The Science of Happiness and Wellbeing
Prof: Priyadarshi Patnaik
Rekhi Centre of Excellence for the Science of Happiness
India Institute of Technology - Kharagpur

Module No # 07
Lecture No # 39
Doing Research on Happiness: Connecting Dots

Thank you, good afternoon friends we have almost arrived at the end of our journey where we are researching and exploring the science of happiness. By this point of time we have a lot of information about the fundamentals of happiness. We have talked about causes and effects of happiness we have tried to connect the dots in trying to find out various different remote and proximal reasons that contribute to happiness.

But as we go ahead and as we reach the end of the journey we go a little technical, and we go a little deep that is what we are going to do in today's session and the final session which is about projects. I will talk about projects in a little detail in the next session and today we will talk about researching happiness. When I talk about researching happiness there are a couple of contexts within which I will be talking about it one is every day we research happiness in our own life in various ways.

And knowingly and unknowingly because one of the fundamental quests along; with the desire for success and identity is the search for happiness. So in that sense we are always searching and researching happiness but then you find that when you start looking at happiness, as a discipline there are specific ways that we do happiness or research or we explore the different aspects of happiness.

That brings us to themes that had addressed as well as methods that are used so in this session I am going to talk about the concepts of doing happiness and because that is where all the dots are connected.

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So why research happiness is one of the fundamental questions we will start with basic approaches to research which is applicable to other kinds of research as well. Examples and where one can begin because that is how I will try to connect this session with the last one which is related to doing projects and happiness. And mind you when I am talking about projects and happiness I am not talking only or at all primarily on academic projects.

I am talking about projects, which are relevant to our life however it is relevant to realize that the entire team that has been involved in this process and is continuing to keep in touch with you, everybody is in some way participating in this research and happiness. You are already introduced to professor Mandal and to me but we have a team of very dedicated researchers who are assisting us and who are a part of the team.

And, in many cases they themselves are leading research, so I will briefly introduce them to you because during the assignments and various other contexts you will be connecting with them. And even otherwise we will have scope in this particular session for you sharing your research ideas and be responding to your ideas where you can take such ideas forward. Now the first of them is Dr Archi Banerjee who, is a researcher primarily focusing on music, brain and happiness and currently focusing on spirituality and happiness as well.

We have with us also Miss Junmoni Borgohain who is again a PHD scholar working on emotions and the psychology of happiness. We also have with us Mr. Ankur Shukla who is researching happiness in a very radically different context which is related to industries policies, well-being in a social context. This brief introduction to the scholars who are

associated and to the various work that are done by many scholars is to make you aware of the fact that happiness and researching happiness is very close to us.

And it is something which is also being done by many UG students B TEch students of our Institute and that makes you aware of and makes you realize that it is, something which is not very distant from us and it can be done by many of us. Systematically, maybe in a not a very systematic way but in a meaningful way because this search and research for happiness probably is so relevant that we have been doing that since we have understood something called happiness in the context of conceptualization and language.

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So we will be talking about, qualitative techniques quantitative techniques research in a scientific context.

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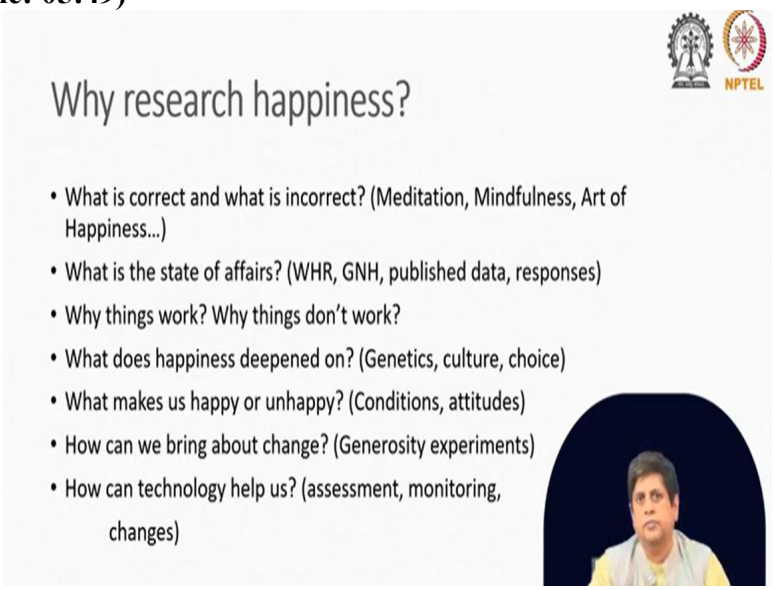

So I begin by touching up on some fundamental issues and then I will follow up with a few examples I will not go through all the examples within the limited period of time given here. But the slides will make you familiar with the various kinds of research going on. And if you go through the slides and search for, the references you can find out the kind of research that I am talking about briefly.

You see that we have a whole systematic as well as a muddled history of happiness. There have been many religions many spiritual traditions and recently many sects many groups which propagate happiness. In fact at the center in the initial phases almost every month we used to get some kind of a mail or a request or, a demand or invitation where people talked about the practice of happiness.

And it seemed like there are a lot of organizations across the world who are not researching but propagating or trying to propose that they can give other people happiness. Now that makes it very important for us to realize what is scientifically valid and what is scientifically not valid? That is the fundamental reason one should start exploring research and happiness like there are some people say talk about meditation being very significant mindfulness being very significant.

There are art of happiness art of this out of that there are training programs of various kinds various organizations and spiritual and otherwise. There are corporate trainings, everybody talks about happiness at work happiness in the, context of consumers. So probably when we talk about an organization like a scientific organization or a scientific center like our job is to look at and to explore and to find out about research which is being done on happiness.

The research which has been done on happiness is fast and in fact we will give you a short reference section where you will get exposed to some of the key databases, which deal with happiness. We will take note of this and our TA's are requested to take note of it that we will be including that in the bibliography that we will share with you. So these databases currently more than maybe 30 to 40,000 papers that is available in different aspects of on different aspects of happiness.

