

**Introduction to Psychology**  
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**Lecture - 40**  
**Alternative Tools & Techniques**

This is the last lecture of this vary course it is reflect upon what we have done in these many weeks. It was 8 week course, we first began with the looking at the major mile stones, and the idea was to trace the history how actually we have proceeded in these many years, in terms of understanding the nuances of human behavior. We then looked at separate or very discreet type of concepts although this type of segregation was based on convenience because we cannot study every aspects of the human behavior at the same time therefore, different-different processes were examined, deliberated, discussed, in different weeks.

So, in one week we only talked about perception, then we only talked about emotion exclusively, we talked about memory for one week, personality for another week, genetics and inventory determinates, personality, intelligence, and aptitude, all of this. Then this week we have been looking at the lab sessions, these were the sessions which were basically suppose to help you understand how to verify, how to quantify, how to empirically examine, how to experimentally ascertain that yes this is the construct, this is what the theory says and this is testable process, this is an observable thing. You can do it yourself, somebody else can replicate it and this is how you systematically come forward with and evidence based type of a finding, this is something that all science as do and this what psychology is also be doing.

In the lab sessions you saw couple of demonstrations, for instance you saw Muller-Lyer illusion. Now any introductory book of psychology we will talk about illusion and it will also definitely refer to Muller-Lyer illusion; what you saw here was too simple that say you have arrow added line, you have feather headed line and then you just now ask the participant to look at the arrow head line to adjust the feather headed line accordingly and you calculate the percentage of header.

Today what we are going to do is to basically look at alternative tools, till now what we have done they are all something that you can find in any lab manual of psychology, the

traditional ones will tell you more of the paper pencil base test in the old apparatus and the newer ones will tell you all computer assistant type of things. Because is this our last lecture therefore, our focus would be to think that can we redo things using the old apparatus.

So, what you do it something new you are trying to find out something know which is an alternative based on the old apparatus this could be one the other could be that when I look at the tools and the techniques available that has been used in various lab sessions do one still question something is their still something which is missing, although this is an introductory psychology course and will not go in to the details of it, but I want definitely to touch on those issues so that you can keep thinking. A thought which will later on know make you move in newer directions.

So, let me take the example of Muller-Lyer illusion first. Muller-Lyer illusions basically wanted you to know move the feather headed line, adjust the feather headed line and based on the pointer the experimenter use to calculate what is the distance of or what is the length of the feather headed line. To imagine if you use your left and the right and both, so once you use the dominant hands psychology will say that no one of your hand is dominants. So, if I use handedness bias schedule basically an inventory which is used to measure how dominant you use your right or your left hand.

Now, in psychology we will find the description of dominant left hand, dominant right hand and then it also talks about something called anomalous dominance means for certain types of task both the hands are preferred and you cannot say that no - right or left dominates. So, those are the anomalous dominance cases. Now I can very easily make three groups left handed right handed and anomalous dominance and then I say that you know make adjustments with your dominant hand and with your non dominant hand and then I now compare the three groups.

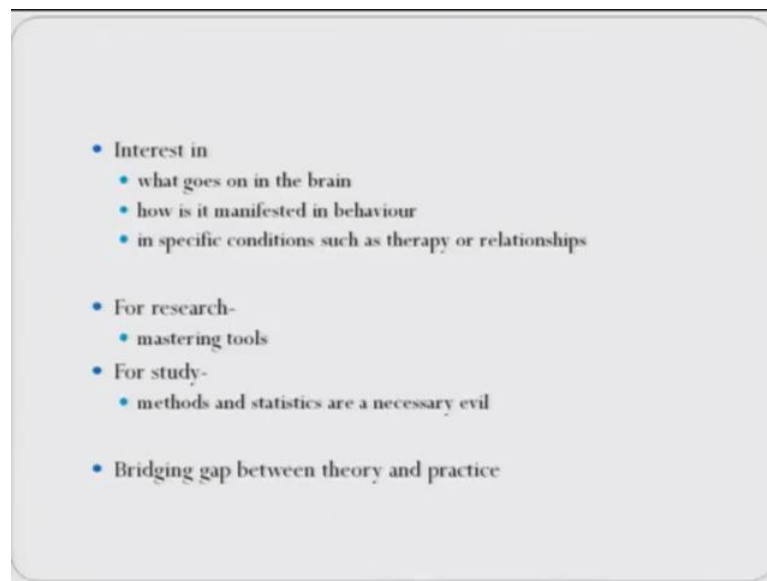
So, I am using Muller-Lyer illusion that very apparatus, but then what I am doing is little different. The second option could be say for instance I use the dominant hand, but then I say that the arrow headed line and the feather headed line they will be know made to be like this they touch each other and then I want the participant to make an outward movement this could be one. And they I adjust the feather headed line right at the end and then I want the participant to make an inward movement, and then I say that fine will

dominant hand and the non dominant hand, what is the degree of illusion when it comes to making an inward versus an outward movement and remember inward outward movement has to do with the joints, the body joints.

