Psychology of Emotion: Theory and Applications
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Module 7, Lecture 15: Emotions and Cognitions: Introduction

Welcome, everyone, to Lecture 15 of the course titled "Psychology of Emotions: Theory and Applications." Today marks the beginning of Module 7, focusing on understanding the interaction between emotions and cognitions. Throughout this module, we will explore various phenomena and concepts associated with both emotions and cognitions, as well as their interactions. This module comprises three lectures, and today, we'll delve into the first lecture, where we'll introduce the relationship between emotions and cognitions.

Just to provide a brief recap of the last module, Module 6 focused on group emotions. We discussed how emotions are expressed and experienced within group situations. Specifically, we explored group emotions, where a collective group experiences emotions together. Additionally, we discussed emotions that arise on behalf of a group, often due to our identity or membership within that group, leading us to experience emotions based on the group's experiences, positive or negative. Throughout the discussion, we examined various concepts associated with these phenomena and highlighted that when we affiliate ourselves with a group, a distinction between "my group" and "the other group" naturally emerges. Consequently, many of the emotions generated within a group context can also be directed towards other groups, potentially explaining conflicts and other dynamics in intergroup interactions.

We also specifically discussed the concept of prejudice and stereotypes in the context of emotions towards other groups. Prejudice pertains to emotions and attitudes towards individuals or groups based on their membership in a certain group, while stereotypes involve generalized beliefs about others based on group membership. In the last module, we explored the various causes and factors associated with these phenomena over two lectures. Today, we shift our focus to the interaction between cognitions and emotions, examining how cognition influences emotions and vice versa. We'll explore different concepts related to this topic, including how emotions influence attention and perception. Throughout history, emotions have often been seen as a threat to reason, with a prevailing notion that emotional states impair rational thought.

So they are not able to think properly. This kind of view suggests that rationality and emotionality cannot coexist. This perspective has been present throughout history, from ancient philosophers like Plato and Aristotle to modern times. We will examine whether this notion holds true or not.

When we discuss how emotions can impact cognition, it implies that these are two distinct systems influencing each other. However, there is a debate about whether these systems are truly

independent. The distinction between emotion and cognition is contentious in both philosophy and psychology, as it raises questions about their interdependence.

According to some theories, such as those proposed by Descartes and Zajong, emotion and cognition are regarded as two independent systems. These theorists advocate for the perspective that emotion and cognition operate as separate systems in the brain, with emotions capable of occurring before cognition and influencing it. Thus, both can function independently.

Conversely, other theories, like Lazarus's, argue that cognition precedes emotion. In this view, cognitive processes such as perception and attention occur before emotions are experienced. According to Lazarus's concept, cognition is necessary for emotion to occur; without cognition, emotions cannot arise.

In the earlier modules, we delved into various theories of emotion, including cognitive theories, which emphasize the importance of cognition in influencing emotions. However, there are also theories that prioritize emotions and argue that they influence cognition. The debate revolves around whether emotion and cognition are indeed independent systems and, if so, which one precedes the other. Different researchers hold varying viewpoints on this matter.

It is still a debated topic. Storbeck and Clore, among other researchers, have suggested an intermediate viewpoint, proposing that it is more accurate to view emotion and cognition as interdependent systems rather than completely independent ones. This perspective aligns better with a substantial body of evidence, indicating that they are mutually influencing rather than operating in isolation. For example, cognitive processes can alter emotions, as seen in cognitive reappraisal techniques that can affect the emotional experience. Conversely, emotions can also regulate cognitive processes in various ways, indicating bidirectional influence.

In this lecture, we aim to present evidence supporting both directions: how cognition influences emotions and how emotions influence cognition. Here, we use the term "cognition" broadly, encompassing thinking, perception, attention, and other mental processes. Let's explore how cognitive processes influence emotions, building upon the cognitive theories of emotions discussed in earlier modules. It is evident that perception plays a crucial role in experiencing emotions such as anger, happiness, and fear, as their experience depends on how an event is perceived and The basic idea here is that cognition affects emotion by providing the necessary foundation for emotional experiences. At a fundamental level, perception is required to experience emotions such as happiness, anger, or fear. To claim to feel happy, for example, one must have some perception of the environment or stimulus that elicits happiness. Without this perceptual understanding, experiencing emotion would be impossible. Therefore, perception and interpretation play crucial roles in determining which emotions are experienced.