So what is correct what is incorrect what works what does not work. At least the, first steps in the direction of asking these questions are very relevant. I remember that in 2013 and 2014 all

the IIT's some of the major IIT's were funded with projects which are to do deal with science and cultural heritage.

So this heritage projects and one of them with which I was associated with one of my senior colleagues related to the context of meditation and its meaningfulness. When you start looking at that and I will talk a little about that as I go ahead you realize that for each of these things there are traditions of research. There is traditional wisdom something which survives for 5000 years 3000 years or even 1000 years.

Tells us that it has been socially culturally or from the perspective of health and mind meaningful, and hence it has survived. So that is a test but, how exactly is it meaningful which aspects of it are rituals which aspects of it are essential these questions can be answered when we started looking at those areas. What is the state of affair? Are we happy are we unhappy can we define happiness? We talked about it in the context of measurements professor Mandal talked about it in the context of individuals I talked about it in the context of countries, states cities.

Now you see that you have published data you have responses from people there are different choices of where is and ways of doing research we will talk a little about that as well. But these are important questions because are the people of the world happy or unhappy have they been earlier happy or unhappy are we moving in the direction of happiness or unhappiness. At a point of time where in spite of all the challenges of the world we have the potential for happiness because there is food security there is a lot greater degree of security terms of our health.

The question that arises is why should we be happy. So under those circumstances these become important questions. Why things work why things do not work some tools some techniques some instruments some methodologies some ways of life some journeys are successful and some are not. Can't they be explored scientifically cannot be develop some authentic way of understanding what works and what does not work.

So that again becomes very important. What does happiness depend on you remember in the earlier sessions we talked about genetics we talked about culture we talked about choice and we realize, that there are different research work which have been done in using different

methodologies. For instance for genetic research you use twins because twins otherwise are very similar but their happiness if it is modified by cultural components.

Then if they are in different environments and they have different ways of behaving that would give us some clues. So there are studies related to that. Some of these are cited in our earlier sessions what makes us unhappy. What makes us happy conditions attitudes our personality traits very significant how can we bring about changes we talk about process solid?

In fact we talked in detail about pro-sociality, but how can we bring about changes does process pro sociality help we have done studies other people have done studies. There are a lot of behavioral sciences experiments there have been experiments in the field of behavioral economics and they give us insights into happiness. And then of course how can technology help us it becomes very important to ask this question when I am located and situated in a technology institute.

But then of course technology has far reaching consequences because it touches all of us and it is in this, context that I realize and I know of my colleagues who work on different ways that technology can be held used for assessing for monitoring and then for changes as well. So assessment is evaluation monitoring is to see maintain find out if conditions are maintained or not, and changes of course behavioral changes.

Or using technology certain changes that can take place when; we talk about this whole range of possibilities that happiness research holds for us. I have not yet touched upon social sciences primarily or philosophical explorations of happiness here but more empirically driven studies. But there are of course descriptive studies which are also available the historical studies and there can be all different kinds of disciplines which can approach.

There can be environmental studies a, whole range of approaches that are available to us. I can here only touch upon some of them. And I feel good to talk about these because some of them have been done in the place where we are doing research and happiness where we are exploring happiness which is the center of happiness Reiki center excellence for the science of happiness.

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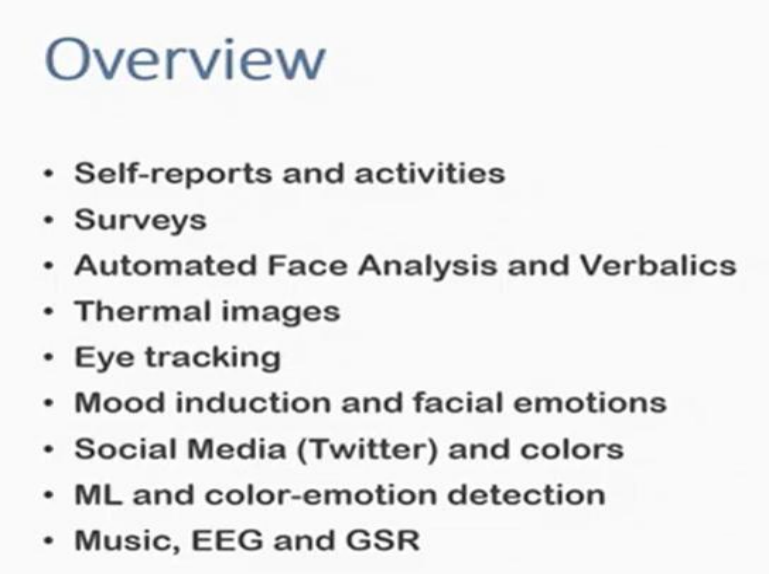

So a quick overview I will not be able to go into the details, of many of these within this short period of time. But I would like to make you familiar with many of these strategies which are used in order to understand or to assess or explore happiness. Here I am not talking about the themes or the areas here I am talking about methods. The moment I move deeper into some of those examples and case studies that I will be taking up.

There along with the methods I will talk about some of the themes and some of the potential themes that can be taken up but we need to understand how different kinds of research can be done. We know that we can always come up with very interesting ideas very interesting questions related to happiness. But it is very important to find out what tools should be appropriate for attempting to answer each of these questions.

So a question pops up in your mind you are a student or you are a researcher you are a faculty and there should be this realization that yes, I have certain methods certain tools which are available to me. And through them I can also address the question of happiness that is/has the reason for familiarizing you with and exposing you to some of the research interesting research which I have come across and which are more or less little empirically driven.

