

60| Fundamentals of Human Neuropsychology – With Dr. Bryan Kolb

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Speakers: Bryan Kolb, John Bellone, Ryan Van Patten



Intro Music 00:00



John Bellone 00:17

Welcome, everyone, to Navigating Neuropsychology: A voyage into the depths of the brain and behavior, brought to you by INS. I'm John Bellone...

Ryan Van Patten 00:25



...and I'm Ryan Van Patten. Before we get into today's episode, we have a few quick announcements from our friends at the INS Student Liaison Committee, also known as the SLC. The SLC is currently recruiting for two student positions, the SLC NavNeuro Program Representative, which can be someone from Europe, Asia, Africa, Australia, or South America, and the SLC Global Engagement Representative, which can be a student from Europe, Asia, or Africa. Both positions have multiple benefits to your training and career. Both have application deadlines of January 4, 2021. Both require a time commitment of roughly 10 to 15 hours per month. Of course, each of the two positions is unique in its own way. You can find more information about the SLC NavNeuro Program Rep and the SLC Global Engagement Rep on our website at navneuro.com/slc. A big thanks to Taylor Greif, Taylor Jenkin, and everyone at the SLC for their support of this podcast.

John Bellone 01:39



Our conversation today is with Dr. Bryan Kolb, a professor of neuroscience at the University of Lethbridge in Alberta, Canada. If his name sounds familiar, it's because he co-authored one of the premier neuropsychology textbooks "Fundamentals of Human Neuropsychology", or FHN, with Dr. Ian Whishaw. He also has a very impressive research career and has been so successful that he has his own Wikipedia page, which is a surefire sign of having made it. [laughs]

Ryan Van Patten 02:08



[laughs] Yeah, I know we're not there yet.

John Bellone 02:12



Hopefully one of our listeners will create a Wikipedia page for us eventually. [laughs] Then we'll know we've made it. We talked to Dr. Kolb about a number of topics, and most of the conversation centers around his book "Fundamentals of Human Neuropsychology", which is currently in its 7th edition with the 8th edition on its way soon.

Ryan Van Patten 02:30



Our interview with Bryan includes the following topics: the story of how the book "Fundamentals of Human Neuropsychology" came to be, how it helped define the field of neuropsychology, the importance of animal research to understanding brain-behavior relationships, the importance of the history of neuropsychology, the importance of case studies in our field, the relationship between neuroscience and neuropsychology, ideas about why training in neuroscience is essential for full time

clinicians in neuropsychology, advice more generally on how to work with a co-author on a book or research paper, a bit about Bryan's co author Ian Wishaw, what's new in the 8th edition of FHN, advice for how to teach neuropsychology, and finally, reflections from working with the great Dr. Brenda Milner, which Bryan had the chance to do.

John Bellone 03:28



We just want to apologize for Bryan's audio quality. In the first part of the interview, there are a few points where the connection was a little bit unstable. It's tough to hear exactly what he's saying at times. But this gets better later in the conversation and it's not egregious. Also, we recorded this episode in January of 2020. So the references you're going to hear regarding the timelines of the 8th edition of his book, and our upcoming book is going to be a bit off. With that, we give you our conversation with Dr. Bryan Kolb.



Transition Music 04:00



Ryan Van Patten 04:09

Okay, so we're here with Bryan Kolb. Bryan, thank you so much for coming on NavNeuro.



Bryan Kolb 04:14

You're welcome.



Ryan Van Patten 04:15

So let's go ahead and get started. I'd like to ask you about the story behind the genesis of your book "Fundamentals of Human Neuropsychology". How did you come to write a textbook about neuropsych?



Bryan Kolb 04:26

Well, I think it's an interesting question and an interesting answer. So in 1975 I went to work with Brenda Milner, it was my second postdoc at the Montreal Neurological Institute. When I got there, I went to the library because I figured I'm there to learn something about the human brain, and there were no books on the human brain, except a book by Andre Kant (?) in French called "Aphasia, Apraxia, Agnosia". So I checked it out and spent about an hour on that and said, "No, this isn't going to work." So then I talked to all the graduate students that Brenda had, and they all

said, "There is no such book." So I said, "Okay, we'll do this a different way." So I went to every neurologist and neurosurgeon and resident in the hospital and asked them, "What's the one paper I should read?" They each gave me their view, it was a different paper from everybody. So I got those papers and started reading them. I thought, if the students haven't read this stuff, and I haven't read this stuff, I should make a course, similar course, on the human brain. So I'll call it neuropsychology. Brenda thought that was stupid because there's no such thing.



Ryan Van Patten 05:37

[laughs]

Bryan Kolb 05:40

So, anyway, I did that. I made up the course outline and I went to her husband, who was chair of psychology at McGill, and proposed this to him. He said, "This is ridiculous. There's no such field. Nobody would take such a course." At the time he was teaching what we know about the brain and behavior to just about 30 students, and McGill is a big university. That's all we attracted at the time. So I said, "Well, how many students would you need?" He said, "Six to put it on." I said, "Well, that's fine." I decided that I was tired of being a student and postdoc, so I wrote to every university in Canada, and included this new course as a possibility. Turns out, people were really interested in it. So I decided to accept - I had several job offers related to the course and I decided to leave McGill at the end of the year. I went and saw Peter [Milner], he said, "You can leave." I said "Why?" He said, "175 students signed up for the course." And I went, "Yeah."



John Bellone 06:40

Wow.

Bryan Kolb 06:41

That was the problem. There's no book. The only book I could find was one by Luria called the Working Brain. It was published in '73. It was pretty clinical, to say the least. It was an interesting little book. It was this big, wasn't very large. When I got to Lethbridge, which is where I've been for the last 44 years - and the reason I went there, people say, "Why would you go over to a little university in the middle of nowhere?" There were only 1000 students then. I'm from Alberta and I missed the mountains. I didn't want to go to the University of Alberta - I was offered a job there - for lots of reasons, but one of them was I was born in Calgary and there's a big rivalry. So it wouldn't be my first choice.



So I said to Ian Wishaw , who I'd known since first year university, "I'm going to be teaching this course and we're going to have to write a book for it. So you're going to help me." He said, "I don't know anything about it." I said, "That's okay, you're going to take the course." So he sat in on the course the first time I offered it and we argued the entire time. The students got a heck of a deal, two professors arguing the whole time. What I did was for each lecture I would make up a sort of tentative bit of the book. So then when the summer came, I guess we started in '78, we started full time writing this book, which we had no sort of basis of any other book to follow except Luria's, which was not going to work. Kevin Walsh published a book in about '79, I think, called Clinical Neuropsychology. He's in Australia. But it wasn't a book you could teach from, it was a clinical book. So we wrote the book. We didn't know that you don't write a book, and then get a publisher. You get a publisher and then write a book.



Ryan Van Patten 08:37

[laughs]

Bryan Kolb 08:38

So we didn't do that. We thought we've got to test it out here. So somebody called Terry Robinson, who was a friend of ours, who had just been hired to Michigan and needed a course to teach that was different. So we said, "Here, you're going to teach neuropsychology. We'll give you the book." It was a Xerox, it was a copy. We sent him the book, it was two volumes that were both about this thick because it was just one sided paper. We said the only deal is the students have to give us the book back and they have to write all over it. Anywhere they didn't understand what we said they had to write, "Means what?" So the book was reviewed by - he had 30 students and I had 30 students, and a fellow called Charles Beck at the University of Alberta, who I'd known as a graduate student at Penn State when I was there, used it too. And there were lots of "means what?" So then we spent the next year rewriting it.



