Selected Topics in Psychology
Psychological Testing and Assessment
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Non -Traditional Research in Behavioural Sciences

Today I will talk about different kinds of research that we are conducting under the domain of behavioral science. Well, research is something which is conducted in all forms of sciences including computational sciences, neurosciences, and also in behavioral sciences. Research is conducted for various purposes to understand various constructs, to understand various issues, which are pertinent to the understanding of human behavior, when we conduct research in behavioral science.

There are three kinds of research, generally we try to conduct and publish in behavioral science. One kind of research is purely empirical research, which we conduct directly on subjects get the primary data analyze them, and publish it. The other kind of research that we do, we call it empirical research clubbed into several heads, which is called Meta analytical research. And numbers of empirical researches are clubbed, data are secondarily analyzed, and then a research is conducted, which we call Meta analytical research.

And the third form of research is generally done on theoretical basis, where the dimensions and constructs are identified, and the research articles are published. So, basically empirical research Meta analytical research and theoretical research these are the three are different kinds of research that we conduct, and publish in scientific literature. Today, I will be talking to you about these researches which are conventionally done with certain procedures.

And then after that I will try to concentrate on nontraditional research in behavioral science, which are generally done using the concept from other sciences or using an inter disciplinary approach, which I called malt disciplinary research using nontraditional research program, that are generally not defined within the classical traditions of behavioral science.

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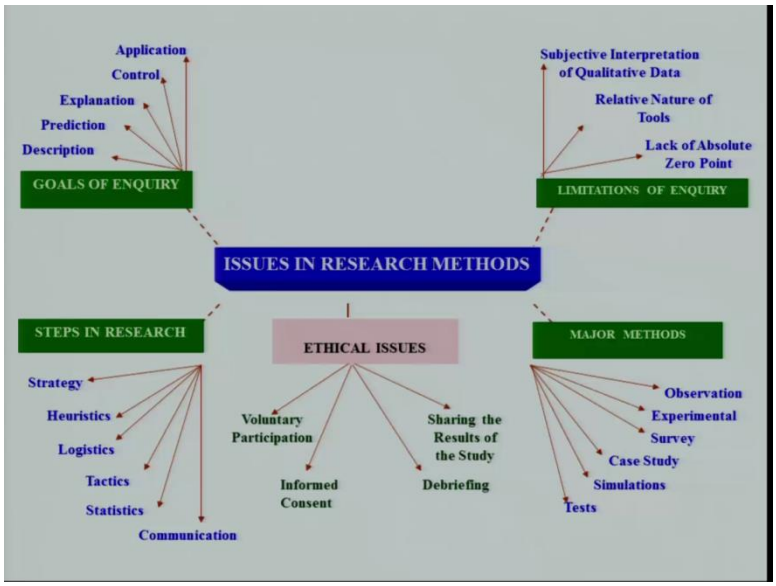

So, at the outset I will first talk about different types of researches that we conduct with certain conventional procedures. The issues in research methods are to be understood in order to understand the conventional methods. As we see, that in the conventional research programs also in unconventional, there are certain major methods, there are certain steps in research, there are certain goals of enquiry, and there are certain limitations of enquiry in behavioral science.

Finally, there are certain ethical issues as well, which is a very important issue though I will not be discussing with it in great detail, but I will touching it upon. Since, conventional research actually looks for these issues in general. So, when we conduct a conventional research in varial science; there are certain goals of enquiry, which include description of a particular behavior, which is nothing but a scientific description or analysis following observation of a particular behavior. Sometimes we go beyond this scientific description, and try to make prediction, which is also a goal of enquiry.

Now this, predictions attains through scientific enquiry are very accurate, when they are very accurate, we try to also explain them, that why such behavior has occurred through certain theoretical and empirical explanations. And if we understand, why such a cause and effect relationship has been established, we also try to control it, in case there are certain operations. And finally, we try to understand, the applications when we implement those behavior, we are results into certain day to day life. Therefore, the goals

of enquiry in scientific research are very many; it can at a very lowest level be a description, only a scientific description of a particular behavior under a certain context. More than that is called predictions, if we can understand that whether such kind of behavior is going to be repeated or at what point it would be done or it is at what point it would be executed. Then prediction is possible, more than prediction when we understand that the prediction is very accurate, we can actually explain, why such behavior has taken place, and after he explains it. If we understand the cause of a relationship, we can control several kinds of behavioral variation or we can optimize a particular relationship, cause effect relationship for a better application or for a future application these are the goals of enquiry.

The steps in research of course are, there are five different steps, these steps include how what kind of strategy in a, in we have in a particular research, it may be experimental strategy, it may be co relational strategy. What kind of literature that we have in hand, which are called heuristics, what kind of tools that we use which are called logistics, what kind of methodologies we are using that is called tactics, and finally how we analyze the data which is called statistics. After completing all these things, we try to communicate this research, then comes that what are the major methods that are available with us.

For example, if we have to only have a description, scientific description of a behavior, we can simply bank on observational method. If we try to understand the cause effect relationship in great detail, we would like to generalize it and we would like to do experiments, repeated experiments in order to do some kind of explanations following prediction of a behavior. If we try to see the epidemiology or see the occurrences of a particular behavior in a community or in a particular area we can use a survey method.