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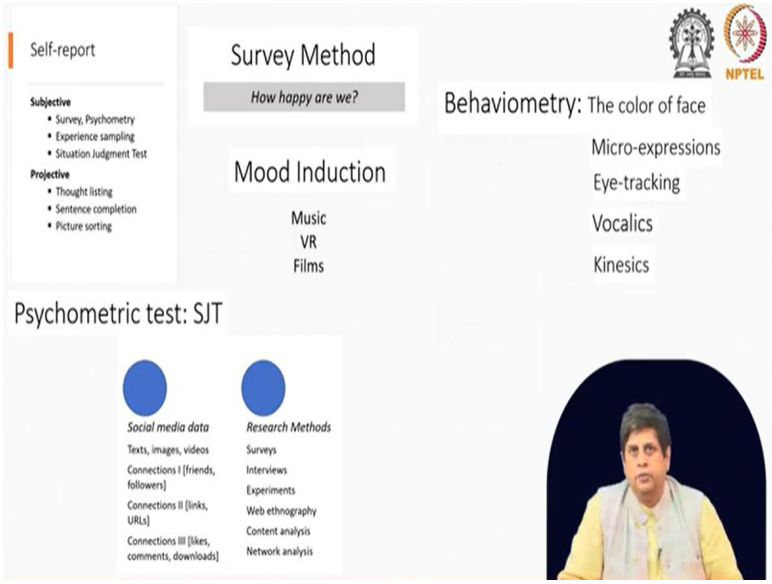

See here we have a whole range of possible ways that we can explore happiness one of the very simplest ways we start exploring happiness is experiential. I can talk about whether I am happy or not I can answer questions about my state of being happy and unhappy. This can be as simple as responding to some questions telling a story writing a novel or, writing a diary. There can be so many different ways that I can report about my personal experience of happiness.

This can be also done in a slightly different way through different tools which try to capture that. And sometimes it can be also done projectively by trying to capture what I am thinking how I am responding to specific kinds of things. So when we talk about self-report we talk about, subjective techniques and projective techniques. We have psychometric tests which deal with the way that we respond psychologically to certain context.

We can have surveys we can have scales for instance we have personality trait scales and various other kinds of skills with more scales general health scales. All these things which are again self-reported it is expected that you are responding honestly, to the questions which are being asked. But then these also give us insights into our state of minds and they can be done in various different ways.

Remember when we talked about measurement of happiness we talked about one of the examples of a mobile being used a smartphone being used and moment-to-moment responses and GPS being tracked together. Here's an example of self-report but mixed with, technology so you have that kind of exploration also you have mood induction which is about asking this

question that if I am in a state of happiness or an unhappiness is it really possible to create such a state.

And if I create such a state how long does it last how does it affect my responses at a later point of time how does it respond others? If you remember when we talked about networking we discussed some of these issues this can be done in various ways through music through virtual reality through movies some experiments. We have done some designs we have ourselves been using. I will share a little about that surveys again is not exactly kind of very self-report but you are eliciting report from the others and in many cases these responses are subjective. In many cases they are objective, responses subjective responses are in terms of moods feelings experiences attitudes beliefs. Objective responses are in terms of facts in terms of material things that I have somebody say how many children somebody has how much of wealth somebody has how much of land somebody has these are objective. So service can address both the aspects of things you have behaviometry which deals with our, behavior and capturing behavior in various ways through understanding looking at the face.

So I mean at a very basic level body language is all about behaviometry and I am sure that professor Mandal has talked about the body language of happiness. So that and in that context you have expressions and I am sure she has she has talked about micro expressions which are minuscule very short term behavioral, changes. And then of course I the moment our entire physiological organism is involved our body response, our eyes response, our breath response our heart response our voice response and everything else.

The way I explore space that response I remember at one point of time there was a meeting on smart citie, and happiness of cities in Dubai where I was a part of the team. And I suddenly realized the, profound significance that space architecture and especially built environment has in the context of happiness. So proxemics, kinesics and all those things become relevant and research can look into those aspects as well. So what I am going to do is I will touch upon a few of these within whatever time I have with me.

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But the idea is to give you a feel of things and the idea is to say that, you starts exploring these references that are here will be shared with you in a separate template and you can access these references and many other references of interesting work which is getting done. Not only at our center but other related centers in India and across the world you can connect with us if you are interested.

And there is always this joy and delight of working together and learning from one another. For instance there have been studies and they are all cited here you can go and explore that on music and images. And this explores how positive music or negative music evoke specific kinds of images and how they are similar and different across time and across culture. Now our continuous music rating where our continuous image rating or continuous video rating where as you are looking at something, what you are experiencing what you are perceiving is something which is monitored in terms of positive and negative emotions for that special tools are created. I will share briefly that you or how evokes response in terms of how people are experiencing visual art. So the self-report could be in terms of telling what one experiences in terms of visuals or could be in terms of creating something.

It is not only self-report but self-expression in terms of visuals these can be considered some of them can be considered highly experimental and unusual methodologies. But they do exist and they do get published and they do give insights into the different areas we are talking about. And all of them, all the points I am trying to make are related to the concept of self-report telling about, yourself telling about your own experiences.

So one of the very fundamental ways that we understand about happiness is by asking questions about our experiences, our feelings, our emotions essentially. But interestingly to take a pause and to digress a little sometimes we say that this is not good enough either somebody is lying somebody is not able to define what exactly somebody is saying? Or we, radically switch to a different area and we talk about measuring somebody's physiological parameters what is happening inside the brain?

What is happening with the skin the conductance of current in the skin what is happening to the heart and asking the question that do they relate to the experience that I am having? So here is a beautiful conjunction of let us say self-report with physiological measures. So self-report is telling one thing physiological measures are telling another thing and when we try to correct see a correlation between the two methods, we have a beautiful new methodology which evolves.

Which says that okay maybe when these things happen here similar things happen here we can do an exploration either way. We will start looking at the behavioral parameters and then try to infer, about the technical parameters we start exploring the technical parameters and try to infer what are the emotions somebody is experiencing? When the degree of predictability between the two is high we know that well this method is to a certain extent working and helping us capture understand happiness in a better way.

