and in fact all of them are, but then why is there a difference in the recognition time?

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CONCLUSIONS

- **It seems clear that emotional reactivity, as measured by GSR, does accompany perceptual defence**
- Emotionality was significantly greater during pre-recognition exposure of the **critical (emotionally charged) words** than of the neutral words hypothesis 1
- the mean recognition thresholds were significantly greater for **the critical** than for the neutral words (i.e. it took participants longer to correctly identify the emotionally charged words) hypothesis 2

So McGinnies said that it seems clear that emotional reactivity as measured by GSR that there is an arousal that actually accompanies perceptual defence. So what is happening that there is a higher arousal as you can see from this, it is a higher arousal for the non for the taboo words, so that is raped, belly, whore, Kotex which is a sanitary napkin, penis, filth and bitch so these have these are these the arousal level is higher when you are seeing these words, but suppose if the arousal level is higher than expected as per common sense that they would be seen earlier, but that is not true.

So that just shows a perceptual defence, there must be something blocking that actually stops them from being significantly aware. So visually aware of this of the stimulus you are being conscious of the stimulus actually takes time. Now, this so he showed that GSR does emotional reactivity as measured by GSR, does accompany perceptual defence. Emotionality was significantly greater during pre-recognition exposure of the critical words than of the neutral words as we saw in hypothesis 1 and the mean recognition threshold were significantly greater for the critical words, so that is it took them more time to see or understand the emotionally charged words.

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Criticisms

- One criticism of McGinnies' study is that participants were not failing to recognize the critical words as quickly as the neutral words, but rather they may have felt too embarrassed to say them out loud - **the year was 1949!**
- Bitterman and Kniffin (1953): **there was no perceptual defence effect if participants were allowed to write down their answers**
- Lacy *et al.*, (1953); Postman *et al.*,(1953): **the perceptual defence effect could be eliminated if participants were warned that emotive words would be shown**



Now one of the major criticism of McGinnies's study was that this study was created at a time when taboo words were really taboo so you did not speak about rape or a bitch or Kotex sanitary napkin in public, especially when you are trying to when you were when you are subject in a research in front of other people other researchers of the scientific or the people of the scientific community. So it was said that probably the subject were to embarrass you say those loud words aloud, so the emotional reactivity part that these words created an arousal that was understandable, but that these individuals the subjects did not say the words aloud because of perceptual defence may not be true. So that is what the critics said that it was perhaps because these subjects were too embarrassed to say them aloud this was 1949.

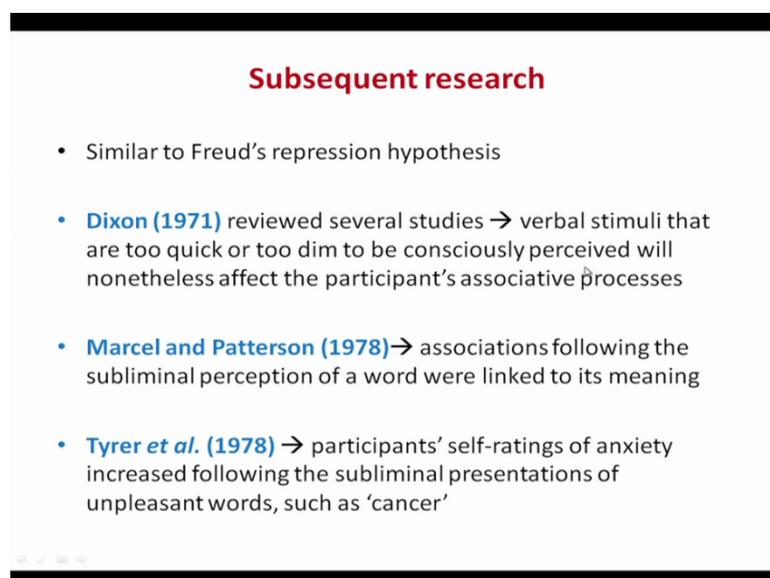
So this was shown in other in other study in 1953, when the when Bitterman and Kniffin asked the subjects to write down the words. So they said that there was no difference in the threshold between the taboo words and the non-taboo words, so that is the emotionally charged words and the non-charge versus neutral words. So again there was another contradiction to the study which said that perceptual defence work primarily for words when we are trying to be conscious of them or saying them aloud, but that was one of the criticisms the other one said and this was again by Lacy *et al.* In 1953 and Postman in 1953 that says the perceptual defence effect would be eliminated if participants were warned that emotive words would be shown.

So if they were told from before they were prepared then probably they would be comfortable with seeing stating the words aloud. So, perhaps that would make them less embarrassed and

awkward in seeing they would feel less awkward in seeing something randomly and assuming that to be a taboo word. So assuming a taboo words and saying it out aloud may have been awkward for people.

But if they actually saw if they were warned from before and you may be shown some such words, then there was when they in such a study it was seen that they did not there was no difference between the emotionally charged words and the non-emotional words. But no matter what the criticism were of McGinnies's study, why we have taken this study today is because it has a major implication in other areas of work and in fact, one of the major implications of this study was primarily in advertising.

