



An Interview with Paul Andronis Professor at Northern Michigan University

(Interview transcript by Brittany Degner and Christina DeLapp, University of North Texas, Department of Behavior Analysis)

Interviewer: I am talking with Dr. Paul Andronis today. He is from Northern Michigan University where he is professor in the department of Psychology. Dr. Andronis is the coordinator for the Behavior Analysis Option for Majors. Dr. Andronis, how did you become a behavior analyst?

Andronis: I was a biology major as an undergraduate and I took – the only real psychology course I took as an undergraduate, was the intro course. And in it there was a typical intro textbook with chapters on scientific method, physiological psych, learning, and so on, right through all of the topics. And in addition to each one of those chapters, we had to read a book that was coordinated with it. So with the physiological psych chapter, we had to read “Brave New World”, and when we got to the chapter on learning, we wrote this - we had to read this funny book that didn’t really talk about psychology. But, it was the first thing that really made sense beyond the *physio* chapter and it was a book about an experimental community that was using applied psychology to help people live happier, more productive lives, and more equitable communities, and so on – it was “Walden Two”. And, I thought, “Wow, if this is psychology, this is really cool!” And by the time we got to the mid section of the learning chapter, when they had gotten through classical conditioning and operant conditioning - and then they talked about S^D, S-Delta discrimination and had a nice close up picture of the pigeon pecking the red key and



sitting back when the key was green and then the chapter switched to cognitive and the rest of the book was nonsense, it made no sense to me. Very little sense anyway. Especially coming from biology, and chemistry background and all the physics and this other stuff was just like fiction. And, I said, “Where did this stuff from the learning chapter go? There is nothing else in the textbook that is even referring to this stuff!” Well, you know – I said, after that course, maybe if I take another course – I’ll run into that stuff again. And I took one more course, and it was actually painful. I mean, I had to fight my way to sit through class. And then I vowed I wasn’t going to take any more psychology – it was trash and it was too bad this guy, Skinner, hadn’t written anything else.

As a junior, or senior – I ran into Joe Layng – he was a student at Notre, Western Illinois, we were both undergrads, and we got into a discussion. I had read, at that point I had read Darwin and I was started to get interested into Conrad Lorenz’s work and about how behavior could be programmed in some way into genes and nervous system. And I got into several arguments with Joe about the causes of behavior and the control of behavior. And he said to me, “You know, you know this is fun but I can’t talk to you, you are too stupid. You have to read something”. So he threw a book at me, and he said, “Read this over the weekend then we will have something to talk about because you really don’t know what you are talking about with this stuff”. And it was Skinner’s “Verbal Behavior”. And I didn’t realize it at the time until I got back home, when I opened up the book, they had in the book of wisdom of all the things they had read and I recognized “Walden II” was there and it was the same guy and so I read it and, by the end of the week I was asking for other things and he gave me “Science of Human Behavior” and a couple other of the early writings. And after that I was just hooked, it melded so perfectly with what I thought a science of behavior should be and it touched on all the areas that psychology seemed to give over to fictional explanations. And as a biologist it

appealed to me just because it was amenable to the same rules of evidence and of the same truth tests that's you get in biological concepts, it just made sense. After that I was hooked.

Interviewer: Wonderful. What was it like to be a behavior analyst during the early years in the field?

Andronis: It happened before I was actually formally a behavior analyst because I stayed a biology major and graduated with my degree in zoology and I went on to get my masters degree in cell biology and molecular biology. But during that time, for example as an undergraduate, Joe Layng had already gotten some expertise in programmed instruction, he had been in contact with Sue Margland University of Illinois, had done some work on projects that, he submitted to them and they mentored him through the early phases of his training in programmed instruction so he started a program at Western Illinois called, "The Center for Innovative Design and Programmed Instruction, CIDPI". It is a student run organization, they applied for a grant and got about a hundred-fifty thousand dollar grant from the state of Illinois. And it was meant to introduce programming methods into college classrooms. And Joe asked me to come on board to learn programming and to help program the material for biological sciences and so I started doing programming in that context, and we put together some PSI courses for the sociology department and so on. So that was my first, actual experience doing anything other arguing with somebody about behavior analysis and it was so appealing because you could actually see changes, you could actually monitor changes with objective measures. We had not only the students performance in class but how many hours we had been logging, how many hours they were studying, how many units they got through per sitting, what the duration of the studying was, we tried to build up the study habits from the ground up. And we also kept track of, the change from the first year when a lot of the people were very resistant about using any of these procedures in a classroom and by the



