Social Behavior and the Brain: An Introduction to Social Neuroscience

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Week - 05
Lecture – 23

Hello and welcome to the course social behavior and the brain and introduction to social neuroscience I am doctor Ark Verma and associate professor of the department of cognitive science iit kanpur we are in the week five of the course where we are trying to understand and perceive social outgroups and in this lecture we will talk in some detail about what are the different ah neural and mental processes that are involved in perceiving social outgroups Now, we have actually already introduced the idea of an ingroup versus an outgroup. What is an ingroup? An ingroup is a group based on similarity, based on some common shared source of identity. For example, if I were to define my ingroup, I could define my ingroup by you know by gender by the state that I am living in, by the profession that I am in, by the language that I speak, by my political ideology may be. So, if on the basis of any source of shared identity individuals can form their in groups. and what is very important about you know what is very important to understand about in groups is that people tend to favor the members of their in group more than the members of any other group. More importantly people have a specific bias for themselves and that bias is a positive one and that bias basically can extend to all the members of that in group as well.

On the other hand, anybody who does not by the definition that you have chosen fall into that criteria of shared identity is regarded as an out-group. For example, if I were to make an in-group and out-group based on gender then everybody who is a male falls in my in-group and everybody who is not falls into an out-group. Now, there is another very important thing that we have been talking about so far is that people are, people have different ways of relating to and interacting with these different outgroups. We saw the stereotype content model from Fiske where you know they present that there is this you know two dimensional space of warmth and competence based on whether the you know an individual is high on warmth or low on warmth or high on competence and low on competence they will differentially you know elicit different kinds of emotions.

So, people high on you know on both warmth and competence will elicit pride, people high on competence low on warmth will elicit envy, people low on warmth high on competence elicit envy and similarly people who are you know high on warmth and low on competence elicit pity. So, again just sort of was trying to you know revise for you that. Now so while there is this idea of in group and out group and you know what is very

clear is that people favor their in groups over their out group. Sometimes people actively discriminate against the out groups also and this is what we saw in the literature that you know in the previous two lectures where we were reviewing the literature related to this concept of dehumanized perception. What is dehumanized perception? When people are extremely prejudiced towards a member or an entire out group.

then that prejudice sort of you know breeds some you know the basic emotion of disgust and people actually you know fail to consider the mental or inner lives, the feelings, the emotions, the choices of this entire you know outgroup. And therefore, this outgroup is deemed as a dehumanized outgroup, you are not considering them and there are several examples that I have been giving so far. if you want to talk about your Second World War you know Germany of the Second World War era. So, Nazis were the perpetual out group whereas the sorry the Jews were the perpetual out group and the Nazis were basically perpetrators of violence and discriminations against this and you can similarly go back to the days of slavery when you talk about say for example, white Americans treating the blacks as slaves and laborers and so on. So, these are some of the things that we have discussed so far.

Now, one of the things that we have not really discussed in much detail so far is how do we perceive output, what are the mechanisms that lead us to perceive these outputs. So, let us talk about them in a little bit more detail. We will basically try and review what we know so far and then we will take into it take you into a newer territory. So far we have seen that Harris and Fiske talked about the most extreme you know form of outgroups which is the dehumanized outgroups. We learned that both the mental and the emotional capacities of these dehumanized outgroup members are considered to be relatively diminished when compared to normal human beings ok or say for example groups that do not elicit disgust and then extreme prejudice.

So, dehumanized outgroups are an extreme form of outgroup. We have seen in this stereotype content model that not all outgroups will generate or will elicit the same kind of disgust feeling and the same kind of discrimination or you know in some sense overlooking the entire thing. So, people do not mentalize about their outgroups about these dehumanized outgroups or at least they find it very difficult to mentalize or to you know empathize with these outgroups. So, on the same premise Harrison Fiske argue that the perception of the dehumanized outgroups should be associated with the activation in the insula. Remember in the previous lecture what did we find? We found that the perception of outgroups or a perception of the dehumanized outgroups specifically is linked to the activation in the insula and the amygdala.