If we are interested in understanding a particular instance or a critical incident, we can go for a case study method, sometimes we go beyond that, and we simulate a method in a virtual reality. The simulation is nothing but an actual event is artificially created in a given environment, when such situations are created, it is called simulations. The simulations are possible in artificial environments through computers simulations, as well as through other technologies, which are called immersion technology; also we can use certain test in order to understand a behavior.

So, the major methods which are available in conventional research program are observational, experimental, survey type, case study, simulations, and tests. They are all limitations of all such enquiries, that is many such results are subjected to some kind of subjective interpretational qualitative data. It also have the difficulty of having the differences amongst the logistics, which are relative nature of the tools, every tool has it is own deficiencies, that are reflected. And in psychological research or behavioral research, there is nothing called an absolute zero point.

So, when we calibrate a behavior, other than qualitative analysis of behavior, we also try to calibrate it on a interval scale, but none of these calibrations start with a zero, or a absolute point. Therefore, in conventional research methods, we have certain goals of enquiry, we have certain major methods, we have certain steps in research, we have certain limitations of enquiry. And we have certain ethical issues, which are also very important. The candidates or the subject participate voluntarily, with their informed consent, with share the result of the study of the candidate wants for, and finally, we do it debriefing in ethical issues.

This is the pattern of a conventional research that we conduct, now what point is missing here, that this conventional research for can also be done, for non conventional variables construct dimensions as well. Generally, in behavioral sciences, we try to manipulate two behavioral constructs, at one point of time. Generally three kinds of researches we conduct, either we try to understand the relationship between two known variables, with a known outcome, or at times we try to understand the relationship between two known variables, for an unknown outcome.

And attempts you also try to understand, the relationship between one unknown and one known variable, naturally the outcome would be unknown. And at times at a very high level of research we try to understand the relationship between two unknown variables, naturally the variable outcome would also be unknown in such cases. Therefore, varieties of researches are done, with the kind of variable that we are using, and the count of kind of outcome that we are expecting.

If it is two known variable with a known outcome, that reflects a repetitive research replicative research which are generally conducted in classroom practical's, with limited generalisability. Other than the demonstration purposes, but whenever we undertake a

high level research, we try to understand the relationship between two variables, with some kind of unknown relationship. Under such conditions, we have to psychological variables, but the variable outcome is unknown, but whenever we try to take a variable which is more than or out of the domain, or the gamut of the psychological sciences.

Then naturally there is a relationship, that we try to establish between these two will have an unknown outcome, as well. I will be talking about some such researches, where the domains of behavioral science or a mixtured with some kind of domains, other than behavioral science at times, or at the same time the domains of behavioral science, with two constructs or two dimensions which are generally not tested, but can be tested, under certain alternate traditional conditions. These researches, I will try to explain one after another.

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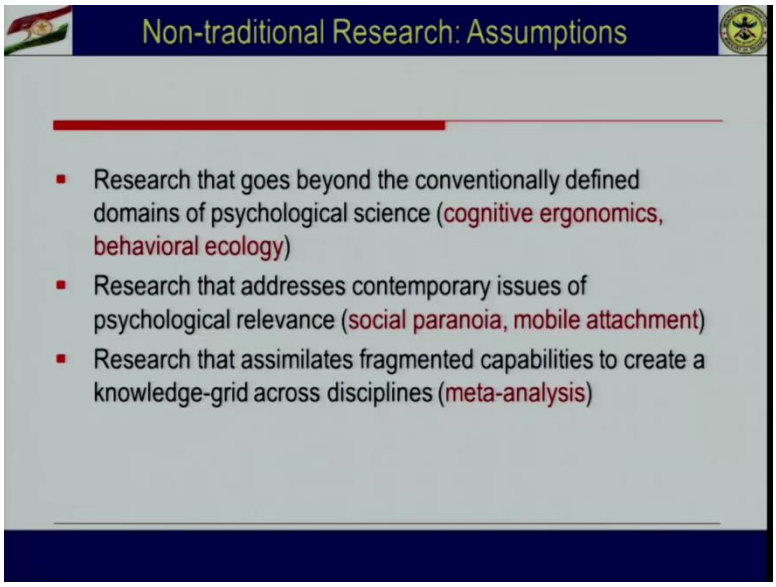

Of course there are certain assumptions in nontraditional research; the assumptions come like this, with the research that goes beyond the conventionally defined domains of psychological science. The conventional defined domains of psychological science are known to all of us, but some of the areas like behavioral ecology, how ecological science and behavioral science come together, as I said when we go beyond the domain of behavioral science. And try to understand the relationship between behavior, and a different science, it becomes part of the nontraditional research.

Likewise we can also try to understand, the cognitive ergonomics as a science. Ergonomics is a science, generally practiced in engineering sciences, but the cognitive component of the ergonomics is actually a finite mixture of psychological science, and a ergonomical science, which at times we called human factor research or human engineering. Behavioral research also as I said, behavioral with ecology, how ecology impacts a behavior, or how behavior is influenced by some kind of ecology, or some form of research.

Generally not conducted in behavioral science, we can undertake some such research in order to do some form of nontraditional research. Likewise we can do research that addresses contemporary issues of psychological relevance, the contemporary issues are not charted in the book always, in the text book. We can actually understand the relationship between the contemporary issues, and some form of a behavioral manifestation. For example mobile attachment, how far mobile is becoming addicted to all our social interactions, how social paranoia is growing, that we become suspicious to each other, how it becomes contagious, following certain incidence.

