

103| Neuropsych Bite: Clinical Case 12 – With Dr. Ronak Patel

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Speakers: Ronak Patel, Ryan Van Patten, John Bellone



Intro Music 00:00



Ryan Van Patten 00:17

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



John Bellone 00:26

...and I'm John Bellone. Today's episode is a clinical case about a 50-year-old man who suffered a traumatic brain injury. Dr. Ronak Patel presents the case. Ronak is a board certified clinical neuropsychologist and an assistant professor at the

University of Manitoba in Canada. This episode is a bit different than our other clinical case episodes because we spend most of the time talking about Dr. Patel's cognitive intervention program called Training of Executive Attention and Memory, or TEAM, so we hope that you enjoy this discussion.



Transition Music 00:59



John Bellone 01:08

All right, Ronak, do you want to jump right into this next case?

Ronak Patel 01:12

Yeah, sounds great. So this next case was a 50-year-old, White gentleman who was right-hand dominant. He spoke English as his first language. He had 12 years of education. He was referred to me after he had fallen off of the ladder while he was at home, the fall was witnessed by his wife. The fall resulted in extensive diffuse axonal injury across the brain and multiple bleeds across the brain. So he had multicompartmental intracranial hemorrhages that were predominantly localized in the left cerebral hemisphere, but they extended from the left frontal lobe to small hemorrhagic contusions in the bilateral frontal lobes, as well as hemorrhagic contusions involving the left anterior temporal lobe and left medial temporal lobe. There were also hemorrhages in the right cerebellum, in different areas of both bilateral cerebellar hemispheres. He had to undergo a decompressive craniotomy to relieve some of the swelling and the pressure of the brain. I had seen him several months, actually, after his initial injury. This is an individual who had a history of sleep apnea, he was on CPAP therapy. He had borderline hypertension and [he] had a heminephrectomy in 2018.



We had done an initial screening assessment when we had seen him to see how he was doing because it had been several months after his initial injury and, despite the extensive hemorrhagic contusions in the brain, he actually was doing quite well overall cognitively. He, himself, reported not much change in his cognitive functioning, neither did his wife. He reported some occasional forgetfulness, but nothing that he found overly problematic or something that he was particularly worried about. When we did our screening assessment, he was largely within expectation or within normal limits across many of the areas that we tested. So passive or simple attention, working memory, visual spatial processing, episodic memory for both verbal and visual information were all within normal limits. His skills in verbal fluency - so phonemic fluency, semantic fluency - [were] all within the average range. Most aspects of executive functioning were also well within normal

limits or well within expectation. The only frank impairment that we saw in testing was Trails B where he took longer to complete the task. His speed was impaired, but this was in the context of preserved accuracy, so no errors. [In] other tests of set shifting, both speed and accuracy were preserved. His problem solving skills were in the high average range. So the impairment on Trails B was really the only thing that we saw. There was a mild reduction in his performance on Coding, he was in the borderline range, but on all other speeded tests, including numeric sequencing, verbal fluency, and other speeded executive tests, for the most part, he was within normal limits. So we weren't seeing an overall picture of slowed processing speed globally, but there was that mild, reduced performance on Coding.

Ryan Van Patten 04:55



So right off the bat here, this is interesting because of the potentially surprising lack of correlation between the imaging findings and the early cognitive testing. So, of course, we look at imaging and look at, for example after a TBI, the extent of diffuse axonal injury, bleeding, hemorrhages, potentially subdural hematomas can [reflect] sometimes just how severe [or] how bad this brain injury was and then we have expectations for cognitive testing based off of that. Certainly there's some clinical anatomic correlation that we see, but we often don't see a very strong or perfect correlation between both. There are other factors at play here. Things like cognitive reserve, plasticity, recovery can happen. Also, for some people, they have a brain injury and they have deficits from it, and those deficits aren't picked up by our standardized cognitive tests. They might happen more in unstructured environments, they might be more mood or motivationally-based, there are other areas that they come out to. So, for him, was there some other area of his functioning or life where he was impaired that wasn't picked up in testing? Or not so much?

Ronak Patel 06:13



Well, that's really interesting that you asked that. So, he was referred to our cognitive intervention program, called TEAM, which stands for Training of Executive Attention and Memory, because some of the rehab therapists thought it would be good for him in light of observations of increased distractibility in real world day-to-day functioning - some problems with goal setting and following through on goals. So even though on testing he looked pretty good, there were reports in his daily functioning that picked up on some more attentional-based issues in day-to-day life and so he had been referred to TEAM. I'm not sure, is now a good time to talk about TEAM?