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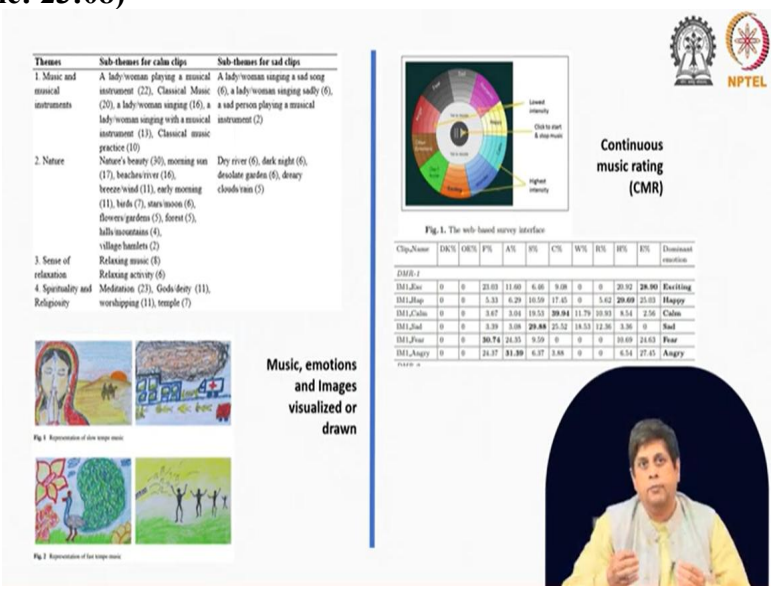

These are examples of the kind of work that can get done and have already been, done here so here are examples of people self-reporting or self-creating responses in terms of happiness. The first one is creation in eliciting responses to different emotions in terms of visuals which

is a self-creation or rather than reporting. The other one is a tool which has been created by our team where you see that you can report different emotions as you are maybe listening to or, looking at a movie or doing anything.

So these tools can be used in a wide range of context where you want to capture moment to moment changes that are taking place within my mind in terms of what I am perceiving or what I am experiencing.

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Surveys as I told you are very relevant when we talking about gross national happiness or world happiness report surveys take place. We also had service we did, surveys with schools in with a team of people who were introducing pro-social courses, source courses dealing with ethics with values. In schools in Uttar Pradesh we did it for Madhya Pradesh we did it for new town what is it that survey employs?

As I told you a little earlier survey can be of various ways, part of it could be in within quotes some kind of a report self-report what you are, experiencing are you happy with the let us say the kind of water that comes in your house? Are you happy with the sanitation do you have enough ATM's around your place? How are you feeling right now are you comfortable with the justice system that prevails in your community? Are you getting enough financial support? All kinds of questions can be asked and these surveys can happen in cities, towns in coastal areas for marginal communities and they tell us a lot about the state of health, the state of mental health, the state of happiness. And once you start running statistics and trying to identify how they are correlated with the existing conditions.

Not only material conditions but also let us say environmental conditions or conditions of management conditions of governance. You might be able to identify the relevance how they are linked how is it relevant it is very relevant because policies can be driven by the findings that emerge out of these.

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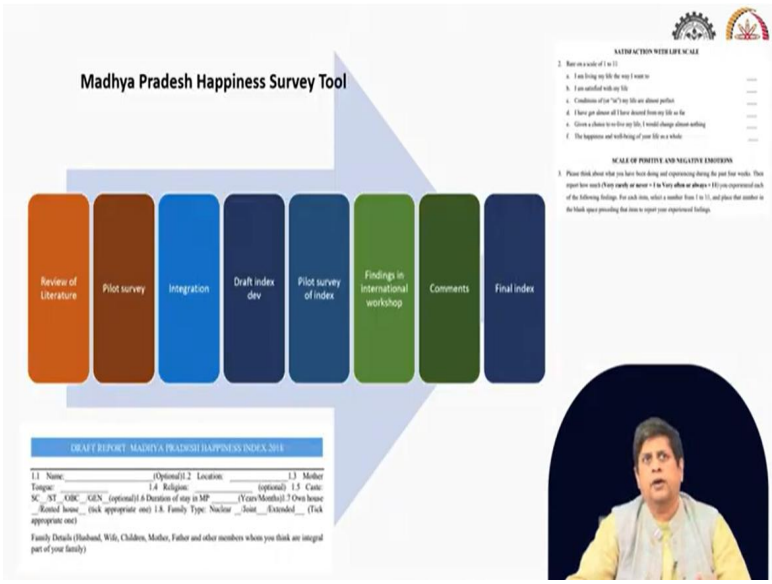

So as I told you here examples that I was talking about.

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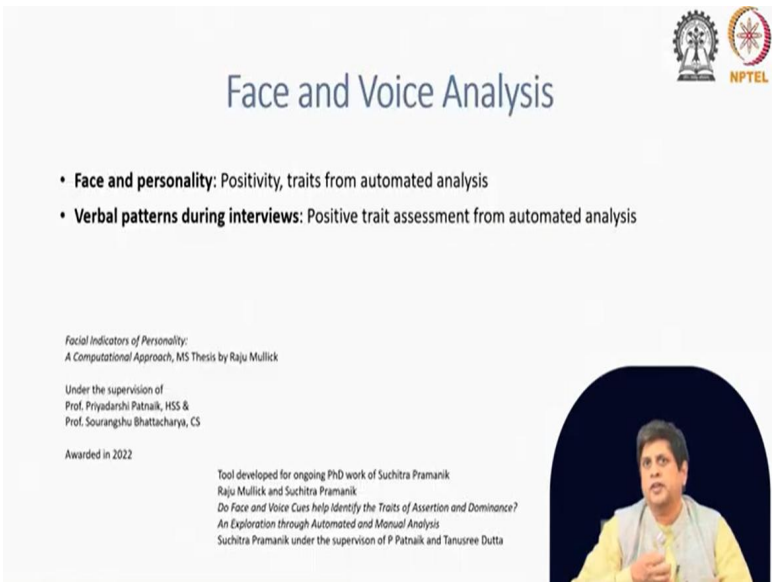

You can do face analysis, voice analysis. And these use computer based or computational tools or image based tools. Here are a couple of examples of that you can check them out and we, will share more detailed references.