These are certain issues which need to be tested, and conventionally or traditionally these are not standards, since there is no available constructs in the books, for such kind of research. We can actually undertake such form of nontraditional research, in order to understand the contemporary issues of some kind of psychological relevance. We can also conduct research; that assimilates fragmented capabilities to create in knowledge grid across discipline, as I said, there are very few researches are done based on Meta analysis.

Most researches 99 percent of the researches are done in our country, which are through empirical studies with direct access for data, on a fragmented component of a behavior to understand the relationship between two variables, or to generalize certain concept, through certain experimental manipulation. But generally we do not conduct Meta analytical research, where we should try to integrate all forms of research, under a different domain, and then come out with a logical conclusion, of those researches to understand the cause effect relationship for a given kind of behavior.

We do not conduct such form of research, I do not call it as a nontraditional research as such in order to tell, that these are not done. But generally, these researches give a better

explanation of behavior, and at times we can go beyond our mind set. And apply our mind to do secondary data analysis, from a large data bank, in order to understand a behavior, with a much realistic and a bigger picture in mind.

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Likewise, we can do research that offered solutions to complex social problems, like optimism bias is a very important issue. Optimism bias is a form of research, where in the people's optimism are not conducive, to they are well being. Now, if I believe that well everybody else will have cancer, and I will not have cancer therefore, I should not take any precautions against cancer, in case I have been smoking, is nothing but optimism bias. I am addicted to some kind of thing, which is detrimental to the cause of my health, I believe that everybody else will have a difficulty, but I will not have a difficulty, is called optimism bias.

Many people suffer in our country, and they are subjected to some kind of disease, because of the optimism bias, how far they run? Running amok is another issue in a collective society like ours, that we lose our individuality, and exercises certain behaviors, which are contradictory to our personal wisdom, which we call running amok. Fetilicide for example, is one such issue you get agitated, by the agitation which is provoked by a group of people, you run amok. And at the same time, you lose your individuality and personal wisdom, and ultimately create a havoc in the society, only to be reprimanded by yourself at a later point of time.

Likewise, research that may utilize our traditional knowledge into contemporary use, spiritual healing for a example, how spiritual healing actually takes place, how healing takes place due to faith, or belief. We are a country with number of believe system, in our psychological construction of health, question is how far spiritual healing helps us. We have a traditional knowledge on yoga, we have a traditional knowledge on spiritual healing; how does it help?

To get rid of the contemporary difficulties that we have been facing, what are the social placebos that we have how we derive social motivation, and social placebo. In fact, there are many researches in biological and chronological sciences done on placebo, almost no research done on social nocybo, there is a concept called social nocybo, there is a concept called social placebo. Placebo we know, that there are incidences, where you are not given the actual in gradient for a given purpose, and yet you fill better.

In the form of some kind of medicine, which are not meant for your particular disease, but you are believing that you are been getting that medicine, and accordingly it has been found that placebo as it is own impact. So, if you are given an injection for a particular disease, which you believe that you had, but the doctor does not believe, doctor often use this placebo. But the other issue is that the social nocybo, where in you are having a disease, you are given the right kind of medicine, but you do not have the belief on the medicine or on the doctor.

Even if you are given the right kind of medicine, by the right kind of doctor, you do not get relief out of it; this is because of your tendency to negate, all kinds of such exercises on yourself. Therefore, social placebo, social nocybo, the spiritual healing, all that running in our collective fervor of the society, can be tested with certain contemporary utility for it, I would call them as nontraditional form of research. As against the conventional research that we are been doing in behavioral science, likewise research that raises a question for other sciences, through the outcome of our studies, for example robotics.

Now, human system, when we are trying to develop a robotic system, through the knowledge of the computational intelligence, how human system or the artificial intelligence. The dynamicity of our cognitive system, if we have to embed into the robotic system, how that is to be embedded, can actually be done through psychological

or a behavioral research, for the benefit of the development of robotics, or computational intelligence.

All such sciences can be create the benefited through the knowledge base of the computational science, as of now we have been using it. But computational scientists are using more heavily; our resources as compared to we are using the knowledge that is generated by the computational sciences. So, it is always important to raise more questions, for other sciences through the outcome of our studies. We can raise more question, for such kind of studies done in a malted disciplinary or a inter disciplinary manner.

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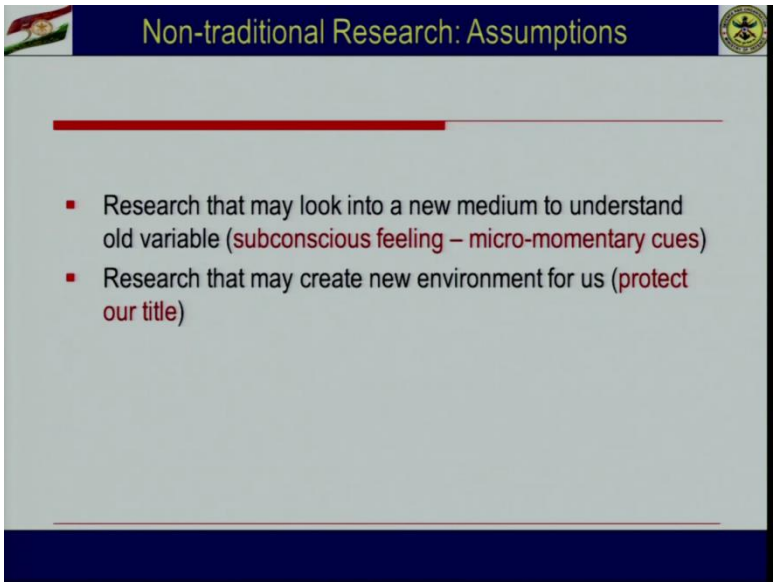

