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SPEAKERS

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Everybody, welcome to a new week, we're gonna be talking about ethics. Before we get into it, I just want to remind you of your peer reviews. If you have not done so please complete those at your earliest convenience. They're extremely valuable. And please be available for anybody who wants extra feedback, whether it's through written emails, messages, or if you talk over the phone or through video chat. So for today, we're going to talk about very short, brief history, if you will, of unethical research is is an all encompassing, but it should give you a nice foundation of some of the things that have come up some of the unethical things that have come up over the years, particularly recent years, or we're talking about research, and how that has led into the formal IRB, or the institutional review board, and ethics training for all researchers, not just young researchers like yourselves. But for early career researchers like me, and even for mid level and professors who have been around doing research for a considerable number of years. So, for ethics, some of you may be familiar with some of the experiments that we're going to talk about. But what I want to highlight here is that the idea of research ethics is really a new concept. If we think about the fact that research has been done, over not just the last century, but over centuries, thinking back to earliest civilizations, research has always been conducted. But the idea of ethics and the informed consent process is a relatively new concept. Some of the research that we'll talk about, was done within the last 40 years. So these things are not so far in the past. And many of the issues that we're still grappling with today have been issues throughout time, and have actually biased some of our own current findings. So one of the first places that we can put a touchstone for

research ethics, is in the war crimes committed by Nazis during World War Two, many German physicians and administrators for their willingness to participate in those crimes and what were considered and still considered crimes against humanity were tried. There were horrifying procedures that were conducted under the guise of research purposes on thousands and thousands of concentration camp prisoners without their consent. And many of the advancements, quote, unquote, that we have had, in certain areas of study, were done through these horrible situations. And that really got people thinking about, well, what should research look like? Should we allow research to happen on individuals who have no control over whether that research is done upon them? Another study that was done very unethically was the syphilis study that was done in Tuskegee, Georgia. It was a publicly funded project that lasted for 40 years. It monitored syphilis in low income, African American males 400 of whom were infected with syphilis. Despite being monitored, and given some amount of medical care, they were never told about their disease, they were never told about the fact that they had syphilis. And the reason they did so was to study syphilis, to understand what syphilis looked like, particularly in later years. Now, there are now a number of ethical concerns to talk about in this and in fact, I've included a podcast that has two parts that actually talks specifically about this study, and the ethics that were concerned or the lack of ethics. But one of the biggest things was the do not do harm principle. And in the 50s, we knew that penicillin treated syphilis and it was readily available yet that treatment was withheld from participants. Because we wanted to study we wanted to know what happened to syphilis in the later stages. Ultimately, many participants study in this study died of syphilis or syphilis related causes. And the ultimately, the study was stopped in 1973. by the US Department of Health only after its existence was publicized. For years, this study went on under the radar of most people. And it was not until it was exposed. That that is when it was stopped, not for ethics reasons for the human rights reasons, but because it was a political embarrassment. Yet, things haven't changed greatly in a number of those years. Again, these are just snapshots. But in 1953, Watson and Crick, quote unquote, discovered the structure of DNA that they eventually would receive the Nobel Prize for, by secretly obtaining key X ray diffraction data from a woman named Rosalind Franklin. And this was done without her permission. She was not awarded a Nobel Prize because she died in 1953 from ovarian cancer, and the prize is not awarded posthumously. So this data was taken from her and used for this great discovery, but yet she did not know. between 1956 and 1980, Krugman geils and other researchers conducted hepatitis experiments, specifically experiments on children with mental disabilities at the Willowbrook state school, which was an institution and some of you may have seen or heard of the geraldo rivera expos a of Willowbrook that got it closed down shortly after in the 1980s. Yet this was going on for a long time. And in this particular study, they intentionally infected the participants with the disease in order to observe the natural progression. So not only were they intentionally infecting participants, but they were doing so it against those participants will. And some of you