So, you can take biomechanics and added with psychology and you come forward with a new introduction. So, the tools remains the same, but then you have come forward with an alternate using the same old too and this can be done for approximately all psychological apparatus where that new or old having talked about how to use the old tools the old apparatus and search for new alternatives.

Let us now go in to alternative tools and techniques this is the topic of discussion that we will be taking up today.

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- Interest in
    - what goes on in the brain
    - how is it manifested in behaviour
    - in specific conditions such as therapy or relationships
  - For research-
    - mastering tools
  - For study-
    - methods and statistics are a necessary evil
  - Bridging gap between theory and practice

Now, what is psychology interested in; we are basically interested understanding what goes in the brain of the individual. Two, even if I not able to directly peep in to the brain or if I am not use in certain techniques like the magnetic resonance imaging or the functional magnetic resonance imaging still I would love to look at the behavior the manifested behavior and I would try to link it with what goes inside the brain.

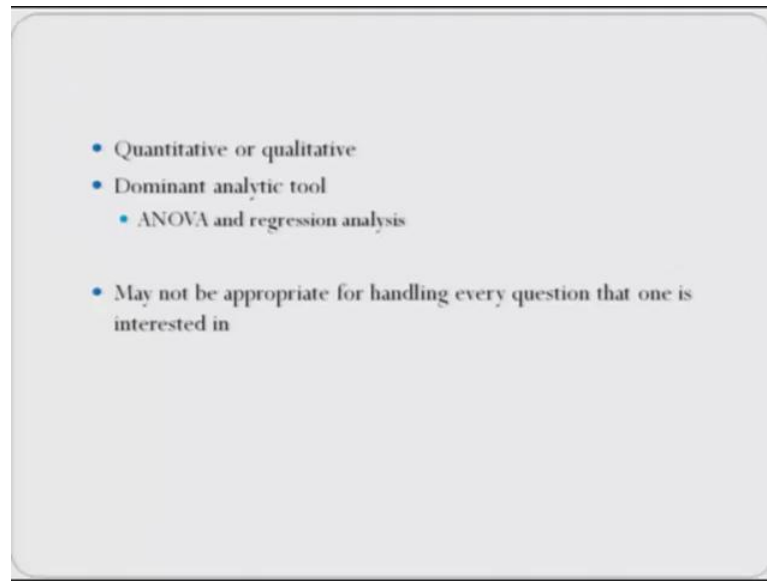
Now, I am interested in manifested behavior, but I am would also love to know correlated link it, interpret it with the reference to what goes inside the mind of the individual or the brain of the individual and then I am also interested in the specific

conditions say like situation of the therapeutic session where I have a therapist and have a client. Now this is a scenario where my focus is exactly on certain types of symptoms, certain types of leads based on which I can deduce something a conclusion which will help me sharp in my therapeutic intervention the intervention which intern will be help full for the client.

Similarly, if I am looking at some type of a relationship, relationship between any two variables of interest these are the specific conditions that I am interested in. So, basically all psychologist they are interested in manifested behavior mostly, some might be interested even in the covered forms of behavior, but they would love to make interpretation in terms of what goes inside the mind or the brain and what happens in the specific condition such as special type of relationships or therapeutic sessions.

Now I can do this with two broad objectives, one - more of somebody who is interested into research. Now if I have that knack, then I need to master certain tools and second could be what I am not interested in doing research myself, but I am definitely interested reading the research done by others. So, I am more into understanding, more into reading, studying. But then also you would realize that certain methods and statistics both become necessary evils you have to understand it and this understanding is essential because you want to bridge the gap between the theory and the practice. So, this is now overall what psychologist do and you would realize that mostly people use either qualitative techniques or they use quantitative techniques.

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- Quantitative or qualitative
  - Dominant analytic tool
    - ANOVA and regression analysis
  - May not be appropriate for handling every question that one is interested in

And those who will use the quantitative techniques they largely dominantly use the tools which are either you know analysis of variance or regression analysis.

So, it could be now all different formats of analysis of variance or it could be any form of regression analysis, but these are the two dominant tools which are used to analyze quantitative data. But then if you go deep down you realize that these two tools might not be appropriate for handling every question that you are interested in. So, all types of questions might not be answered using these two dominant analytical tools the ANOVA and Regression. Now understand one thing why I am I saying this, there is an ongoing debate.