Likewise, we can do research that may look into a new medium to understand old variable. For example, subconscious feeling, micro momentary cues in our face that is a new medium to understand old variable. We all know, that subconscious feeling is something, which is already into our system, but we never at a access to subconscious feeling. We know that there is no possibility through which we can access subconscious feeling, can we understand this subconscious feeling in a micro momentary facial expressions.

In micro momentary facial expressions, if we can capture that expressions, which are instantly an involuntary expressed, for a very brief period less than 100 millisecond, if we can capture that, we can understand the subconscious feeling after 200 millisecond.

We develop a control on our facial expressions, and all those expressions there after come in a socially fabricated or socially desirable manner, which becomes purely conscious, and we do not get the access to subconscious feeling. Since, we do not have the access to those, such a brief expressions in our face, through the available technology.

We can therefore, understand our subconscious feeling through certain newer forms of technologies, which we called as micro momentary cues in the facial expressions of emotion. So, new medium can be utilized to understand, old variable which tried once upon a time talked about, and the objective variation for variable for that has never been tested, in a experimental manner. Likewise, research that may create new environment for us, we being a behavioral scientist a Para professional group, our protection are protected.

When we make predictions, and if we feel, our titles in our protected a psychologist, like a medical practitioner or an engineer, whose titles are protected, all titles are not protected. Until and unless we create a new environment for us, it would not be possible for us to develop, a complete professional flavor for the discipline, without having such kind of flavor. We would not be able to raise our level to the extend in which we may say that, our titles are protected. In fact, in other countries in u s and western world, the titles of the psychologist are protected, because they have created a new environment for themselves.

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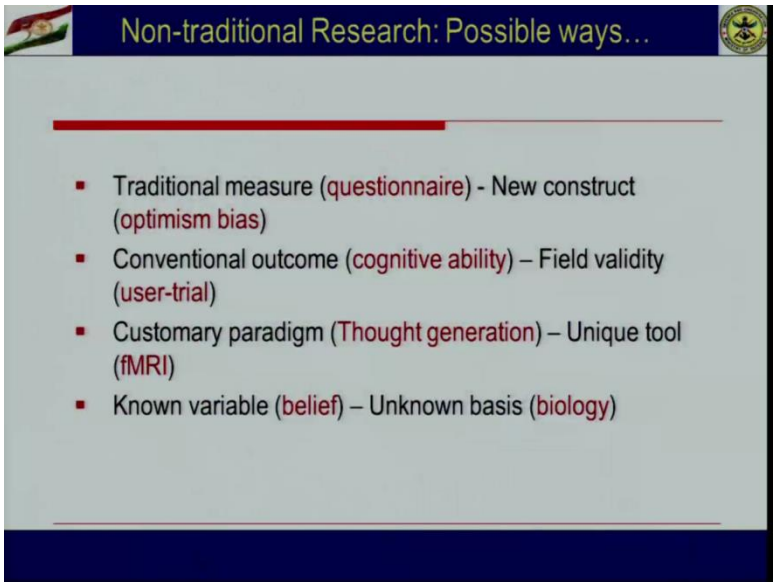

So, the non traditional ways I will give you some examples, of why and how such researches can be conducted. We can use a traditional measure for a new construct, as I have said, we can use say questionnaire method, to understand optimism bias. Optimism bias is a construct, we have never tested, and are a collective society like ours, optimism bias is ramp end, how can we measure it, can we do such kind of measure, use such kind of measure to understand optimism bias. Like we can have a conventional outcome, with a filled validity, like we always understand cognitive, we always measure cognitive ability.

We can measure cognitive ability, with a statistical validation index, but how far they have got predictability in real field. Now, if I understand somebody through the use of a cognitive test, that the person can be a very good shooter. I can isolate him, using psychological test that he is a very good shooter, but what is the field validity of it, apart from the statistical index, can I ask him to shoot 100 times. And see how many times he failed, can that be an index validating this statistical index, based on which the whole study has been conducted.

So, use a trial concept in our psychological validation is really done, it is a non traditional approach, we can make use of such kind of a approach to have a practical utility of our studies, otherwise most of our studies will remain in stack. And we would not be able to make use of it, and people would not make use of it professionally, until

unless they understand the utility of such test, under what condition and with how many aerates, such a test can actually predict outcome of a behavior, cannot be established until and unless.

We develop our capability to the level of filled validity, apart from statistical validity. Likewise we can use a customary paradigm with a unique tool, that kind of research can also be conducted. A customary paradigm is a thought generation, in order to understand what region of the brain gets activated, under what kind of thought process. Now, thought generation is a customary paradigm, but we have a unique tool today, which is called functional, magnetic, resonance imaging. In which we understand the activation pattern of a brain, in collaboration with some kind of thought, there are thought generation capabilities, at a design level is possible, and we can test it with some form of unique tool.