may have heard the rumor, and some of you may have known it's actually based in fact that the CIA began mind control research programs. In the late 50s, and early 60s that administered LSD to unwilling and unwitting patients, sometimes it was veterans. Sometimes it was active military personnel, sometimes it was prisoners. Again, I'm hoping you're seeing the outrageous ethical concerns with all of this work. But sometimes, the ethics the problems with our ethics, problems with the morals of a study aren't necessarily so overt. Sometimes, they're much more subtle. In one recent example, is the CRISPR studies in China, which, a couple years ago, last year, a researcher in China used CRISPR on twins to remove the HIV a susceptibility to HIV from their DNA system. Supposedly, the parents knew about this. Yet, when we consider the ethical concerns of CRISPR. Nobody took into consideration the twins. They are an experiment, we don't know. And we have not done enough work in the genetics to understand how modifying using CRISPR can impact growth and other ways. There may be a number of unintended consequences from removing one single gene in our entire genomic structure. It may be subtle, and we may not notice it, but we just don't know. And the fact that the twin girls did not have a choice in whether or not they were to be experimented on is a huge ethical concern. And in fact, I believe that researcher has since been fired in that study has since been put on pause. So what have we done for these? Well, we've done some things. In some stretch, we have not done enough, but we have done some things to make sure research meets an ethical standard. And that started with the Nazi atrocities. So in due to what they did during the war and the tribunals that were held In the years after the war, it drew attention to the lack of an international standard on which we conducted research with human participants. And that led to the formation of the Nuremberg Code, which was published in 1948. And essentially, the Nuremberg Code was a standard in which to try the Nazi scientists against. So it was an international agreement that we said, these are important factors when we're doing human research. As you can see, there were not necessarily formal guidelines. But there were things that we hoped people would ascribe to. And in the examples I just gave, they came after the Nuremberg Code was invented in urn written down. So just because something is written doesn't mean it changes the actual act. However, 1974, in partially in response to the syphilis study, we started to codify the requirements that human participants in research must be protected. So we took those Nuremberg standards, and we actually put them into law, which set the stage for the Belmont Report, which was published in the same year. And so the Nuremberg Code outlined 10 different aspects of human research. First is that research should be voluntary. And that is absolutely essential. And most of you probably understand that principle today. But that was not necessarily the case. We need number two, that experiments should reach some fruitful result that is good to society. So it has to benefit somebody, it can't just mean it's random or unnecessary in nature, there has to be some fruitful results. Experiments should be designed based on the results of animal experimentation. And so again, think about the time that this was set in that we couldn't just start out doing work in

humans without any understanding of what might happen. And so this really started what we now do is mouse studies or other animal studies. And even those in today are starting to be brought back up and the ethical concerns of doing work with animals. And are they consenting to this work? And does this work actually translate effectively in every case, into humans? In some cases, it does. In other cases, it doesn't necessarily. We know that experiments should be conducted to avoid unnecessary physical and mental suffering. Certain studies may have that introduced, although we have to be very considerate about what types of physical or mental suffering might occur. studies that have that have occurred since like the Stanford prison study, or the study in which individuals were looking for authoritarian, almost authoritarian inclinations, whether people would would follow in line with authoritarian rules. Those added some pretty severe mental strain on participants. And the question is, were the findings worth that extra mental strain, we know the degree of risk should never exceed the benefit. We know that proper preparations should be made and facilities should be adequate to make sure we reduce the fact of injury, disability or death. Each experiment should be conducted only by scientifically qualified persons. So this means people who have studied or who understand the principles of research should only be those allowed to do that research work. We know that during the course of the experiment, that human subjects should be at liberty to end they have autonomy to stop the research whenever they want. And we also know that the scientists must be prepared to end the study. So if they see things going in a direction that is not appropriate, they have the responsibility to end the study. And so these 10 items led to ultimately the Belmont Report, which outlined three basic ethical principles and you should hear some of those 10 standards I just mentioned, in these three standards. So the first is respect for persons. So that means an individual has autonomy. There are protections for the individuals with reduced autonomy. So things like prisoners, or children, or other vulnerable populations have an extra level of protection. There's benefit reasons, meaning that we need to maximize the benefit and Minimize the harm. And there also needs to be justice. So there needs to be equal distribution of the research costs and benefit, meaning it shouldn't cost individuals too much in order to receive the benefit of the study. So let's delve into these a little bit further. So again, within respect for persons, we treat individuals as autonomous persons, we allow them to choose for themselves. And this is the foundation for what is considered informed consent. So each of you will have to build an informed consent process, and then informed consent document. And that is through the Kiu system in the IRB. And we'll walk through that. And I'll provide an example for all of you to look at when it's time to get into that you all should have access now. So if you haven't, you can delve into it. Within respect for persons, we also know that individuals can withdraw from the study without penalty. Sometimes that may mean, they don't get the big incentive that you had outlined for participants who completed the entire study. But it also means that there isn't any penalty for them, so they don't have to pay anything. or, in the case of psychology research, if a student is taking part in research

