Great Experiments in Psychology
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Module 1
Lecture No 5
Structuralism and Beyond

Hello, and welcome to the final lecture of the first week of Great experiments in psychology. In the first weeks lecture, we discussed about the history and genesis of psychology and we spoke about the philosophers, we spoke about the physiologists who had a role in developing psychology and we spoke about Wilhelm Wundt and his contributions to developing psychology as a new discipline.

Today, we will talk beyond Wundt so and here we speak about the other developments that were being taken forth in the different parts of the world and here primarily we are going to speak about Titchener that is Edward Bradford Titchener, he was Wundt's student and he propagated psychology in America. He was an English man, he moved to England and later on to America and of course we see the rule of two other very famous individuals mainly Charles town and Galton.

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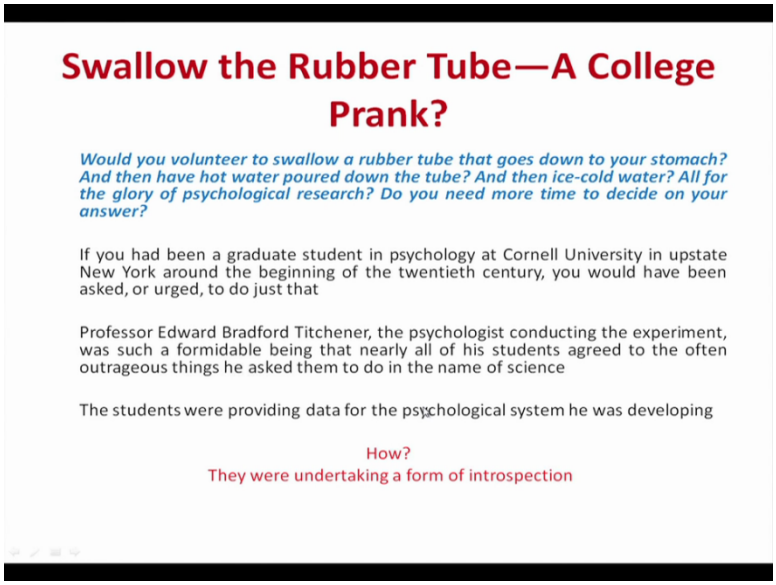

So to start with our lecture first I will introduce to an idea, it is actually an experiment that was being conducted in Cornel university in the twentieth century in the earlier twentieth century and this actually was about a swallowing a rubber tube, so the students were asked to volunteer to swallow a rubber tube that would go down the stomach and then have hot water

poured down the tube and again ice cold water poured down the tube and all this was conducted for psychological research.

So can you imagine any such experiments being conducted at that time even now as a part of psychological research, yes it was being done and this was being done by the under the guidance of Edward Bradford Titchener in the early twentieth century and what he was trying to do was understand the processes understand the subjective experiences at an individual was going through when such an experiment was taken place.

So strangely there were a lot of students who had volunteered to be a part of this experiment imagine, somebody swallowing a tube, so there were several students who reported and it has been doctrinated that there were several students who reported that they were having problems and very soon very often they would vomit out the tube, but again they were swallowing the tube and trying to conduct experiments, so they would have to write down their perceptions or their understanding their immediate experience when water was being poured through the tube.

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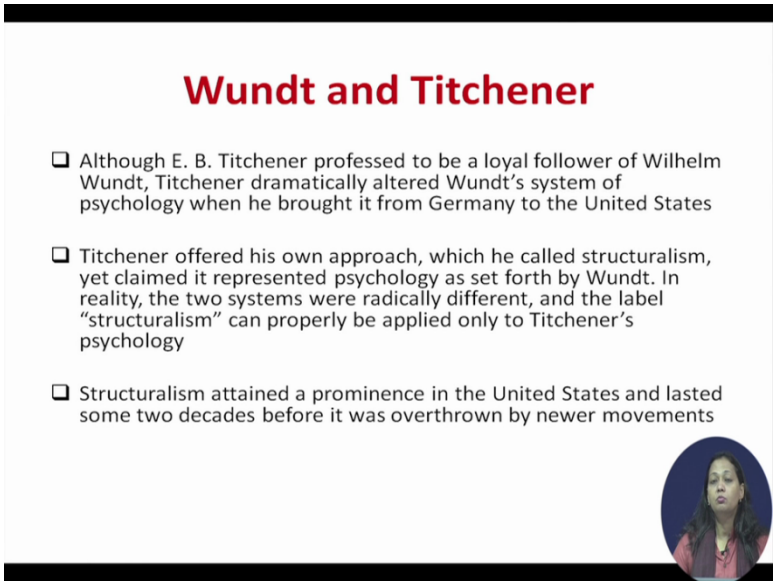

Similarly other experiments were also being conducted like when an individual is going to the lavatory what were the experience is that he had he was undergoing and all these were done by in a psychology lab were led by professor Titchener and he was trying to understand the form of introspection. So Titchener professed Titchener as we have already spoken about several time was a student of Wundt and he trying to take Wundt's psychology to America, but by the time he had started practising psychology and his experimentation in America, he

developed as his own science and though he spoke about it as Wundtian psychology and he spoke about it as structuralism, it was very different from what Wundt had initially proposed. And he offered this he called this psychology as I mentioned structuralism and it attained a prominence in the United States and lasted for around two decades before it was overtaken by some other overthrown by some other dominant school of psychology.

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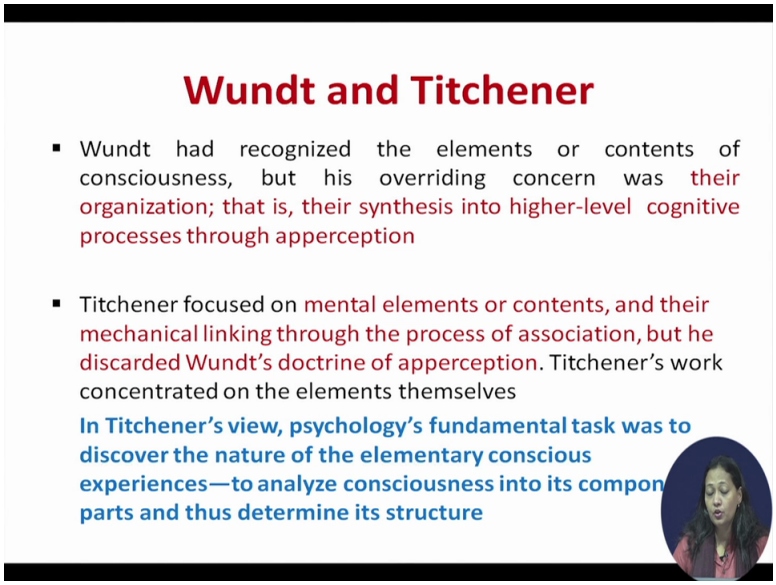

So Wundt had recognised that the how did Wundt and Titchener differ, so Wundt had recognised the elements or contents of consciousness but his overriding concern was their organisation. And that is where he spoke about the synthesis into higher level cognitive functions and here that is where he spoke about apperception or accumulating it or synthesising it as a whole. Titchener on the other hand focused on the mental elements or contents and their mechanical linking through the process of association, so he was not an associationist, so where he tried to link the elements in a process so in a mental process and he discarded Wundt's theory of apperception his doctrine of apperception. And Titchener primarily concentrated on the elements themselves specifically and then Titchener's views psychologies fundamental task was to discover the nature of the elementary conscious experiences to analyse consciousness and its component parts and thus determine its structure.