Then at the end of '79, I guess, we sent it to every publisher that did textbooks in North America except for one. They all wrote back and said there's no such field therefore, there's no such course therefore, there's no such book. We had not sent it to Freeman and Company, which at that time was in San Francisco. So Ian said "Well, send it to Freeman." I said, "They're not going to want it." Anyway, so I sent him the book and he phoned me and he said, "Did you send this to anybody else?" I said, "We've had a lot of offers." He said, "No, you haven't. Nobody's going to do this. They're all going to say the same thing. There's no field, therefore there's no

such book." I said, "So why would you do it?" He said, "Because it's the future and I talked to Richard Thompson" - he was his next door neighbor. I don't know if you know who Richard Thompson is. Then Richard Thompson said, "This is the future. You'll define what the field is. Do the book." So that's what happened. There were no reviewers except the students. They took it as it was. They did the artwork because Freeman owns Scientific American, and so their artists did the art. And that's the story.



John Bellone 10:38

Wow. That's quite the genesis of the book.



Ryan Van Patten 10:41

Yeah.



John Bellone 10:42

It's wild that there wasn't...

Bryan Kolb 10:45

Yeah, it never occurred to us that there would be a 2nd edition. We figured it was a one off and we're done. We met the editor. His name was, believe it or not, Buck Rogers at Society for Neuroscience in '78, '79. We said, "How are the sales going?" He said, "Well, a bit slow, but it's a new thing. The reason we're selling it for \$20 is because we want to put a hook out there to catch people. Because if we sell it for what it costs to make, we'll lose money." We said, "Oh, hold on, you're losing money on the book?" He said, "For the 2nd edition, we'll make money." I remember saying, "The 2nd edition?"



Ryan Van Patten 11:23

[laughs]



Bryan Kolb 11:23

He said, "There'll be a 2nd edition in five years. Start working on it." And we were.



Ryan Van Patten 11:32

Yeah. For you to have been a postdoc, you're not even completed with your training yet and neuropsychology isn't even a field according to people you're asking. And then to receive negative feedback from so many publishers, it must have taken a lot

of resilience on your end to put all the time and work into this to make it successful. What was it like to receive negative feedback from so many publishers initially?



Bryan Kolb 11:57

Well, I've got to tell you, Ian Winshaw wasn't happy with me. Even a case of beer wasn't going to solve that.



John Bellone 12:02

[laughs]



Ryan Van Patten 12:02

[laughs]



Bryan Kolb 12:03

So we had gone and visited various people with the book. Well, when publishers were all telling us to drop dead we went back to Penn State and visited people there. We went to McGill. We went to Western Ontario, Carlton, everybody was positive. Saying, "No, you're on the right track. Stay with it." Doreen Kimura, you may have heard of, really hated it. She just said, "It's really, really bad. It's going to ruin your career." I just thought, "Well, where's your book?"



Ryan Van Patten 12:36

[laughs]



John Bellone 12:36

[laughs]



Bryan Kolb 12:38

Well, we just kept on it. And it turned out.



Ryan Van Patten 12:41

Yeah. Fair enough. How would you say that your book, FHN, fits in with other seminal neuropsychological books that we now have, such as Lezak's Neuropsych Assessment?



Bryan Kolb 12:53

So her book came out about the same time. Of course, it's very different.



Ryan Van Patten 12:57

Yeah.

Bryan Kolb 12:57

I met her really 10 years after our books came out. We had a great conversation about how the books were complimentary. Kevin Walsh's book from Australia was not done in a 2nd edition. So I've never met him. I think the books complemented one another. There were no others. I remember being at the publishers row at the Society for Neuroscience and overhearing a conversation between the people at Oxford and the people at Prentice Hall, I think, saying, "We've got to get a book to compete with that Kolb book because there isn't one." I just went, "Okay." [laughs] I introduced myself and they both laughed. I thought it was pretty funny. They just said, "Do you know anybody who can do that book?" I said, "No, and they'd do us a favor if they did because that'd be the end of us. We wouldn't be stuck with it."



Ryan Van Patten 13:49

[laughs]



Bryan Kolb 13:50

There really hasn't been another book like ours. There's cognitive neuroscience books, of course, and clinical books, but ours is different as you know.



Ryan Van Patten 14:00

Yeah.



John Bellone 14:01

Yes. Maybe tell us about the general organization and layout of your book. How did you go about deciding to organize it this way? I mean, you tackle so much information, how did you plan that out?



Bryan Kolb 14:13

Slowly, because it evolved of course. The idea was that you can look at the brain in terms of anatomical organization. Now, we all know that calling something in the frontal lobe is meaningless because it refers to the skull bones, stuff under the bone. It's not a functional area. It's dozens of areas. But we thought, "Why don't we start with the lobes?" Well, we have the background stuff, the first 10 chapters, but then we'll start with the anatomy and make sure the students have a good understanding of how it's put together. Then re-do it by psychological construct -

memory, motion, and so on. So a lot of material is covered twice. It's covered first in the context of temporal lobe and parietal lobe or whatever, and then it's covered again in the context of the hypothetical construct. Then the stuff at the end, of course, was more clinically based, and so on. Now, the original book was much shorter than the current version and that reflected the fact that we didn't know anything and the field was much smaller than it is now. So the book really evolved as time went on. If you look at the 1st edition, there's a lot of nonhumans in it because that really was the basis of where the field came from. Now there's hardly any. There's a few monkey anatomy figures and monkey studies and there's a few rat studies related to space and memory. But really, the nonhuman stuff has mostly vanished in the book.

John Bellone 15:43



Right. We've noticed that a lot of your research has been in animal models. I've often wondered whether the term neuropsychology can be applied to work directly outside of humans. Like, is it only a term that can be used for human based research? How do you think about this issue of using animal models and calling it neuropsychology? Just out of curiosity.

Bryan Kolb 16:11



We need to look at the history of the word. So I wrote to Don Hebb, he's the first person I know who actually used the word in print. It is the subtitle to his "Organization of Behavior". The subtitle is "Neuropsychological Theory". So I wrote him a letter, there's no email in those days, and said, "Where did the word come from?" The first use of it I can find is from [unintelligible]. He said, "Well, Lashley." Karl Lashley was his supervisor, who never worked with people, only used rats and monkeys, used the word a lot. He would talk about neuropsychological tests. So really, the basis of the word is in animal studies. It was only later when people started studying humans and using the same kind of logic as was used by Lashley, and later Hebb and others, that the word was applied to people. So, it really began more as an animal thing. Now, it turns out that Hebb was wrong and the first person to use the word was Sterling Mosner, who was a Montreal physician. I don't know in what context he used it, but he used it in some way. I've never been able to actually see what he said, but he was the first. It was around 1900 that he used the word.

Ryan Van Patten 17:27



Along these lines, talk to us broadly about the importance of animal research in the understanding of the brain. And then the understanding of neuropsychology specifically.