While emotions can originate from sources other than cognition, such as sudden loud noises triggering fear reactions, these instances are considered very basic and may bypass cognition. However, according to cognitive theorists, at least a basic level of cognition is necessary for

experiencing emotions. This notion is supported by significant evidence, with numerous studies investigating the cognitive causes of emotions and providing valuable insights into the subject matter.

For example, one of the earlier studies in the cognitive perspectives of emotions was conducted by Lazarus and Alfret in 1964. They aimed to examine how cognition, particularly appraisal, contributes to emotion—how thought processes, judgment, or interpretation appraisal processes contribute to emotion. Let's briefly summarize the experiment and its key aspects. University students participated in this study, where they watched a short anthropological film depicting the circumcision of adolescent boys, a ritual practiced in certain religions such as Judaism, Islam, and some African tribes. The film depicted this ritual, with the facial expressions of the boys indicating pain and fear blurred. Participants were divided into two groups, each receiving different information.

The participants were divided into two groups and given different information. Although both groups watched the same film with identical content, they received different instructions. In Group One, participants were informed that they would witness a painful circumcision ritual that the adolescents had feared for months, with no support provided during the ritual. This instruction was given by the experimenter to the participants in the Group One condition. Despite the description, the pain was not visibly apparent in the video due to the blurred facial expressions.

In the first group, participants were informed that the circumcision ritual was a painful process that the boys had feared for months, and no specific support was provided during the ritual. This instruction conveyed the idea that the boys experienced a significant amount of fear leading up to the ritual.

In the second group, the instructions were different. Participants were told that the ritual was something the boys had been looking forward to for a long time and that experienced elders in the tribe would offer support and assistance. Here, the experimenter's instruction emphasized a sense of anticipation and eagerness for the ritual, without mentioning fear or apprehension.

The boys had been looking forward to the ritual for a long time, and experienced individuals in the tribe provided them with support and assistance during the rituals, as necessary. The instruction given to each group was different, but the same film was shown to both groups. After watching the film, the participants' emotions were tested using physiological measures such as skin conductance and heartbeat, alongside a questionnaire to assess their subjective experiences during and after the film.

The results showed that the film elicited very different emotional responses from both groups. Despite watching the same film, the different instructions resulted in completely different emotional experiences for each group. Group One exhibited clear indications of arousal in their physiological measurements, indicating high levels of fear and anger during and after the film.

The second group had entirely different emotional experiences—they felt happiness and interest and were eager to understand what was happening—simply because their instructions differed. In Group Two, participants were told that the boys had been anticipating the ritual and were supported during it. This instruction elicited positive emotions. Conversely, when participants were informed that the boys were fearful of the ritual and lacked support, they experienced negative emotions such as fear and anger. The only distinction between the two groups was the information provided before watching the film; everything else remained the same. From this experiment, Lazarus and Alfret concluded that the information given to participants influenced their appraisal of the film's content, subsequently affecting their emotional responses.

It very clearly shows how the interpretation of a situation ultimately influences emotional experiences. Different interpretations led to different emotional experiences for the same film, highlighting the significant role cognition plays in emotional experiences. Additionally, Lazarus and colleagues conducted extensive research on cognitive interpretation associated with emotions, stress, and coping. The study discussed earlier by Lazarus and Alfret, along with their interpretations, has inspired a range of theories and studies falling under the category of appraisal theory.

Appraisal theories essentially examine the impact of cognitive interpretation on emotional experiences, with Lazarus being one of the most prominent researchers in this area. According to Lazarus and colleagues there are two types of appraisal: primary and secondary.

Primary appraisal involves the immediate classification of a stimulus as positive or negative upon encountering it in the environment. It's the initial interpretation we make when faced with a situation. For example, when preparing for an interview, one assesses whether the overall situation is perceived positively or negatively.

Secondary appraisal occurs after the primary appraisal and involves further interpretations of the situation. This includes attributing the cause and responsibility of the event, considering coping possibilities, and anticipating future events. For instance, one may evaluate if they have the resources to handle a stressful situation and anticipate potential outcomes.