second year we had props from the sociology department coming in and asking us to program courses. We had about a dozen courses in sociology that they were asking for programs. Most of us, got, when I was doing that, I borrowed some books from the program's library and there was a pair of books on calculus programmed, that's on calculus and I knew I was staring at calculus two years down the line to finish up my degree and boy it made, I didn't really, from the first hand experience standpoint, I didn't have any idea, really what a different experience it was to use that kind of programming to accomplish something that almost everyone gets done some other way. And it was, it was such a different experience that I realized that you could actually change people's lives with these kinds of things.

And so once I graduated with my master's degree in biology, a couple things happened. One was, I was taking a seminar, it was a graduate seminar in molecular biology and the topic at that time was a relatively new topic, so it tells you how long ago this was but neurotransmitters, it was a seminar that talked about how neurotransmitters worked, where they worked, what people thought was the genetic code of the brain so to speak. How neurons can code information and they made a big deal out of the fact that there were four neurotransmitters, just like there were four base pairs in DNA and they said they may have cracked it and so a bunch of pop articles had appeared again that we were asked to read. Most of it was the typical quiet propaganda drug companies, setting you up so that you turned that industry and they were claiming that now that we are pretty close to understanding the code the brain uses we are going to be able to manufacture drugs that create a specific code in the brain and someday you will be able to take a pill for example, at nighttime and in the morning, get up and you'll know calculus. And I thought, "Wow, this is pretty heavy stuff." And then they talked about how psychiatric drugs were being used to surgically change the symptoms of mental illness to leave the person's personality, core personality intact but to remediate a lot of



the problems. But, all of this was pretty startling stuff and it –it didn't square with what I knew about behavior from behavior analysis so instead of going out and getting my doctorate right away in biology, I took a couple years off and worked in psychiatry so I could see what those drugs looked like up close, what they actually did uh how they were used and so on. This was at Northwestern Memorial Hospital, it was one of the Northwestern University hospitals.

I got a chance to see mental illness up close and really uh different behavior, very disturbing behaviors some cases, because I worked on a locked psychiatric unit I got to see the use of almost every popular drug in psychiatry, what I came to see was a misuse of those drugs because after two years of really close observation, not only of the effects of the drugs but also the sorts of procedures that were used typically in psychiatry. I had made my decision at that point that they had nothing, that they not only didn't understand what the drugs were doing but they had, in a way, maliciously misrepresented what these drugs did to people. And that they weren't doing to society or the people they were treating much of a service, with the kind of terrible, savage treatment. It was ineffectual and it was largely, maintenance... I didn't see, in-in that time, I didn't see many of the people who were taking the medication do anything about stopping the problem to the people who complained about the behavior in the first place. And at around that time, Joe Layng was working in one of the other hospitals and had set up a couple of programs there and, so he began pushing to do the same thing in the hospital I was in and we got to talk to Joe through Sue Margles grad student, Joe got in contact with Izzie Goldiamond Chicago and, he agreed to talk to both of us, we told him, Sue Margles told us of his each his own, and after I met Dr. Goldiamond, his secretary was ready to shoot me because he had a very tight schedule and when I went to visit him he decided he was going to grill me and we ended up talking for about 3-4 hours. Lucy said to him that he missed the faculty meeting and he said he didn't care and he told me when I left that if I was going



to apply to Chicago to make sure to mention that I talked to him. So I did, I went there, and my earliest piece of behavior analysis activities aside the school part of it and that was really the first formal class I was having there as well, but we were assigned to a fluency program where we were working with people who stuttered. I was an assistant to somebody who was doing schedule induced defecation research and we were all required to kick in on this state department of mental health project to put constructional procedures in to state hospitals to teach the staff constructional methods and that was really the first applied stuff that I ever did as a student and it never changed after that. We were constantly doing those kinds of things from then on.