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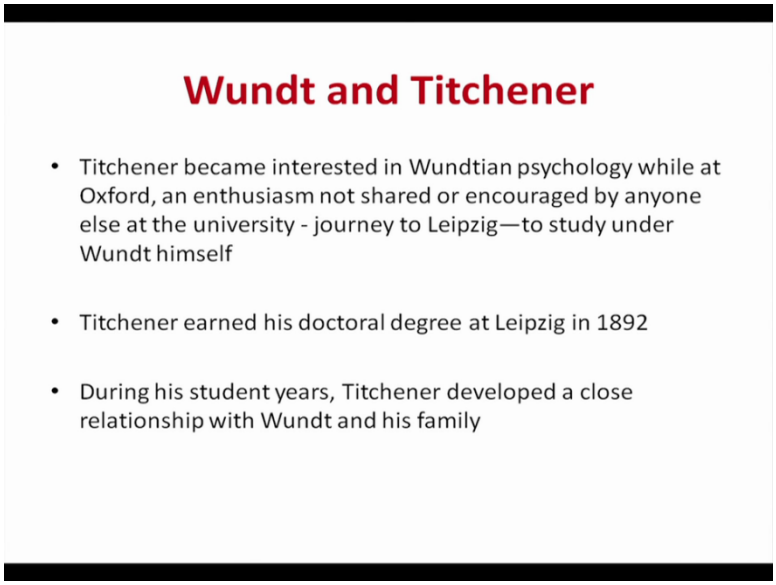

So he was focussing on the conscious experience or say and to analyse that consciousness he used the proposition of introspection and to divide it to break it into sub parts or sub components and determine its structure that was his goal, so to understand about Titchener. Titchener was an English man who was interested he was from oxford and he became interested in Wundtian psychology but that was not at that point in time as we discussed earlier. England was not welcomed to be idea of psychology and so he had to move to Germany where these new sciences and these different ideas were being encouraged, so he travelled to Leipzig to study under Wundt himself. Titchener earned his doctorate degree in 1892 and he had very close associations with Wundt and his family and in fact, he had also travelled on a vacation with Wundt and his family.

After completing his doctorate Titchener returned to England and to promote experimental psychology, but it was not well received so he again took up a position in Cornel University in US to teach psychology and direct the laboratory over there. He was just 25 years of age and he remained at Cornel for the rest of his life, he developed brain tumour and died at the age of 60 and till date his brain has been preserved in a glass jar on display at Cornel. It is a part of a collection which began in 1889 and to study differences in brain characteristics in fact, in one of APS conventions Titchener's brain was brought as a guest in one of the experimental psychology conventions.

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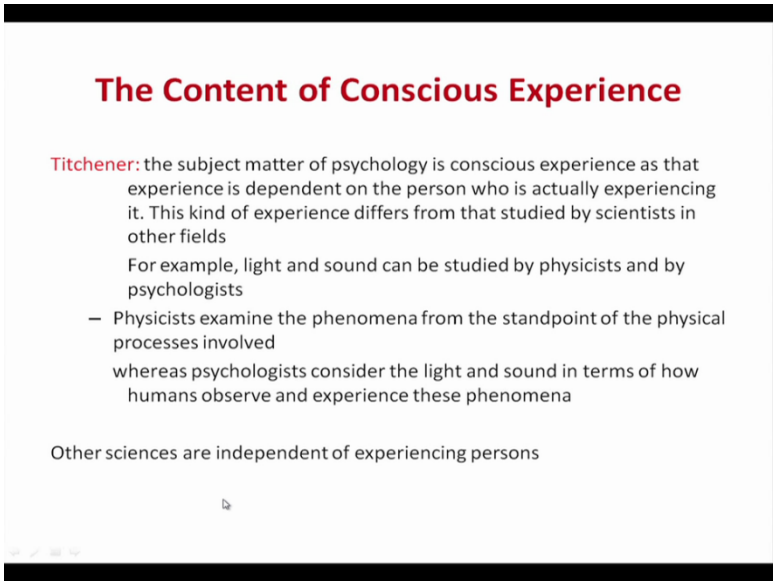

So Titchener spoke of consciousness experience and he said that the subject matter of psychology is conscious experience as that experience is dependent upon the person who is actually experiencing it. This kind of experience he said it differs from the other sciences, so say if a physicist is trying to establish the any fact, then he will not require to be present in that group say for example if you trying to determine the temperature of a room, an individual is not required but in any psychological to understand any psychological phenomenon the human being has to be present in that condition.

So physicists he said could examine the phenomenon from the stand point of physical processes where psychologists had to consider the physical process in terms of the human observation and experience how human how individual how human being were trying to experience that phenomenon so obviously you would need an experience in person whereas the other sciences like physics and chemistry were did not require another individual to be present or the human being to be present when you were making observations.

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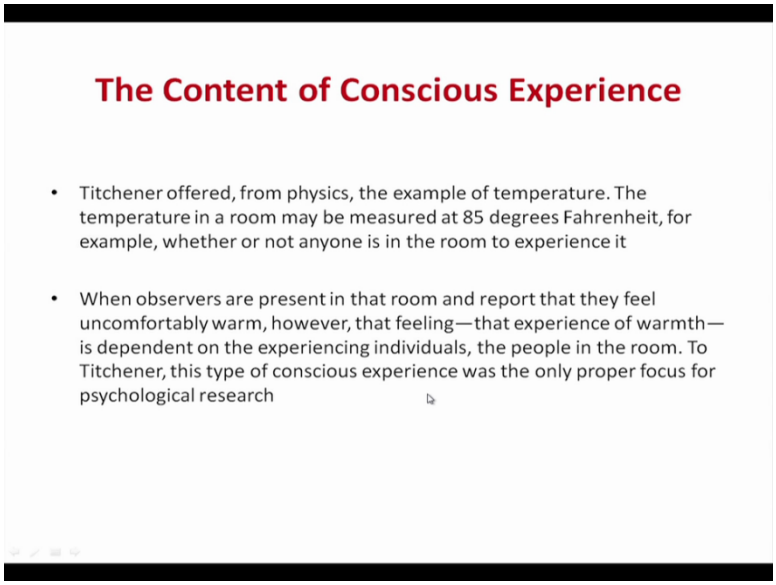

So he again to repeat he gave the example of a temperature in physics and he said if temperature in the room may be measured at 85 degrees Fahrenheit whether or not anyone is in the room to experience it but when observers are present in the room and report that they feel uncomfortably warm however that feeling or that experience that experience of warm is dependent on the experiencing individuals that is the people in the room. To Titchener, this type of consciousness experience was the only proper focus of psychological research. So when we are talking of consciousness experience we are actually talking about the experience that the individual is going through at that point in time, so imagine people talking about all these in the early twentieth century. So we actually see how advance the thinking processes had gone.