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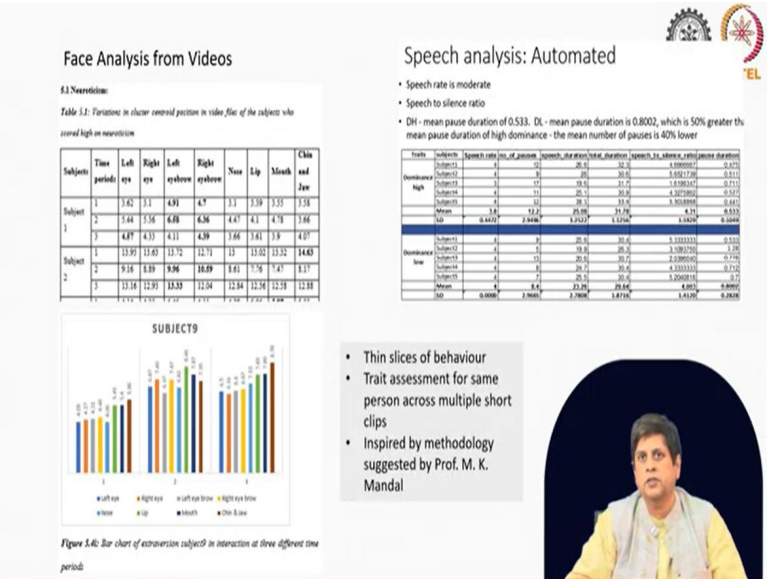

But what we are talking about is that your voice can tell about your emotions your face can tell about your emotions. There have been studies around the world where cameras have been placed in different locations and there are existing algorithms even you people can try it out which gives you by looking by looking at your face your different emotions. Read the, emotions read through the day 5 different locations in 5 different places in a city and you can say which locations in the city are more positive and richer less negative.

Just by looking at number of smiles that are captured by the camera and by counting them very simple tools but they give you a lot of insights. Driven by an automated mechanism which is so very easy in the context of so, many advanced algorithms being distributed freely across the world. So students can do it, faculty can take up projects small simple things already available but we can do that.

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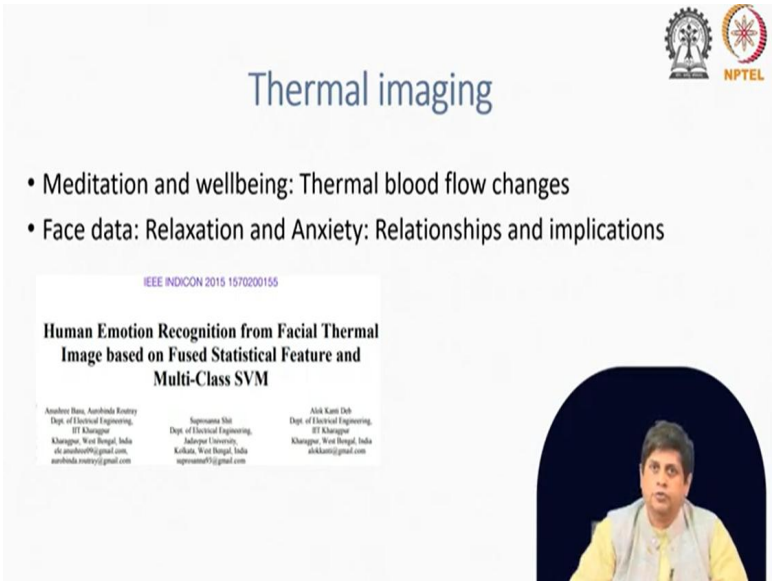

You have thermal imaging for more sophisticated close but non-invasive understanding of the kind of blood flow that takes place when we experience different emotions. Imagine trying to find out somebody telling a lie as, supposed to telling the truth somebody feeling happy as opposed to not feeling happy. Images can be used blood flows can be explored.

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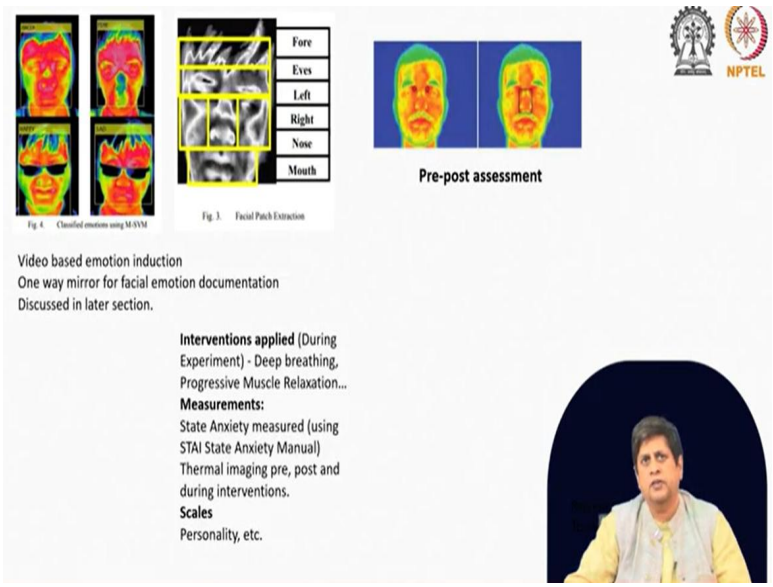

This can be relevant in the context of meditation can the context of personality traits in the context of different exposure to different kind of environmental condition, which generate different kinds of emotions can be correlated with personality traits and a number of other things, anxieties.

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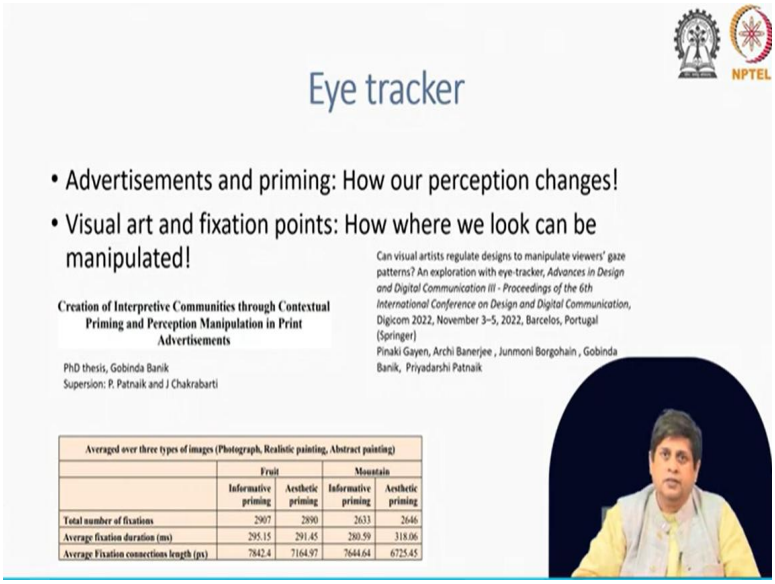