So, just talking about the insula, so Harrison Fiske argued that the perception of the dehumanized targets should be associated with the activation in the insula and this is a region which gets activated in response to the emotion of disgust and also perception of

these outgroups is linked with less activity in the neural areas associated with the functions of mentalizing attributing minds and thoughts to others which is the medial prefrontal cortex. So, the idea is that when you are perceiving these dehumanized out groups there will be higher activity in the insula and the amygdala and there will be lower activity in the medial prefrontal cortex. And this is basically what a lot of studies around that time find. So, in confirmation with their hypothesis which implied that the dehumanization is associated with distinct neural responses that parallel the behavioral reactions of being disgusted by and attributing less of humanity to these most negatively stigmatized outgrowths. So, this is about outgrowths, this is you know a little bit about the research of Harrison Fiske which we saw in the previous 3-4 lectures.

If you go a little bit further back then back on the same line we found the research from Amodio, where Amodio disentangles the influence of automatic and controlled processing in regulatory processes that influence racial bias against outgroups. So, remember we talked about the fact that people let us say when they are even interacting with the face the stereotypical information race, gender, you know impression formation all of them get immediately activated and because they get immediately activated they can actually in principle influence the way we interact with these outgroups. And a lot of times because in today's era expressing dislike and prejudice towards others is not really the norm and in fact it is considered unacceptable. So, people try to regulate this all right. So, people try to regulate their implicit biases and prejudices while trying to explicitly say that oh we are liberal and egalitarian and we want to treat everybody equal.

So, Amodio's research talked a little bit about that, ok. He argued that the dual process models, the automatic and the controlled ones that we have discussed so many times in the past, basically when we talk about stereotyping and prejudice are rather simplistic. Amodio says these models are relatively simplistic and he provides evidence for the fact that motivational and regulatory abilities are actually you know they provide more nuances to the traditional models. So, you basically can qualify the older models by adding aspects of motivational and regulation capabilities. For example, one of their, you know, experiments actually examined the responses of people who are all self-proclaimed egalitarian.

So, each of these participants said that, oh, I do not harbor prejudice, I do not want to behave in a discriminatory fashion, in an unjust or unfair fashion towards members of an outgroup. And, you know, and Although there is a very interesting difference that they differed you know in whether their motivation to respond without prejudice was internally or externally motivated. Remember we have discussed this in the past as well. You can be internally motivated to respond without prejudice because you are seeking equality, you are seeking fair behavior, you are seeking fair treatment and so on. on the other hand while you may be internally biased you may profess egalitarianism you may profess liberalism you may profess equality or equanimity for that matter on by virtue of

what the society will think or say for example as if somebody is monitoring you and they will note down that oh you you know expressed prejudice and in that sense you are a good you are not a good person and so on.

You know individuals motivations to behave justly and fairly were actually due to the internal locus of control, internal motivations then they performed much better in regulating and performing without bias as opposed to people who were trying to respond without prejudice based on just external pressures and we have discussed these findings in detail. Again just repeating for you, so those who are internally motivated to respond without prejudice actually show a greater regulation of prejudice as reflected in the error related negativity than that people who are only externally motivated to respond without prejudice. So, it seems that the internal motivations what you actually want actually plays a very important part in how do you respond with or without prejudice to these outgroups. Now, Amodio's work actually emphasizes the idea that both motivational and self-regulatory factors actually influence our behaviors as well as the neural responses to others or these other outgroups, all right. Now, let us go even further back and then look at the studies that we were reviewing in early 2003, 2005, 2007 and there is what we saw is the event related potential work with respect to phase perception and what did we find there.