based on a class, they're not penalized in the class because of their withdrawal from the study. The same can be seen in educational research, where if a child is taking part in a research study that is looking at the classroom, they their educational opportunities are not hindered by their non participation in the research. We also know that persons with limited autonomy need potentially extra accommodations or extra protections. And this depends on the amount of risk and harm and likely benefit of the study. In the cases of those with limited autonomy, we may have what's called an assent process, where you get consent from their legal guardian or parent, and you get a sent which may be verbal or written from the individual themselves. This takes time and practice in order to implement appropriately. But there are ways in which we can make sure that those who have limited autonomy, or who have a limited ability to communicate, for example, can demonstrate their own will, within the research project. With benefits comes the IRB. And that is really, who determines ultimately, whether the benefits outweigh the risks. In most research institutions, particularly larger ones, there is a university based IRB or Review Board. And so, for example, I submit my materials to the university's IRB, which faculty from departments across the university serve on and they look at my proposal and make a determination whether or not my study has met the benefits principle, whether there's enough benefit that outweighs the width the risk of committing this study. The obligations affect both the researcher and society that researchers are required to give forethought to the maximization of the benefits of their proposed study. As you are thinking about your topics, it's not enough that you are interested and it's not enough that you feel like this study may be of benefit. You need to be able to show and demonstrate what exact benefits are going to occur, and how that might outweigh the risk of individuals taking part in your study. On the society's standpoint, they need to recognize that the longer term benefits and risks may improve knowledge. Often this is lacking society as a whole. And this is a very large generalization. But society as a whole doesn't often recognize quite what the risks and benefits for all studies or even an individual study is. And that is where the researcher needs to do work, particularly with the informed consent document to demonstrate what those risks and benefits are. Within the Justice principle, it's treat everybody fairly, the golden rule, if you if you will, essentially do not exploit those readily available or those malleable To, to your will. Particularly this would be in cases of children or convenient sample where a professor is leveraging their power dynamic relationship over students in a class. We also need to make sure there's fair distribution based on the problem or issue that's under investigation. So are you fairly considering what is going on? And are you the right person to be doing that work? So what does this look like applied? Well, in the respect for persons category, through the informed consent process, and, though informed consent has been around as an idea since the 50s, it's only been a serious discussion since 1972. So less than 50 years ago, is all of this process coming together? And so in order to meet the respect for persons, there's things that we have to make sure we're identifying. So in the case of information, does your consent form provide

all the information necessary for the individual to make a reasoned decision? Is it in language in which they can understand? Does the consent form clearly indicate that the participation is voluntary, and that they can stop their participation at any time that they would want? Also, once you as you're thinking about this, think about what other additional protections might we put in place to protect those with limited autonomy? How might you go about making sure that you're providing enough information, that it's a way in which someone can comprehend and that you're demonstrating the voluntariness of the study? For individuals who may have limited verbal communication? What things might you have to do? How could you go about that process? Looking at benefit reasons, again, it's an assessment of risk and benefit. So the risks refer to the probability of harm. If it is a risky study, that means it's very likely that somebody is going to get injured or hurt. benefit is obviously the promotion of health, well being or welfare. So how do those risks balance against the benefit? Are the risks justified, is having the person do something that is risky? meet the need, it is absolutely necessary in order to receive the benefit? Can those risks be minimized? And it's not again, just physical risk, we may be talking about psychological or emotional or social or professional, or even economic risk that is involved with your study. Depending on the topic, can we design the research to minimize those risks and maximize the benefit, and this is going to come with competence. The more you do this, and the more you work around individuals doing good research, and I use good in quotations. If you're doing good work, you'll be able to see the processes in which they go through and be critical. Just because someone that you are working with is using a certain set of procedures. And even if those procedures have met the bare minimum IRB standard, and again, I'll stress that the IRB is the bare minimum for this. Just because it's getting it's gotten written off by a group that is not elected who is voluntarily sitting on a board does not necessarily mean it's a completely ethical study. It is the bare minimum. So as you're thinking about the risks and benefit, what are they? What are the benefits to read to the society to the participants who are going to take part in your study? And can those be justified? Lastly, with justice, the selection of participants is important. And I even made a mistake here and I said selection of subjects. Subjects is a term that is since only been used in more basic forms of research, more clinical types of research. For most of research, we consider quote unquote, subjects, we consider them participants. It's a simple language change, obviously the person or people have not changed yet, within that language participant means individuals are participating, right they are collateral With the research project, they are active members of that research study. Subjects mean they are subject to they don't have autonomy, so that simple language can demonstrate your command of ethics. And back to the Justice again, is the subject pool appropriate for your proposed research? Is it appropriate to involve certain vulnerable populations within your study? Are they there because they're convenient? Or are they easily manipulated as a result of their situation? Or are they there, because that's the population you need to do work with? Are the recruitment procedures fair and