So they had the people who were already talking of understanding doing experiments with human beings, people who were already talking of conscious experience and what is important to understand human beings so it is amazing to see how psychology had establish its started establishing itself as a scientific discipline.

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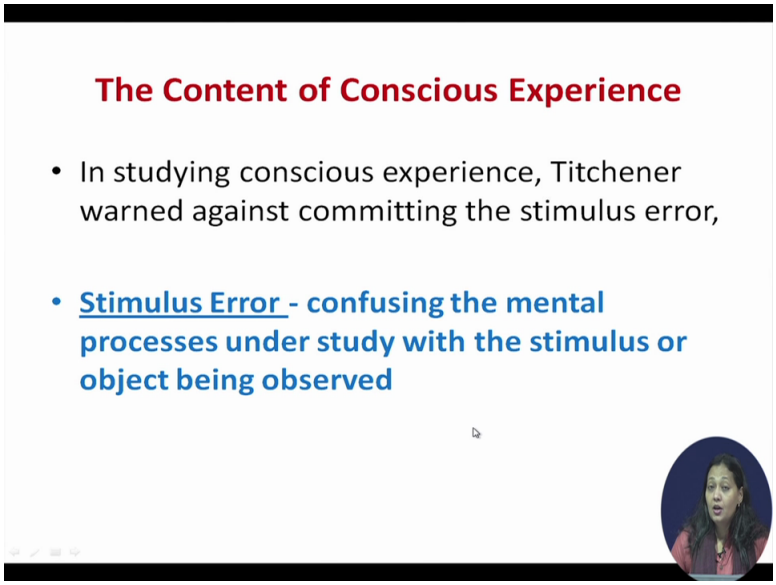

So in studying conscience experience Titchener warned against committing the stimulus error. Now what is this stimulus error it is confusing the mental processes under study with the stimulus or object being observed? So here he spoke about the mediate and the immediate experience.

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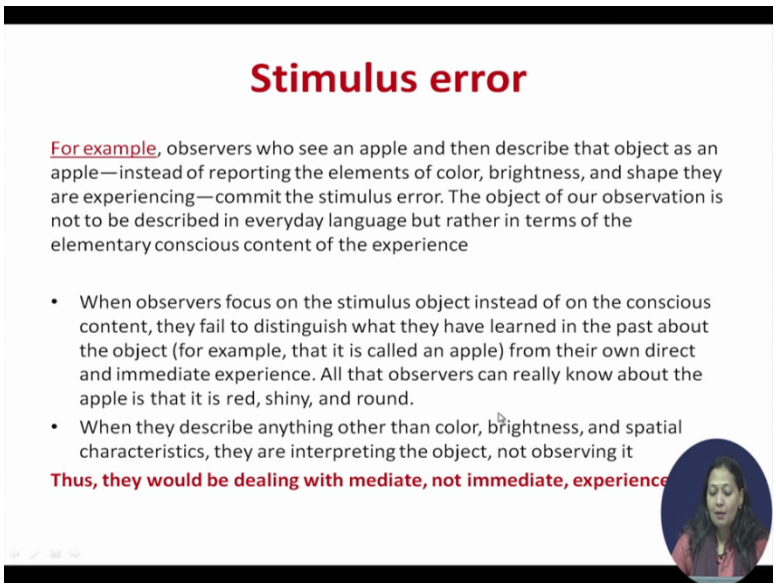

So for example, when you see an apple when an observer an apple and then describe that object as an apple instead of reporting the elements of colour brightness and shape they are experiencing, they commit the stimulus error. So here you see we are actually talking like of Wundt's experiencing the redness of the rose, so it is quite similar but there are some differences between Wundtian and Titchener psychology. The object of our observation is not

to be described in everyday language, but rather in terms of elementary consciousness content of the experience. So here he speaks like as Wundt had already spoken of is mediate, immediate experience and when he says that when observers focus on the stimulus object instead of the conscious content they fail to distinguish what they have learned in the past from the object that they are currently seeing.

So it as I was mentioning in the previous class, they an individual who is looking at an apple and saying I was mentioning about the rose but here also as an apple if an individual says that this is a red apple or this is a big apple, so the moment you see it s a big apple there are some ideas that you already have about this size of an apple so and that by that previous experience you are trying to estimate the current size. So that is not an immediate experience immediate conscious experience. So what they hear, Titchener says that observers if they say about the size and shape and colour and brightness of the object, then all the observers can really know about is you know they must be knowing about the past, they have some past information that is guiding their current experience that when they describe anything other than the brightness, colour and special characteristics, they are actually interpreting the objects not observing it and that is when an individual is suppose to commit this stimulus error.

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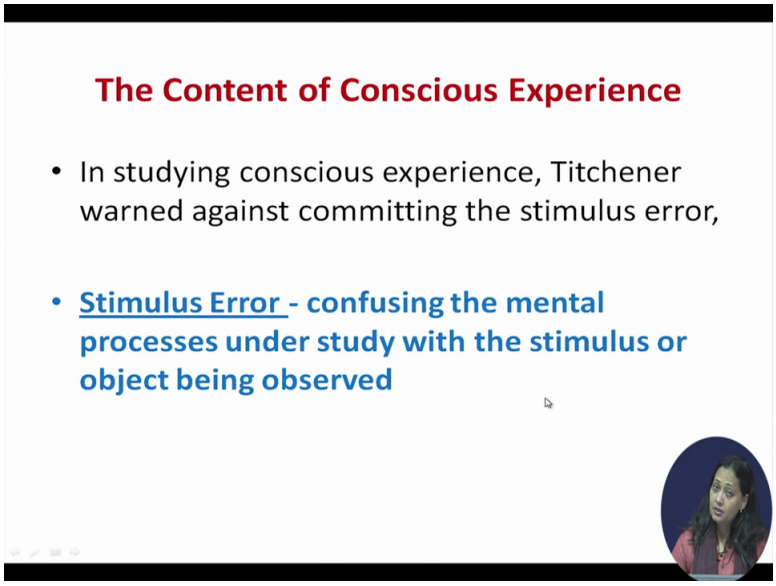

So again to go back what is this stimulus error, it is confusing the mental processes and their study with the stimulus or the object that is being observed, so thus if the person is committing the stimulus error he would be dealing with mediate and not immediate experience. Now that brings us to another idea that Titchener propagated or the idea of introspection.