All these additional interpretations that follow the primary appraisals are termed secondary appraisal. To provide more specific examples, let's consider a diagram illustrating the entire process. Upon encountering an event or stimulus, such as seeing a snake, the initial assessment determines whether it is perceived as positive or negative. For instance, seeing a snake may be appraised as threatening or negative, constituting a primary appraisal.

Afterward, various other interpretations can occur, such as assessing how to deal with the situation and understanding the reasons behind the presence of the snake. These additional interpretations, which encompass identifying causes, responsibilities, coping strategies, and expectations, constitute secondary appraisal and may ultimately shape one's emotional experiences. This framework represents the cognitive perspective of emotions.

For instance, imagine a scenario where you're walking in the forest and spot an animal among the trees. Although you see various animals during your walk, you may not be able to identify all of them.

Now, in this situation, you will engage in a lot of thought processes. The primary appraisal involves interpreting whether the animal is threatening or dangerous. This initial judgment, made upon seeing the animal, constitutes the primary appraisal, which may lead to several secondary appraisals. You may consider factors such as the cause of the animal's presence, your ability to deal with the situation, and the likelihood of being attacked. These additional interpretations, known as secondary appraisal, may result in the emotion of fear or other interpretations, such as perceiving the situation as manageable and less harmful. The ultimate emotion experienced depends on how you conduct these primary and secondary appraisals.

We have already discussed some of these cognitive theories in detail earlier, illustrating the significant impact cognition can have on emotions. Now, we will explore the reverse scenario: how emotions can influence cognition. Today, we will provide an overview of introductory concepts, and in the next lecture, we will delve deeper into how emotions influence memory. Additionally, in another lecture, we will discuss how emotions affect our thoughts, judgments, and decision-making processes.

Emotion can profoundly impact what we notice, remember, and how we reason. Sometimes, emotions lead us to focus on specific things or aid in decision-making processes. Emotions are attached to certain memories or help us make decisions in our lives. While some may advise keeping emotions aside when making decisions to avoid bias, research has shown that emotions can be functional and It's not always that emotions adversely affect our thought processes; emotions can also help us make decisions. We'll explore these evidences later on.

The evolutionary approach to emotion suggests that emotions are adaptive—they serve a purpose in helping us survive various life situations. Emotions like fear, for instance, keep us away from danger, making them functional in that sense. The impact of emotion on cognition may also depend on the type and intensity of the emotion.

The amount of emotion you experience can influence your thought processes. For instance, the Yerkes-Dodson law suggests that learning, memory, performance, and reasoning are most enhanced under moderate levels of arousal or emotion. This law indicates that performance is optimal when arousal levels are moderate, rather than too high or too low. While this is a generalization and may not apply in every context, it suggests that mild or moderate emotions may aid in reasoning and performance. Graphically, arousal levels indicate the intensity of emotion, with optimal functioning occurring at moderate levels of arousal. to productive thinking and action.

The performance is highest at the mid-level of arousal, neither very low nor very high. Two graphs are shown, one for easy tasks and the other for complex tasks. For easy tasks, performance is optimal when arousal levels are slightly higher, whereas for complex tasks, performance is best

with slightly lower arousal levels. Complex tasks require more concentration, so higher arousal can disrupt performance, while simple tasks can be performed well even with higher arousal levels.

The impact of emotions on cognition has various aspects, and researchers have examined their effects on attention, memory, reasoning, and decision-making separately. This lecture will focus more on broad theoretical principles explaining the role of emotion in cognition. We will discuss three major theoretical perspectives: emotion or mood congruence, feeling as information theory, and styles of processing influenced by emotions.

Emotion or mood congruence refers to the phenomenon where an individual's current mood or emotional state influences how they perceive, remember, and process information. Your current emotional state can shape your cognitive processes, leading to information recall and interpretation that aligns with your mood. For instance, if you're feeling happy, you're more likely to recall and interpret information consistent with happiness. Conversely, if you're feeling sad, your mind may retrieve sad-related information.

You are more likely to remember all the negative things in your life, so your current emotion will stimulate congruent information or cognitive processes, making them more readily available than incongruent information. Incongruent information, such as happy thoughts while feeling sad, is less likely to come to mind because it doesn't align with the present emotion. This concept illustrates how emotions can influence cognitive processes, creating congruence between them. The nature of the emotion you're experiencing shapes the nature of the thoughts and information you recall.