John Bellone 07:00

Was that before your screening evaluation?



Ronak Patel 07:03

So, typically, individuals who are referred to this cognitive rehab group undergo an assessment. In this particular case, just the way timelines were working, we did not get to see him for initial assessment before he participated in the group. So this screening assessment, by the time he came up on our waitlist, was actually after he had already participated in the group. So it kind of worked a little bit backwards.



John Bellone 07:29

Well, I was going to say maybe the reason why the testing was good is because you fixed him.



Ryan Van Patten 07:34

[laughs] Well see...



Ronak Patel 07:34

[laughs]



John Bellone 07:37

[laughs] Just a quick comment, I know you call this a "screening assessment", but you had a good number of tests that you gave. You had several WAIS measures, D-KEFS, the HVLIT. You had the Ray-O and the delayed recall portion as well. So, you know, it wasn't maybe as comprehensive as your other batteries, but it's also not just just a MoCA or something, which some people might call a "screening".



Ronak Patel 08:06

Yeah. This is where language becomes important, right? And also probably training in different jurisdictions. So I'm in Canada, and historically - and I think this is true in North America in general - historically, we would do these very long, long batteries. I think that in the States there has been this push over time to abbreviate those batteries, but I think Canada took longer to get there. So now we call these more shortened, compared to your historically day-long or one- to two-day long batteries, anything shorter than that we call a "screen". [laughs]



Ryan Van Patten 08:45

[laughs]



Ronak Patel 08:47

I think that's become the norm in the States for a long time. So, yeah, that's the screen. We want it to be more comprehensive than a standalone screening measure, like the MoCA or the MMSE, and we want it to give us valuable information that allows us to answer the referral question, but we don't want it to be as comprehensive as a full day of testing often because patients in rehab settings don't have the motivation and stamina to undergo such testing. They're usually preoccupied with other things that seem more pressing, like their physical injuries that they're contending with.



Ryan Van Patten 09:27

Great. We'd love to hear you talk in depth about TEAM. Just a quick statement for our listeners: In this case, we would like to spend more time talking about the intervention. Of course, with a real patient, and you did this for this person, there's a lot of assessment pieces, a lot of time and effort that goes into background, medical [and] psychiatric history, many things like that. Just for this case, we'll be very brief in that regard. Ronak, if you could quickly mention if there's anything else that is very clinically pertinent with respect to his background, we'll just state that and start talking about the intervention.



Ronak Patel 10:02

The only thing that comes to mind is that he was off of work. He was working as a technician and he had his license medically suspended, which is the case for many of our patients, and [he] was in the process of reinstating that. Just in terms of background information about him.



John Bellone 10:21

How long after the fall did you initiate TEAM?



Ronak Patel 10:26

I believe it had been several months. I would probably say about eight months after the fall he participated in this group.



John Bellone 10:33

Great. Yeah. So tell us about that program.



Ronak Patel 10:37

So Training of Executive Attention and Memory, or TEAM, is a group-based outpatient cognitive rehabilitation group that we started here several years ago, that

I put together. A lot of the group is based on my foundation in cognitive rehab, which I really got through my training at Baycrest in Toronto, where they have developed some excellent cognitive interventions primarily geared towards older adults, but they also apply to adults with brain injuries and younger adults as well. So TEAM would really reflect my combination of my experience in Baycrest. I had done my practicum there as well as my pre-doctoral residency and I had led a number of their cognitive intervention groups while I was there. So when I came to my position here at the University of Manitoba, I thought, "Wouldn't it be great if I could combine everything that I learned and put it into one group?" So that's really what formed the foundation and the basis for TEAM.

So TEAM runs as an 8-week intervention where we meet for two hours once a week. It's primarily geared for individuals who are having cognitive difficulties secondary to neurological disorders, such as traumatic brain injury or stroke - [those] tend to be the two most common etiologies, but we also have individuals with MS or individuals who've been diagnosed with ADHD who also participated in this group.

We've broken down TEAM into a few different elements. So the foundation of the group starts off in mindfulness. We introduce mindfulness as a way to train our attention. So in the first couple of sessions of TEAM we do a deep dive into mindfulness and using mindfulness as a way of training our attention. We start off the discussion by really exploring the concept of being absent-minded. We have individuals in the group explore what it means to be absent-minded. "Do you lose your focus? Do you have trouble focusing your attention? Under what circumstances?" So we do this deep dive into the concept of absent-mindedness as the lead-in and the intro into the topic of, "Well, what is it to be mindful? And how do we better focus our attention on the here and the now?"