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- Ongoing debate-
- Importance of *between-person results* when the interest is in *within-person processes*
- Frequentist approach vs Bayesian approach
- To make informed decision one needs to be familiar with the arguments

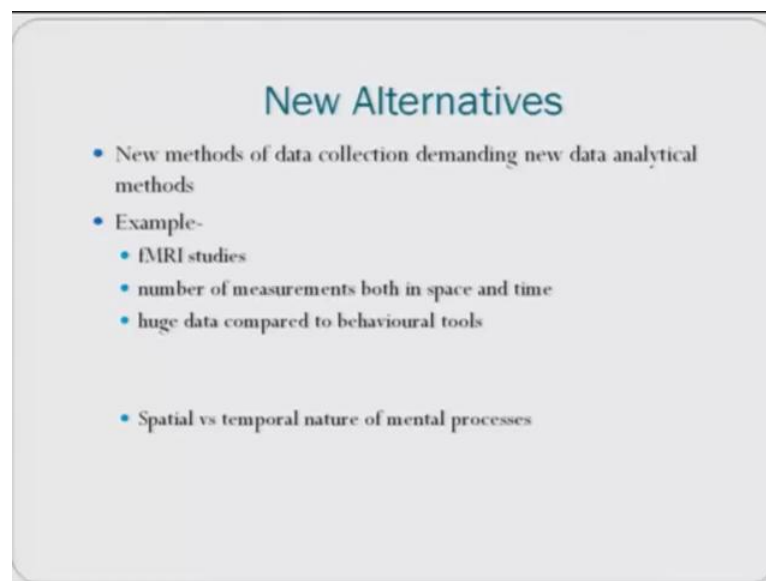
One is of course, in terms of which technique to adopt. So, there is something called frequentist approach, so analysis of variance, regression analysis all those types of statistical techniques which are called a frequentist approach and then there is something called Bayesian approach. These are two different types of approaches and you need to be informed about these two techniques and the arguments based on which you can make very informed decision whether to use - the frequentist approach or the Bayesian approach when you analyze your own data. I am not going into these two details, but what is the reason why I am saying this; the reason is that usually what happens whenever you go for quantitative technique and you try to compare the data basically you look for between individual results, between person result and then your primary interest lies within the individual.

Now, compare psychology with sociology these two subjects are little different and I always say know that psychology is something that will always like to zoom in and focus at an individual go within the individual where as sociology will always try to zoom out and look at the group of the individual of course, social psychology also does that community psychology also does that. But mostly it is the sociologist who would like to always zoom out and look at the process, whereas psychologist would always love to zoom in.

Now, when I zoom in I am primarily interested looking within the individual. So, all the processes that take place within the individual, but what happen? I show a tendency as a psychologist who generalized my findings and when I look at this very aspect of my research then usually I go and land up doing between individual analysis between subject analysis. So, between and within are two important things that one always has to look at and remember one thing that are primary interest lies what goes with in the individual whereas our basic tendency is to always generalize what have we have found in various individuals those who become parts of our sample.

Now, let us come to new formats of data collections. We have seen in the paper pencil format, we have seen the computer assisted formats; now if you look at the current trend you say for example, let us take the research which are based on the functional magnetically resonance imaging for instance.

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Now, this is a new method of data collection which has a very heavy influence in psychology. Now what happens in fMRI studies, you have number of measurements at given time you map the brain. So, you look at this space in the brain and then finally you come forward with a very huge data which you compare against the behavioral tools.


Now, look at any paper which as used fMRI as a tool in the study you would finally, realize that the boxes are analyzed using the statistical tools. So, it is that key test which is finally no use to make a distinction between the non presence versus the presence or

the non engagement of the brain versus the engagement of the brain and again it is the statistical test, the T test in the significance of which tells you whether the brain was involved or not and again you make an assumption saying that because the oxygenated blood was know being consumed in the particular area of the brain relatively know more when the task was being performed which is an indirect indicated that this part of the brain is responsible for the task that was being performed by the individual.

Now, earlier people use to use the (Refer Time: 14:57) data. One of the biggest things that one will always find as far as the contemporary trend of lab experimentations and research are concerned you look at the mental process, you have to finally consider what are you actually looking at - the temporal process or their spatial process. At a given point in time my brain thinks something, my mind comes forward with certain types of thoughts imaginations, fantasies, ideas, emotions and then I manifested in my behavior.

When I look at the time of course, fMRI is not a good tool; if I have to look at the space fMRI become a good tool. So, even the latest technique has a great impediment because it cannot know plot space versus time so that I extract the action and dedicated they find at this very time, at this very location this is what my brain under veined, this is why my mind made me experience and therefore, this is what my manifested behavior was. So, many of these things the inter place they are more and more inferential in nature.

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**New Alternatives**

- Affect regulation research-
- The strength of current affect depends on preceding affect (previous day, hour, or second)
- Differs across individuals, and is related to individuals' levels of neuroticism, depressiveness, and self-esteem

- Kuppens, Allen, & Sheeber (2010)