Interviewer: Fantastic. What work would you like to be remembered for, if I can ask you this question?

Andronis: The students I produced.

Interviewer: Fantastic. How do you think behavior analysis has changed over the years of your career? What hasn't changed? And if so, how?

Andronis: I'd say that some of the wind has been taken out of the sails because we've made less progress than we should have with from the early growth pattern and I'm not sure why that is except in the 70's when the so called cognitive revolution came along the money dried up in this field. The cognitive departments have gotten so much money and they get these bright students who they train in their area and they can talk a great game but they have contributed absolutely nothing to our knowledge in education, or in psychiatry, or anything else. Our people go out on a shoestring budget, wheedle their way through with quick fixes and things so pretty astounding changes but the research base hasn't proceeded to grow. We got interesting growth areas but not the kind of progress that we could have been making as in the early days. I always point out to the students in my applied behavior analysis course, I show them the Lovaas film on behavioral



treatment of children with autism and they say, “Wow, that’s pretty spectacular. How come? Is this stuff really that new?” I said this movie was in the 1980s, early 1980s. Based on cases in the 70’s which were treated with procedures which we’ve known about since the 1960s so you tell me. You know, and it hasn’t, treatment of autism has not changed that much. There are a few smaller changes. We do a much better job of verbal behavior, we have streamlined some of the procedures but it still is not anywhere nearly as effective as it could be, I think. And its because we haven’t incorporated into it things like fluency building for certain repertoires. Finding key repertoires that once put in place will grow, you know. That’s Sulzer-Azaroff ‘s book on applied behavior analysis and a chapter on goals, she talks about using pivotal repertoires along with goals, that would expand into other things: You teach one and you get five things from it. And, autism treatment hasn’t really done it that effectively. The Kagels in California, in Santa Barbara, do what is called pivotal response training and they get some of that sense, but they don’t use thorough going behavioral procedures for the rest of it and they are trained behaviorally from what I understand. But we need to have the sense that there is a lot of growth area. The forward movement has slow down – I think that is the biggest change I have seen. In the 70s when there was still grant money flowing in, pharmaceutical companies who sank the original money into behavior analysis because it provided really good stable baselines for testing drugs and so on. That initial spurt of growth with drug company money coming in, stopped in the late 70s, in fact they stopped in the early 70s when cognitive psychology gave expert systems to the military and started getting a flood of money into its artificial intelligence research. But our money dried up at the time and I visit several departments around the country and a lot of them are giving up their research labs because they are not supported any longer with funds. Students bring pigeons out on carts to conference rooms, run their sessions, and then take them back. And you are not going to learn how to build equipment, you aren’t going to learn how to manage a laboratory, and how to cannibalize equipment and how to reshuffle existing equipment to

do things that you can ask some novel questions with. If we keep relying on store bought stuff, we do store bought experiments.

Interviewer: So, is there anything in your career that you would have done differently?

Andronis: I might have taken, well I might have gone to a research university where we wouldn't have such a high teaching load and I could've played more in the laboratory. Instead I opted to go to a teaching university where the research was incidental and I didn't get the research stuff that I wanted to get done, we just recently added a master's program so I am actually getting some master's level students to do some experiments done that I have put off. But that would be one thing I would change is to be in an environment that supported doing experiments and also having time to write them up. I am a plotter, I in many ways, I don't like things leaving my hands until they are just right. I can't do it on the fly I have to focus on it, I need blocks of time and with a heavy teaching load, we teach three courses a semester and I, because I am the coordinator for the behavior analysis program and I advise about 80 students and they all come in at different times during the semester and I get absolutely no time in my office when I can actually get everything else done. So that would be the one thing I would change is maybe going to a different university environment that fostered a little bit better time allocation for research and scholarly activity.