So, in the first two sessions of TEAM [when] we're discussing these concepts, we do a number of exercises. From the mindfulness literature, we do the mindful to breath exercises, mindful body scanning, [and] the raisin exercise. We have participants do these exercises in the group, but then we also assign them to do it as homework between the sessions. They start learning to use mindfulness as a tool to train our attentional focus at any given point in time. In these sessions, we also present the evidence that supports the use of mindfulness as an attention training strategy. So we will go over some of the latest research that looks at the study of mindfulness and its effects on the brain. We'll cover some of the structural and functional changes that mindfulness has been associated with and some of the clinical benefits that mindfulness has been associated with - reduced stress, reduced anxiety, reduced depression. I think this is a part of the program that the participants really appreciate, especially when we present some of the structural

functional brain findings or neuroimaging findings that show mindfulness can actually influence neurobiological changes in the brain. I think they find that really cool and really fascinating - just that something they could be doing could actually lead to neurobiological changes in their brain. We are very careful not to overstate our claims of what mindfulness can do or not do, but we do present the evidence that is out there now. If you actually go back and look over what's been done over the last 20 years, there's been a huge surge in neuroimaging research in mindfulness so it's really nice to be able to present some of those findings and show there's actual structural and functional changes in key areas such as the hippocampus and areas of the prefrontal cortex which are actually involved, we know, in supporting memory and attention. So they find some of those findings really fascinating and then they really take to the exercises. Often, they have not had any formal training into mindfulness-based attention, breathing, or body scanning and so we have them practice on a daily basis. We get them to track their homework on a day-to-day basis and then we debrief on their homework and how it went for them at the next session. So that's the first two sessions of the program, this deep look into mindfulness, and it sets the stage as an attention-training technique.

Now, I should probably back up and say, before we start the intervention, this is a cognitive rehab group that's really dedicated to improving performance or function in everyday life. So we're not set out to improve test scores or neuropsychological test scores. It's about improving quality of life or everyday functioning with whatever the clients might be struggling with. So we have each client articulate their set of goals and what they would like to achieve throughout the program. So, for the case that I just presented, his goals that he wanted to achieve through the group were the following: he wanted to process information more accurately, he wanted to better prioritize tasks in a given day, he wanted to improve his decision making, and he wanted to improve his ability to complete tasks by reducing distractibility. So we get clients to set these four functionally-relevant goals so that they'll be able to apply the strategies they learned from the group to these goals throughout the intervention. We get pre-ratings - we collect ratings on their perceived level of performance as well as their perceived level of satisfaction before the group and then we go back and get those ratings after the group.



Ryan Van Patten 17:51

Got it. Very individualized. So we have weeks one and two on mindfulness, and then what happens next?

Ronak Patel 17:58

From weeks three to six, we focus on goal management training. Goal management training, for those who don't know, is based on the fundamental idea that there's a failure in higher order attentional processes that prevent us from focusing our attention and following through on goal directed behavior. In goal management training, what we're doing is building a strategy. It's a strategy that gets individuals to really stop and think, ask themselves some critical questions about what it is that they're doing and how does it compare to what it is that they want to be doing? Are they on task or not? So over those three sessions, we really build up that strategy and we pair it with the mindfulness strategies that they've learned in the first two sessions into one coherent strategy where they're putting it all together. That's facilitated also through a number of in-session exercises. We have them do a number of different activities during the groups where they actually have to apply the strategy, the stop and state strategy, to different activities that we get them to do in session. We'll give them a number of different things and they have to prioritize which one is important, which one is not, how are you going to use and stop and state to plan and prioritize and keep your focus on what you need to, and how do you shift your attention accordingly. So GMT reflects the heart of the program in sessions from three to six.