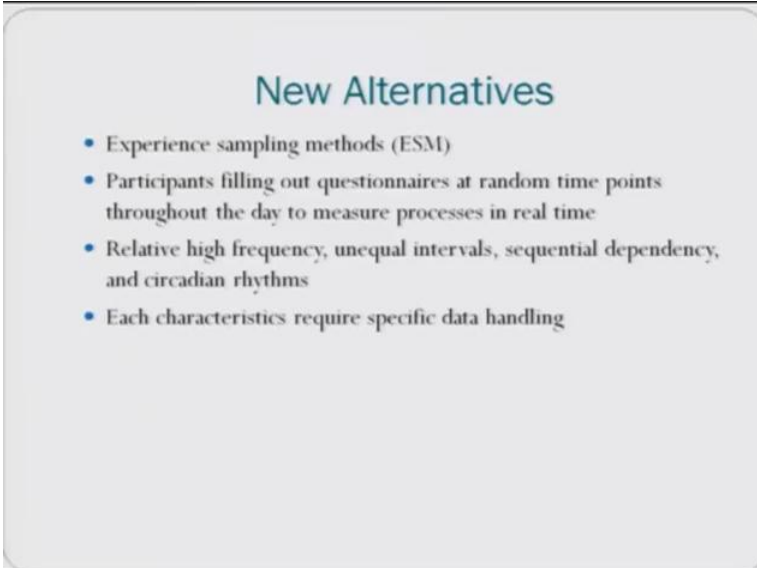
- This approach provides exciting new insights in regulatory processes and maladaptive forms of coping.



Let us take another example we have the now looked at the emotion in one of the weeks, we also had a lab session on emotion. Now let us look at the research that has to do with affect regulation the regulation of emotions. Now if I am looking at my affective state what I am I feeling right now, the strength of the emotion which I am experiencing it basically depends on the preceding emotions what I was experiencing just before this what was a I experiencing little before this and hour before, couple of hours before, a day before, what have I been experiencing in last couple of days all these things mater a lot. Now when I try to assist the state of emotion basically what I look at is what I am experiencing at a given point in times. So, that is the temporal type of a think you know, it is a temporal process where as this temporal process is not an indicated that it is mapping the present immediate past, little more past, hours, days, months and so forth.

I could be an given a state of mind for a relatively longer period of time which runs into months, weeks, days or couple of hours. Now psychological tools have great difficulty in terms of assessing this and therefore, this strength of affect in differs across individual and is also related to individuals level of say neuroticism depressiveness self esteem and so forth and as we have understood that when you look at these very aspects you realize that these are the things this is the approach which basically provides exiting in side when we look at the regulatory process of the affect as well as when we look at the maladaptive coping process.

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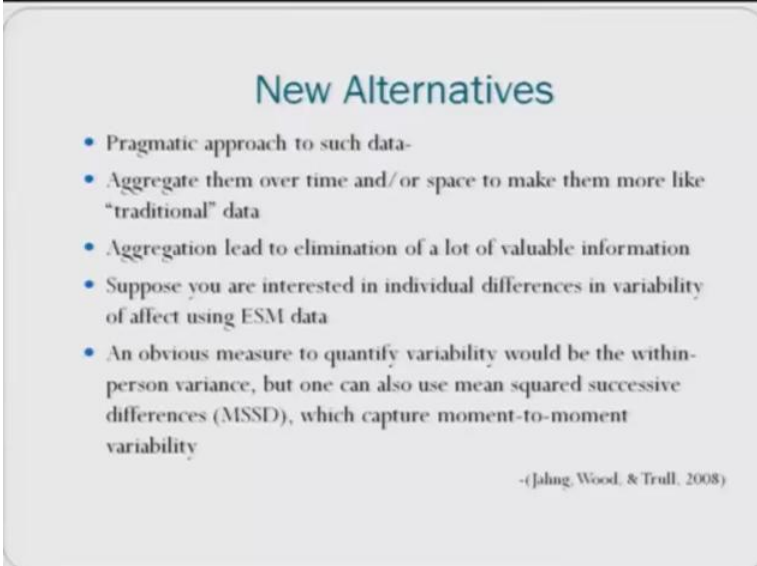


**New Alternatives**

- Experience sampling methods (ESM)
- Participants filling out questionnaires at random time points throughout the day to measure processes in real time
- Relative high frequency, unequal intervals, sequential dependency, and circadian rhythms
- Each characteristics require specific data handling

Now, there is a new alternative to it, there is something called experience sampling method ESM, now what happens unlike the traditional questionnaire technique the paper pencil based technique or the computer assisted techniques basically participants they fill out questionnaires at random time points throughout the day to measure the process in real time. So, what would happen? You have a relatively high frequency, unequal interval, it could be sequential dependency and even you can go to the level of not looking at the circadian rhythms. Now each of these characteristics it requires know it is specific data handling technique and therefore, in the beginning I said that know you are require to master certain scales if you want to investigate certain things yourself.

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**New Alternatives**

- Pragmatic approach to such data-
- Aggregate them over time and/or space to make them more like "traditional" data
- Aggregation lead to elimination of a lot of valuable information
- Suppose you are interested in individual differences in variability of affect using ESM data
- An obvious measure to quantify variability would be the within-person variance, but one can also use mean squared successive differences (MSSD), which capture moment-to-moment variability

-(Jahng, Wood, & Trull, 2008)

Now, the pragmatic approach to handle such data would be that you aggregate all of them over time or over space or both and you just make it like a traditional data, what is traditional data? In traditional data you have the items and then you say that what are you feeling right now and you have say something like a five point (Refer Time: 19:51) scale or I ask you that have you been feeling nowadays. So, I do not say right now, but I say nowadays and again I give you a (Refer Time: 20:02) scale, but then finally, the tool that I am using it gives me a set of score.