We found that you know stereotypical information or information that potentially can you know trigger stereotypes such as information about race and gender and so many things can actually get activated very early in the chronology of information processing. So, Ito and Urland's you know work basically suggested that there is this you know N100 peak which basically says that it is around about 100 milliseconds that this information becomes available to an individual when they are viewing faces of let us say the other community. All in all on the basis of whatever we have seen so far what we can see is that this work reviewed suggest that the processing of in groups versus out groups is associated not only with different behavioral tendencies, but also with distinct neural correlates all right. So, this is what we have seen so far. Now, how do we perceive these out groups? What are the mechanics by which we engage with these out groups? Let us pay some attention to that.

So, and again something that is interesting about the studies that we have reviewed so far is that mostly they are they are basically examining responses to single cues such as things like ethnicity or race or you know other things that you can make out through the first impression or the first glance. ok, but again remember human social perception is not just you know a first impression thing ok, it is based on a number of information, it is based on a large number of social cues. For example, several social messages are simultaneously conveyed and encoded even from a single channel of communication such as the face. So, when you are looking at somebody's face, it is not only that you are recognizing their identity, you are recognizing their race, their gender, maybe also

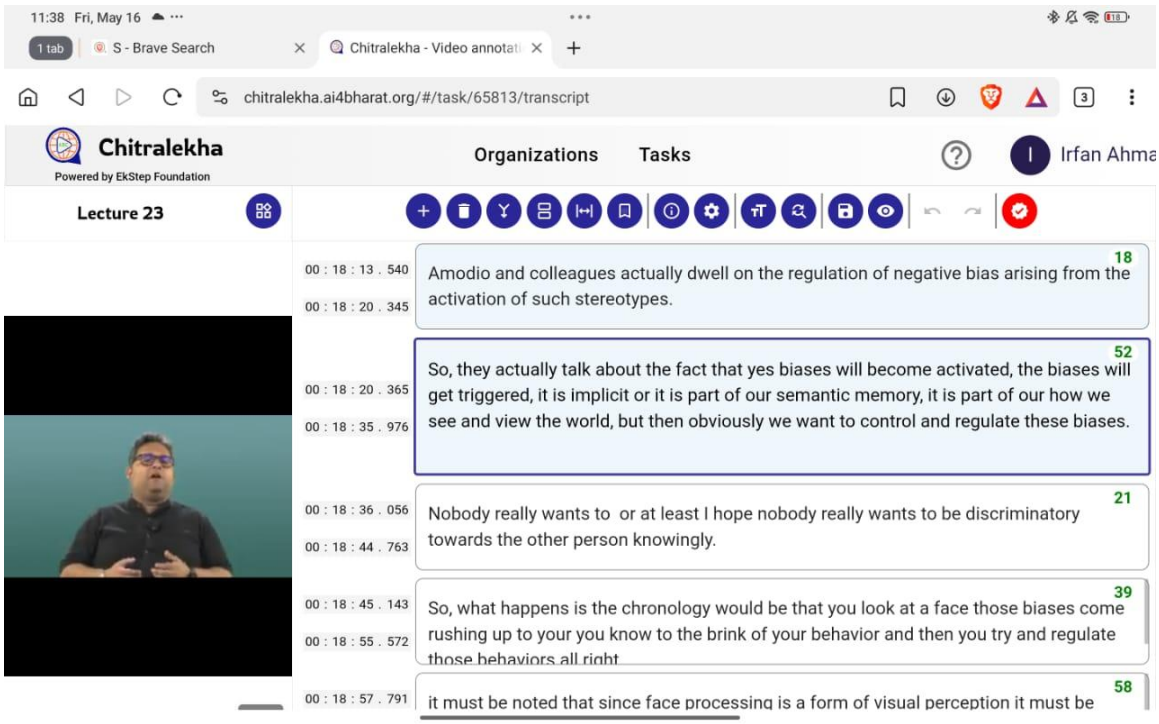
judging their emotional expressions, you know making a sense of their intentions, making a sense of their dispositions, all of in all of that information basically becomes available to you very quickly due to this you know this very minimal exposure. So, the face can simultaneously you know convey all of this information.