In order to understand for example, for a sequential processing, what kind of activation takes place in which part of the brain? For a parallel processing, what kind of activation takes place and in which part of the brain. So, unique tool are available today, in order to test our customary paradigm, we can do some nontraditional research based on that. We have got several known variable like belief, belief system is a very important system in our psychological science, but we do not know, whether there is a biology way and belief or not. This is the unknown basis, almost none of us have studied, with their belief has got a biological concomitant not.

We know in our behavioral science, that in order to establish a construct, there are five constants which are required, one is a theoretical basis is required, we know there are theoretical basis behind belief system. There are biological or concomitants available, there are developmental concomitants available, there are cultural concomitants available, and there must be statistical base behind a particular construct. So, theoretical, biological, developmental, cultural, and statistical constants are important in order to develop a particular construct.

Belief is also a psychological construct, we have got theoretical constructs, we have got cultural constructs, we have got statistical construct, we have got developmental construct, but we do not have a biological construct behind it. So, can we establish the relationship between belief and biology, with the use of unique tool, which is called

functional m r i, with the use of certain designs, which are acceptable to both behavioral science as well as neuroscience.

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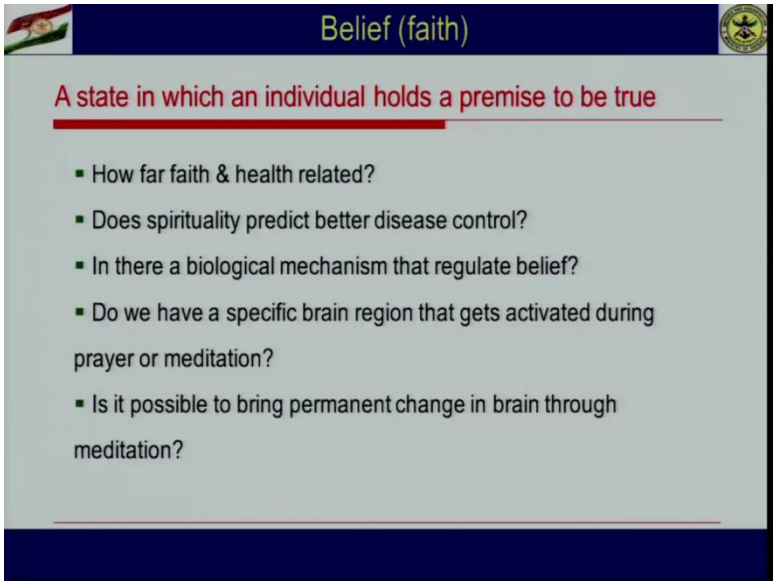

Now belief, I will take an example of belief, in order to explain, how such studies has become important. Belief is very important tool, because a it is a state in which the individual holds premise to be true, I have a belief means, I have a belief in the god at belief, that god is really there. So, a state in which an individual holds a premise to be true, there are questions which we can test in our nontraditional research, how for faith and health are related?

Is there a true relationship between faith and health, somebody who does not have faith in a certain body? Whether their health gets affected or not, this is a question we have never tested. Does spirituality predict better disease control? Those who are spiritually in clean, or they less acceptable for some kind of disease, is not been tested. So, we can also understand, whether spirituality predict better disease control or not. Is there a biological mechanism that regulates belief, but whether there are specific brain regions, that get activated during prayer or meditation.

Now, meditation we are found that those who have been doing meditation for long, they are brain activation pattern is different, those who are not doing they are brain activation for meditation for long, they are brain activation are different. So, meditated state has got a different activation pattern, do you study the belief system, which are corroborated

with some kind of activation in the brain region. Do you have a specific brain region that gets activated during prayer or meditation? Has not been tested very widely prayer meditation all our concepts, which are traditionally embedded into our system.

Likewise, is it possible to brain permanent change in the brain through meditation? Since we know that, with prior in meditation our brain undergoes some kind of change temporarily, but with continuous prayer or meditation is it so that, the brain gets some kind of permanent change in them activation pattern or not.

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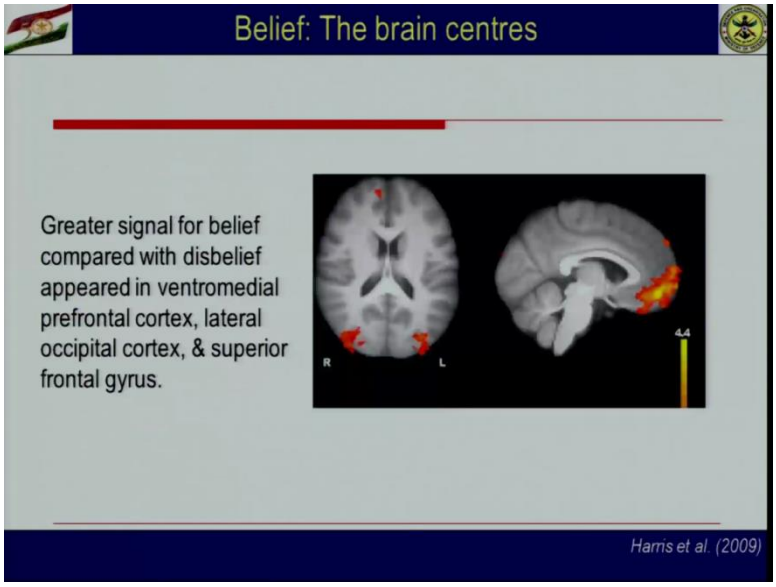

For example, in a recent study published in new scientist, we have found this study has been done by Harris in 2009, that there are greater signal for belief compared to disbelief appeared in the ventromedial prefrontal cortex, lateral occipital cortex, and superior frontal gyrus. So, belief is now today, and known to have a clear relationship with the brain activation pattern. Therefore, we can tell that belief has got some kind of biological concomitant, but what kind of belief system, what about our traditional belief system?