impartial, are the inclusion and exclusion criteria fair and appropriate. So for example, if you're doing a study and you are recruiting, and for a certain study, you have a very large incentive to do the research project is that inadvertently, causing people to sign up who normally wouldn't? For example, when I was in undergrad, I almost signed up for a study that was being done at the University of Michigan, on heart medication. And it would have taken three days of being in the hospital under strict supervision, but at the end of it, I would have gotten paid 40 $500. As a individual in undergrad 40 $500 was a lot of money. But in reading more deeply, there were some serious potential side effects that will come from taking that medication, and I ultimately didn't do it. But that amount of money can be very persuasive to individuals who may not have other choices. Also, are we making sure that how we recruit individuals is not being manipulative. For example, if I was working with a child on the autism spectrum, who is nonverbal, and their parent had already consented for them to be in the study, I'd still have an instant process in order to make sure I gauge their desire to participate. And with a child who's non verbal, it can be hard, they may be able to signal to you with a nod their head yes or no, or thumbs up or thumbs down. Or, as the researcher you may have to explain it in a way they understand through pictures, and then gauge their interest and their engagement in the project. And if they start engaging, that may mean they are actively engaging in the research process that they are sending to this study. Yet it doesn't in there, you have to keep monitoring, because that behavior may change. And you may be the person who has to say Nope, they have now reached a point of descent, and therefore I'm going to remove them from that study. As I'm describing all of these, and as I'm bringing up all of these topics, it is important to recognize that there are decisions that are made in the moment. And there are decisions that are going to be made with experience as you learn about them. But the more you can think about this ahead of time, and the more you can put out a process of what to do in each scenario ahead of time, means you're going to be much more prepared for when you ultimately come up against that in the research when it happens, and that you're more prepared, and that you can justify the decisions that you're ultimately making. So what I'd like you to do, for our first discussion for this week is go to the bioethics research.org site, and they have a number of case studies. What I'd like you to do is select one case, read through it and answer the questions in your discussion post. Some of them are shorter than others. What I'd like you to also do not just an answering the questions that they propose, I'd also like you to think about the ethical considerations in relation to the Belmont Report. So have they appropriately used respect for persons, beneficence and justice within their study? And if not, how can they fix it? Each of these examples are very bio ethic related, which may be outside of the context of many of your interest areas. That's okay. It's outside of my interest area too. But find a study that resonates with you that they may have done something that is of interest and write about it. Sometimes it's good to get outside of your own area and learn about what's going on in other areas. That way we don't become too siloed in our knowledge. Okay, the IRB review