Then in the last two sessions, or amongst the last two sessions, we focus our attention on developing some memory-based strategies. We look at internal-based memory strategies as well as external-based memory strategies. We really present participants with all the evidence that supports the use of certain internal memory strategies as well as those that support the use of external-based strategies. When we're talking about internal memory strategies, we go over and we practice things like the use of associations and how that's been effective in learning different types of information, short pieces of information. We also do things with spaced repetition. So, yes, repeating information can be helpful, but it's really helpful under conditions of spaced versus massed types of repetition. So we have participants practice those types of internal base strategies in real world settings. We get them to learn their partner's name, date of birth, their hobbies, interests through using these internal-based strategies in session and then we also send them home and give them some homework where they have to apply these strategies as well. Then we do a pretty deep dive into the use of external memory aids. We know that external memory aids are amongst the most effective ways of supporting memory and we go over what the research says. How do we make these external memory aids the most effective for supporting your memory? Is using a system like post-it notes better than using the consolidated day planner organizer? Is your phone any good? A lot of people aren't necessarily using the calendar function in their phone, although we know that, with practice and with good habit formation, that it can be a very viable and effective way of supporting your memory. So we really do a deep

delve into what people are using as their external memory aid, how they're using it. It's really fascinating because we have group members telling each other, "Oh, well, you can do this with that phone. Or you can do this with this thing. Here's my system and here's how it works for me." So they really feed off of each other and learn from each other with their different systems.



John Bellone 22:03

Yeah, that collective approach is really powerful. It sounds like you get a lot done in those eight weeks. That's great. [laughs]



Ronak Patel 22:10

Yeah.



John Bellone 22:11

How did your patient specifically do in the TEAM? Do you remember?

Ronak Patel 22:17

He did really well, overall. So, we collect qualitative and quantitative feedback. Qualitatively, he said he really enjoyed the attention to breathing exercises. A lot of them will carry on with the breathing exercise because they find it relaxing. He also said that he was able to better focus on attending to one thing at a time, one task at a time, and effectively using the stop state strategy that he was taught. His mornings were often in a rush with his two kids, and so he was using stop state to organize his morning and make sure that the morning would run more smoothly than the chaos that it was becoming. He also started using his phone as an external memory aid, something that he had not been doing much of or was doing inconsistently, and so he started using it more consistently. And overall felt like there were improvements in his overall level of patience with others and himself through the whole course of the group. Then his performance and satisfaction ratings also increased for some goals and then not for others. Usually, that's not uncommon, because we don't get to - we have patients select four goals, but they might not be able to work on all four goals through the duration of the group. So if they're only working on two, then we don't necessarily address the other two. So, generally, on the goals that he worked on throughout the group, he saw both improvements in his self-perceived level of performance and his perceived level of satisfaction. We also tried to collect information from collateral sources. So his wife actually reports that he extremely benefited from the group. That he was more organized, seemed more calm, and generally seemed to be doing better overall with some of the strategies that he had acquired. So that was amazing feedback to hear.





John Bellone 24:19

It's excellent. Is this program manualized? For listeners who wanted to learn more about it or potentially incorporate it into their facilities, is that a possibility?



Ronak Patel 24:32

Yeah, that's the long term goal. At this point, it's not been manualized but the next step, I thought, would be good to start formalizing this into a program that others can access. Parts of it are taken from my training at Baycrest, and Baycrest has manualized and published their whole intervention on just goal management training. So you can get that program through Baycrest if you're interested. Then they have great educational workshops where they have train-the-trainer workshops, so they teach you how to deliver the program. If you go to the Baycrest Geriatric Center for Healthcare website and look for goal management training, you'll find their commercial program there. They offer it for use and for sale. But mine, this program, went broader than just GMT. It also covered memory, mindfulness in terms of attention training. And we also have a - I didn't talk about it, but we do one session on CBT where we briefly introduce the CBT model. That's really our way of briefly addressing symptoms related to adjustment, anxiety, depression - the emotional side of things is often a core component of a patient's journey.



Ryan Van Patten 25:51

Well, thank you for talking through this case, Ronak, and the TEAM approach and model and then applying it to the case. This was interesting. We haven't done a clinical case presentation quite like this before, but there's a lot of power behind this movement in neuropsychology to incorporate intervention into our assessment expertise. I'm fully behind it. I think we can do a lot of good providing interventions. So, again, thank you. Before we let you go, we have two quick bonus questions for you. We ask all of our guests these questions.



Ronak Patel 26:23

Ohh.



Ryan Van Patten 26:24

[laughs] So your answers could be related to anything we talked about with your case, but they don't need to be. They're about neuropsychology broadly. The first one is, if you could improve one thing about our field of neuropsych, what would it be?