Averaged over three types of images (Photograph, Realistic painting, Abstract painting)				
	Fruit		Mountain	
	Informative priming	Aesthetic priming	Informative priming	Aesthetic priming
Total number of fixations	2907	2890	2633	2646
Average fixation duration (ms)	295.15	291.45	280.59	318.06
Average Fixation connections length (px)	7842.4	7164.97	7644.64	6725.45

Eye tracker study as I told you a little earlier is a very fascinating way of trying to understand how our eyes behave under different conditions. We have done such studies we know of many such studies which can be relevant in the context of consumer happiness. Although with a pinch of salt we are not talking about consumer well-being but consumer gratification what, attracts the consumer lot of advertising strategies or advertising research these days use. Variable eye trackers where people can move around look at different things and the pattern of behavior the areas of interest can be identified.

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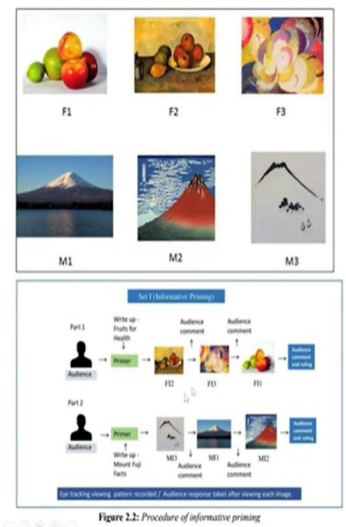
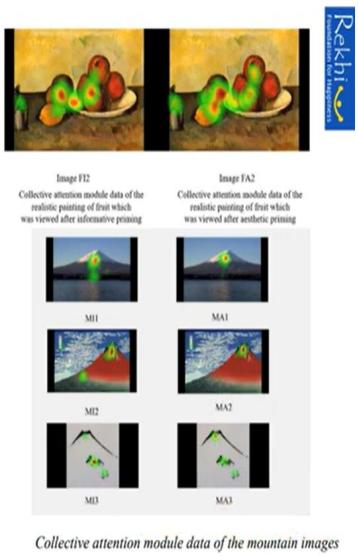


Figure 2.2: *Procedure of informative priming*



Collective attention module data of the mountain images

So we did something of that kind and you can see and the kind of areas that got into focus when people were looking at specific areas with interest. Details can be, found in some published papers and other documents which will be shared with you.

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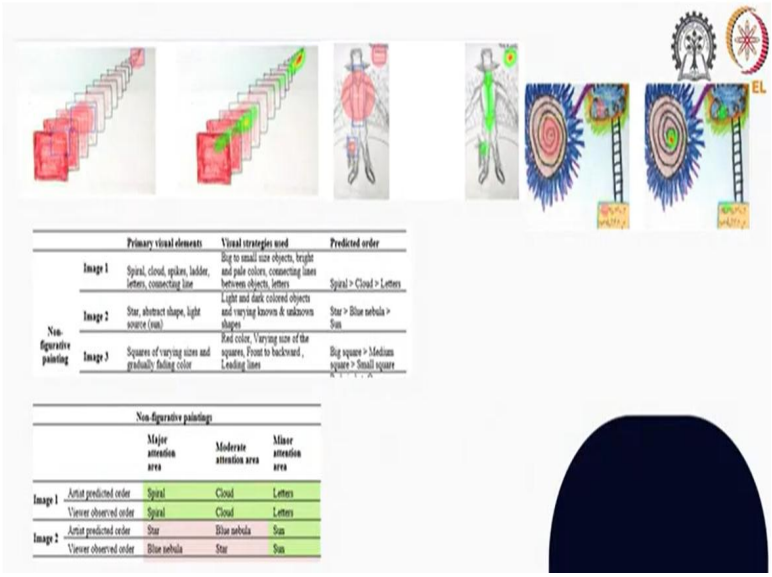

And published documents as well which are indicated over here of how people's behavior of gazing behavior can be captured. And how they can be controlled and that can tell us a lot of things about on the one side how they can be manipulated on the other side what are the implications of such manipulations?

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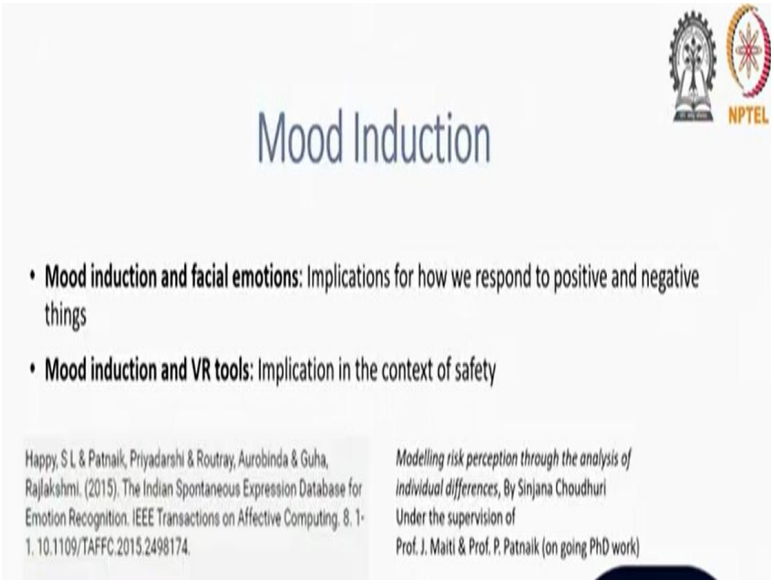

Mood induction, as I told you is very important we talked about it when we discussed networking. And mood induction very often is used as a systematic tool for capturing various things we did that for capturing different emotions and creating a database.