board. So within the IRB, as I had mentioned, it's typically a group of individuals who are from all over a university, or who are asked to be a part of independent review boards that serve smaller institutions or private research companies. And those individuals often come from multiple disciplines in order to make sure there are multiple points of view used within any decision. And individuals within the IRB are trained to look at the three different principles of benefit reasons, justice and respect for persons. So they are ultimately looking for that risk to benefit is the benefit outweighing the risk? They're looking for experimental designs. They're looking at the qualifications of the primary investigator. They're going to be looking at how you're recruiting individuals. Do you have clear inclusion or exclusion criteria? And how are you going about recruiting? They're also looking at your informed consent document? Do you have what's considered surrogate assent or consent and assent? Meaning Do you have consent from a guardian innocent from the individual? And how might you go about doing so they are looking for whether you are keeping the confidentiality or even an amenity of the participants. That way people can't figure out if they participated in that study. Because the risk of somebody knowing that they participated might outweigh the benefit that they get in that study. And what might protection, what protections might you be giving to any participant that's taking part in your study. So again, IRB review all research activities that involve human subjects, excluding Invasion of the Body, and animals. So if human subjects are being used, it goes to the IRB. If you are doing research that is using secondary data, where you do not know the or you're not coming in contact with a participant, or if you're doing a literature review, or an analysis of documents, where you're not actually working with a person. Typically, those are what's considered excluded from from the IRB, they're exempt. But if you are using people, you need to go through the IRB process. And just to define these a little more clearly as to what we're talking about. Research is the systematic investigation, including research, development, testing, evaluation, designed to develop or contribute to generalized knowledge. human subjects are defined as a living individual about whom an individual is conducting research. And these come directly from what's considered the common rule, which is federal law, which defines how we go about the IRB process. within human subject research, we also consider information or biospecimens. To be under this definition, and whether or not there are identical private information are identical biospecimens are considered human subjects. So if you have a biobank of human genetics of blood, blood or tissue samples, that's still considered human subjects, because that information could be identifiable. So when you submit, as I mentioned, you fill out a document and I'm going to show you what that looks like in just a second. It could go into three categories. The first is exempt, which is research that according to federal regulations, informed consent might not be needed. Alright, so this might be studies that have minimal risk when you're doing the interviews or it could be from surveys that are anonymous, or it could be from observations in which you are not collecting information about any person in particular but a system or classroom or environment in

which people may be but you're not collecting their information. Or if that data is archival, as I mentioned before in an identifiable, it would be exempt. expedited means that there is minimal risk. So that is typically decided by the IRB, you don't necessarily decide that. And if a study is decided to be expedited, it might, it still gets reviewed, but it's not reviewed by the full board. It may be the chair and one or two other people who are experienced and designated by the chair in that particular area. And the last is a full board review, which is where the entire board reviews it and often discusses it before they provide approval or denial. And if it gets denied, you get a chance to fix what is incorrect. And there's typically a process that goes on before that happens. So what are your steps in this in this process? Well, you need to have a solid defensible research design. And in the coming weeks, we are going to talk about different types of research designs, which will help you make that argument. It also helps to have a good literature review and command of the literature review of that topic. You are you are the expert in the topic that you are presenting to the board, they may not have no knowledge of your particular sub discipline. And so they can't necessarily speak to its importance. But you can show importance by using the literature. You also need to complete the online investigator training, which goes through a couple organizations, the largest is what's called city. And I'll show you that, again, coming up in a couple of slides. You also want to make sure you complete the appropriate protocols and forms. That's the chi use system. At least that you empty other places have different systems, you'll submit through IRB through the chi use IRB system. And if you need to change, you can modify or fill out the full report within that system, you will not have to do you will not have to submit an IRB for this class. But you do have to fill out or at least start filling out those forms. And the reason I asked you to do that is so when you ultimately do a study, whether it is the one you're proposing here, or it is something different for your thesis, you at least know how to go through everything to fill out the forms in which you will need to submit on the board side of things. First, the chair or other staff members would determine the status of your proposal. They'll also do preliminary reviews in which they will ask for clarifications or corrections on certain items within your IRB protocol. If it's full board, it'll be assigned to primary and secondary reviewers. If it's exempt, that is where those reviewers and the chair will make the decision. If it goes full board, those reviewers will present the results of their analysis to the full board. And they may ask the PI the primary investigator to attend that meeting during that conversation. Once that conversation is had a decision is rendered and provided to the researcher whether they can go forward or they need to revise the application. As I mentioned, we use the chi u system to fill out all the IRB information and keep track of it. All of you have been given access to this system. So what you can do is you can go in through u and T site and you can log in using your un t EU ID and password that should be the same you can log right into the system. They have a lot of forums in there. But also the research.umt.edu slash faculty resources slash forums is also where you're going to find the informed consent document or the consent slash assent document. What I'd like you