Now, the physiognomy of the face such as the facial maturity of the face is in itself a cue that you know also influences social perception you can get an idea of the age of the individual. See these are face invariant feature these are invariant feature. So, they will tell you some things about the individual if you see the individual in in different times say for example now and five years later and ten years later you will see that the face tells you the age or that the person has aged emotion expressions and I guess are also conveyed by the face and they also affect social perception okay So, let us consider the three you know consider that what are the types of information that we get through faces and because they will be a very important and a very pertinent you know information in order to interact with others and interact with other social groups. So, what are these informations? Facial appearance, eye gaze and emotion. So, there are three of these things and we will talk about each of these three things their separate effects as well as their combined effects.

Alright. So, coming to facial appearance. Now, facial appearance can actually be seen as the primary vehicle for the formation of intergroup perception. For example, when you are interacting with others, the first you know the first entry, the first window of interaction is when you look at the face of the other individual. And and you know now nowadays we use very interesting very different terms say for example, vibes you know I was not getting very positive vibes from the person who I saw and that is why I turned my head and I you know went away. I avoided interacting with that person a lot because he bores a very you know neutral or a rude expression in some cases.

So, faces do tell us a lot of this information as we have been seeing. Now, Ito studies demonstrate that early categorization based on facial appearance cues happens, it happens very early based on facial appearance you can a categorize an individual oh this person is Caucasian, he is Asian, he is African American, he is Southeast Asian, you can get this information in your first glance of the person's face. Now, what does this information do? It tells you or it biases you in certain ways. Suppose you are harboring a bias you know and by the way it is not only a specific race for example, we are constantly talking about white Americans, but it is basically because you know the book and the subject matter and the most of the research that we are reviewing is about white Americans versus you know African Americans or the blacks. But a certain degree of racism if I were to call it is presence in all kinds of people and basically it is in ideally it is not really a negative term, it is basically the cognizance of the difference in race between one individual and the other.

So, you notice that difference that individual belongs to my race or does not belong to my race just that much just that cognitions. But what happens is because of the historical baggage because of our semantic knowledge about the world and about how the world works and the trends and the fashions etc Those kind of things tend to factor that information in our decision about how to how will we behave with this particular individual how will we interact with this particular individual uh it may bias us it may give us some you know a priori attitudes Oh i'm going to talk with you know an african-american person maybe there are some cultural biases that i have been given or i have read about or i don't know i have got through somewhere and it could be something like oh you know these people probably are you know less friendly or they eat so much or any random you know thing you can pick up and nothing of that may be actually true. But the idea is because the facial categorization can happen very early just by looking at a person's face and it happens as early as just 100 milliseconds, it basically activates and it brings to the fore all sorts of stereotypes, all sorts of baggage that has to be and that baggage starts you know intervening in your first interaction with these individuals. So, in the same you know vein in the same direction Harrison & Fiske would try to look at dehumanized perception or activation of stereotypes as a result of categorization as an in group or an out group based on facial appearance. So, Harrison & Fiske's work basically tells us that yes faces are you know a window to or are a trigger sometimes because you know all of that information becomes available to you so quickly, they may be an trigger to activate these stereotypes, they may be a trigger to activate all of this baggage and the semantic knowledge and the a priori attitudes and the prejudices that we carry and all of that comes to the fore.



Amodio and colleagues actually dwell on the regulation of negative bias arising from the activation of such stereotypes. So, they actually talk about the fact that yes biases will become activated, the biases will get triggered, it is implicit or it is part of our semantic memory, it is part of our how we see and view the world, but then obviously we want to control and regulate these biases. Nobody really wants to or at least I hope nobody really wants to be discriminatory towards the other person knowingly. So, what happens is the chronology would be that you look at a face those biases come rushing up to your you know to the brink of your behavior and then you try and regulate those behaviors all right. it must be noted that since face processing is a form of visual perception it must be influenced and constrained by the mechanics of the of vision as well see reading for example is a visual activity looking at faces for example is a visual activity and both of these you know both of these processes are therefore constrained by how our vision works.