Bryan Kolb 17:38

If you think about how the field was, let's say in 1950, there were two ways to study how the human brain works. One was to study patients with accidental injuries or surgical removals - these aren't clean, as you know. They don't follow Brodmann's areas very well, or at all. The other way was to work with rats, or monkeys, or cats or dogs, and actually make surgical removals. So the field at that time really was an analysis of nonhumans and then trying to make sense of the human stuff. The problem, of course, at that time was people didn't know how to study nonhumans in a way that made sense to study people.



I'll give you a good example. In Peter Milner's book, "Physiological Psychology", which was published in 1970, it was one of the books to use at the time. He said that the function of the hippocampus in humans and nonhumans was different, there had been a huge jump and it didn't do the same things. So, because of his wife stuck on HM and amnesia, it didn't appear as though the animals showed amnesic symptoms. Well, they do if you use the right tests. So people had to figure out ways of actually asking a rat, "Can you remember this?" Or asking the monkeys, "Can you remember this?" So that was a real challenge.

If you came into the field in 2020, you would say, "Why do you need the animals? You got all these fancy machines. You can use MRIs and PETs and ERPs, and so on." The fact is, that's still not right. There was a nice paper published a couple years ago, arguing that if you use those machines, it shows you areas of the brain that are involved in particular cognitive functions, but they're not necessary. The only way you can know which regions are necessary, is to take them out. You can take them out in animals and actually study what goes on. Or you can look at people who have accidental lesions to take them out. There's a lot of regions of the brain you can't take out accidentally and survive. So you still need animal studies to ask certain questions. Now, as time goes on, I think we'll use animals less and less. We'll be asking different questions, but historically, I think that's the role they played.

Ryan Van Patten 19:59



Yeah. I think that's really helpful. John and I both completely agree about the importance of animal research and translational work in neuropsychology. Sometimes I think clinical neuropsychologists who have spent their entire careers working with people, it can be less intuitive how animal work translates. So we appreciate you sharing that knowledge.



John Bellone 20:18

A lot of my early work, too, is in research models and basic science. I think it's so fundamental. You can't ignore it.



Ryan Van Patten 20:25

Yeah, agreed. So another aspect of the book that I'd like to ask you about, Bryan, is the initial chapters on the history of neuropsychology. Many students find the history portion of a book or a class to be the least interesting. I've heard students argue that, "The history isn't important. I just want to know what we know today." So what do you say to your students who find the history part less appealing?

Bryan Kolb 20:48

I use the American expression, "You got to dance with who brung ya." Got to start with whom you came with. If you don't know that, a lot of it doesn't make any sense. I know the students don't see the history as the most interesting thing. I think it can be presented in a way that is interesting, especially if you talk about people like Goldstein and Luria and so on and the things that they did, based on nothing really, they were just guessing. But I really think that for students not to be engaged in history is a mistake.



Now we have a book, a little book you've probably never seen, called Behavioral Neuroscience. It's taking the seminal papers historically. Let's take one, the one by Phoenix, Young, and Goy on hormones and sex. So in 1950, people had no idea that hormones changed the brain. Today, it seems like a ridiculous idea that you wouldn't know that, but nobody knew that. It wasn't until they did these studies in the early 1950s on guinea pigs in which they castrated the males at birth and started looking at changes in behavior and discovered they were essentially females, that the whole field changed. So we had somebody write the history, starting in 1950 going to 2018. The book was published following that. Students found that interesting because they could see this trail.

Another interesting thing is dopamine as a reward molecule. This was the idea that Roy Wise had in the early 80s and it's totally wrong. But students all believe it's right. It's in all the news, the media talks about the pleasure hormone and it's not true. So, Terry Robinson and Kent Berridge wrote a chapter on that and showed the history from Roy's original papers, how it went through time, and how it's not true. Even Roy agrees it's not true. But it's pretty hard to convince people once they've decided that it's true. So, again, knowing the history where the idea came from and

how it evolved to be found to be not true. It's obviously involved in reward but it's not the reward molecule.



Ryan Van Patten 23:01

Yeah.



John Bellone 23:02

Yeah. The history is so important for so many reasons. It gives us context for why we're doing what we're doing now. We can avoid some of the pitfalls that happened in the past. There's so many reasons. But one other thing I wanted to talk to you about is that you use a large number of case studies in your book to illustrate different points about brain-behavior relationships. Can you just talk about the importance of case studies in neuropsychology?



Bryan Kolb 23:27

I can give it to you in a personal way first, and that is the first person I saw with contralateral neglect just blew me away. I went to see this gentleman who seemed older, he's probably my age now. But he had a stroke and you know where the stroke was. He was showing neglect and I was studying him. I just found it so fascinating. I thought, the only way we're actually going to be able to get people hooked here is to actually talk about these people and these examples. I know early on Wishaw and I visited the neuro [unintelligible] various patients, and I wanted him to meet them. There was this one psychology major, who had had a stroke and we walked into a room and I said, "Good morning, how are you?" She said, "Fine." I said, "This is my friend Ian." He said, "Hello." She said, "Hello". I said, "Okay, thanks." We walked out and I said, "She's aphasic." He said, "No, she's not." I said, "Let's try that again." We walked back into the room, and I said, "The cow jumped over the moon." And she said, "Oh, I'm great. How are you?"



Ryan Van Patten 24:32

[laughs]



John Bellone 24:33

[laughs]



Bryan Kolb 24:33

He was shocked. He said, "Oh, now I get it."



Ryan Van Patten 24:35

[laughs]

Bryan Kolb 24:37

She had some sort of conduction aphasia, and I already knew that. So I think that when I look at my teaching reviews, or historically when I see students, they say, "I don't remember the content of all your lectures, but I sure remember the case histories." Because I talk about a lot of others that are not in the book, of course, because I still see patients, not clinically so much as experimentally. But they really remember the case histories. They remember. You guys will remember your first patient forever, right? It's just seared into your brain. The students will remember these cases. So when they read them, some of which I'll mention again in class, I figured there's no reason they can read them, I'll just tell them about another one, they're parallel but not the same. So that's why they're in there.



John Bellone 25:20

Yeah, when I study - like I was studying for my ABPP exam recently, it is so much easier to remember the different syndromes and presentation if I can tie it to a case I've seen. It's just something that brings it to life, where it wouldn't otherwise be that vivid.



Bryan Kolb 25:36

Yeah.



Ryan Van Patten 25:37

Yeah. There's a lot of both neuroscience and neuropsychology in your book. How do you think about the similarities and the overlap? Or similarities and differences between these two fields, neuroscience and neuropsychology? The border isn't always a bright line.



Bryan Kolb 25:54

No, it's not. Unfortunately, many neuroscientists know nothing about human neuropsychology, and an awful lot of neuropsychologists know nothing about the brain. This is a problem. I'll give you a little anecdote. I was at SFM and some students were giving a poster on hippocampus and these various learning tests and memory tests and whatnot. This guy walks up and he says, "This is just nonsense." He said, "You should be studying calcium channels. That's the future of understanding how the brain works." I listened to him and he said, "This stuff is just



a waste of time." So I said, "Excuse me, I couldn't help but overhear what you had to say. You're telling me that if we understand calcium channels, you'll understand how I could talk to you?" His response was, "You're just an asshole." He turned and walked away. I said to the students, "That's the problem here." We've got two solitudes. It's not perhaps quite so bad as US politics, but we're quite far apart. That region in the middle requires that people know neuroscience and requires that people know case histories and neuropsychology. Unfortunately, that's where the overlap is fairly small. There are people who I know well [unintelligible] that study still, rats, monkeys and humans. We still study mice, rats, and humans, but it's not common for people to do that.

