

Dr. Tedd Judd Talks About Errorless Learning

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Dr. Tedd Judd: Errorless learning, boy we hear about that one, and it sounds really cool. It's a nice name, and it really is a great concept. One of the things I love about the research on this, and I won't bore you with research, I know that's, but one of the reasons that I like talking about this research is because it doesn't take numbers.

I had a professor who said the really interesting phenomena don't need statistics to bring them out. When the research teams, Barbara Wilson and others in Great Britain, first started using errorless learning with people with severe amnesia, they took one group with amnesia and another group, and they used the usual means of instruction with one group and errorless learning with the other, and they said with errorless learning they learned it after so many sessions, and with the other method they never learned it. And I said great, this is really neat stuff.

So what is it? It's based on the observation that comes from our research with people with amnesia, with brain injuries, that there are two major kinds of memory. Now there are a whole lot of minor kinds too, but the two major kinds that are important here are what we call declarative and procedural, buzzwords, let me make it easier. It's learning what and learning how. Learning what is learning information. It's things like what's the capital of France, it's things like what did you have for lunch yesterday, it's things like two plus two makes five, oh wait a minute, I think I got that one wrong. It's information, it's the kinds of things you learn in school, or remembering specific experiences that you've had.

Learning how is skill learning. It's learning the way to do something. One of the classic examples is riding a bicycle. You don't learn how to ride a bicycle by reading a book about it, you learn it by getting on the bicycle. Maybe you get a few words or instruction about how to do it, maybe you just do it over and over and hopefully you don't fall too much or too badly, and eventually you're wobbly and you get it, and you get there. And typically you hang onto that skill for a long, long time. You may get rusty at it, but it's mostly there. That's procedural learning, that means it's a procedure, it's a way of doing something.

It doesn't have to be a motor skill, that is a movement kind of skill. It can be a procedure like how to use a certain computer program, or a cell phone, or how to do a certain mathematical procedure, or really from what I can tell, it seems like learning melodies and songs is probably more procedural learning than it is information learning. And it sticks with you, and seems to be one of the last things to go with Alzheimer's Disease.

So as it turns out, the Watt learning, the declarative learning is very dependent on the hippocampus of the brain, hippocampus and amygdala, and those are two structures that are deep in the temporal lobes. And I'll try not to go very far into anatomy, but the reason they're relevant to this discussion is because their location is pretty close to the

base of the skull. And with a lot of brain injuries, especially those in auto accidents, you tend to have the auto accident when you're moving forward and you stop suddenly, and you hit your head, and the brain gets jammed down into the base of the skull, and the hippocampus and the amygdala get affected particularly, more than other areas, and so that kind of memory is affected, sometimes to the point of severe amnesia, of having a lot of difficulty learning anything new.

But procedural learning is dependent on a number of other structures in the brain, some of which are affected by injury of that sort, and some of which are less affected. So we often find in people that have severe memory impairments for that kind of, what did you do yesterday kind of information, new learning, have a preserved ability to learn by procedures. That has an upside and a downside. That means they learn what they do, whether it's right or not. So if you try to teach somebody who has preserved procedural learning and poor declarative learning, by the trial and error method, well try it and see what happens. They may well remember their mistakes.

So it can happen like this for instance in the hospital. You go by the, if you're a neurologist or a psychologist making rounds, and you go by the bed of the person with amnesia and say do you remember my name? No. Well I'm Doctor Judd, I'd like you to try to remember that. A minute later, do you remember my name? No. Well take a guess. Doctor Smith. No, it's Doctor Judd. And maybe you try again, and do you remember my name? No. Can you guess? Doctor Smith? No, it's Doctor Judd. And a little while later, next time you come by you ask again, oh hi Doctor Smith, because they remember their mistake.

That may be the mechanisms also by which people will ask the same question repeatedly. They remember the question, they don't remember the answer. They remember the question because it's something that they did, they asked it. But they don't remember the answer because it's information coming in, so they remember their own action. So we try not to teach by means in which we encourage guessing, we don't encourage guessing.

You give the person the whole information, or the whole procedure. So you may have a written phone number and dial everything but the last number and have them do the last thing, or a procedure on a cell phone or on a computer, have them do the last one, and then when they do that reliably then you add the last two steps, and have them do it reliably. You have them do things by copying you, so that they're going through the action, doing it themselves, and remembering what it is they're doing. And you never give them a chance to make a mistake. Now that in itself is a bit of an art, because you have to be able to guess when they're going to get it right, or when they might not quite know. And you have to know the particular person, cause some people are more inclined to guess than others.

But you use what we call vanishing cues. So you give them a little bit less information each time, as long, or enough information to allow them to finish the thing. Or if it's

more motor, you just do it by doing it over and over again. And we find that we can train people more reliably that way.