So, that just is a caveat that you have to remember. Now, social cognition also exerts a rather powerful moderating influence on how we see the world, you know. It gates our attention in specific ways, it determines whether an individuation or categorization actually happens and it also influences how individuals will interpret the visual cues they perceive. When we talk when we started talking about social cognition in this chapter we said yes social cognition and non social cognition are different. We said social cognition is much more complicated because it takes you know the information from cues, the information from goals and intentions and agents and you know patients and all of that sort of you know is in the play.

So, obviously social cognition what you understand about the world, what is your intention, what do you want to do with that information, how what is the context in which you are interacting. Say for example, if you are interacting with a member of an out group in a very formal setting, I am sure your interaction will be slightly different than when you interacted with them or you were interacting with them let us say on a playground or you know in a restaurant or you know in a place where it is not really you know you are not supposed to be that formal. Alright, it also gates our attention in a sense that for example, based on what we want to do, based on what our goal or what our expectation from the interaction is, our attention will also duly get modulated, ok. And another very interesting thing is social cognition also or our idea about whatever semantic knowledge we have also dictates whether we will individuate the other or we will just broadly push them into a category you know and say oh this person is an African American and I know a little bit about African Americans and this person might also be in the same line and he will also behave according to whatever I have learned about African Americans or you know any other social group that you want to take. Or for example if there is something very interesting that you can individuate and you can mark that person separately and say oh I met a person of let us say the African American group

and that person behaved rather atypically and you were surprised and I was pleasantly or negatively surprised I mean does not matter ok.

So, social cognition moderates how the system of you know how the system of vision is you know operating upon the social cues, operating upon the social objects like faces for that matter. And, early research indicates just sort of you know taking this forward this early research clearly indicates that race is very readily detected from facial appearance cues even as early as 100 milliseconds I already said that although there may be individual differences that exist in a way that they will you know influence our responses to this. For example, if you are internally motivated versus if you are externally motivated, if you really care about coming out as unbiased, non prejudiced and so on or if you just do not care about it, all right. So, previous research has revealed that there is a very interesting effect we were talking about individuation and categorization. So, previous research has revealed a very interesting phenomenon something called the outgroup homogeneity effect.