One theory that delves into this concept is Bower's Associative Network Theory, proposed in 1981. According to Gordon Bower's theory, emotions and moods are connected to an associative brain network, where memories congruent with the current emotional state become more accessible and easier to retrieve. This network of associations links emotions and related information, encoding them together based on the emotional context.

When an emotion is triggered, it activates similar nodes of information encoded during similar emotional states in the past. Memories encoded under similar emotional states become more accessible when that emotion is experienced again. For example, when feeling sad, memories of past sad experiences are more likely to be activated due to their association with the current emotional state. Therefore, experiencing an emotion activates all associations connected to that emotion, making related memories more accessible.

Emotions are associated with different information depending on how they are encoded, making congruent information more accessible. This association contributes to the interpretation of the current event, shaping how you interpret situations based on past information activated by the emotion. Bower also proposed that material congruent with one's current emotion is better learned or remembered because it integrates into active memory structures more easily. For instance, participants induced to feel happy or sad while reading a story about two college students were

later found to remember more facts congruent with their emotional state. Those in a happy mood recalled more positive information about the students' achievements, while those in a sad mood remembered more negative aspects.

However, research has since found that the effects of emotions on memory and cognition are very complex. While congruent memories are often remembered effectively, instances exist where memories incongruent with one's current mood can also be recalled effectively. This idea of congruence remains important in emotion research, but not all mechanisms proposed by Bower are well-established, as some researchers challenge their validity. For example, two individuals, one happy and the other sad, shown a neutral object like a rose, are likely to encode it in the same manner regardless of their emotional state.

In this context, emotions may not have much influence. For example, whether you are sad or happy, things like roses may not have a significant impact because of their emotional neutrality. Memory for rose-related events will likely not appear to be mood-dependent under these circumstances. However, in certain situations where individuals recall personal life events, mood influences do indeed exist, but they fluctuate due to the distinctiveness of people's experiences. Emotions can play a very important role, especially when remembering autobiographical memories or past life incidents, but individual differences exist, and for neutral objects like roses, emotions may not have much influence. There are different complexities associated with it that Bowers' model has not fully addressed.

Eich and Macaulay also concluded, based on a lot of evidence, that mood-dependent effects on cognition, such as memory and perceptions, are influenced by various factors, including the task performed by the participant, the mood induced, and the characteristics of the participant. Many other factors may influence this whole phenomenon. To address this, another theory was proposed by Forgus, called the effect infusion model. It attempts to explain how emotion influences cognition, similar to Bowers' model but with some modifications to address certain issues. This model suggests that mood and affective states influence cognitive processes, judgment, and decision-making. It proposes that emotions can infuse or impact various cognitive processes, leading to changes in information processing and decision outcomes. Additionally, this model suggests that the impact of emotion on cognition is not uniform and depends on various situational factors, such as the presence of others, how emotions are expressed by others, and the type of task being performed. For example, happiness may infuse positive evaluations into judgment tasks.

These findings suggest that emotion can influence cognitive processes in complex ways not entirely explained by Bowers' model, but some aspects are addressed by the effect infusion model. This is one way to understand the impact of emotion on cognition. Another theoretical perspective is feeling as information, proposed by Clore and colleagues, which provides a second approach to understanding how emotion can influence cognition.

It suggests that emotion can provide important information when we make judgments. So when we make any decisions, we will delve into this topic in more detail while discussing the decision-

making process. When we make any decision or judgment in life, the emotions we experience during that process provide us with some information about what to do. So there is an informational value to emotions. That's the gist of this theory. There are two certain hypotheses associated with this model: emotion serves as a signal providing information about our environment. So emotion gives a signal. For example, if you are experiencing anger, it is a signal that some injustice has occurred and needs to be addressed.