Ronak Patel 26:40



I would say, and there's been a lot of work done in this area so I don't want to negate all the work that's been done in technological advancement, the assessment of cognition and brain and behavior functions, but beyond just some of the programs that are out there for measuring cognition on a computer interface to be able to capture more readily what happens in the testing room between a psychometrist or an examiner and a patient with technology and it not be just a computer screen. It's hard to articulate. But, finding a way to kind of, I don't know, I guess, I don't want to say a robot administering a test [laughs]. But, I guess technological advancement in our field and just further incorporating it and finding ways that really emulate the person-to-person interaction that goes on in the testing room, I think, would be something that I would like to see or maybe our field can get to one day.

Ryan Van Patten 27:50



Yeah, there's a lot in that area, right? In technology. There's computerized testing, mobile cognitive testing on people's phones, there's research on that. There's passive data collection, wearables, we can get a lot of information there related to cognition, the Internet of Things. We've touched on some of these things before, but I agree, technology is a broad umbrella and there's a lot of ways we could incorporate it into neuropsych.

Ronak Patel 28:16



Yeah. How do we capture the human to human elements in those systems? I'm not sure we've done a great - I don't know if anybody's really adequately addressed that. But I think that it's all a step by step process, and hopefully one day we will get there.

John Bellone 28:33



Then the last bonus question is, what is one bit of advice that you wish someone told you when you were training or maybe somebody did tell you that really made a difference? We're looking for an actionable step that trainees can take here.

Ronak Patel 28:46



Well, I'll probably repeat the one that I tell all my trainees, which is "Always follow your interests." So whatever your interests are, broadly speaking, that is the thing that will ultimately sustain you over the long term. So make sure you're pursuing something because you're truly genuinely interested in it. My training started out by doing a thesis using animal models and that really sparked my interest in brain and behavior. That was the pathway for me. I found that truly fascinating. So through all

the highs and lows of graduate training that we all go through, [laughs] there are times where you just want to walk away, it's my interest that's sustained me over time. So find out what you're interested in and follow that because that is what will sustain you over your training especially in neuropsychology. We know that it can be quite long. So that would be one thing that I would tell trainees. That applies to their research, clinical training. Find practicums that you are truly interested in. Pursue a research question that you are really interested in. Because, again, it's that interest that's going to sustain you and that's going to keep you invested.

Ryan Van Patten 30:09



That's great advice. I very strongly agree. I tell my trainees something similar. Our jobs, it's hard to make them 9-to-5. We want work life balance, but there is continuing education that goes on and the more we put into our jobs, the more we get out of them. So, if you enjoy it, if it doesn't always feel like a drag [laughs] to be working or listening to a podcast or reading a paper or a book, then obviously your quality of life is better and you do better at your job. I also tell people, whatever niche within neuropsychology or if it's out of neuropsychology that is your passion, follow that and you'll be a lot happier.

Ronak Patel 30:48



Yeah, I couldn't agree more. I think NavNeuro has been really great because it's been a collective community of neuropsychologists who are really passionate about our work and who do really find it interesting. I think it's one of those things that if you follow your passion, it feels like less work. Although some days...

John Bellone 31:09



[laughs]

Ryan Van Patten 31:09



[laughs] We all have days.

John Bellone 31:13



Even NavNeuro is work. I have to deal with Ryan all the time.

Ryan Van Patten 31:16



[laughs]

Ronak Patel 31:16



[laughs]



John Bellone 31:16

So, you know, there are downsides to it. [laughs] Well, Ronak, thanks so much.



Ronak Patel 31:22

Well, thanks guys, for having me. I wanted to support you guys because I really love the work that you guys are doing on the podcast. I do listen to it when I get a chance. I'm just a proud supporter because I really appreciate the work that you guys are doing.



John Bellone 31:39

That's nice of you to say.



Ryan Van Patten 31:40

Thank you. Yeah, and now [you're] a contributor to the podcast. [laughs]



Ronak Patel 31:45

Yeah, sounds great. Thank you guys so much for giving me the opportunity. It's been awesome.



Ryan Van Patten 31:49

Yeah, happy to.



John Bellone 31:50

All right, Ronak. We'll talk soon.



Ronak Patel 31:52

All right. Bye guys.



Transition Music 31:57



John Bellone 31:57

That does it for our conversation with Ronak. If you've been enjoying these episodes, please take a minute to leave us a rating or review on whatever podcast platform you might be listening to this on. We really appreciate it. And, as always, thanks so much for listening, and join us next time as we continue to navigate the brain and behavior.



Exit Music 32:16



John Bellone 32:40

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Ryan Van Patten 32:51

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