John Bellone 27:18



You had said just a second ago that some neuropsychologists know nothing about the brain. Listeners might not understand what that means. You're saying that people can understand the intricacies of the assessment process without actually understanding the underlying cognitive mechanisms, neuroanatomy.

Bryan Kolb 27:32



Yeah. You can call yourself a neuropsychologist. We used to be able to, if you took a weekend workshop with Ralph Reitan. I tell my students when we get to the end of the course, "Okay, how many of you are neuropsychologists?" No hands go up. I said, "If you took this weekend workshop that you paid \$2,000 for and they gave me a little piece of paper that said you're a neuropsychologist, would you be one?" They just laughed and said, "No. Of course not." So it requires a lot of understanding of brain organization, brain anatomy, and so on. I think a lot of clinical folks, and I'm not picking on them specifically, look at the MRI studies and think, "This is real." Well, it's not real. It's all the subtractions involved and so on. You don't understand the idea that I mentioned earlier, just because MRI says that all these regions are involved in theory of mind, doesn't mean they're necessary for that. You have to keep that in mind. I think it's that lack of understanding of the basic processes on the one side and, on the other side, the neuroscientists lack of understanding that we study the brain to understand behavior in the mind. I tell the students, Winshaw doesn't agree but that's okay, but the fundamental question in neuroscience is how the mind works. That's what we're trying to figure out. If you forget that, you get consumed by calcium channels, you're going down a deep hole.

Ryan Van Patten 28:59



Yeah. Steven Pinker has a great book by that name "How the Mind Works." It sounds like you're talking about the fact that the term neuropsychology or the term

neuropsychologist is not really well protected. So it is not essential that we get a lot of in-depth training in neuroscience, neuroanatomy in order to hang a shingle and call ourselves a neuropsychologist, which is an issue we've talked about as well.

John Bellone 29:26



I've often wondered, this is more of a philosophical issue, of when you can call yourself a neuropsychologist and when you call yourself a neuroscientist. So, clearly, not all neuropsychologists can say they're neuroscientists, and vice versa. Where do you draw the distinctions here, in terms of terminology?

Bryan Kolb 29:45



I don't know. What you're saying is correct, of course. I really call myself a neuropsychologist. I think most people would probably give me some slack on that. But I certainly never took a neuropsychology course because there weren't any. I never took an APA program related to neuropsychology. I was on the Canadian Psychological Association Board of Directors, and we tried to see if we could get a designation, neuropsychologist that was different than a psychologist. Most people on the board, I convinced them that they're not the same. But so many people who were APA trained or CPA trained, who were acting as neuropsychologists refused to accept that and it was voted down, which was really discouraging because it really has no meaning without some sort of credentials.

Ryan Van Patten 30:42



Yeah, a fair number of our listeners would consider themselves aspiring or current clinical neuropsychologists. For those of them who have never taken a neuroscience course, what would you say is the benefit for a clinician who 100% of their time will see patients? What's the benefit to learning some of the basic mechanisms of neuroscience?

Bryan Kolb 31:06



I think the only way you're going to understand the basis of the cognitive processes is if you understand the hardware that's making it. If you don't understand the hardware, you don't understand the concept of plasticity, for example. I just don't see how you can be as good at what you're doing as you could be. I know there are many people who are neuropsychologists who have great clinical skills, who aren't really well trained in the brain. That doesn't mean that they shouldn't be.



Ryan Van Patten 31:33

Yeah.



Bryan Kolb 31:34

[unintelligible]



John Bellone 31:34

Right. Yeah. It's like a programmer who knows C++, right? Who has a language but doesn't understand how the computer works.



Ryan Van Patten 31:43

Right.



John Bellone 31:44

Right.



Ryan Van Patten 31:45

You're more of a technician, as opposed to an expert or a master in the area. For John and I, and some of our listeners, we would like to consider ourselves lifelong learners and educators of the next generation. So how can we best use your book? Is there a particular point in training, like undergraduates, or graduates, or postdocs when your book is most useful, do you think?



Bryan Kolb 32:12

I think that the book can be read at different levels. So the undergraduates that I teach will have taken brain-behavior already, or some equivalent course. So they're mostly juniors and seniors, they're reading it at one level. I have graduate students in the class as well. I'm expecting them to read it at a different level, and postdocs at a different level. So I think that what you get out of it depends on where you are, in terms of your knowledge, and what I expect of people varies with that as well. But it really depends on the level you're at.



Ryan Van Patten 32:47

Yeah, that makes sense. That's been my experience. I first read it before beginning graduate school in neuropsychology and I didn't retain everything. But it was a great intro to a lot of the concepts. It prepared me for graduate school training. I knew more than I would have. Then more recently, I've looked it over again.

Obviously, I understand much more now than I did the first time but I'm still learning things. It's a great review and it adds to my knowledge.

I wanted to reflect on one thing you said earlier, which - the first time I read it, I noticed what you said about how you go through everything twice. You go through the lobes of the brain for geography - frontal lobes, parietal, etc. Then you go through the systems - learning and memory, visual spatial skills, things like that. And, of course, if we're talking about parietal lobe functioning and then we're talking about visual spatial abilities, there's overlap there. But I like the dual approach that you took in thinking about the brain in those two different ways. It helped me learn first geography and anatomy and then function. It sounds like that was a very conscious choice for you to cover things twice like that.

Bryan Kolb 34:04



It was. It was unusual to do that. I don't know any other book that does that. But we had reviews of the book in terms of our revising, and people say, "Why do you do this? Why do you do it twice? Students don't want to hear it twice." My response to that is, "Yes, they do. They just don't know that."

Ryan Van Patten 34:23



[laughs]

Bryan Kolb 34:23



Yet.

Ryan Van Patten 34:23



[laughs]

John Bellone 34:24



Yeah. That dovetails very nicely with what you were saying before that you need to understand the hardware before you can understand the data that we're getting from the cognitive testing. So you need to have some understanding of the neuroanatomy that you take us through in the book before you get to the lower levels, or the higher levels I guess. You're currently working on an 8th edition of the book, right? When does that come out?

Bryan Kolb 34:52



Probably the beginning of 2021.



John Bellone 34:55

Okay.



Bryan Kolb 34:56

That's my guess.



John Bellone 34:57

Sure. Obviously you're not fully in control of that.

Bryan Kolb 34:59

We're not in control of it, and it takes a long time to do it. Even if you say, "Oh, it's a revision. It won't take any time." No. It's been six years since we wrote the last one. A lot has changed, especially in the last decade, with all the imaging and network stuff. Both Ian and I are having to read an awful lot of stuff that we would never read otherwise and trying to integrate it. One of the rules in doing the book - after the 3rd edition, which was double the size of the first one, the publisher put her foot down and said, "No. You can't do this. You have to shorten it by 1/3. That's how it's going to be from now on." So we have to be exactly the same length in each subsequent edition as the previous one. What does that mean? It means you take stuff out to put stuff in. And, of course, we all have our favorite sentence or our favorite paragraph that we don't want to relinquish because, you know, it took us a year to write the sentence.