Many of the emotions we experience provide us with information, such as fear signaling danger, which helps us make decisions. When you experience fear, you sense danger and decide to take action, such as running away. Many of our judgments are too complex for us to review all the relevant evidence, so we often rely on simple assessments based on our current feelings. Many times, we cannot consider all aspects of a situation to make a decision because it is too time-consuming and requires a lot of effort. So sometimes we take shortcuts using information and make decisions based on what our emotions dictate. Many people say, "I decided based on my gut feeling," which means they haven't thoroughly examined every aspect, but they made decisions based on their emotions. These are instances where emotions can help us make decisions quickly in complex situations. For example, when evaluating a political leader, some research shows that we often rely on our gut feelings about a person rather than weighing all the evidence. People generally use gut feelings to make decisions. These gut feelings essentially use emotion as information to make a decision. Clore and his colleagues argued that emotion can be a very useful heuristic or rule of thumb that can be used to make judgments or take action, as they often work better than random guessing.

They are better than random guessing because emotion is telling you something and helps you make decisions sometimes. This perspective challenges the assumption that rational thought is always the best approach to decision-making. Rational thought is important, but sometimes emotion can help you make decisions. So, just judging that emotions are bad for decision-making may not be true in many instances. Research has shown that emotional state can influence judgments even when the objects being evaluated are unrelated to that source of information.

Sometimes, the source of emotion could be very different, but you are making a decision in a completely different context, which can also be influenced by emotions from other situations. So your emotion may arise in one context, such as your family life, but it can impact your decision-making in your work life. The source may be different, but it affects a completely different situation. Positive and negative moods have been found to affect various judgments, including consumer item evaluation, assessments of political leaders, and evaluations of losses and gains.

Emotions can influence decision-making everywhere. Positive emotion generally leads to positive evaluations, while negative emotion leads to negative evaluations. It's generally as simple as this. Moreover, moods and emotions also affect judgments of the future. Many times, while making decisions about the future, moods and emotions also influence those decisions.

Negative moods tend to make people view the future pessimistically. For example, when we feel negative, our future also looks very dark. When we feel happy or joyful, our future also appears bright. In a study by Johnson and Tversky, participants were induced into a negative mood by reading newspaper articles about a young man's death. Under the negative mood, people judged negative life events, such as contracting a disease, to be more likely to occur in the future. So, under a negative mood, people judged future possibilities more negatively, overestimating the likelihood of contracting a disease, for example. Emotions can influence future judgments as well.

The third perspective related to the impact of emotion on cognition is called the style of processing. Another alternative perspective suggests that different emotions and moods lead to different cognitive processing.

Your emotions could influence how you process information and what your style of processing is, affecting how individuals reason, weigh evidence, and draw conclusions. Cognitive psychology has identified two systems of thinking style called System 1 and System 2. System 1 is a very automatic, intuitive, fast mode of thinking. Many times, decisions are made very quickly in this mode, as it operates rapidly, involuntarily, and automatically, relying on heuristics. Not much conscious thought processes go into it. For instance, when someone asks, "What do cows drink?" most people instinctively answer "milk" because they associate cows with milk.

But here, the question was, "What do cows drink?" This is an example of System 1 because if you immediately say, "Cows drink milk," it's because you associate cows with milk. So if you do something very automatically, the answer may be "milk." On the other hand, System 2 is a very deliberate, analytical, and slow mode of thinking. When you consciously process information, think about pros and cons, and so on, then System 2 is activated. It engages in more effortful reasoning. In the same scenario, System 2 may lead to a response that is more clear and correct, such as, "Cows typically drink water, but calves may drink milk."

So this answer involves some conscious thought processes. There are two systems: one that is very automatic and rapid most of the time, possibly providing unconscious responses, and System 2, which is more deliberate and analytical, involving more detailed processing. We make decisions sometimes under System 1 and sometimes under System 2. These are two different styles of processing. Both systems have their own strengths and problems; both have their pros and cons. Sometimes, System 1 helps you make decisions very quickly, but it can be prone to errors, while System 2 can require a lot of effort, which you may not be able to do, or because of too much effort, you may not use it most of the time. Both System 1 and System 2 thinking play crucial roles in our cognitive processes. System 1 allows us to quickly navigate familiar situations, while System 2 enables us to handle novel and complex tasks requiring deeper thinking and analysis. Both have their own strengths and applications in different situations. In the very popular book "Thinking, Fast and Slow" by one of the Nobel laureates, Daniel Kahneman, he discusses these two systems in detail. In that book, he discusses various research conducted with his colleague

Amos Tversky, which showed that people's heuristic responses often take over when presented with problems that require deliberate thinking.