Do you get such kind of activation with our traditional and nontraditional belief system and all? These are certain questions we need to answer. So, they question that I would like to put forward here, that with certain behavioral dimensions are domains, which have never tested either biologically, culturally, statistically, developmentally, theoretically, can we test them through a multi disciplinary prospective using a nontraditional paradigm.

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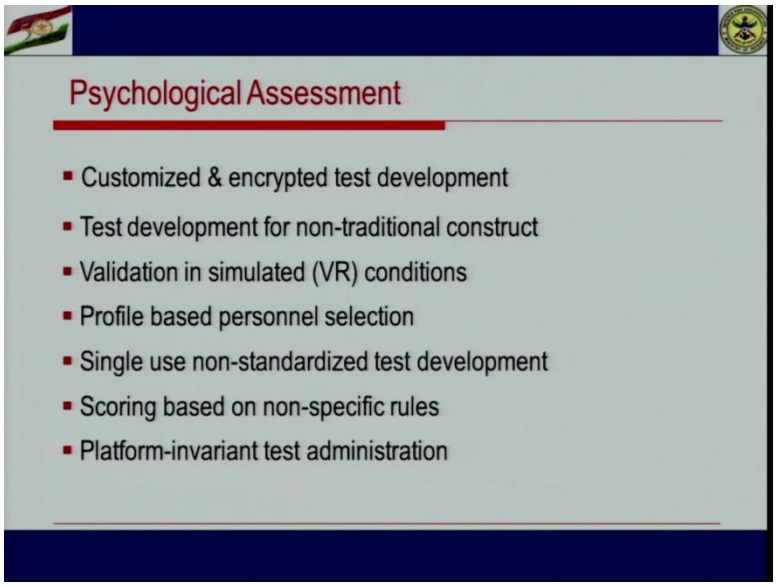

There are questions also in the psychological assessment as well. We have been using all kinds of psychological test, for the usage of, for the understanding of human behavior, but do we use encrypted, do you have an accessed knowledge to encrypt a test development or customize step development. We have translated different ((Refer Time: 30:57)) tests, we have adopted several tests, which are developed outside the main of our country. We have standardized certain tests within our own setup, but do you also customized test to the requirement of our own population, which is representative to our own population, can we develop a encrypted test.

The result of which will never not be known, otherwise by anybody. Can we develop a test, which is based on a nontraditional construct, for example social nocybo I have just talked about, can we develop a nontraditional a test based on nontraditional construct. Can we validate a test result in simulated condition, which is called virtual reality? Now, in simulated condition if the test result can be predicted, these statistical indices are important for theoretical purposes for test result communication purposes.

But in order to see the applicability and implement ability of the test result it is important, that we test them under certain simulated conditions, is it possible to develop a test, or a system of test, or a battery of test, in order to understand the complete profile of a human being. So, these are certain non traditional ways of developing an assessment mechanism, can we develop a single use non standardized test. Now, the test if it is can

be used for a single use purposes, and for none with a non standardized paradigm, is it possible or is it acceptable, these are non traditional ways of test development.

Likewise, can we develop a test, where scoring is done based on certain non specific rules, I am sure such kinds of tests are not a generally developed by us, because we want to go by some kind of conventional procedures. Likewise, can we develop a test, which are platform invariant for administration that is the test can be administered? Manually through a computerized system, and through a system, which is simulated within a given environment, which is a test development, I would call them as platform invariant. All kinds of psychological assessment, that we try to develop, we can do it in a non traditional manner.

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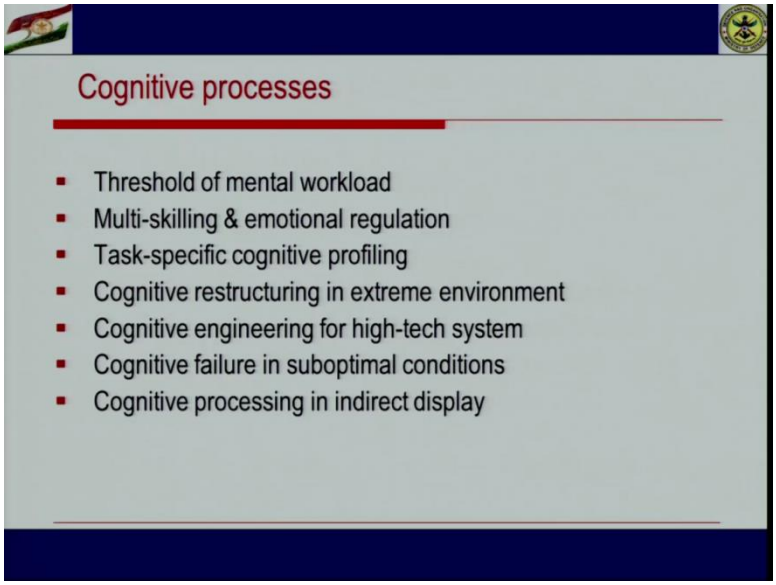

Likewise, for understanding for example cognitive processes, we can develop certain experimental paradigms in a non traditional manner to understand the threshold of mental workload; of course, this area has been studied. These days can we develop multi scaling and emotional regulation together, if a person is capable of doing multi scaling, generally emotional regulation becomes poor. There is, and if there are high level of emotional regulations, in such case multi scaling is not possible, point is that the inwards relationship between two variables, which are cognitive and affective in nature.