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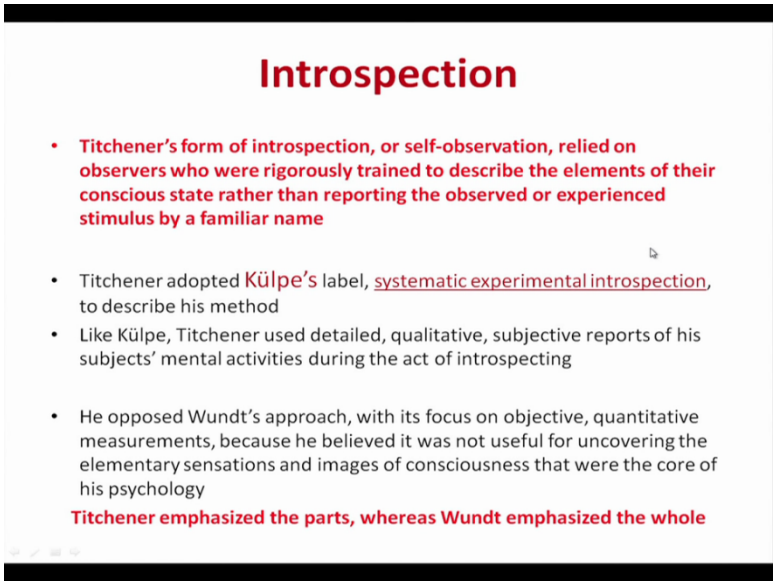

So Wundt also spoke about introspection and Titchener one of his students who propagated Wundt's views spoke about introspection, so Titchener's form of introspection of self-observation relied on observers who were rigorously trained to describe the elements of their state and rather than reporting the observed or experienced stimulus by a fair familiar name. Titchener adopted Kulpe's label another Kulpe was another psychologists of the time and he had started his study under Wundt, so he was also a student of Wundt and Titchener took up Kulpe's label of systematic experimental introspection and he also used that to describe his experimental method of introspection. So like Kulpe Titchener also used detailed qualitative subjective reports of his subject's mental acts during the acts of introspecting.

So it is a little different from Wundt, Wundt studied Wundt said that you are studying the introspective process as it is happening and here Wundt focused on the objective processes, so he focussed on the objective quantitative measurements. Titchener on the other hand focussed on the parts whereas, Wundt focussed emphasise on the whole and that is why Wundt focus more on the apperceptive process so that a synthesis of the elements.

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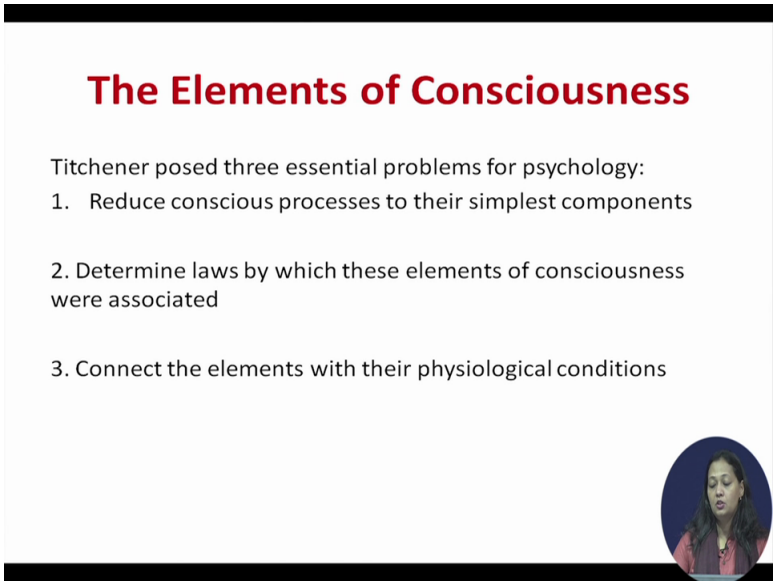

Titchener focused on parts, so Titchener psychology or the study of structuralism is definitely very different from Wundt's study of the psychology. So where we could say that Wundt's study was more on voluntarism or he actually worked more on violation? The elements of consciousness, so Titchener spoke of the essential problems for psychology, so he said these are should be the research areas of psychology. So that is to reduce to see reduced conscious processes to their central simplest component. Determine the laws by which these elements of consciousness were associated and connect the elements with their physiological ambitions. So these were the three areas that Titchener believed should be taken up as psychological mechanisms to be studied.

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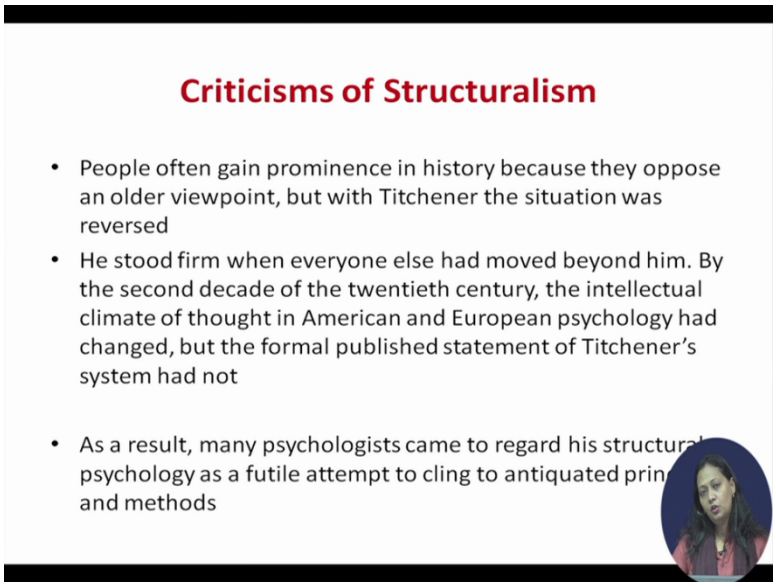

So there have been several criticism of structuralism and but it has also made huge contributions to the science of psychology, one of the major reasons for structuralisms build up in America was Titchener himself. He was an amazing orator and many of his students report his lectures as dramatic performance in fact, boring one of his students who later turned out Boring was turned out to be a historian later reports that his class rooms were overflowing with students and Titchener entered through another gate and then that laid him directly to the podium and his performance was astounding and in his class lecture in the way he spoke and here he was he looked and spoke like Wundt.

So there were many things that he tried to emulate from Wundt and many people actually thought considered Titchener in fact, he also kept beard like Wundt and many in many people mistook him as a German. He was an Englishmen, but he was mistaken as a German by many and Titchener's influence on his students was humungous in fact, several students, several of his students had objections to his to the way he influenced their lives or he was involved in their lives.

So perhaps this way of dealing with his students and with psychology made also helped in propagating his views also helped his and his personality his oratory skills and the fear and the work that it aroused in arousing many people and many of his students during that time, so then the strange thing is that most of the times students most of the times people again prominence in history because they have objected to an already established view.

Titchener on the other hand stood firm when others moved behind and there were other schools of psychology that would gradually coming up and but Titchener stood firm and with his idea and in this intellectual climate of America and Europe the psychology of the time had also changed, but the published this establishment that Titchener had created, he did not move from his point.

In fact, he was very angry with people who refuted his point so there were conflicts with people but I must say that Titchener's contributions to psychology has definitely led ground breaking influence on development of psychology at that time. See with most of the theories coming up as a criticism to structuralism, so this is his research methods based on observation experimentation and measurement and they were in the highest traditions of science and it was consciousness could be only experienced perceived by the person having the conscious experience.