Interviewer: What areas of the field or in your area in the field would you like to see more work in? You talked about that a little bit but

Andronis: I think, one of the areas that I would like to see more done –and in fact it's a growth area now– is the relation between biological structures and behavioral outcomes. One of the areas for example, autism, is important as I think it is momentarily for behavior analysis and I think it is also a pit where if we put all of our efforts into treatment of autism. You know, once they find out whether this is actually preventable,



the field will disappear afterwards if they don't need remediation, if they can prevent it, or if they can treat it through some sort of medication or physical manipulation. It's what happened with polio. There was a Sister Kenny who had devised a way of doing therapy for kids with polio to avoid the paralysis later. I think it is covered completely and it was through physical manipulation, of the muscles and so on. Nobody knows her anymore because the salt vaccine, the saline vaccines came along and eliminated polio as a major problem. And yet here is this person who, she was a nurse – doctors didn't take her seriously at first but she essentially did good physical therapy procedures. I would like to see that happen to behavior analysis, but autism provides one of these opportunities as a research opportunity to understand what is the relationship between some really subtle, maybe some subtle biological variables and the trajectory that takes you to the kinds of complex behavior that we expect in people versus the sort of stunted growth that a lot of kids with autism have or the abset of the repertoires that they do develop. There are recent data from neurobiology that these kids, the neurology defines the pathways called reinforcement pathways the ones that are involved in reinforcement of behavior and connection between those areas and the emotional areas and the frontal lobe that are associated with face recognition and a few other functions that some of those connections are weaker in kids with autism and it would be in keeping with the idea that many times reinforcement has the characteristics of increasing behavior but it doesn't change the affect of the component there is no underlying affect of content to the reinforcement experience. The way other people talk about pleasure when something happens that is also a reinforcer; kids with autism don't seem to have their behavior reinforcement things that also make you feel good. Those things, seem to be distinct, facial recognition – they can recognize faces but they don't have the affective response to familiar faces that other kids do, they see mom and it is sort of an indifferent response in some respects. It turns out that in the piriform gyrus it's in high up in the visual association area, most people's face recognition activity – you give them a task to recognize a face– that area lights up in



most people. In kids with autism other parts light up and it turns out not just different part but a different part in each one of these kids. They recognize these faces perfectly well but they are using idiosyncratic parts of the brain, parts that don't seem to be a common area for face recognition and it's individual, it is not like all kids with autism see the faces and this part lights up. It is different places, it is distributed in other areas and it would be interesting know how much that contributes to kids some of the autistic features some of the aloneness features and failure to make connections.

So I think that is a really important area that behavior analysis can contribute to by asking some of the right questions. All of these great imaging techniques they have, aren't matched by the psychological procedures they are using to have people do things while they are on the scanner, in behavior analysis we got enough really interesting control procedures, especially stimulus control procedures that will give us an unambiguous question and answer from a behavioral standpoint and then be able to make a connection more strongly with an area that could be on these scans. But we don't do that much, I don't know if it is because of a pre-existing prejudice against doing anything that is maximal organic approaches but I think we have probably the most to contribute to those areas, biological psychology and that I think would be a really important growth area. That's my own prejudice though from my background.

Interviewer: I can appreciate that – the preparation is obviously very important. So what do you see as the future of behavior analysis? I think you touched on it but paint me a picture in ten, twenty, thirty years, what do you hope, what do you think we will be doing?