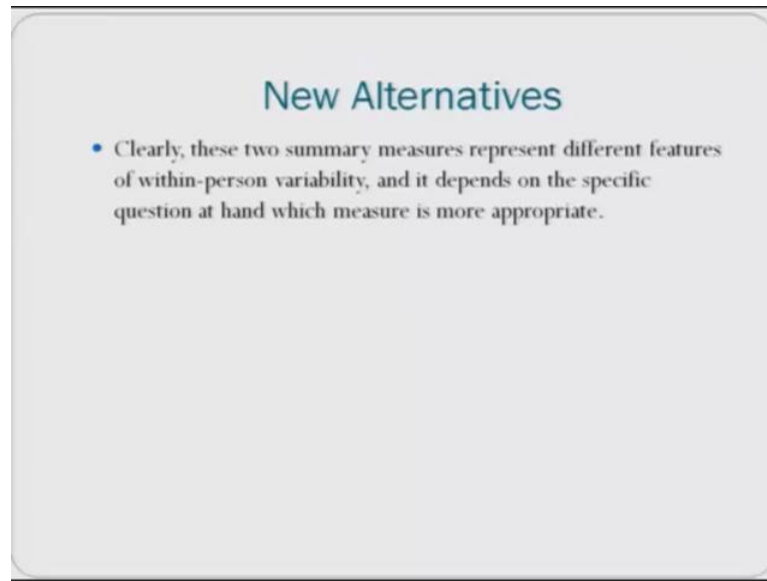
So, for each item I have just one quantitative, value whereas in the tool that I am talking right now to you what happens you have for the same thing, for the same item, you have multiple scores because throughout the day you have been know doing it repeatedly. So,

I have a big problem because the same item has given multiple scores now, if I aggregate them then again it gives me a traditional data it will help me lose certain things now. So, aggregation basically leads to elimination of certain valuable information. I will not be able to share the full detail with you, but in defense research when it comes to mental alertness these are your physical capabilities and the impact of training. One of the biggest thing is that how to retrain yourself, so that even though your biological system becomes little sluggish mentally you are still alert and this is a big challenge even today also.

Now, for such type of things if I go for aggregating data then of course, now I get a compromised score wherein certain valuable information will be lost. So, what was the impact of or what was the variation in the circadian rhythm at that time, what was the variation in certain type of biological indicators of alertness at that point in time, those information's gets lost and suppose you are interested in the individual difference in variability of a affect then again you realize that fine you know aggregation does not help you. So, one of the obvious ways of taking care of this is you go for a mean squared successive difference MSSD.

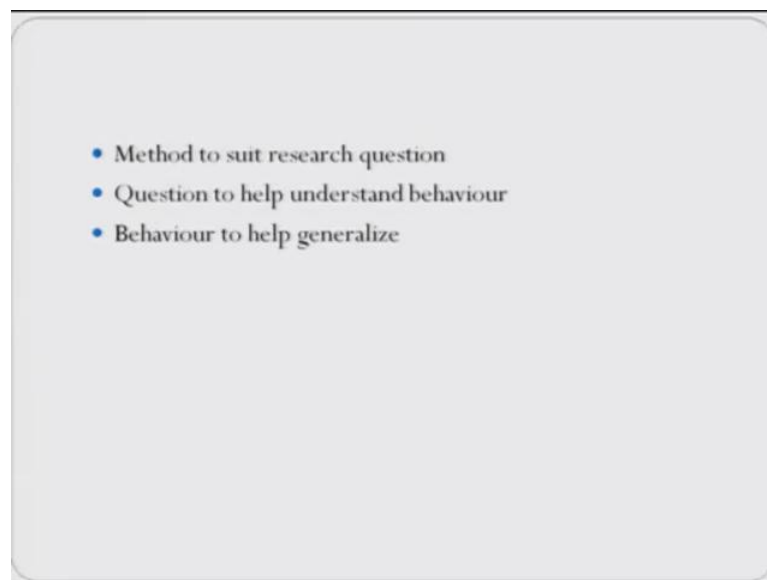
This is a technique which basically captures movement to movement variability and this is again an alternative tool, this is a new alternative. You do not go further traditional pattern of data acquisition in psychology when you are mapping human behavior rather you go for a different type of approach, but my interest is not to confuse you, but my interest is to tell you that the world does not stop here what you have seen as this part of this course there are new development that are coming up and I am sure by the time this lecture is over and if you read on your own you would find many new things that would have come up.

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So, clearly there are measures which basically represent different features we are interested in the within-person process, variation within individuals, and then you always have to look at what are the methods that basically suit your research question.