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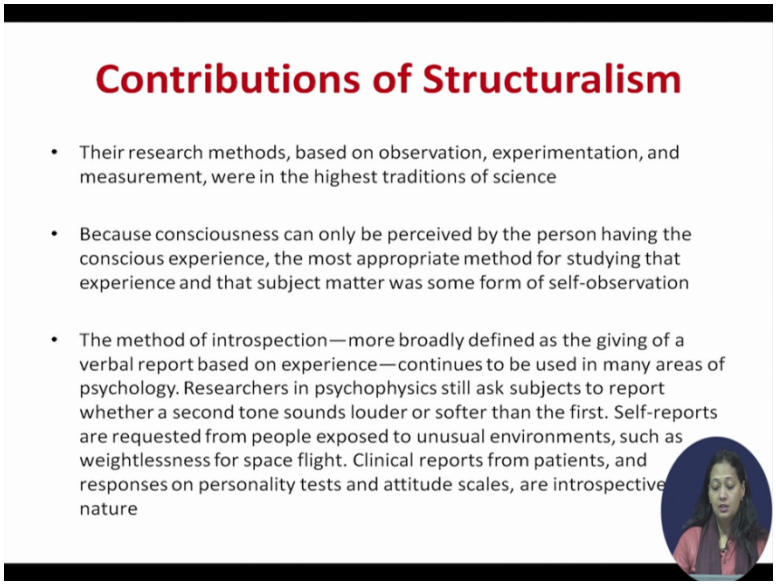

He spoke about self-observation, so the most as the way to study experience and he also changed the way he tried to use introspection and in fact of course Kulpe actually spoke about that experimental introspection where he speaks about more about the subjective report where the individual explains what he went through after the conscious experience and this is still followed. We will see that it is followed in other places also, so till date when you are doing a psychophysics experiment especially psychology students who are attending this course you must be familiar with it after an experiment on psychophysics, we generally ask to report as a your subjective experience what you went through. The same thing is also used in space psychology when people experience the weightlessness.

This idea was introduced by Wundt but it was propagated also by Kulpe and finally Titchener. So these are still used till date so we cannot ignore the contribution of structuralism. Meanwhile, in the other parts of the world we see that there were certain developments that were taking place and one of the famous people of the time was Charles Darwin and his notion of evolution and this changed the focus of new psychology from the structure of consciousness to its functions. So see now psychology has is to has established itself, they were people who were doing their psychology programs their doctoral degrees and moving forth with their new ideas and with their new lab setups and it was inevitable that his was a time for the functionalists to come.

So functionalists primarily studied that what do these mental processes accomplish, so now they did not studied the mental elements and structures, but they studied the mind from the functions and processes and how it related to the early experiences. So it was obvious that the

time was now ready for understanding the functions and these was primarily influenced by the other world developments and in this case Charles Darwin played a huge role and off course also Francis Galton.

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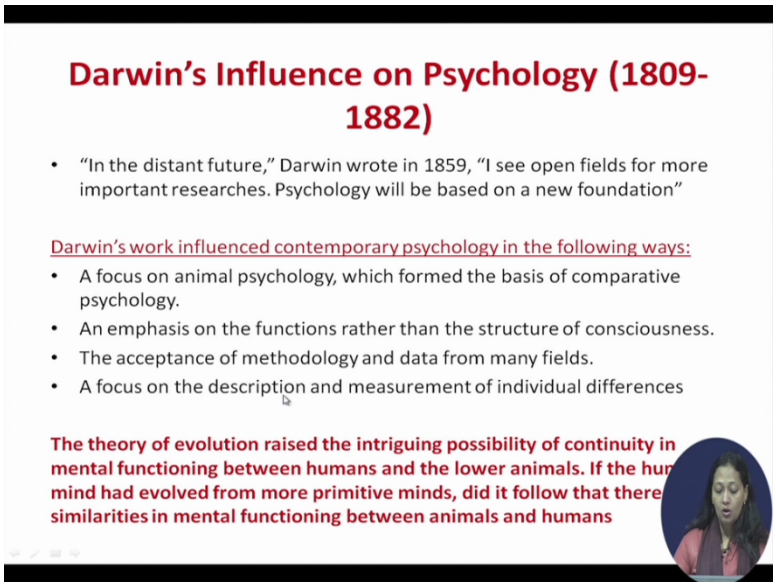

So strangely they were cousins and Darwin in Darwin actually saw psychology as an important science and he said that in the distant future Darwin wrote in 1859, I see open fields for more important researches. Psychology will be based on a new foundation and Darwin's work influenced contemporary psychology in the following ways, so he focused on animal's psychology which formed the basis of comparative psychology. So as you see psychology has established itself as an experimental science, it is also influencing the idea of comparative psychology or understanding animal behaviour so an emphasis also on the functions rather than the structures of consciousness. Darwin focused on that, the acceptance of methodology and data from many other fields so it was also trying to make psychology as an interdisciplinary science.

So we are talking about understanding data from other sciences and their focused on the description and measurement of individual differences. So the theory of evolution raised the intriguing possibility of continuity in the mental functioning between humans and the lower animals. If the human mind had evolved from more primitive minds, did it follow that there were similarities in mental functioning between animals and humans, so this was the onset of comparative psychology.

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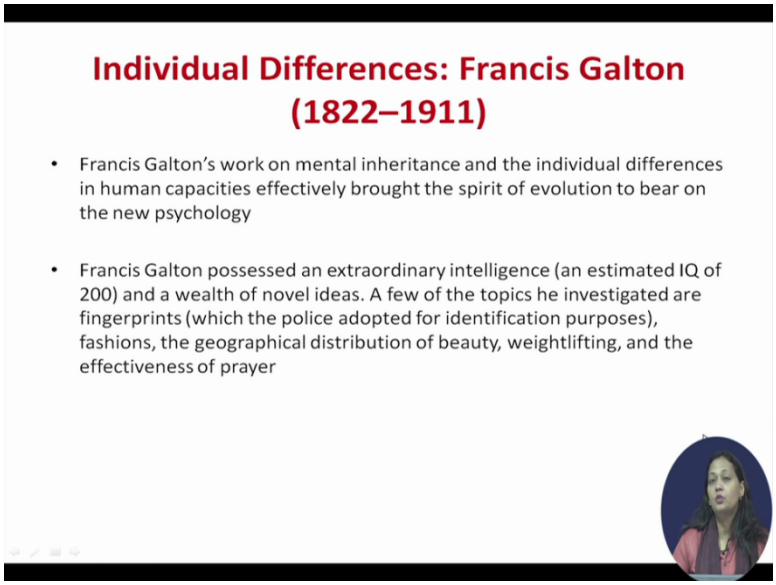

We will see that the behaviourists who come later when you are experimenting on learning primarily had started with working with animals, and during this time another individual who happened to be Darwin's cousin that is Francis Galton started talking about individual differences. Francis Galton was an extremely intelligent person, it is considered that his IQ was beyond 200 and Galton had various interests, so he spoke about he could speak several languages fluently and just said that one of his professors asked him to translate a paper an article from Dutch to English so he said that in a week so he said that I do not know Dutch so his professor said that you learn it and he did it.