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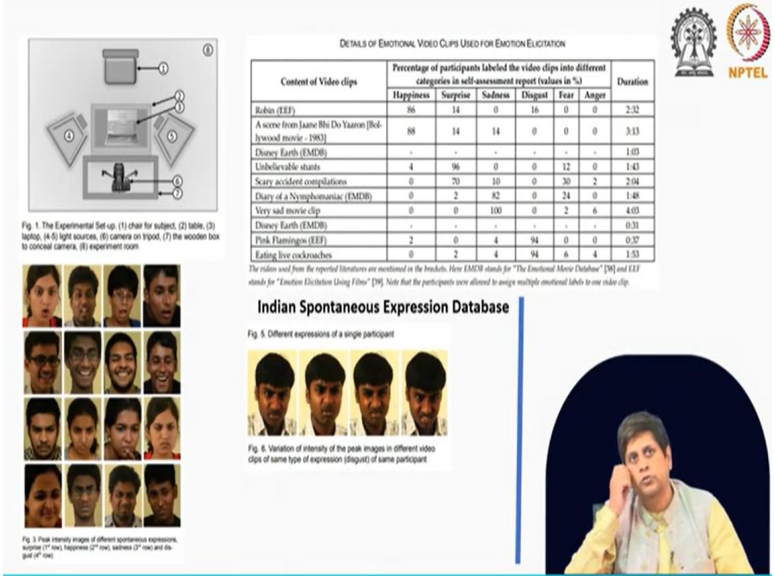

It can also be used for various kinds of experiments where we want to know the impact of moods short and long over a long period of time and how they influence, people and how these influences influence other people.

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So such studies can also be done. Social media data and using them using sophisticated or even not so sophisticated techniques. Facebook data twitter data can be scrapped using software like R and other software python and one can start analyzing train patterns. There can be sentiment analysis to look at modes that are generated in social, media such studies are done there is an example of analysis of visuals which were done which can reflect on attitudes behaviors.

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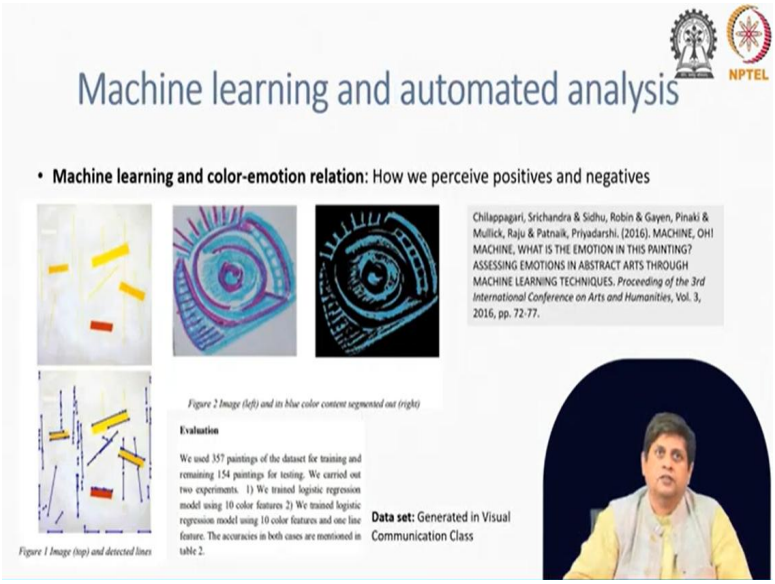

And they can be also applied to happiness studies in various ways. Here are examples of emotions being detected or I mean emotions we generally associate with various kinds of colors and forms through machine learning techniques. This can also be used in the context of, happiness studies for built-in environment for design for interiors and a whole lot of areas.

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Studies have been done on the relationship between emotions EEG and GSR. One such study by my I mean young colleague junior colleagues over here gave us very insight very interesting insights though it is not cited here. And we will be sharing it with you later on with the fact that when emotions are induced let us, say through music certain emotions get stored in our memory and kind of impact and influence us over a long period of time.

Interestingly negative emotions persist for a longer period of time than positive emotions getting reiterated again and again. Tells us a lot about the fact that emotions especially negative emotions play very significant role in our lives. And we need to go deeper into understanding, and harnessing the power of negative emotions and transforming into it into something positive.

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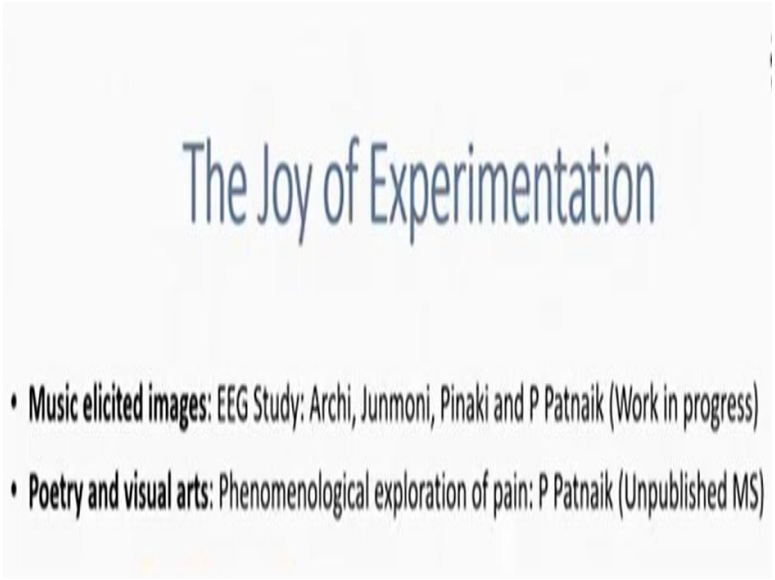

And then of course the joy of experimentation we have examples here of doing easy even when somebody is doing a work of art creating something we have luckily with us musicians, visual artists people who work on different aspects of social media. And you see that the joy of creation and the joy of celebration, something which I talked about earlier when I was talking about creativity can be linked with research and it can be a wonderful experience.