Andronis: Well, I hope and what I think may happen, may be two different things but they aren't different. I don't know if the name is going to stick around in fact, I am not sure if it is the right name anyway, I think it is part of our problem is the name because it

includes the word behavior and people think of behavior as being superficial and it forces us into talking about well, what caused the behavior and then they are going to resort them to the man inside or the person inside the homunculus and it completely invalidates what we stand for and that will continue as long as we continue saying behavior analysis. I think that we will probably be much better off calling it contingency analysis because in essence that's what we do. We don't analyze behavior we analyze behavior in the context of reinforcement contingencies and functional contingencies and that, people aren't going to dispute as readily. In fact they can't, cognitive psychology... they've used a concept called the condition-action pair and it's their meat and potatoes, it is the equivalent of their stimulus response, and it's something that I always enjoy when people talk about condition-action pairs in a debate about cognitive versus behavioral procedures because they usually start off by saying, "Behaviorism is very simple S-R association" and then they bring up this nonsense about condition-action pairs and I say, "Well condition-action pairs actually are stimulus response relation because the action is the cognitive outcome, or the outcome of this cognitive variable, so it is just an S-R. The condition is just the stimulus for this action, this cognitive actions so it is an S-R model. The behavioral model on the other hand, the arrow doesn't go from the discriminative stimulus to the behavior, that is really enhanced – it is a dash, and it is a simultaneous occurrence of simply two events and the arrow is from that pair of variables to the consequences, it is a very different model, it is an R-S model if you want to call it anything."

What is funny about that is now, cognitive psychologists are saying, "Well, part of the way these condition-action pairs are formed is from feedback." They are talking about reinforcement and in fact, the newer areas of cognitive science are using a consequential model. They talk about strengthening, it is like they cannot bring themselves to use the word reinforcement, they can't bring themselves to use the word contingency, they are reinventing a vocabulary. But it is becoming more and more behavioral, more



contingency model and that is where, that is what I think will happen to behavior analysis is that once people get over the idea that they don't have a behavioral model when they see that this is in fact a useful way in framing the world, we will probably eventually going to end up being the dominant or a pre dominant model. But it won't happen until people won't have to say, "Give Skinner all the credit for it and won't have to say that the behaviorists were right all along." It is not going to happen that way, and people in behavior analysis really need to understand that it is not going to be psychology it is going to be a whole different approach to behavior, from what other psychologists have thought of, it is going to look just like what we have been doing and what we wanted to do but it is going to be talked about in a different way and the history will be portrayed very differently as well. But I think we still are going to end up be major players, major contributors. Certainly the affect of the APS journal, the president of the APS about two years ago wrote an editorial that was called, I think, "What happened to all the Behaviorists?" and his answer was that we are the behaviorists, it reminded me a little of the "Martian Chronicles", Ray Bradbury's book where people discover the Martians and find out that we are the Martians and they trans connected us. And this guy was claiming that although the field of behavior analysis has disappeared, which I thought was pretty funny, he said that psychology has adopted so many of the central tenets that really psychology has been transformed by behavioral approaches not, this was all news to me, I had not seen any evidence of that. But he was pretty strong about it and apparently he caught some flak in some quarters but a lot of behavior analysts wrote to him and said, "It's about time". Nothing has come of that, they hadn't talked about that since. I haven't seen people anymore frequently or more strongly claim that they have some sort of behavioral heritage in standard psychology, but it was a nice gesture anyway.

Interviewer: So, final sort of thoughts – what messages would you like to send to students of the future? And I won't call them behavior analyst students...

Andronis: I would, just because that's where we are right now and I don't cresten I can't see the future. But I think if the students are as good as the ones I have seen while I have been at some schools including this one. Especially the University of North Texas, the students are going to do... are going to be the progress and as long as they keep the level of enthusiasm and level of curiosity that they have right now they will grow the field. The only other thing I would say to students to make sure that happens is to learn as much as they can about everything. They need to learn about literature, they need to learn about physics, they need to learn about electronics, they need to learn about economics – because all of these things are by products of behavior and when people want accounts of behavior, they want accounts that are coherent enough and comprehensive enough to account for things in all of those areas and you can't do that if all you focused on is behavior analysis and if you, you know treatment areas where we are interested, people who are well versed in autism and know nothing else aren't going to be very valuable to the field – they are going to be a tremendous asset to the community in treatment terms but they won't grow the field. We need people who can compete intellectually in all these areas and be good at convention standards in behavior analysis.

Interviewer: Wonderful, well thank you for your time.

Andronis: You're welcome and thank you.

Interviewer: Thank you so much.