So he was immensely intelligent and he had several ideas, he had different ideas that he would wished to pursue and if you see you will see that it is very different. They are very novel and very different from each other, so few of the topics he investigated are fingerprints, fashions, so imagine him talking about fingerprints in the 1820s, 1830s. The geographical he spoke about fashion, he was interested in studying fashion, the geographical distribution of beauty, weight lifting and the effectiveness of prayer.

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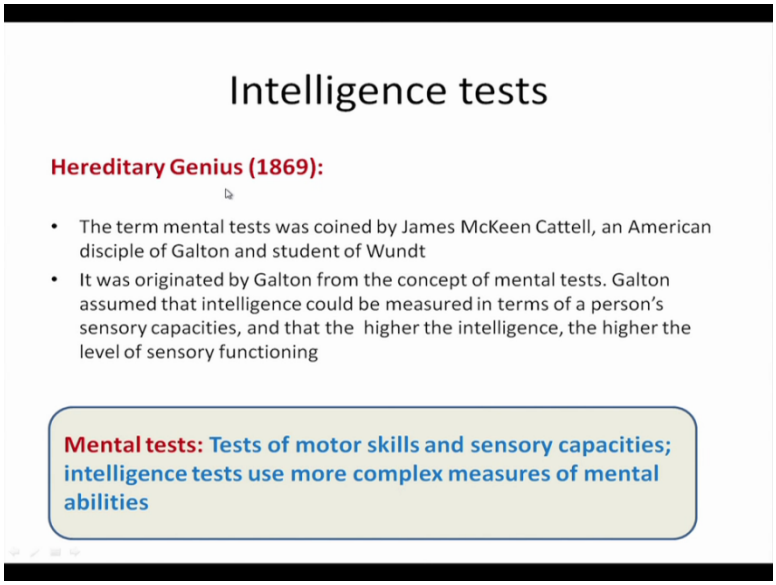

So as you can understand it is way different, all his ideas are way different from each other, but what is very important in this that he read up Darwin's book on evolutionary theory and he was so impressed that he wrote a book on inheritance and this he later used to this the books name was Hereditary Genius which again Darwin read and thought that it was an amazing piece of work and it could be actually experimentally verified also with the form of different experiments. Now, this after this Hereditary Genius even from these various ideas that Galton had you will see that he thought that there is a very important effect of genetics on the way or hereditary on the way an individual presented.

So the individual differences he spoke about individual differences and he said that intelligence and different other traits were dependant on the inherited properties, so it was less of the environment and more of the hereditary. So he started working on mental tests and Galton so developed the idea of creating intelligence tests and he mental test was the idea of the mental tests was actually coined by Galton one of his disciples and also a student of Wundt and what were mental tests, so theses were tests of motor skills and sensory abilities and the intelligence tests are actually the same but they are more a little more complex measures of mental abilities.

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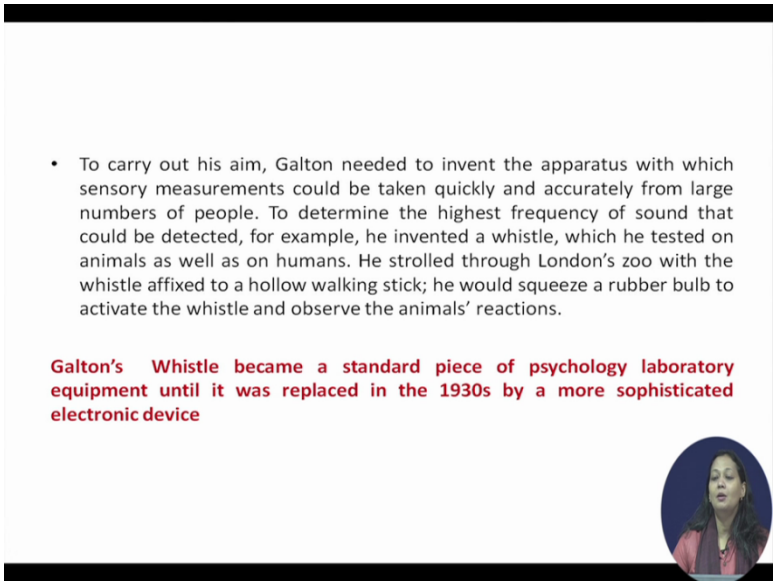

So the ideas of these intelligence tests was originated by Galton and Galton assumed that intelligence could be measured in terms of a person's sensory capacities and that higher the intelligence, the higher the level of sensory functioning. In fact, the information processing theories that were later developed also talked on similar lines. So what did Galton do to carry out his aim Galton needed to invent the apparatus with which sensory measurements could be taken quickly and accurately from large number of people? So he was trying to assess the intelligence so he would need to make sensory its measurements and for that to determine the highest frequency of sound that could be detected for example, he invented a whistle and which he tested on animals, so he would move around the zoo and trying to test the behaviour of animals when he tried when he used that whistle and this has come to be known as a Galton's whistle.

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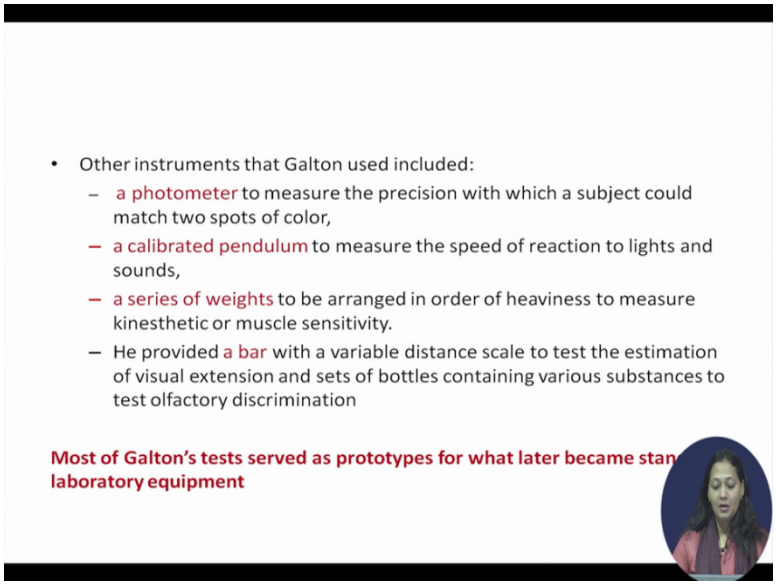

So most of you are you are familiar with this, so Galton's whistle became a standard piece of psychology laboratory and used in the 30s after it was replaced by other things. So other instruments that Galton used included a photometer so that measures a precision with which a subject a would matched to spots of colour, a calibrated pendulum to measure the speed of reaction to lights and sounds, so this was actually to see the reaction time and a series of weights that could be arranged in order of heaviness to measure the muscle sensitivity and the tactual sensitivity.