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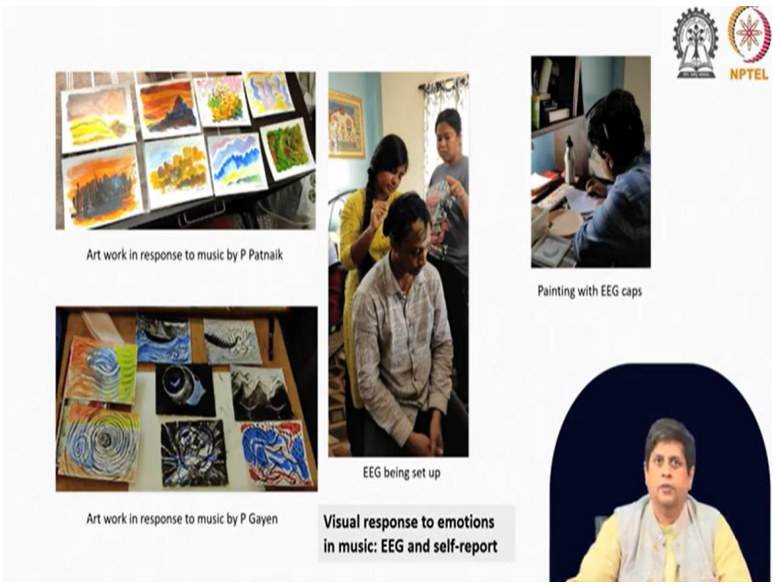

The reason for talking about all these things and here is examples of experiments getting conducted under those circumstances.

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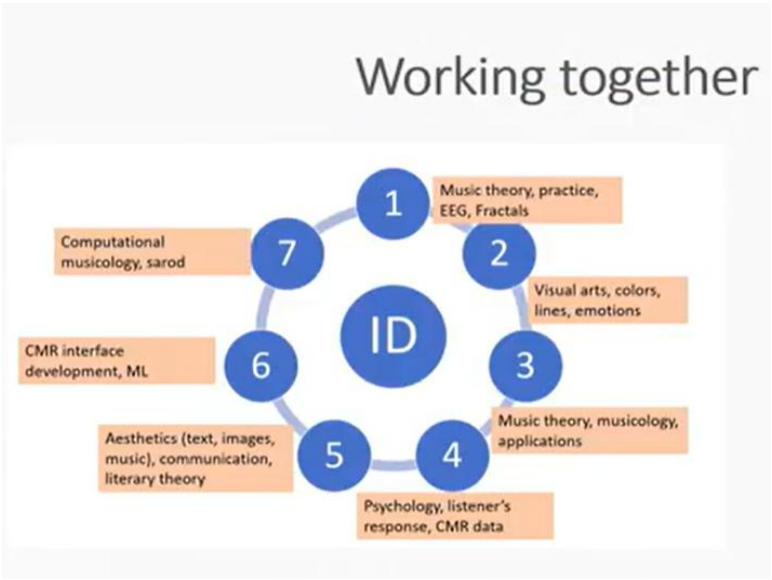

The reason for talking about this, is the fundamental concept of working together. Happiness pervades all disciplines happiness perverts, all our lives. And happiness can be unilaterally explode from diverse disciplinary angles but more significantly. There can be collaborations between related disciplines or disciplines which can work together. And we are joining hands people can actually do very beautiful meaningful explorations ask fundamental questions about happiness.

This is a beautiful time when a lot of research is going on, around the world in the field of happiness and interdisciplinary collaborative together work is one of the keys that can happen even among young students who are taking this course. And we would really be delighted if some of you reach out to us and say that you are doing certain thing and you would like a little hand holding or a little advice here and there.

And we can also always connect with you, and help you out with it or in fact collaborate with you these possibilities exist in the context of doing research and happiness.

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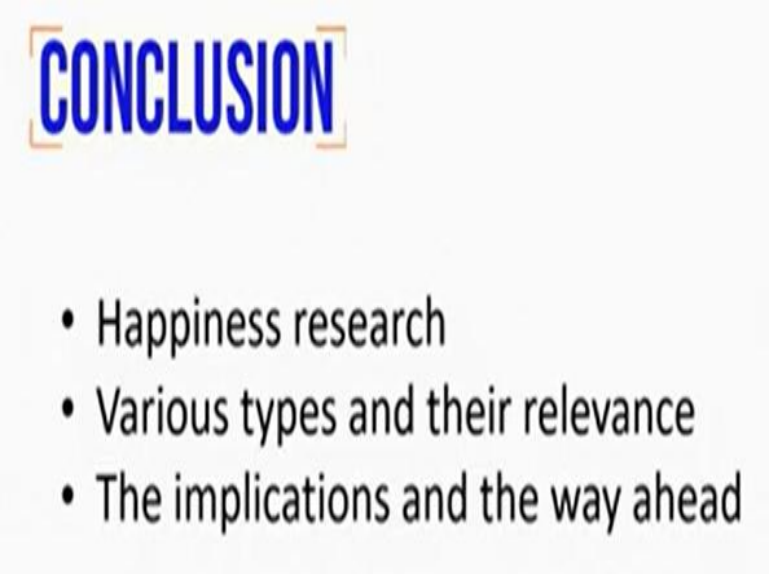

So at the end I would like to say that we had a feeling that in this course it was very important to also touch upon the fact that research can be done on happiness it can be done at various levels and in various ways. By saying so, we do not want to take a high handed, approach to any discipline where many would say that you are just learning something for the first time who are you to do research in that area?

We on the other hand say that the potentials exist and happiness belongs to everybody it is nobody's special property and hence whether it is in a systematic way or in your own exploratory way. Because you can do research and happiness because happiness friends are something we are all entitled to and in as many different ways as possible. And one of the ways that is possible is when we set this sense of property and have a sense of realization that it belongs to all of us together.

I hope that we have summed up these ideas and we have been able to share with you what are the implications for the future. The last point that I would like to make is that; in the next and the final session I will touch upon some actual projects which have been taken up. In the sense that I am not talking about academic project or research projects I am talking about all kinds of projects including humanitarian projects.

And the kind of projects that you can take up which would be your experiments with happiness Gandhiji was no scientist in the narrow, sense of the world but he was an experimenter and he called his autobiography and experiment with truth. We all in our quest in our journeys can take of happiness the search for happiness and experiment of happiness in

our lives. And I hope that we will whatever little we have shared in the small short journey would be equally meaningful for you thank you.