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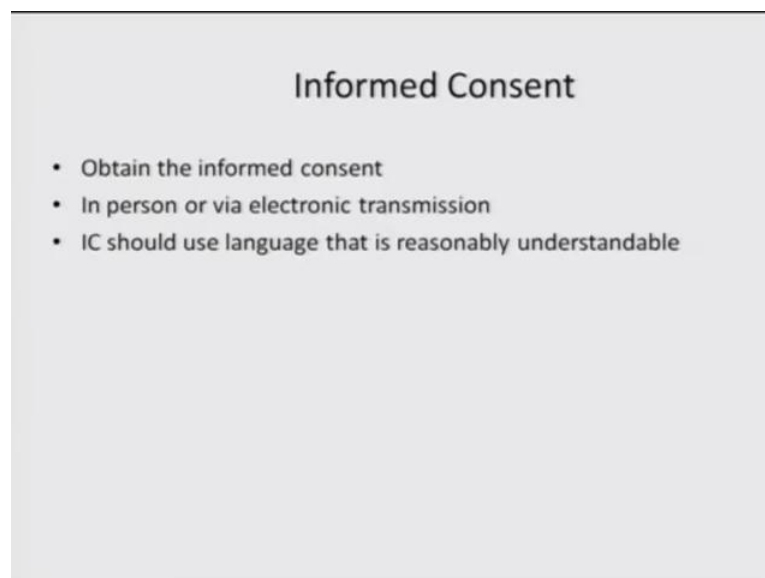


Methods are not important per say rather their research question is far more important, and you have to have a good understanding of the methods, their appropriateness, their limitations, and then you choose the method which actually suites your research question.

Second important thing is that is there a possibility of tweaking with method can I go for little revision in the method that I am going to use to basically suite my research process, I customize the method of a bit which is scientifically acceptable which is very much replicable. Because these are the questions which will basically help me understand human behavior and this is my intention as a psychologist, but then I am always driven by this whole fantasy that finally whatever I observe that very behavior I have to finally, generalize so that I can claim that this is a how human beings do this is what goes within the individuals this is how the behavior can be explained and narrated to the rest of the world.

Before we end this discussion I would like to focus on something which is of at most importance and gradually over period of time has become excessively significant as far as research is concerned, studies are concerned. There is something called the ethical code of conduct and over a period of time it has become mandatory for all researches to take care of these ethical code of conduct. So, I would (Refer Time: 24:51) like to know just focus on it. So, that you also can take care of it this is important for conductance of the study, this is also important for publication of the study and this is also important even otherwise if you look at things from the point of view of legality.

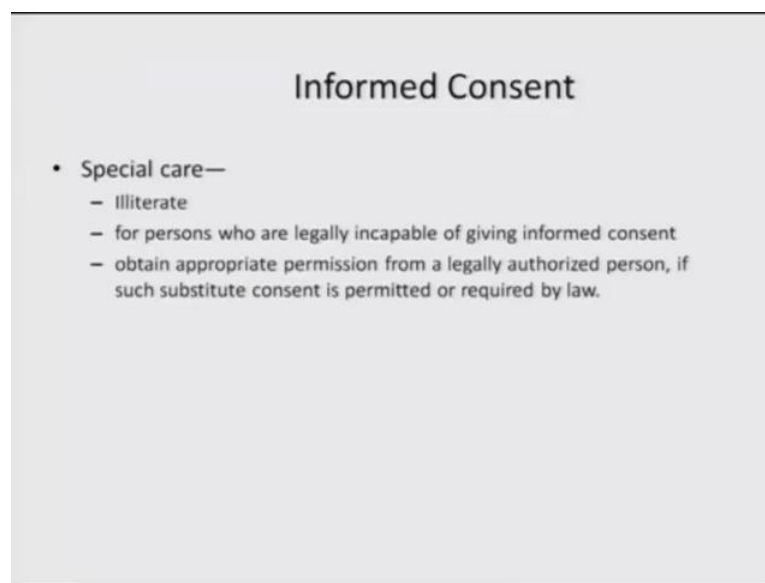
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The first in the important thing is that you have to go ahead with informed consent. So, basically there is a form, you have to design a form before you are conducting study and