So you see, Galton had actually started building a standardized laboratory, psychology laboratory with apparatus to understand the mechanisms of the mind, so when we are talking about psychology as the study of the soul from then you see it moved to the mind and then to consciousness and now we are measuring consciousness Wundt spoke of it in one way, Titchener spoke of it in one way, Kulpe also spoke of it in one way and now we are speaking about the ways to measure the mind, so and the ways to measure the functions of the mind through real time instruments and he also Galton also provided a bar with variable distance scale to test the estimation of visual extension and the set of bottles containing various substances to test olfactory discrimination. So see he is using all the equipment to understand the different sensory organs.

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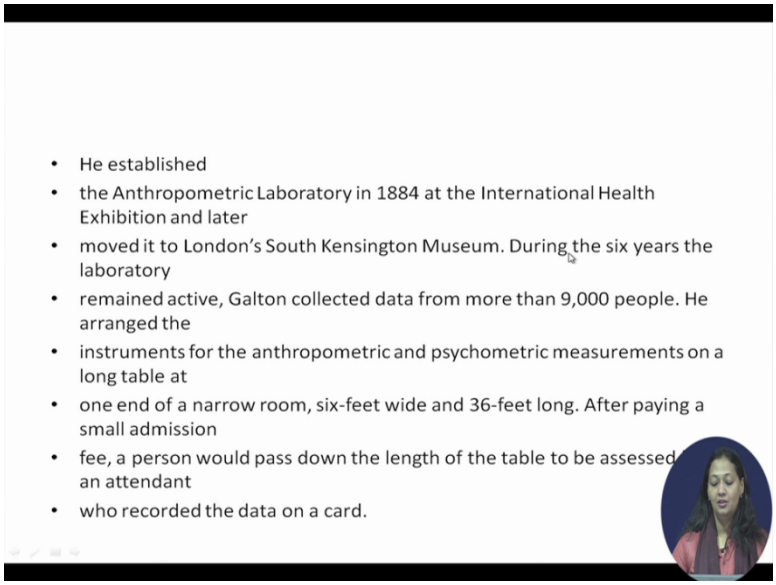

So most of Galton's equipment have actually become a part of the standardize laboratory equipment, a first psychology lab so he established the Anthropometric laboratory in 1884 at the international health exhibition centre and later moved it to the London's south Kensington Museum and during the 6 years the laboratory remain active, Galton collected data from more than 9,000 people. He arranged the instruments for the Anthropometric and psychometric measurements on a long table and yet the recordings were done.

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So this as you can see is Galton's laboratory, so there were several office assistance where the individual entered from one room one side and would continue with all the experiments. So this was the Anthropometric laboratory to collect data on human psychometric capabilities.

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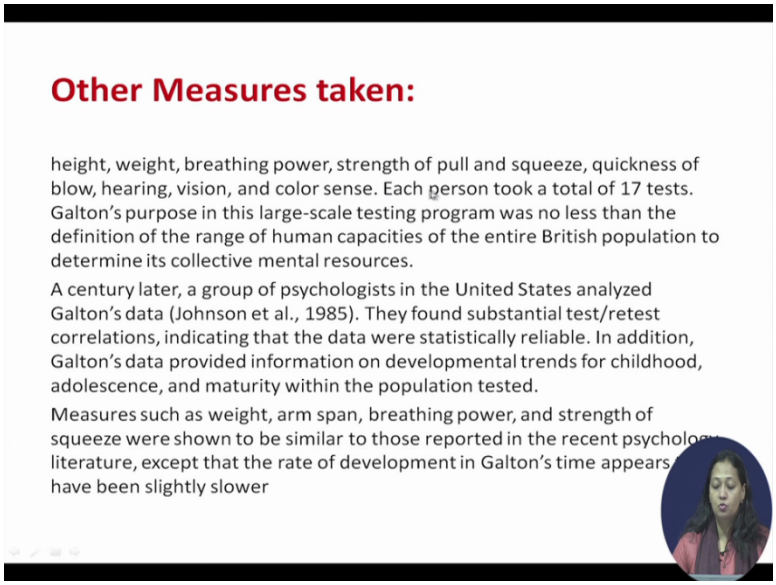

So there were other measurements along with the sensory data that was collected and that was height, weight, breathing power, strength of pull and squeeze and quickness of blow, hearing, vision and colour sense. So actually each person took around 17 tests and Galton's purpose in this large scale test testing programme was to understand the range of human capacities of the entire British population to determine its collective mental resources. So think about the time, so this is the time when the World wars are on, so here this is time when there is a lot of political movement in the world and Britain being and taking an active part in it, at that point it is also very important to understand the resources that a country has, so Galton's work on sensory on intelligence was well taken during that time.

Strangely, you know Galton's data was taken studied by psychologists in US century later and they found that the tests were statistically reliable and it provided the data not only provided information on all these, tests but it also provided information on the developmental trends of childhood, adolescence and maturity when the population was tested. And there were several things that showed that the rate of development during Galton's time had been slightly low as in the measurements in weight, arm span, breathing power, strength of squeeze, these measurements that were taken by Galton a century ago.

They showed that the development was a little lower slower as compared to current times. Galton during this time was also working on statistics and he is the first one to come up with the idea of co-relation. So in fact, one of his students Pearson was encouraged by Galton to come up with the Persons product movement coefficient of co-relation later on.

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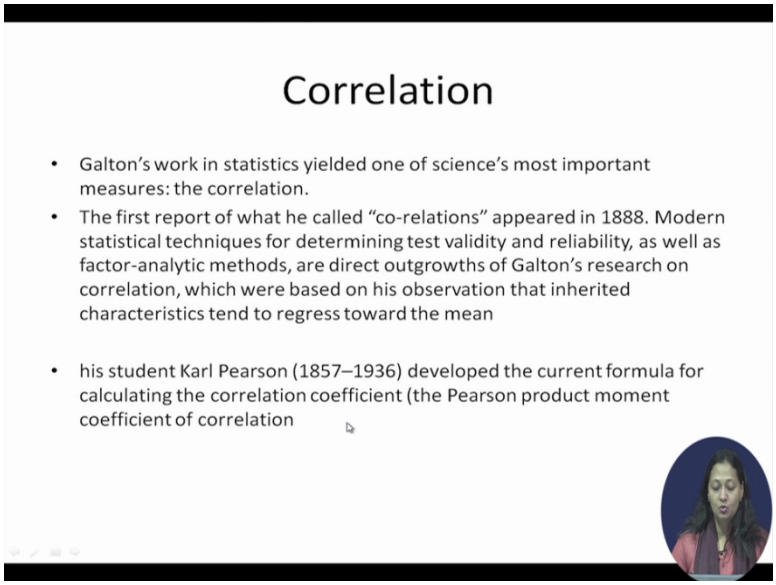