Ryan Van Patten 35:54

[laughs]



John Bellone 35:54

[laughs]



Bryan Kolb 35:56

So it takes a long time. We have a - do you know what a development editor is?



Ryan Van Patten 36:02

Not specifically the development piece.



Bryan Kolb 36:06

A development editor, which we never had, obviously, in the first editions, is somebody who knows about the field and they actually work with you to try and make the revision go seamlessly and make sure that the book sounds like it's written by one person. Because, obviously, Ian and I read each other's chapters, but we're not the same person. He - in this case it was a he, it was a she up until this year - is responsible for making sure the development is seamless. That takes time too because, in this case, he has to go over it all. When we send them the revised chapter, he'll say, "Okay, did you know about this stuff that was on National Public Radio on blah, blah, blah?" And you'll go, "No." He said, "Well, I found this and so you might want to listen to this." So that's very helpful because you can't be everywhere listening to everything. So that's why it takes so long.



John Bellone 36:57

I like that.



Ryan Van Patten 36:57

Yeah, this is really helpful. John and I are actually currently working on a book of our own that we're hoping to publish next year. It's not a "Fundamentals of Human Neuropsychology." [laughs]



John Bellone 37:09

[laughs]



Ryan Van Patten 37:09

It's a little more niche. But the process of authoring a book has been challenging and fun. What advice do you have for scientists-clinicians like us who are also aspiring authors? Because you know that those are related but different tasks.



Bryan Kolb 37:26

Well, first of all, Ian and I had to learn to work with one another because we'd never done that. We had to learn that there's a line you don't cross over. So I may hate the chapter, but I'm not going to say that.



Ryan Van Patten 37:42

[laughs]



John Bellone 37:42

[laughs] Ryan says that to me, though.



Ryan Van Patten 37:43

I tell John what I hate.



John Bellone 37:46

He hasn't figured that out yet.



Ryan Van Patten 37:48

[laughs]



Bryan Kolb 37:48

[laughs] You've got to learn how to manipulate one another. It sounds a little crass, but that's what you're doing, basically, is manipulating one another. I remember one example - the space chapter wasn't in the 1st edition or 2nd, it was in the 3rd. I wrote it and he came in, he said, "Well, I read your chapter. We'll discuss it in my office."



John Bellone 38:07

[laughs]



Bryan Kolb 38:07

I said, "It's that bad?" He said, "No, it's worse than that." So we were able to say, "Okay, so how are we going to make it better? We started with nothing, now we've got something we can work with." So there's that aspect to it. There was more to your question, though, I think. I missed part of it.



John Bellone 38:22

Just how to work as a co-author. How to be an author as a scientist-clinician, as well.



Ryan Van Patten 38:28

Yeah.



Bryan Kolb 38:29

I think there's a big advantage in being a scientist-clinician and an author. That is, you've got experience to draw on. If you were just an author, you really wouldn't have the experience of the case histories. You wouldn't have the experience of learning new things when you go to meetings and so on. I remember going to

[unintelligible] science in the mid '80s and there was this new thing called plasticity, which I'd never heard of. I went, there were a couple of posters on it, and I just went, "Holy cats. This is all new. Never heard of any of this before." So that's a way of grounding new stuff. But if you were just writing the book, you'd never do that.



Ryan Van Patten 39:10

Yeah.



John Bellone 39:10

Right. Like the case samples, right? They give color and help you remember the material.



Ryan Van Patten 39:16

On the topic of co-authoring a book, though, you've mentioned Ian Wishaw a number of times. I'm wondering if you could tell us a little bit about him. Like, why was it that the two of you teamed up? What's Ian's background? You alluded to your relationship. What's it been like to co-author a book with him?



Bryan Kolb 39:33

Yeah. I met Ian, as I mentioned, in first year university. He was not in first year of university. We were taking the stats course together. He took seven years to get a BA in English, so he was seven years older than me. He was a makeup student in psychology. He went to Notre Dame in Indiana and then his parents ran out of money, so then he went to Notre Dame in Nelson BC, which is a little religious school that doesn't exist anymore. Then he went to Gonzaga. Then he spent a year in Europe. Then he came back and went to the University of Alberta, Calgary, it's now called the University of Calgary, and he finished his BA in English. He took a psychology course there and found it kind of neat and so he was a makeup student. That's when I first met him. He was actually playing on the varsity football team, I didn't know that. He was sitting beside me all the time in the stats class and he had a cast on his arm, and I said, "What happened?" He said, "Well, I broke it." He said that, "So and so playing for University of Alberta really got his helmet on mine." I said, "What?" He said, "Oh, yeah, I play for the Dinosaurs," which is the Calgary team. I said, "Ohh, okay." Then he left and went to Western Ontario to do - he did a master's at Calgary - he went to Western Ontario to do PhD with a guy called Case Vanderwolf in electrophysiology. But he had two little kids and the rent was due and so he needed to get a job. In those days, people didn't do postdocs. So he took a job, the only job he ever was offered at the University of Lethbridge, which was a brand new place in the middle of nowhere, Lethbridge was a small city.

Meanwhile, I went off too. I did my masters and went off to Penn State, then I did a postdoc with Vanderwolf, his PhD supervisor, so we re-encountered one another on his visits to Western. When the jobs were offered, when I sent the book and the course proposal all around, he was at Lethbridge. So when I visited there, he said, "You know, I'm the only one here who does what we now call neuroscience. It'd sure be great to have a colleague". But the job I was applying for was clinical psychologist, which I'm not. So the Dean actually was really good. He had a piece of paper on his desk, and I was going to have to teach abnormal psychology, psychometrics, introductory psychology, and this neuropsychology course. He said, "Read this. Is this you in this job description?" I said, "No." He said, "Well, at least we're agreed on that."



Ryan Van Patten 42:22

[laughs]



Bryan Kolb 42:22

He said, "Why would you want to come here?" I said, "Well, because I think Winshaw and I could have a lot of fun doing research together." "That's not why we're hiring you." I said, "I know that."



Ryan Van Patten 42:32

[laughs]



Bryan Kolb 42:32

Anyway, in the end, they offered me the job. I decided to go there, not the big fancy places. We were basically each other's graduate students. We had no graduate students for the first 25 years. We had postdocs, but we were each other's graduate students. We would spend all day together in the lab, we would work together, it's already in the book. Made sense. So it may not have worked out if we didn't get along.



Ryan Van Patten 43:00

Yeah.



John Bellone 43:00

Yeah.



Bryan Kolb 43:01

But we did.



John Bellone 43:02

[laughs]



Ryan Van Patten 43:02

Yeah.



Bryan Kolb 43:04

If you look at the most recent edition of the book, you'll notice the pictures of us both have cowboy hats on. That's because we both have horses, and he's responsible for that. That's a whole nother story.



John Bellone 43:21

[laughs]



Ryan Van Patten 43:21

[laughs] Yeah, well, I mean, I can speak to that. It's a lot of fun to work with a friend and colleague. John and I give each other a hard time a lot, but it makes work a lot more fun if you can find a friend of yours who also has the same interests and work on projects together. So that's what we've been doing.



John Bellone 43:39

Yeah, very true.