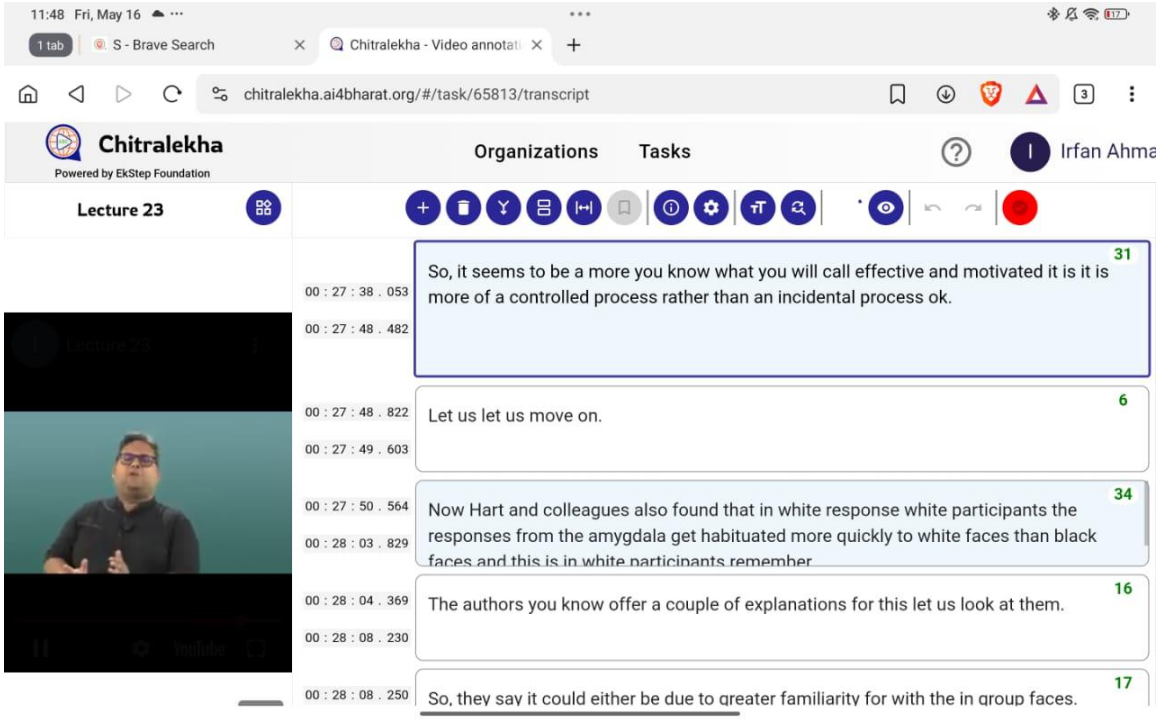
What is this outgroup homogeneity effect? Outgroup homogeneity effect in the form of is basically a form of an own race bias in remembering faces and what really implies you know here is that people actually tend to club together all the faces of that outgroup. they do not pay attention to the features, the identities, the differences and so on, whereas they process in much more detail the faces of members from the in-group all right. So, it seems that this effect may be moderated by the speed at which individuals are you know racially categorizing out-group versus in-group faces. So, as soon as you see African immigrant face you say oh this is an African immigrant, you will see by the way very casual know there is there is a lot of casual racism in the society as well. So, you will see somebody you know people saying that oh you know I I cannot differentiate between the faces of African American people.

So, all of them look the same to me. You will see here people saying oh all Chinese look same to me or say for example or northeastern you know people look the same to me and this is basically nothing rather than the manifestation of that out group homogeneity effect or actually the manifestation of a very strong in group bias that we carry, all right. An interesting factor here and why does this outgroup homogeneity really take place is probably because people are doing this categorization rather rapidly. As soon as they categorize sometimes they would probably you know in their minds shut the window of further processing. This is a Caucasian face, this is a African American face and their decision making world analysis probably ends there. So, and research has shown that the faster people categorize these out-group faces the less they individuate them and thus they you know the better their relative memory performance for in-group happens or I think the better way to say this is that the faster people categorize these out-group faces the less they would individuate them and they will be less unique information to remember them by.

And because there will be less unique information to remember them by, people will obviously remember the out groups much lesser than they will remember the in groups and that is basically the asymmetry in the memory performance for out group faces versus in group faces, alright. Now let us move forward, let us look at this other study. So, Golby and colleagues investigated this out-group homogeneity effect by examining the sensitivity of the fusiform gyrus. So, all of you know we have talked about this that the fusiform gyrus is the area in the brain in the left in the right temporal lobe that basically you know is specialized in recognition of faces. So, fusiform gyrus is a structure that is that is deemed to be specialized in encoding the structural aspects of face identity.

So, identification of faces when the fusiform gyrus is lesioned people suffer from a disease called prosopagnosia which basically means that they have lost the capability of identifying faces. Now, Golby and colleagues were looking at this you know the sensitivity of the fugiform gyrus to black and white in black and white participants when these people were viewing the photographs of people from the same race versus other race all right. And after the individuals had viewed faces in the fMRI scanner they were given a face recognition task as well. What happened? What do you think would have happened? Indeed in line with the expectations the magnitude of this memory effect was found to be directly correlated to the differential activation in the fusiform gyrus for in-group versus out-group face processing. So, remember you seen the fact that in-group and out-group you know stimuli are differentially treated in the brain that the out group faces mainly or extremely demonized faces mainly activate the amygdala and the insula whereas, other out group faces and in group faces basically activate the medial prefrontal cortex.