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Subsequent research

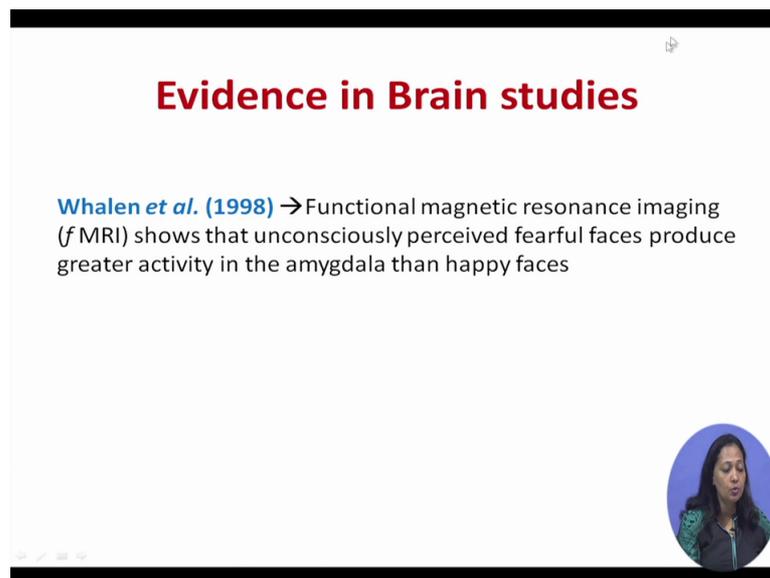
- Similar to Freud's repression hypothesis
- **Dixon (1971)** reviewed several studies → verbal stimuli that are too quick or too dim to be consciously perceived will nonetheless affect the participant's associative processes
- **Marcel and Patterson (1978)** → associations following the subliminal perception of a word were linked to its meaning
- **Tyrer et al. (1978)** → participants' self-ratings of anxiety increased following the subliminal presentations of unpleasant words, such as 'cancer'

But before that you will also see that a lot of subsequent research followed this work and as you see that this research is quite similar to Freud's repression hypothesis. So Freud, where Freud said that we do not remember words that are unpleasant. We repress memories of events that are unpleasant, so this is one of his forget theories of forgetting where he suggests that unpleasant material, unpleasant imagery, unpleasant events are actually repressed by our mind into the forced into the unconscious and we tend to forget it.

So McGinnies's study is quite similar to Freud's repression hypothesis, Dixon in 1971 reviewed several studies and here he showed that verbal stimuli that are too quick or too dim to be consciously perceived will nonetheless affect the participants associative processes. So even if they are that is just below the threshold point, it will still affect the way an individual possesses the information or associates the information.

Marcel and Patterson also showed in 1978 that associations following the subliminal perception of a word were linked to its meaning. So if it is below the threshold the associations are linked to its meaning and Tyrer also showed in 1978 that participant's self-rating of anxiety increased following subliminal perception presentation of unpleasant words such as "cancer". So basically work on subliminal perception started way back in 1949 with McGinnies work and that is why it makes this study very important.

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You see when we are talking about one of the reasons why we have introduced this as one of the major studies, is that we need to understand it because this used physiological measurement. So primarily galvanic skin response recorder to show that to measure a the perceptual process and here so it was trying to link it to the biological mechanism that is related to perception. So we are trying to understand the psychological phenomena of perceptual defence and also trying to relate it to the biological phenomena of arousal. So McGinnies did it in 1949 and the implication of the research as I was mentioning right now has a lot of evidence later on in advertising and in also in brain studies as MRI studies showed that unconsciously perceived fearful faces produce greater activity in the amygdala than happy faces.

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Applications and implications...

Evidence for unconscious perception challenges ideas about consciousness that are popular among those who study consciousness, both neuroscientists and philosophers

one idea suggests: any stimulus is either 'in' or 'out' of consciousness

This experiment suggests that sensory information is processed in a wide variety of ways, with different consequences for different kinds of behaviour

Some of these behaviours are usually taken as:

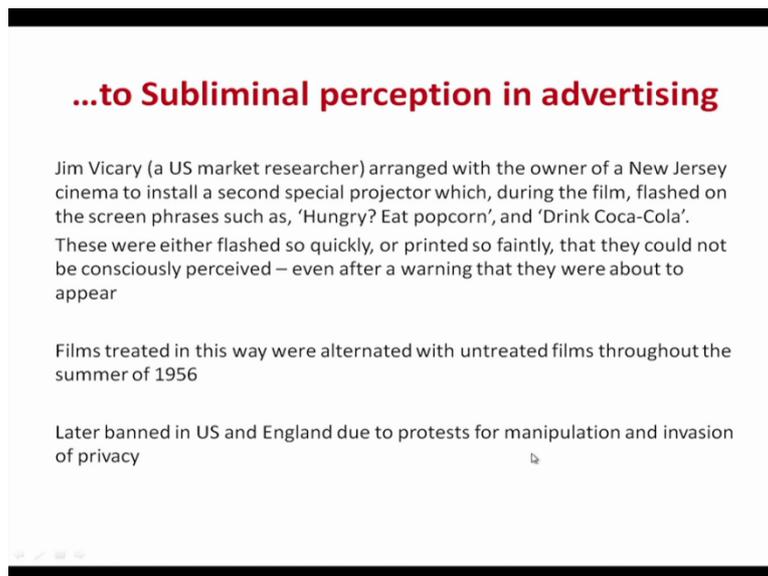
indicators of consciousness → verbal reports or choices between clearly perceptible stimuli