If we can test them, there are great implement ability and applicability of such kind of test is also. Task specific cognitive profiling is a very important area of cognitive

assessment. We have been doing lot of theoretical researches in cognitive area, but the deliverability of such kind of test, such kind of researches are not so much, because we do not do the task specific cognitive profiling, which at germ analysis based.

Likewise, cognitive restructuring in extreme environment, when you go to extreme environment, our cognitive profile getter develops some kind of disturbances, or turbulence. How do we restructure our cognitive system, when we enter into an extreme environment, it may be high altitude, it may be under the sea, it may be desert, it may be jungles, it may be top sky anywhere. Under such extreme environment, our cognitive system develops some kind of turbulence, can how can we restructured them, in the form of a preparedness module, or in the form of a management module.

It is absolutely important, because we need proactive preparedness, as well as retroactive management, to restructure our cognitive system for the best of the performance under extreme conditions, but our research is generally, are not directed towards this end. Cognitive engineering for high tech system is another issue, because most of the high tech systems are developing, with the technological development, but our human skill, do not develop so easily, so quickly.

If we do not keep an, keep a pace between the high tech system and human skill development, either the high tech system would get absolute or will become absolute. So, cognitive engineering is a science based on, which the high tech systems are developed, we can undertake many such researches, where high tech systems are developed, keeping the cognitive system that we have in hand, or in picture. Likewise cognitive failure, simple cognitive failure in some optimal conditions, under certain extreme suboptimal conditions, we feel in very simple task, but not necessarily in a very complex task.

Do you study, why such simple failures take place in extreme conditions, or sub optimal conditions? Now, how the energies reallocated, how the resource is distributed, is not known to us, such kind of researches definitely can be done. Like how do we process an information, which is shown to us in indirect manner, there are cognitive processes for direct understanding, for direct vision, for direct listening. But if the energy is put to you in a indirect manner, how our cognitive system works, like in night vision camera, night vision goggles.

We get an image in a indirect manner, or in a laparoscopy cooperation, this surgeon gets in a indirect manner, where the particular damage is there in a system, in a body. How the surgery is done using the computer screen, which is an indirect display of the actual difficulty, which has brought a sea change in the entire surgical operations for the human system. So, the cognitive processing of indirect display, is very really known, with the behavioral scientist, actually can take up many surgery researches, in order to understand, how such cognitive process takes place.

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We can also walk for some kind of social developmental studies, which are not conventionally done, that how the social engineering takes place in the attitude check. How can I change the mind of a person? How can I change the mind of a group of people, through the use of social engineering? How can we negotiate a crisis? For example, a hostage negotiation, such studies are absolutely important, how such negotiation can be done. What is called non conventional leadership, where the leader is never exposed to a condition, or never known to anybody, the leader has to hibernate all the time, is called non conventional leadership.

In a social developmental process, how we can build leaders, who are coming up with such kind of qualities, how can you identify them. Terrorism and mass stress, mass panic has become an issue following terrorism, how can we insulate the public mind, through some form of psychological mechanism, to get rid of the mass stress that our people are

experiencing, over a period of time? Rumor formation and mob hysteria, how it can be controlled, how rumor can be checked, how propaganda can be conquered or certain areas, which are areas very rarely studied by us.

What are the social triggers for fratricide and siblicide, which often takes place under some certain context or conditions, what are the social triggers, can we identify them, because if they triggers or controlled definitely, such occurrences can be controlled in a big way. Likewise, how can we profile a person from some form of secondary data, all are important areas of research, which we can actually conduct in a non conventional manner.

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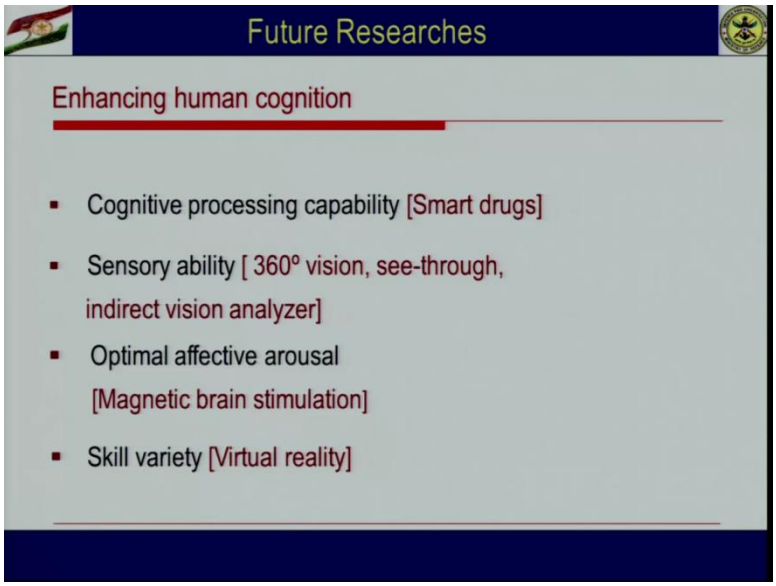