Here we are seeing is what we are seeing is that the fusiform gyrus is also differentially sensitive to in group versus out group face processing ok. So, on the basis of this finding on the basis of this study it can be concluded that greater fusiform activation is likely related to greater perceptual expertise associated with processing the in group phases as compared to the out group phases. So, when they are looking at the in group phases there is greater fusiform activation when they are process when they are viewing out group faces then there is lesser fusiform activation. Interestingly, inter group contact has not really been found to reliably explains the out group homogeneity effects and hence they seem to be driven more by an effective or motivated process rather than in non incidental or rather than incidental cognitive process. So, it seems to be a more you know what you will call effective and motivated it is it is more of a controlled process rather than an incidental process ok.



Let us move on. Now Hart and colleagues also found that in white response white participants the responses from the amygdala get habituated more quickly to white faces than black faces and this is in white participants remember. The authors you know offer a couple of explanations for this let us look at them. So, they say it could either be due to greater familiarity for with the in group faces. which leads to perceptual expertise account. So, again if you have seen a particular kind of face more and more you have interacted obviously with the more in group members than out group members and that probably leads you know get a very good get an become to an expert in looking at those faces and therefore, what happens is you get habituated with that you start almost automatically you know processing those faces.

But the other explanation is more interesting which says that there seems to be a racial bias towards the outgroup members which basically you can see is consistent with the more effective and motivated account. So, you know because there is this racial bias towards outgroup faces I do not I am not inclined to process them in any detail and I am not therefore, inclined to remember them for later you know time. Similarly, another study Phelps and colleagues reported that white participants although did not really reveal a difference in amygdala activity in response to black versus white faces directly, but actually showed a correlation between amygdala response to black faces and their implicit attitude towards black faces. Remember we have seen that there are explicit measures of bias and there are implicit measures of bias. The implicit association test is actually an implicit measure of bias and it tells us that the degree of bias or the level of

bias people would have or show in this test actually relates to the degree of amygdala activity they will show when they are viewing these black faces or other group faces.

So, this work suggests that responses to black faces actually result from a perceptual expertise rather than you know result less actually result less from perceptual expertise than from learned emotional or affective associations. So, it is more of a motivation thing, it is more of a conscious controlled bias thing ok. And in in the same way you know work has demonstrated that variation in sensitivity to in group versus out group faces also appears to be a conscious attempt to control such racial bias. See sometimes there the bias is there sometimes you are trying to control it a lot all right. So, altogether if you see these studies tell us that you know the kind of responses that happen when you are looking at a face they give rise to categorization and one of the primary modes of categorization is according to race membership.

So, and we have seen that it happens at a very early stage. So, the specific influence that the race prototypical appearance plays in neural responsivity to faces still needs to be examined in a little bit more detail. People have not really talked about this a lot. There have been a bunch of studies which have demonstrated that the modulation in the effective responses of white faces happens in response to black faces with you know contingent to high versus low afrocentric features. Again, if you look at faces and if you analyze them, some features are, say for example, described as Afrocentric features.

Say for example, the shape of the nose, the shape of the mouth, the shape of the forehead, all of those are peculiarly different in the African, you know, American race versus the Caucasians, white Americans for that matter. but interestingly these effects appear to operate relatively separately from race categorization. For instance, the differential presence of afrocentric features has actually be found to profoundly influence responses to faces even when they were clearly categorized as white. So, again you remember we did a study where they were these mixed faces also. So, if even a white face has those kind of you know those features people would you know be sensitive to that and their processing probably gets modulated due to that.

So, further neuroscientific investigations obviously need to be done to determine the role of such facial appearance cues in intergroup perception and they may therefore help better to clarify our understanding about how the mental operations underlying racial categorization and stereotype activation actually take place. So, that is all from this lecture. I will continue you know talking about how do we perceive these you know social outgroups in the next lecture as well. Thank you.