to do this week before we start getting into everything is to take a look and get into the IRB system and play around with it. Try to start a new protocol that won't trigger anything until you hit submit. But when you put it in, where it says faculty or staff, click faculty and put your advisors name there. What that will do first because you're you aren't necessarily fully trained yet to leave a research study, your advisor will technically be the PI on your studies. Also, by putting them there within the system, they will have access to be able to go in and look at what you put in, in your IRB forms, so they can help you out. If you run into any trouble with this, let me know again, this is you don't have to do anything complete until the end of the semester. And you don't have to submit anything. But what you will submit with your final project is a PDF of your documents. And we'll walk through how to do that when we get to it. The other thing I want you to pay attention to is the city program. Each of you if you have not done so already at another university, I need you to go in. If you haven't a login, you can log in if you need to register, register. And when you register, you'll be able to select u and T. And there's two required. Actually, I think there's three required modules that you have to go through. The first is the basic research, I think it's RCR research, responsible conduct of research, the other is a conflict of interest. And the third is either social behavioral research, or biomedical research. If you are somebody who is interested in doing things that would take blood tissue samples, or measurements within the body, most likely you're going to want to do biomedical if you're somebody who's looking at behaviors, so things like sociology, or psychology, or even physical activity behaviors, you're going to want to select social behavioral researcher. When you submit your final proposal, I need you to submit the completion form. So you'll get a certificate. Once you complete all the modules in there, you'll submit the PDF of each three of those areas. So the RCR, the responsible conduct of research, the conflict of interest, and either the biomedical or social behavioral certificates. They're fairly straightforward. If you run into any issues with those, let me know and I can help walk through walk people through. So before we talk much more about other types of misconduct within research. Now that we're starting to think about the ethics of research, and we're talking about how we consider each individual research project, I want you to start thinking about your particular project or a particular topic of interest. And without telling me any types of design. I don't need to know if you're thinking of a qualitative or experimental or quantitative or mixed method study or descriptive study, I don't need to know any of that at this point. What I want to know is what might be some ethical issues that you have to consider when planning your study? For example, if you're thinking about working with athletes, what might be some ethical considerations that you need to think about? When you're designing your study? What might the informed consent process look like? If you're going to do in person research? How are you going to go about getting consent? What benefits or risks might be involved? How do you expect to recruit your participants? What criteria are you considering for inclusion or exclusion? And I realize I haven't defined this very well. But within any study, you're going to have some inclusion

criteria, meaning you're going to want to make sure you have some specific things you're looking for in your particular sample. For example, when I do work with autistic youth, oftentimes I would say I'm looking to recruit. And within my inclusion criteria, children have to be between the ages of three and 10. They have to have a diagnosis of autism or something similar. They have to be able to follow directions based on verbal prompts. And they have to be based in the US. So those would be my inclusion criteria. My exclusion criteria essentially would be anything the opposite of that. So children older than the ages of 10 children who have diagnosis that is not autism, and the list goes on. What I also want you to consider with that This discussion prompt is, how will you ensure confidentiality or even an amenity within your research? And what will happen ultimately to the data at the end of your study? What are you going to do with it? Are you going to keep it? While you're supposed to keep it by? By law? You have to keep it for a minimum of three to five years? But how are you going to store it? Where is it going to live? If it lives on your personal computer? How are you protecting it? Are you the only person that uses that computer? Do you share it with other family members, because if you do, you need to have additional considerations. for that particular work, I have a laptop, a personal laptop that nobody else in my family uses, because I have research that exists on that on that laptop. And that's not just to keep people out of it. That's because I have to consider the ethics of the research living on there. And my family understands that they can't go on my laptop. Because of that fact. I also have those password protected. So in the rare case that my spouse, or other people use my laptop, they won't accidentally stumble upon and be able to see all of the data that I have stored on my laptop. Okay, so the last couple of things we're going to talk about our other areas of research misconduct. So we talked about the real big ethic concerns, so making sure people have autonomy. And people have an ability to leave the study or that you're considering how recruitment goes or you're considering if the risks are valuable for that piece of research. There are other pieces that are also ethical concerns that happen after the research has already started. So things like fabrication, falsification, and even plagiarism are, are unfortunately, widely seen across the research world across all of research in any discipline. Now, when I talk about fabrication, I'm talking about literally making up data or falsifying or not falsifying, but, but fabricating results, or recording data the way you want them to be recorded. falsification is the manipulating of research. So changing or admitting things are not accurately representing research, and the research record of the data you actually collected. And plagiarism. Many of you have probably heard these terms. But this is the appropriation of another person's ideas, processes, results, words, without giving appropriate credit. There is a thing called self plagiarism ation, it is the idea that you do not cite an idea that you had already previously published in another study, it can get kind of muddled. But you can actually plagiarize from yourself, if you're taking a word or an idea from something you have published elsewhere. So in looking at each of these specifically, within plagiarism, there are multiple tools in which journals, or watchdog