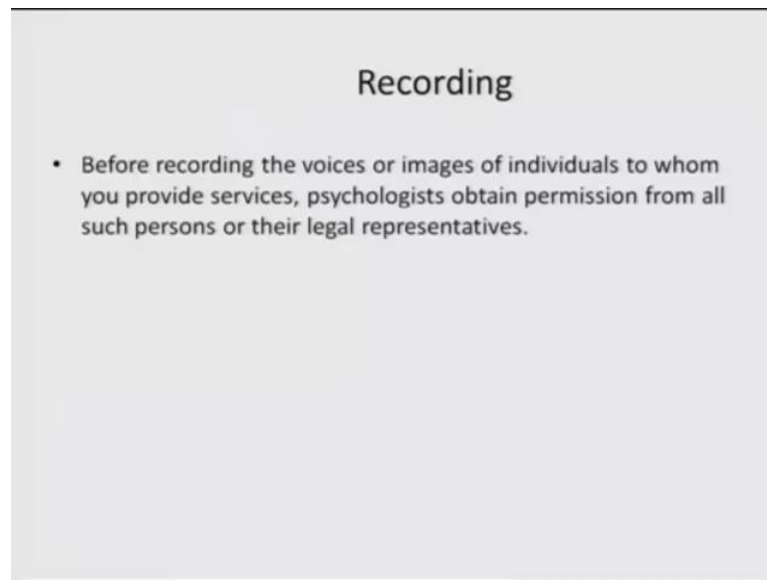
you obtain the consent of the individuals who are participating, this can be done either in person or it could be done through electronic transmission. Important thing that you have to take care is the fact that informed consent should actually be in the language that is reasonably as understandable by the participants. So, if I have a Hindi speaking group I will have to have the informed consent form which is either only in Hindi or English and Hindi, if I have different language group I have to take care of the language of the participants so that whatever is retained in the informed consent form the participants can understand it easily.

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In case your study involves illiterate participants then you have to take special care, further if you involve people who are basically legally incapable of giving their informed consent then also you have to go for an appropriate legally authorized person who would sign on their behalf. Similarly if you are working on people who are not of the legally expectable age range to give consent then again you have to go for their parents or guardians who would know sign the informed consent form on their behalf, but before you take their consent on a proper informed consent form it is advisable not to conduct the study the primary obligation of all researcher, all psychologist is to maintain the confidentiality and therefore, all information that you derive out of your study whether it is a clinical trial whether it is a lab based experimentation, field base study, the confidentiality of the information has to be maintain, it has to be protected. This is true even for the recordings.

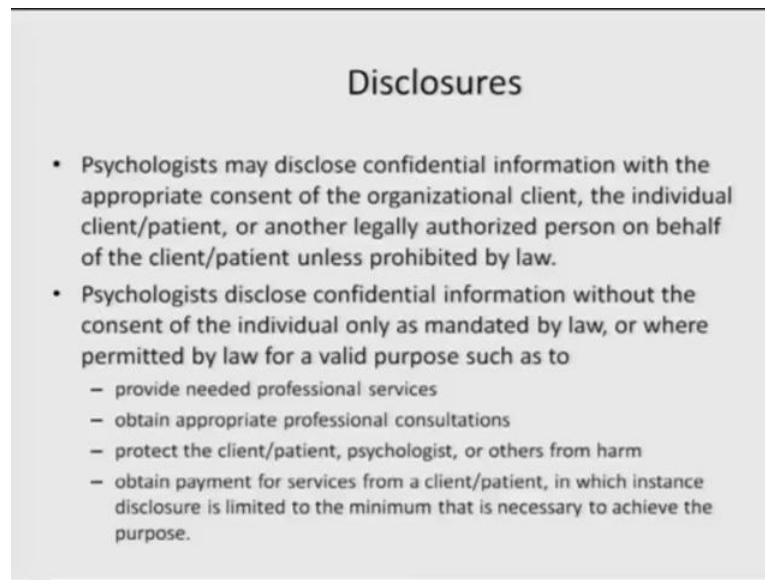
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Nowadays we always know go for voices or images or video footages for all of that you have to take permission from the person.

While doing this in the primary thing that also has to be taken into account is that you have to minimally include in to the privacy of the individual. So, you should basically look at the fact that the communication that you are making whether it is a written or oral, should be very very appropriate, very very scientific and it should have that professional flavor. Try your best that you do not include into the privacy of others. Further there are certain things where you have to or you may be required to disclose and the confidential information with the appropriate consent of the organizational clients or the individual clients or the legal authorities.

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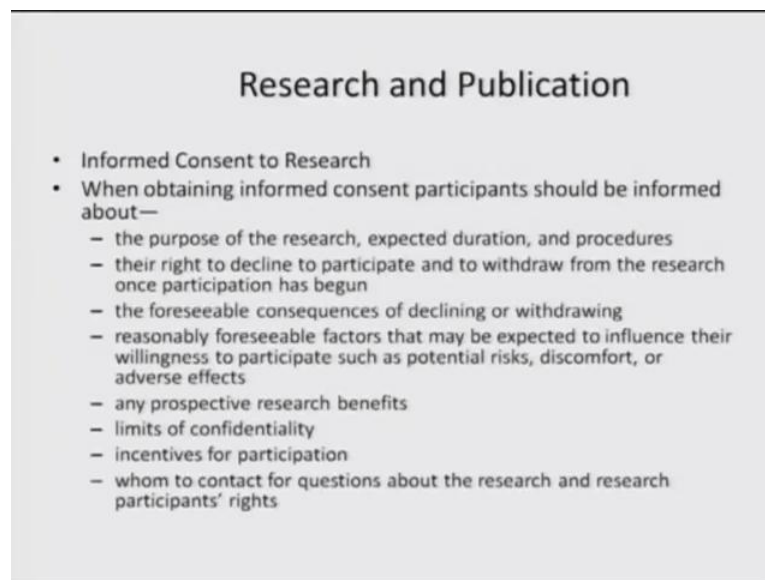


### Disclosures

- Psychologists may disclose confidential information with the appropriate consent of the organizational client, the individual client/patient, or another legally authorized person on behalf of the client/patient unless prohibited by law.
- Psychologists disclose confidential information without the consent of the individual only as mandated by law, or where permitted by law for a valid purpose such as to
  - provide needed professional services
  - obtain appropriate professional consultations
  - protect the client/patient, psychologist, or others from harm
  - obtain payment for services from a client/patient, in which instance disclosure is limited to the minimum that is necessary to achieve the purpose.