I will give some future researches program for enhancing human cognition, for example can we study the cognitive processing capability, what kind of drugs actually enhance our cognitive capability, or certain areas which are not known to us. And at least the form logical science, behavioral science they can come together, how memory can for example, there are lot a patterns to understand, whether memory can be improved or not, Whether cognitive processing capability can be improved or not, the behavioral sciences paradigm are not properly designed in order to understand with the such things can be done or not.

For example, can we enhance our capability, can we have 360 degree vision, by having something at the back of our head, can we see through with certain technology, can we

have a indirect vision analyzer. The use of technologies an enhancing or sensory ability is something which is part of the human capability, can we join hand with technology or engineering sciences, along with the behavioral sciences to understand human capability, in a slightly better manner. Can we arouse or optimal affective level by through some kind of magnetic brain stimulation, there are hundreds of people suffering in depression.

There are lots of studies these days going on understanding, whether certain activation in the brain areas, in a certain localized areas, whether they improve upon our affective arousal or not. These researches are now being coming up with medical sciences; we can join hand to understand the capability of human cognizant, for a better future tomorrow. Like can we enhance our skill variety in a virtual reality conditions, these are certain areas, which where future researches can done, it can be done to enhance our human cognition

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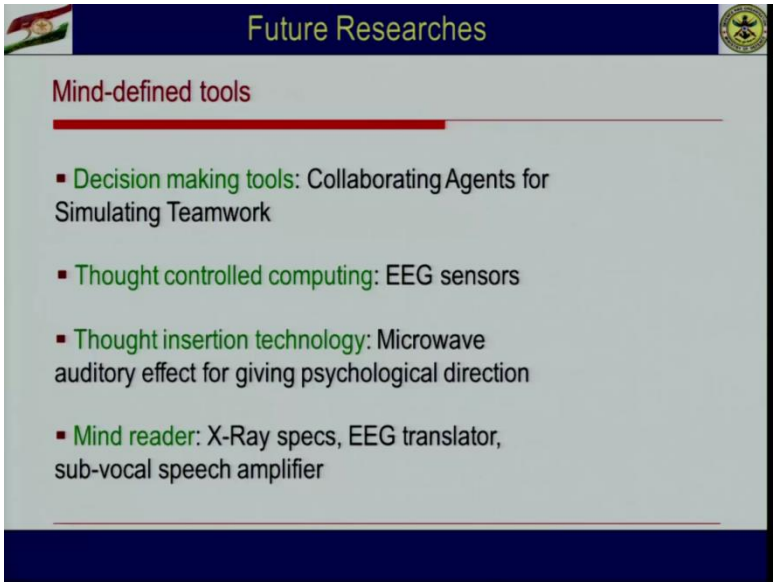

We can also do certain research through outs the engineering sciences through decision making tools. For example, can we simulate a team work through collaborating agents of the computer, is it possible to do something inductively with the use of computers, which will actually carry out certain cognitive understanding at a different level. And finally, they parallel processing through a network, can a decision making be done under such conditions.

The tools can be mind defined in that weight is also possible that E E G sensors are coming up, where we can actually do the thought controlled computing, how the thoughts are being controlled, how the E E G sensors can read our thought process. New scientist, these days have come up with some such articles, we can also engage our knowledge in behavioral science, join hand with the engineering science to understand our mind in a some or bit different way.

Like thought insertion technology through microwave auditory effect for giving psychological directions for mental patients, it is absolutely possible that some kind of thought insertion technologies can be utilize for obsessive compulsive patients. Which are generally thoughts generated, whether we can use such kind of technologies to alleviate the disorders, in the mental patients or not. Likewise can we also develop some kind of mind reader, with the help of the engineers likes, x ray specs are being developed, E E G translators are now coming up.

Sub vocal speech amplifiers are possible to speak in net cell that there are engineering sciences, neurosciences, computational sciences, behavioral sciences. There are ample opportunities to come up in a multi disciplinary way to enrich the science of behavioral sciences, because in order to do nontraditional research. We need to understand that should be a thought clarity that what is that, the mind we are trying to understand, what kind of mind we are interested in what kind of understanding, we should have about the mind.

And in order to understand the mind, instead of using behavioral science only as a tool, we can derive tool from engineering sciences, neurosciences, computational sciences. And then 45 hour science, after we developed the thought clarity, we need to understand that how multi disciplinarity can actually be develop, this multi disciplinarity should come by using different methodologies from different sciences. Then enriching the sciences of behaves the behavioral sciences through the understanding of cause effect relationship.

After we do the multi disciplinarity or inter disciplinarity, we can think of having some kind of deliverability in our behavioral science, because without having deliverability, behavioral sciences will ultimately not 45. So, with the deliverability, we can understand that this seem less continuity in our science with other forms of science will develop.

And in that process, we should be able to come up with some kinds of results, and these results are possible not only through conventional and traditional method, this is also possible through the nontraditional methodologies.

Thank you.