Bryan Kolb 43:41

If you can be honest with one another, that helps.



Ryan Van Patten 43:43

There's no problem with that. [laughs]



John Bellone 43:45

We're blatantly honest. [laughs]



Bryan Kolb 43:45

[laughs]



John Bellone 43:48

We wanted to just circle back to the 8th edition that you're working on of "Fundamentals of Human Neuropsychology". Just to give our listeners a sense of what might be the big changes of the book. Why should they buy the 8th edition when it comes out? What are the major things?



Bryan Kolb 44:03

That's a good question. The field has changed a lot in the last decade because of imaging and network analysis and so on. So we're adding a lot of network stuff that didn't exist when we wrote the last one, it was just starting to exist in the last edition. So that's one reason. The other reason is that there's been so much new neat stuff. I don't know if you're familiar with echolocation and blind people - that people who are blind can actually echolocate. There's this nice video of this young boy riding his bike down the street. He's totally blind.



John Bellone 44:39

Yeah, I saw a TED talk a while back about that. Yeah.



Bryan Kolb 44:43

So there's a lot of stuff that's come out, a lot of new things. Students are going to ask me the same question you've just asked. "When the book comes out, why should I buy the 8th edition when the 7th edition is available for virtually nothing?" My response would be, "Well, you can use the 7th edition, but there's a lot of material that will be in the exam that isn't going to be in that 7th edition and it is in the 8th." And, as I mentioned, stuff gets taken out to put new stuff in. So there are still students who use previous editions.



Ryan Van Patten 45:15

Yeah, when we're reading scientific literature, we stay up to date. We want to read newer papers on a topic, right? I wouldn't want to read papers from 10, 20 years ago if there's updated literature. So, for the same reason, it makes sense to read the newest edition of your book.



John Bellone 45:33

To switch to a different kind of topic, you mentioned that you teach quite a bit and the genesis of the book was this class that you taught. What advice do you have for early career professionals like Ryan and me when it comes to teaching the next generation of neuropsych students? Just in general, the process?



Bryan Kolb 45:54

Yeah. I think the first thing for teaching anything is not to take yourself too seriously. I tell students don't take courses from new professors because the new professors are trying to prove that they have clothes on.



Ryan Van Patten 46:07

[laughs]



Bryan Kolb 46:09

You've got to remember, the students really don't know anything. You can say, "Well, they've taken three psychology courses." Yeah, they don't remember any of it.



Ryan Van Patten 46:18

[laughs]



Bryan Kolb 46:18

They simply don't, and neither did we. I remember, when I was at Penn State, it wasn't me, I was the TA, the professor did an experiment. Students had a final exam in spring, there was a [unintelligible] system, and it was all multiple choice. Then they were asked to [return] in September and they were going to get some 10 bucks or something if they came and wrote the exam again. They were told, "Don't bother studying, we're not counting the grade. We just want to see how much you remember." Well, the chimpanzee would have done better. They didn't remember anything. Now I think if they flipped through the book, a lot would have come back. So the first thing is that the students really don't know much.

The second thing is that students are naive. That's great because they'll ask questions that make you think about things in a new way. I know a lot of my colleagues just poopoo the students. Say, "Students are knuckle draggers. They don't have any thoughts," and so on. That's not true. When they ask questions, sometimes there's a lot in there that you've never thought of. I find that really useful,

too. Often, when students ask the question, I'll say, "Wait a minute, I've got to write this question down, because I don't want to forget what you asked when we're working on new lectures." So that would be the first advice.

The second, I think, is to try, and this is going to sound silly, but try to make the course as interactive as you can. It's hard as the classes get bigger. My original classes were only 30, now I'm teaching 80 or 90 in the senior courses - you don't know many of them. But I think that the more you can look at every student in every class, and I try to make a point of looking all around and try to interact with them, the less likely they are to be on telephones. In fact, none of them are. So those two things.

The other thing is, I try to include material that's not in the book. I tell them what's not in the book. I tell them the reason that I'm giving it to you is not because the book's [unintelligible]. Because this is new stuff. I don't know if you guys have Moodle, we have something where you can have lectures available to students. I say all the stuff that's new will be there you can have the papers. I got everything and [I'm] not asking you to read it, but it's there if you want. So those are things that I think are useful. I remember when I first started teaching abnormal psychology, students would say, "Well, this isn't abnormal psychology. This sounds like neuroscience." And I would say, "Well, that's what abnormal psychology is."



Ryan Van Patten 49:02

[laughs]



John Bellone 49:02

[laughs]



Bryan Kolb 49:02

"Well, that's not how it used to be taught." I said, "He's not here anymore and I am. We're talking about the brain. The brain is making this behavior whether it's good or bad, and so we need to know what the brain is." So students were dumbfounded at this and I just didn't care.



Ryan Van Patten 49:20

[laughs]

Bryan Kolb 49:23



Psychometrics was a really hard course to make interesting. It was a full year course and I didn't have a full year's worth of material. So I did two halves of it. So we did a lot of tests, they would test one another and so on. That made it more interactive and more interesting. The tests meant something rather than just doing nothing but statistics. I don't know if you've taken psychometrics, but it's not really very interesting. We've got to do something to make the students interact.

Ryan Van Patten 49:53



Yeah, yeah. Thanks for the advice. This is helpful. I love what you said about abnormal psychology being in the brain. You're preaching to the choir.

John Bellone 50:00



Yeah, it's strange how people don't realize that that's the case. [laughs]

Ryan Van Patten 50:04



Yeah.

Bryan Kolb 50:04



Yeah. [laughs]

Ryan Van Patten 50:05

Yeah, I mean, part of that is the artificial psychiatry/neurology divide in medicine, where neurology is the "brain stuff" and psychiatry is the "other stuff". As if psychiatric conditions are not in the brain.



Moving on from teaching, you have a long history of scientific work as well. What I saw on your Lethbridge bio was it listed over 350 publications. Our listeners, the vast majority of them, will know you from your book, but they may not know your research program. How would you describe it?

Bryan Kolb 50:41



Well, you're right. It's now like 450 papers and chapters. I went to Mexico a couple years ago, was giving a talk on my research, and the woman who invited me did not know about the book. Everybody was coming up and asking me to sign this book, and she said, "What's this book all about?" One of the professors said, "You don't know that he's famous for this book? It's his research nobody knows anything about."



Ryan Van Patten 51:08

[laughs]

Bryan Kolb 51:08

She was stunned. My research began [by] trying to demonstrate that the rodents had a prefrontal cortex. In those days, that wasn't topical and nobody believed. Even my PhD advisor, JM Warren, refused initially to sign my thesis because he didn't believe my thesis that rats had a prefrontal cortex, [that] it was organized similarly to that of primates. Then I started looking at effects of early brain injury in the prefrontal cortex and later elsewhere. As time went on, when I started working with people, I realized, "Well, there's a whole lot of stuff here that nobody knows about." Posterior parietal cortex? I think it's organized the same way. It turns out it is. Much simpler, they don't talk, obviously. So it progressed along that way, but I kept going back to people to try and get ideas, to test things out on them, and so on. By doing that, the research evolved.