People generally opt for System 1, which is much easier and intuitive, as it takes over most of the time, while System 2, which is more deliberate, requires a lot of effort. Although System 2 can override System 1, it often requires effort, and sometimes, due to laziness, people prefer to rely on System 1, which is quick, and System 1 is used more in decision-making. Now, emotions are attached to each of these processing styles. Our emotional world is what allows us to make decisions quickly.

Many times, System 1 is linked to emotions, where we make decisions quickly using certain intuitive gut feelings. Without emotion, how could you know what is important? It is emotion that helps us determine what is important, and accordingly, we make decisions. According to research, positive moods tend to promote the use of heuristic thinking. Additionally, the type of emotion you are experiencing also determines which system you will be using.

For example, positive moods tend to promote the use of heuristic thinking, which is System 1, while an anxious mood can facilitate deliberate thought processes, which is System 2. So not all emotions will lead to just System 1; some emotions can stimulate System 2. For instance, when you are very anxious, people want to look into the pros and cons, and so on, then System 2 may also get activated. So emotions can influence both the processing style depending on what kind of emotion you are experiencing. Negative emotions, mostly like sadness and anger, can also have different effects on thinking style.

For example, positive moods tend to promote the use of heuristic thinking, which is System 1, while an anxious mood can facilitate deliberate thought processes, which is System 2. So not all emotions will lead to just System 1; some emotions can stimulate System 2. For instance, when you are very anxious, people want to look into the pros and cons, and so on, then System 2 may also get activated. So emotions can influence both the processing style depending on what kind of emotion you are experiencing. Negative emotions, mostly like sadness and anger, can also have different effects on thinking style.

So anger can have different effects, and sadness can also have different effects on processing styles. For example, this study found that people are less likely to rely on stereotypes when feeling sad. When people are sad, they do not use stereotypes that we have discussed in the last class. So generally, they do not use too much of System 1; stereotypes are System 1-related processing. Sad people generally do not use much of System 1 processes as compared to when feeling angry.

When people are feeling angry, they are more likely to use stereotypes and more of System 1 type of processing. Stereotypes are more heuristic judgments that we have already discussed and are more likely to be used when one is in an emotional state such as happiness or anger. People are more likely to use stereotypes when they are happy and also when they are angry. So happiness and anger, these emotions are more likely to lead to System 1 kind of thinking, and more

specifically, in the context of stereotypes. Thus, emotion can influence the type of cognitive processing we engage in.

So, emotion can influence the type of cognitive processing style we are using. Now, briefly, we will be discussing how emotion can influence our attention and perception. A lot of evidence supports the common belief that our emotional state affects how we perceive objects and events in our environment. Emotion affects our attention; where we put our attention is guided by our emotions. So, emotion has been found to shape perception, determining what we look at, attend to, and how we perceive it. Our environment presents us with a plethora of information, but we selectively focus on certain things, and this selective attention can be guided by our emotions.

Emotional objects capture attention; if an object is associated with emotions, we are more likely to pay attention to it. Emotions tend to grab our attention, as we experience in our daily lives. Emotional objects are more likely to capture our attention than neutral objects. Studies have shown that our emotional reactions to stimuli occur very quickly and often before we are even aware of them. We encounter numerous stimuli in our environment, but we only attend to a few, and one reason for this is that our attention automatically gravitates towards objects associated with emotions.

There will be some emotional value to it. Sometimes unconsciously, our attention goes there. Once we have an emotional reaction, we automatically direct our attention towards the object. I think it's because it is important to us; because emotion says that something is important, our attention goes there. This increased attention towards the emotional object allows us to become more aware of their presence and location in our environment, enabling us to act accordingly. So, emotional objects that elicit positive emotions can also capture attention; joy also captures attention. However, objects that are perceived as threats or elicit negative emotions, like fear or anxiety, capture our attention more than objects that elicit positive emotions because negative emotions are very important; they signal danger, indicating that our life may be at risk.

So from a survival perspective, negative emotions are stronger and more attention-grabbing. This phenomenon has been observed in various attentional tasks such as the Stroop task and many other experimental setups. Objects including humans and schematic faces, images of objects, and words have been used in all kinds of experimental setups to show that objects associated with negative attention capture our attention more. For example, studies have found that people detect threatening faces more quickly than friendly ones in a crowd of neutral ones.