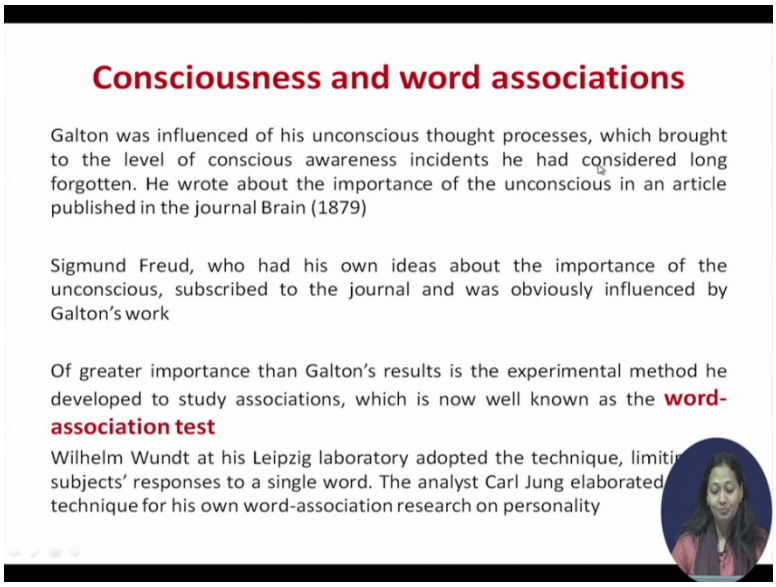

So Galton used these co-relations also to understand the inheritance properties so he also influenced the idea of unconscious thought processes and which could be brought to the level of consciousness through awareness incidence and he wrote about this in an article in the Brain in 1879. Sigmund Freud in Austria at that point in time was also working on his ideas of unconscious and he subscribe to this journal to understand to read Galton's work and he was really influenced by Galton's theory on unconsciousness. So of great importance in Galton's results is also his understanding or all his development of the word association test. Wundt at his laboratory adopted the technique limiting his subjective responses to a single word. Later on Karl Jung another associate of Sigmund Freud took up the word association and used it in his ideas to develop his theory of personality.

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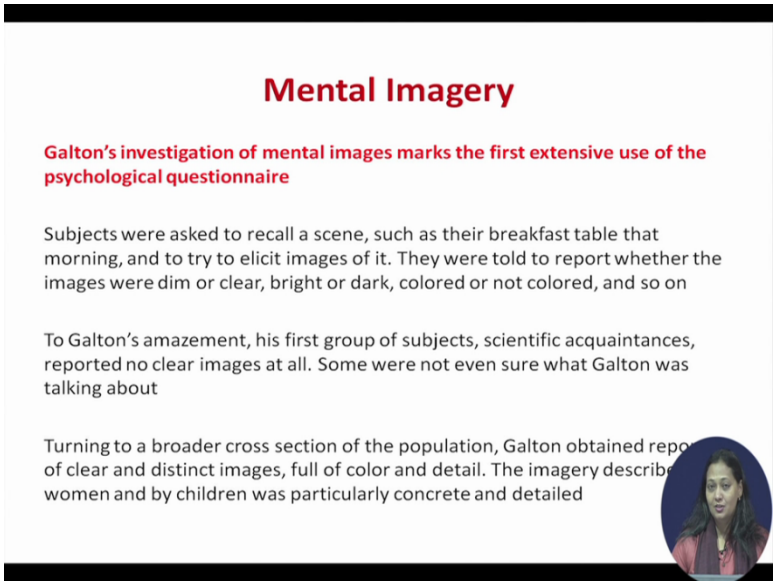

So you can see, Galton's wide influence on different psychological aspects again finally Galton spoke about mental images, so see Wundt ignored the use of imagery and so here Galton studied in mental images and marked the first extensive use of the psychological questionnaire. So they were subjects, who were asked to recall a scene such as their breakfast table at morning and tried to elicit the images. They were told to report whether the images were dim or clear, bright or dark, coloured or dotted and black or white and so on.

And strangely Galton saw that his first group of subjects those who were scientific acquaintances reported no clear images at all; some are not even sure what Galton was talking of. So they were not being able to either develop the imagery or they were not being able to report it. Now turning to a broader cross section so here he was looking at other people of the population, so not the scientific acquaintances only and he obtained reports of clear and distinct images full of colour and detail and the best images were given by women and children, so they were more concrete and detailed.

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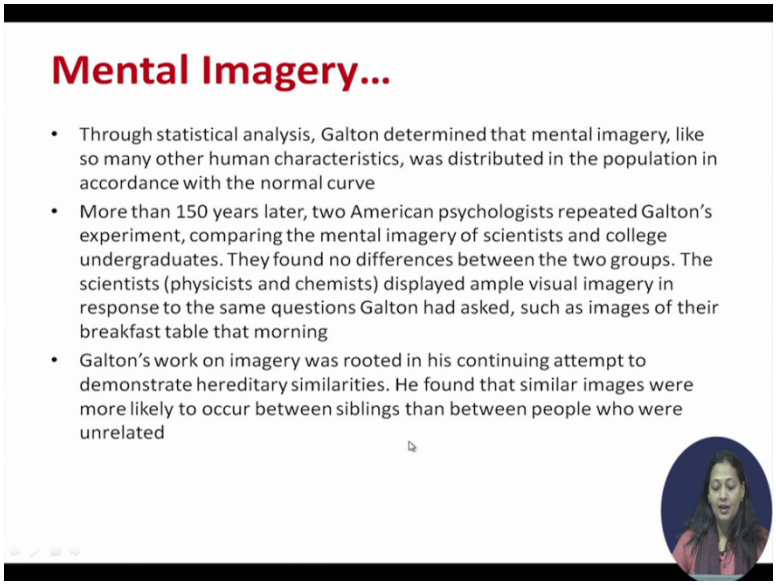

So through statistical analysis Galton determined that mental imagery like so many other human characteristics comes in a human in a normal probability curve or a bell shaped curve. So the average of the population will be in the centre, there will be some exceptionally good and some exceptionally bad. So more than 150 years later, two American psychologists repeated Galton's experiments comparing the mental imagery of scientists and college undergraduates. They found no differences between the two groups, the scientists displayed ample visual imagery and response to the same questions Galton had asked such as images of their breakfast table at morning.

So, but though the difference results differences in results were seen it must still be acknowledge that his work was the first study on mental imagery. So Galton's work on imagery was rooted in his continuing attempt to demonstrate hereditary similarities, so Galton's spoke that people who generally from the same family produced similar images. So though at that time Galton spoke about it as hereditary, hereditary being an influence on the types of images, the individual reported it could also be in today's date with so much of information on psychology we can also say that it is probably also because of the amount of information and the type of information that the family members exposed to a certain environment the input is available to an individual.

So maybe that is why it is it is the rule of environment which also has an importance as to how what kind of imagery is produced, but Galton of course focused more on the hereditary affects and its impact on mental imagery and also on intelligence. So, finally as we end the

first weeks lecture in great experiments in psychology, we have covered the history and genesis of psychology as a science from the developments in philosophy and physiology as well as the physical sciences and how its impact in the world in different parts of the world brought about this new science of psychology. How the geo, geophysical there are influences of Germany being more substantially involved in the development of psychology as a science and then how it spread across to the different other parts of the world.

And so in the next lecture classes of the week in the next week even to take up classics studies and cognitive and social psychology, I hope you will enjoy it and there will be a small assignment at the end of this week, so please it is going to be really small so please finish it and submit it as quickly as possible Thank you.