Currently, I do a lot of developmental stuff, a lot of early interventions after brain injuries. We're actually [working] with indigenous communities. That's in Canada - the US has a rather dismal history of the effects of colonialism on indigenous populations, and their lives are not like ours. So we're actually intervening now with various programs, working with people, taking the ideas from rat studies and applying them to people. I also started a project with neonatal intensive care units. So what's the standard of care for an ischemic baby? You cool them down for 72 hours, send them home, and say good luck. Well, that isn't a program. So we've started up a program and we're starting studies now at the neonatal intensive care unit at the University of Calgary and University of Alberta, to try and intervene and give the parents this whole program, which is based on our studies. So that's sort of how it's evolved over time. Most people who wouldn't have taken [unintelligible] would have no idea that that's going on in the background.

John Bellone 51:23



Yeah. I also wanted to ask you, you mentioned early in the conversation that at the Montreal Neurological Institute, you had worked with Brenda Milner. Among her many achievements she conducted research with HM. For listeners who don't know, he had his bilateral medial temporal lobes resected. So both of his hippocampus were removed to try to stop these epileptic seizures. Can you tell us about your time with Dr. Milner? What was it like to work with her?



Bryan Kolb 53:53

Sure. I mean, in my wildest dreams I never expected to be working with people. But I was unemployable. So Doreen organized for me to go to work with Brenda. I met Brenda before when she visited Western Ontario. She's still alive. She still works. She's 101. She's pretty blunt and so you learn that really fast.



Ryan Van Patten 54:17

[laughs]



Bryan Kolb 54:18

[She] doesn't take any nonsense whatsoever. But she's obviously brilliant. I had an interesting relationship with her early on because I told her what I wanted to do and she said, "No, you can't do that." So I just went ahead and did it anyway. In those days, of course, there were no ethics committees. You didn't have to run things by anybody. So after about three months, she said, "You've been here three months but you haven't done anything. When are you going to start?" I said, "No, I have. Here's some data." She said, "Well, from what?" I told her. She said, "Well, I told you not to do that." And I said, "Well, look at the data." She looked at it and she said, "Oh, my goodness. Yeah. I'm giving a talk at the Society for Neuroscience next month. Can I use this?"



Ryan Van Patten 54:58

[laughs]



Bryan Kolb 54:59

So I'm looking at changes in emotional, social behavior in patients with cortical lesions because I've done the same thing in cats, and hamsters, and rats, and I was treating them as they were hamsters, cats, rats, doing these same kinds of tests, looking at facial expression and all sorts of things like that. She said, originally, that people will think you're doing social psychology and they're not going to appreciate you. Well, after she saw the data, she realized, no, actually, this is pretty cool. So she is closed minded initially, but then very open minded once she sees data - she's a sucker for data.

She's a tyrant when it comes to writing. It's impossible to write with her because she only writes things once. I don't know how you guys write, but I sketch it out and then I redo it, and then I redo it. She writes each sentence one time. Well, that's not going to work for me. So the first papers we wrote together, I wrote [unintelligible] and then sent them to her, this is by mail of course. Two months go by, I hadn't

heard a thing. I phoned her and I said, "Did you get those papers?" "Yes." I said, "Well, have you read them?" "No. I read the first sentence of one of them and there was a comma in the wrong place, and I couldn't go on."



John Bellone 56:13

[laughs]

Bryan Kolb 56:15

So the only solution was to fly to Montreal and sit beside her and do it sentence by sentence. So the students are terrorized. We had our 100th birthday party for her students to come back and everybody had the same writing stories about [how] on Saturday morning, because it was always on Saturday mornings, she would sit down with people and just tear their pieces of their paper to bits. So that's tough.



But she knew everybody, so everybody came through. All the big people in the field at that time would come and visit her and so you got a chance to meet them all, which was really neat because I would never have been able to meet all these people. Why would they want to talk to me? But she insisted that all graduate students speak to these various people, and it was great.



Ryan Van Patten 57:01

Yeah.



Bryan Kolb 57:02

It's quite an experience.



Ryan Van Patten 57:04

It's obviously incredibly impressive that she is 101 and still working.



Bryan Kolb 57:09

She's still working. She, to be fair, doesn't have a competitive grant. She has a philanthropic grant. That's fine.



John Bellone 57:09

Right.



Ryan Van Patten 57:16

Yeah.



Bryan Kolb 57:17

To get out of the treadmill of grant writing.



John Bellone 57:22

Right. We had actually reached out to her to ask her to be on the podcast and her secretary said that she doesn't do this very often anymore. Maybe we would have gotten some of the bluntness that you had gotten. [laughs]



Ryan Van Patten 57:35

If I'm still around at, you know, 100 or 101, much less working, I will be grateful. And healthy. Yeah.



Bryan Kolb 57:44

To be fair, I mean, she's feeble. Physically, but not mentally.



Ryan Van Patten 57:49

Yeah.



Bryan Kolb 57:50

She's just as sharp as she was when I met her.



Ryan Van Patten 57:53

Yeah. That's great.



John Bellone 57:55

Yeah. Well, Bryan, this has been wonderful. We have a couple of bonus questions before we wrap up with you. These are just pertaining to the field at large, so take them wherever you want to. If you could improve one thing about neuropsychology, what would it be?



Bryan Kolb 58:12

Well, I think that we've already encountered that. I would have people know more about the brain. That would improve neuropsychology. Having people in

neuroscience know more about neuropsychology would improve neuroscience. So I think that's the biggest thing.

The second thing I think is that people need to know more about where these images are coming from in fMRI and PET and ERP and what they actually mean, and that it doesn't often mean what people think it means. I know there was a paper several years ago called "Social Neurosciences: Is It Voodoo?" Well, it's not voodoo, but I see why the paper was written. Because you can find anything you want, but I think a lot of people don't realize that. You need to know a lot about what these machines are doing and how you get those images. The stuff you see on the raw data is not this picture of a brain and little dots and that's where morality is or whatever.

Ryan Van Patten 59:14



Yeah. It's seductively tempting to come to that conclusion. We frequently hear people use the terminology X part of the brain lit up and X part of the brain is responsible for this ability because it lit up in an fMRI study, and that is just a gross oversimplification and misunderstanding of the data.

John Bellone 59:41



Something could be necessary but not sufficient. There's lots of reasons for that. I want to go back to your first bit of advice about neuropsychologists getting more familiar with neuroanatomy. Other than, obviously, they can read your book and they'll get a fair amount of that, any other tips for neuropsychology trainees who are listening to get that? And vice versa for neuroscientists who might be listening to get the neuropsychology aspects?

Bryan Kolb 1:00:06



Well, let's do them first because they're easier to pick on. That is, they've got to remind themselves what the brain does, and it doesn't run calcium channels. They're there but that's not what it's about. When the rubber hits the road, it's all about behavior and that's psychology.

Ryan Van Patten 1:00:26



Yeah.

Bryan Kolb 1:00:26

I have a colleague, Sam Weiss at the University of Calgary, who used to say, "Kolb, you and your psycho mumbo jumbo. This is just nonsense. Why don't you do real science?" Now he sends his students down to us to learn about behavior because he said, "I finally get it. It's about behavior. It's not about all these chemicals." So that's the one thing.



For the neuropsychologists, I think what they need to do is to be more open minded about their CE credits. For the CE credits, they don't need to hear another talk on apraxia or another session on - you can get CE credits for going to sessions on how to run a business. I get it, but I would like them to have more CE credits related to the basic structure of the machine that they're working with. I've been to these things giving the CE programs and the students really are not that interested in that. I think they are missing something.