groups can look up and determine whether or not a study has been whether it's actually an original piece of work, or it's been fabricated. This is an example. And so you can see the the top four pictures are one research study. And all of the highlighted elements are taken from other studies, either verbatim, or pretty darn close without actually attributing to those other studies. So everything in red comes from that middle row. And all the other colors you can see there's a diagram that's copied directly. There's text, big chunks of text, and this is a really bad example. Sometimes it's not quite as this bad. But people copy it happens. And it can get scary when you're when you're writing up a paper in your you're thinking about how to rephrase or synthesize work that is from somebody else. And if you go to identication, or there's other free, plagiarizing software's that you can actually upload your own paper to check and see if there's any overlap or not. You may get a certain percentage back. And just because you get something back doesn't mean you plagiarized it, it could be that you wrote it similar in a similar way to the author in the software is catching it up. When I did my dissertation, all 280 pages of it, I had a score of about 5%. Once I excluded the references section, but about 5%, they said was non original. But when in looking at all the examples, it may have been a short phrase that was cited appropriately. So, if you go through that process, and you look and see, oh, this is pulled from somewhere else, they're saying that this is attributed to another study. If you're citing that research, then you're good to go. If you're saying that this is pulled from somewhere else, and you're not giving appropriate attribution to that quote, or that piece of text, then it would be considered plagiarized. And remember, we can pull in direct quotes from other pieces of work. But try to do that sparingly. And only in cases where you cannot reframe or you cannot synthesize what is being said in any better way than how the author originally put it. In terms of falsification when you were looking at these two pictures, particularly the bottom two, and so you can see here, this is where they're modifying the data to meet what they want the outcome to be. Those two photos that were included in that paper are identical. And you can see, if you zoom in real close, they used Photoshop or some other photo editing software to eliminate that piece of the skin that's refer because that's what they're ultimately this study they want to do in order to correct that it's probably some fungal thing going on in the foot. I don't know exactly. But they photoshopped it, they fabricated and they falsified that data. And ultimately see that research was retracted meaning it was published by a journal. But after they found out that the data was falsified, the journal pulled it back. They said we're basically apologize for publishing and they said, this is wrong. We're we're pulling this information back. And there's actually a website, you can go on follow called read, retraction watch, that will synthesize all the work that's potentially being retracted in journals across the world. Lastly, there's fabrication. And so where data is just fabricated, made up completely. And this one, it's hard to tell that it would be fabricated, right. Obviously, it got past reviewers, and it made it into a journal. But when you learn more about work, what really research particularly quantitative work or even qualitative work, you see