Indicators of unconsciousness → fast reflexes, guesses or certain measures of brain activity

nothing is ever 'in' or 'out' of consciousness

Now, evidence for conscious perception challenges ideas about consciousness. Yes, this is also very important that earlier it was basically thought of that there are some things that within just in consciousness and out of consciousness, but this experiment suggest that sensory information is processed in a wide variety of ways, with different consequences for different kinds of behaviour and there is nothing that is ever “in” or “out” of consciousness. There are indicators of consciousness, where we see verbal reports or choices that are made in perceptual stimuli and unconsciousness are indicators of unconsciousness being biological mechanism, especially brain activity and also reflex mechanism but nothing is actually “in” or “out” of consciousness, so it does not shift from being out of consciousness to in consciousness, so there would be just different ways of studying that that stimulus.

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...to Subliminal perception in advertising

Jim Vicary (a US market researcher) arranged with the owner of a New Jersey cinema to install a second special projector which, during the film, flashed on the screen phrases such as, 'Hungry? Eat popcorn', and 'Drink Coca-Cola'. These were either flashed so quickly, or printed so faintly, that they could not be consciously perceived – even after a warning that they were about to appear

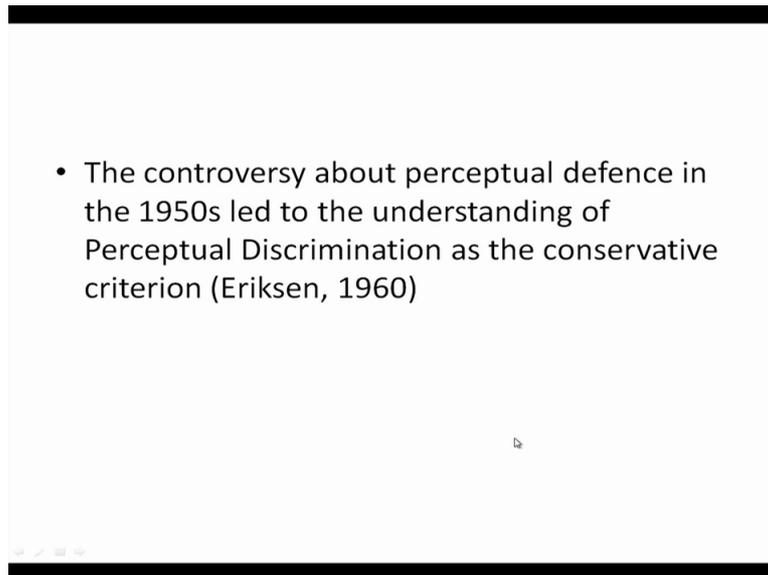
Films treated in this way were alternated with untreated films throughout the summer of 1956

Later banned in US and England due to protests for manipulation and invasion of privacy

So as I was mentioning this work has been influencing the subliminal perception in the subliminal perception in advertising. Basically, this was taken up in a very powerful way in by the US market especially by Jim Vicary who arranged with the owner of New Jersey Cinema to install a second special projector which during the film, flash on this screen phrases like “Hungry? Eat popcorn drink Coca-Cola” and they flashed so quickly between the film that and it was or it was printed so faintly that they could not be consciously perceive.

So if you ask the individual who was watching the movie at that time in the movie hall, that did you see an ad of Coca-Cola or were there any suggestion was there any write-up saying you are you feeling hungry? Eat popcorn. Nobody could consciously report it, but they the sale of Coca-Cola as well as popcorn increased during the intervals, so that is during the movie intervals. So this was basically banned later on in US and England primarily because there was a huge ban of protest which said that this was an unethical way of using of manipulating an individual by using subliminal perception but that just an invading invading privacy, but that just shows that subliminal perception is actually there.

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So the controversy about perceptual defence in the 50s led to the understanding of perceptual discrimination as the conservative criterion and this is till date studied in several universities as you will see that the advertising media is still influenced by studies on perceptual defence and actually they use a lot of emotional content. You all often see especially in Indian advertisement you will often see the use of emotional content especially mother and child or baby or relationships especially the big companies the often use emotional content to stir up the individual that is the target audience.

Now, they still use the concepts that started way back in 1949 with the idea of perceptual defence. So in fact, you can still go to the studies were there are several universities who one of them I was going through some paper by New York University, which show that the selection of a stimulus the selection of a desired stimulus is based on a different perceptual discrimination criteria. So you can go through these studies they are really interesting and it all began in way back in 1949. So I would end my lecture by saying that you see there are in cognitive and social psychology there are a lot of interesting studies and especially this study has a major role to show how emotions and how we perceive social stimuli actually or how we look at social stimuli is various time influenced by the values we add on to it and what the emotional connotation we add on to it. Thank you.