Ryan Van Patten 1:01:30



Yeah, yeah, that's great. What's one bit of advice that you wish someone told you while you were training, or that someone did tell you that really made a difference? We're looking for an actionable step that trainees can take that they might not have thought of that can improve their performance.

Bryan Kolb 1:01:46



Yeah, that's a good question. I would say, "Don't take no for an answer." If you think something is real and right, try and do it. Try and work around things. It's harder now, as I mentioned. We did studies with no ethics and you can't do that either with animals or people. But just because someone says that the brain doesn't make new neurons after birth, and everybody believes it, does not mean it's true. I think that if people had told me to be more skeptical than I was, it would have been beneficial. I mean, I really believe that when I started studying the effects of early brain injury, that the doctor was correct. Well, that's only true if you're a monkey, but it's not true if you're human. It's not true if you're a rat or a cat. It's only true if you're a monkey because monkeys are born old. So I was going down the road trying to prove that rats showed the same things as monkeys, and they don't. I wasted a lot of time doing that. The other thing is, I wasted a lot of time early on when we were doing early work on plasticity because people would say, "It's not right, it's wrong." So we would say, "Oh", and then later we discover all those things we did were right. People just kept telling us that we were wrong and we weren't. You know, we waste a lot of time. So I think you need - you don't want to be stubborn, but you need to be open to the fact that there are people in the field who want to keep the field the

way it is. I'm guilty now, because I'm old, but you really got to be able to say, "Hold on old fella, maybe it doesn't work that way. Maybe there's another way that this actually works." I'm lucky because - and so was Ian, we have a young colleague, Majeed Najaroni (?), who was an engineer by training but has a PhD in neuroscience. He knows not a whole lot about the brain, he knows a whole lot about electrophysiology and measuring things. But he's been great because he'll say, "Where did you get that idea from?" We'll explain the history of it. He'll go, "Oh, did you ever think of this?" I think for us that's great because we're getting him to challenge us rather than saying, "Oh, okay, sir. All is good." Which is not good. I think if people told me early on to be more skeptical of the big shots, we might have turned out worse because we might have been narcissistic about it or something. But, at any rate, that's good advice.

Ryan Van Patten 1:04:25



Yeah. Scientific skepticism and then a willingness to engage in discussions even with your supervisors. Right. I mean, my experience has been that sometimes in graduate school or in training we see our supervisors or professors as godlike figures almost, that know it all, essentially. Certainly they have impressive knowledge, but as trainees, no matter where we are we should be asking questions and pushing boundaries, not just accepting the way things are, the status quo.

Bryan Kolb 1:05:00



When I take a new student, I say, "Okay, here's a key. I'm going to let you in the lab and your job is to read stuff. Tell me what you found [unintelligible]. So get at it." They'll sort of look at me, "What?" I say, "I'm just as naive about all this new stuff as you are. You're more likely to have time to read it than I will. So we can have this conversation and you can teach me too."

Ryan Van Patten 1:05:23



Yeah, yeah.

Bryan Kolb 1:05:24



That's really important.

Ryan Van Patten 1:05:25



As a student, I so appreciate when my professors say what you just said. That in all of their knowledge and accomplishments, they're humble and willing to have a back and forth discussion with me.



John Bellone 1:05:37

Have their ideas challenged.



Ryan Van Patten 1:05:38

Great advice. Yeah. So one more question. Now that we've covered advice for trainees, I like to ask about advice for early career professionals. John and I are both in that category. If we think about neuropsychology, the healthcare landscape is changing, we want our field to remain relevant and useful. What can we do to make sure that neuropsychology remains relevant, and that we're providing cutting edge services for the next few decades?

Bryan Kolb 1:06:08

I think it's critical to go to meetings. So INS in your case, perhaps. In my case, I used to think Society for Neuroscience was the cat's ass, but it's too big and at my stage of my career I'm better going to smaller meetings and actually talking to people. I think that's really an important thing. The National Academy of Neuroscience would be another one that would be relevant. I think if you don't go to meetings, you become stale. Stuff's published years after it's discovered and found. People are talking about it. If you can go and interact with people, I think that's really, really important. You go to stay fresh.



You've also got to make sure that you don't get sucked into a black hole of administration. Assistant professors, in my view, should do almost none. They should be focusing on what's down the road. They're going to have to do something to get tenure, whatever the permanent position would be called in a hospital or whatever. But you can't early on get too - what I've seen young professors do, is they want to get involved in all these committees. The question is "Why? Why would you want to do that?" "Well, I want to help change things." "No, you want to help do things." By doing things, by doing your research, doing your clinical work, and teaching, you're going to do more good things than if you're on these committees because it just eats up your time.

The other thing I would say and it's going to sound dumb, but I get on some of my colleagues who I'm leaving work at seven, and they're still there. I'll say, "You've got little kids, you should be going home." "Well, I've got to get this done." "Why? Why do you [have to] get this done?" I think you've got to remember that there's more to the whole thing. Early on, I worked way too hard and it cost me a marriage because I was always working. I think that's when we tend to take ourselves too seriously and realize that those extra two or three hours you put in at 9 o'clock at night aren't

the most productive hours. You might be able to get other things done. You could read a book, you could interact with your kids or your dog or whatever it is you do that takes your mind off your work. So I try to encourage people to keep that in mind. Easy for me to say now.



Ryan Van Patten 1:08:41

[laughs]



Bryan Kolb 1:08:41

I didn't get that advice, but I think it's something you ought to remember.



Ryan Van Patten 1:08:46

Yeah. We appreciate hearing it, especially from someone of your status. It's good to be reminded to take care of ourselves.



John Bellone 1:08:52

Yeah.



Bryan Kolb 1:08:53

Yeah.



Ryan Van Patten 1:08:53

This has been great, Bryan. Thank you so much for your time. It's been great to talk about your book and neuropsychology more broadly. We really appreciate the wisdom.



John Bellone 1:09:02

Yeah, thank you again.



Bryan Kolb 1:09:04

Oh, thank you very much. This has been fun. I'll just give you one other thing here. I can't count the number of people who've stopped me at meetings and said, "I want to shake your hand." "Oh, yeah, why?" "Because I have your book. I don't do anything like what you do but it turned me onto neuropsychology or medicine or whatever. I would never have known that stuff existed." Some of them are veterinarians, some are neurologists, psychiatrists, all kinds of things. You don't

know what influence you're having on people for a long time. Same will be true for you guys.



Ryan Van Patten 1:09:36

Yeah. Thanks.



John Bellone 1:09:37

Thank you. We hope so.



Ryan Van Patten 1:09:38

Appreciate it.



John Bellone 1:09:39

Thanks again.



Bryan Kolb 1:09:39

All right. Thanks a lot.



Transition Music 1:09:44



John Bellone 1:09:44

Well, that does it for our conversation with Dr. Bryan Kolb. Be on the lookout for future episodes on multiple sclerosis, learning disorders, spina bifida, pediatric Neuropsych Bites, and many other topics. As always, join us next time as we continue to navigate the brain and behavior.



Exit Music 1:10:02



John Bellone 1:10:26

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Ryan Van Patten 1:10:37

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