patterns. And you, you can understand just common sense whether data is actual or if it's if it's made up. The reason they found that this was made up data was because the controls are way too closely clustered. The fact that they're all right around the bottom is practically improbable. You'd expect there to be some overlap, or at least one or two of those samples to be a little bit higher, right? You would not expect them to be all essentially zero, all framed right around the bottom there. So it was clear to the people who are looking at this afterward, that that data was falsified, or sorry, it was fabricated. Okay, so I've included this article as an option to read but Dr. de la outlined several areas of research that need to pay attention to and those can be falsifying or fabricating research data, using another another's ideas without obtaining permission or giving credit, ignoring or circumventing human subject requirements or guidelines. So circumventing the IRB process, ignoring conflicts of interest, participating in relationships with students or participants or clients that could be interpreted as a conflict of interest or even questionable. So you're, you're you're blurring the lines between friendship and research. You're using unauthorized or confidential information, you're failing to present data that contradicts previous research. You're overlooking others use of flawed data or questionable interpretations, changing the design or methodology or results. In response to pressure from a funding source, so research should be done in a systematic fashion. And you can't go back and change how you said you did things just because that doesn't match up because the data doesn't show what you want it to show you're publishing the same data are results in two or more publications without doing something different. So this one is a another kind of gray area where you can publish multiple things from a single source of data. However, you can't just publish the same thing, it's got to be a different analysis or a different interpretation of that data. You're in appropriately assigning authorship credit. Now, many of you, this is going to be hard, and it's hard for young young scholars to determine this, especially when working with more senior researchers or senior collaborators. Under APA, the authorship should be assigned as those who played a significant role in the research. For example, if you and a co author, there are two of you put in an equal amount of work. But you came up with the study and design the study it, you'd have a pretty good argument for you being first author on that study. If you're doing a study with multiple authors five, or six, or seven, and some of those didn't actually attribute to the research manuscript, there's a harder argument to be made for them to be included. Now, in some disciplines, they include people who take part in the research process, for example, if a research lab director has the funding for the lab, well, it is sometimes common practice to put them at the end of the of the authorship because if they didn't have that funding, then you wouldn't necessarily be able to do that research. In other cases, you may put on an advisor, you may put on other people, but they should have had a considerable attribution to the research project. And it's important to have those conversations early, the earlier the better. You do not want to get to the end of a project and have a manuscript written up, and then get in a fight over who should be

ordered in what way. And continuing from the path. We also want to look for withholding details of methodology or results. or using inadequate or inappropriate research designs, or dropping observations or data points simply based on a gut feeling that they weren't accurate, we actually have to have a rationale for why data might not be included. So for all of you, keep meticulous records of your of your research. It's good practice to keep a lab notebook or just running notes that keep track of all of your thoughts on a research project, everything that you do, record everything and retain everything, not just because there are many things you have to legally keep track of. But also, if anything ever comes into question, you can go back, and you can check. And if somebody says you falsified or fabricated this data, you can show them Nope, here's the raw data, here's all the data that I collected. You can look for yourself, this is not fabricated. You want to make sure that you label thoughtfully and consistently. There's no right or wrong way to do this. But however you do it, make sure you understand your labeling process and keep it consistent. If you have data and notes, sometimes it's helpful to have them witnessed. You can maintain a chain of custody. So if data is being transferred from one place to another, make sure you keep track of that and you define it. And it's sort of a little bit hyper bowl, but you might prepare as if you might need to defend yourself in the court of law about what you do or don't do in your research practice. So if you put it on that standard, if you could stand up and say without a doubt, this is what your process was and you can show with evidence, you will be okay and you will be protected from having some of these misconducts that occurred during the research process. So there's some resources for you to use while thinking about this process, so there's the ethical decision making process that is on pages 5462 of your book. There are also ethical issues that are of consideration which is in table 4.1 which is on pages 89 And 90 of the crestfallen Cresswell PDF that I've included in this module. So in conclusion, keeping adherence to ethical guidelines is absolutely necessary. It's how we make sure that research isn't pushing into territory where it's doing harm. It's important to consider the ethics of a research study as you're designing your research, which is why we bring it up first, before we even talk about research design. So as you've thought about your project, and as you've thought about the topics at hand, you can start thinking about what are the ethical considerations. And as we do each of the design pieces, when we do the questions and the methods, you can actually consider what does what design things are needed to make sure you're doing ethical research. Be systematic in your approach, not just in designing, but also conducting your research, it will only be beneficial to you if you have to go back. And it's also important that we recognize there are unknown ethical considerations, particularly in biomedical and tech research, but also in other areas of research that we might not recognize right now, that ethics are not as a stagnant thing. As I mentioned before, research has been conducted with animals for a long time. And it was considered ethical to do that work prior to doing the work in human subjects. Yet, in recent years, the ethical concerns of doing work with animals have have come to the forefront. People are starting

to question whether we should be doing work with animals, whether we should be permitting the use of animals in certain cases that we wouldn't do to humans. Some, on the other side, argue the value of doing work here because we may find things that are ultimately beneficial to humans that we couldn't do otherwise. So just recognize, again, I don't have the right or wrong answer, and I'm not trying to persuade you in any way. But recognize that ethics are not stagnant, that we will continue to learn and continue to grow as societies morals and ethics shift as well.