But then, there are certain laws, there are certain guiding principles and in everything the disclosure that you make has to take into account these many facts.

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### Research and Publication

- Informed Consent to Research
- When obtaining informed consent participants should be informed about—
  - the purpose of the research, expected duration, and procedures
  - their right to decline to participate and to withdraw from the research once participation has begun
  - the foreseeable consequences of declining or withdrawing
  - reasonably foreseeable factors that may be expected to influence their willingness to participate such as potential risks, discomfort, or adverse effects
  - any prospective research benefits
  - limits of confidentiality
  - incentives for participation
  - whom to contact for questions about the research and research participants' rights

As for as the publication part is concerned of your research data, the purpose of the research the expected duration, the procedure you have to mention in the informed consent form. You also have to tell your participants that they have the right to decline to participate or they can even withdraw from research after they have know began their activities in the research. So, they might have started the process, but then whenever they

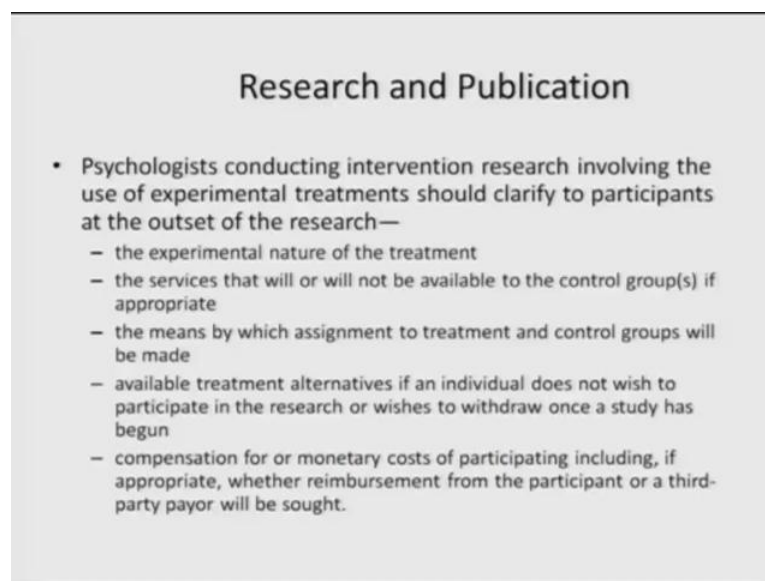


feel they have the right to withdraw. Then there could be certain issues where in you have to very clearly state the potential risk, the discomfort, the adverse effect, the prospective benefit that the researcher might get the prospective benefit at the participant might expect, the confidentiality part that you would maintain it, the incentive if you are provide into by participant.

You might even talk about the limits to confidentiality with the participants and then you have to very clearly state whom to contact if the participant has any question related to the research or the rights of the participants or if the participants wants to know the findings I remember that you can always ask only for the observation based on your personal data you cannot ask for the observation made on in the data of others.

But as a researcher you have to disclose who is the authorized person whom the participants can made talk to or write to.

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**Research and Publication**

- Psychologists conducting intervention research involving the use of experimental treatments should clarify to participants at the outset of the research—
  - the experimental nature of the treatment
  - the services that will or will not be available to the control group(s) if appropriate
  - the means by which assignment to treatment and control groups will be made
  - available treatment alternatives if an individual does not wish to participate in the research or wishes to withdraw once a study has begun
  - compensation for or monetary costs of participating including, if appropriate, whether reimbursement from the participant or a third-party payor will be sought.

Now psychologist, they conduct intervention research where certain type of treatments are also provided, certain interventions are also provided and there are different code of conduct for that and that has to be followed religiously.

So, primarily our intention was to understand human behavior in totality, our intention was to understand the hidden process which is not so glaringly indivisible to public at large - what goes within, what comes afterwards, how the behavior gets manifested and

is there a pattern within an individual and between individuals so that we can generalize that this is how human beings behave, this is what leads to one types of behavior and that is what leads to the second set of behavior.

This course was basically customized to help you understand all these. We also add the lab sessions to help you understand things better, to empirically find out yourself how theories are built, how theories can be tested, how hypothesis can be made and we also ended with certain alternatives that you can always think for. So, I hope this course helped you to understand human psychology little better.