So, if there are many people with neutral faces and one threatening face, our attention will be drawn to the threatening face. In one study, a threatening face was placed among neutral faces, and participants' attention was automatically drawn to the threatening face. Even when a friendly face was among neutral ones, it captured attention more quickly. Threatening faces are attended to more rapidly compared to friendly or neutral faces. Experimental evidence also supports this, showing that objects that elicit emotional reactions can capture attention rapidly, even when our attention

is limited or diverted by other relevant objects. For example, fearful faces are detected more efficiently than neutral ones, even when presented for only 20 milliseconds on a computer screen.

People can even detect fearful faces in a very short span of time when they are presented. Once we direct our attention towards an emotional object, it becomes difficult to disengage from it, and we process that information. People in a state of anxiety or fear are even more likely to attend to threatening stimuli. So, if you are in a negative state of emotions, you are more likely to attend to negative stimuli because your present emotion is also negative, making it more congruent in terms of detecting other similar or negative emotions. This finding aligns with evolutionary theory, which suggests that emotional reactions to threatening stimuli were naturally selected for survival purposes because threats and negative emotions pose immediate danger.

People automatically attend to stimuli aligned with our body and mind to protect ourselves and ensure survival. It's important to note that neutral objects can also capture attention similarly if associated with fear. Interestingly, even neutral objects associated with fear can capture attention due to their association. For example, if someone had an accident with a bike, the bike, although neutral, might elicit fear reactions upon subsequent encounters due to its association with the accident.

Emotions not only influence what we pay attention to but also the extent of our attention. Positive emotions broaden our attention, allowing us to focus on more objects and stimuli in our environment, whereas negative emotions often narrow our attention, limiting it to only a few things. Research by Isen and Frederickson suggests that positive mood promotes more flexible, creative thinking, aids in forming important social bonds, and broadens our resources.

We have already discussed these concepts in detail during the positive emotion lecture, so we won't repeat them here. Research also demonstrates how high arousal negative emotions narrow our attention, particularly emotions like anxiety. This narrowing contrasts with positive emotions, which broaden our attention. This phenomenon is known as the cue utilization hypothesis, suggesting that attention becomes restricted to central cues while disregarding peripheral ones during high arousal negative states. Further research confirms that attentional narrowing occurs during negative experiences such as stress, exposure to simulated danger, or negative facial expressions. This narrowing of attention has various practical implications, including weapon focus, where eyewitness memory for details of a crime perpetrator decreases due to attention being captured by the weapon.

It basically indicates that in crime situations, witnesses tend to focus mainly on central aspects, such as a visible weapon. This phenomenon, known as weapon focus, refers to a decrease in memory because people forget about other things and focus solely on the central aspect of the situation. This phenomenon occurs because threatening stimuli tend to capture and hold people's attention, especially in threatening or crime-like situations where a weapon is the most dangerous element. Attention narrows down to the weapon only, making it difficult to process other information, causing individuals to forget about other details. A study conducted by Kramer and

Kulig in 1990 found that participants who watched a video of a mock crime scene with a highly visible weapon recalled significantly fewer details about the perpetrator and other elements of the scene because their attention was focused on the weapon. This phenomenon demonstrates how under negative emotions, our attention narrows down to the central aspect only.

Interestingly, the influence of emotion on attentional scope may be less related to balance and more to arousal. Positive and negative emotions undoubtedly have an impact, but arousal is more crucial. If the negative emotion is highly arousing, such as extreme anxiety, then attentional narrowing occurs more intensely. Hermon-Jones and colleagues discovered that emotional states with high levels of motivational intensity, such as strong desires or disgust, narrow attentional focus compared to neutral states, while emotional states with low levels of motivational intensity, regardless of their balance, broaden attention. Therefore, although positive and negative emotions can also influence attention, arousal level plays the most significant role. If a negative emotion is highly arousing, it triggers a more pronounced narrowing of attention compared to considerations of balance or the positivity or negativity of the emotion.

These are some of the important points regarding the introductory concepts of how cognition and emotion can interact and influence each other. This was a more introductory lecture. In the next lecture, we will delve more specifically into how this interaction impacts our memory and decision-making. With this, I will conclude here. Thank you.