

94| Neuropsychological Rehabilitation After Acquired Brain Injury – With Dr. Dana Wong

May 1, 2022



This is an audio transcription of an episode on the Navigating Neuropsychology podcast. Visit www.NavNeuro.com for the show notes or to listen to the audio. It is also available on the following platforms:



Speakers: Dana Wong, 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 00:26

...and I'm Ryan Van Patten. One quick announcement today before we get into our episode: In case you didn't know, John and I wrote a book called "Becoming a Neuropsychologist: Advice and Guidance for Students and Trainees." The book is

for anyone who's interested in learning more about neuropsychology, whether you're a student in high school, college, graduate school, or just curious about our field. If you read the book and like it, please consider leaving a five star rating on Amazon, Barnes and Noble, or wherever you buy books.

John Bellone 00:59



And now, for today's episode. We speak with Dr. Dana Wong about neuropsychological rehabilitation after acquired brain injury, or ABI. Dana is an associate professor, clinical neuropsychologist, and school director of graduate research at La Trobe University in Melbourne, Australia. She has an active research program in cognitive interventions for ABI and has won a variety of awards for research and teaching efforts. Dana has sent us several resources which we have links to in our show notes at navneuro.com/94. She also asked us to mention that there is a new INS special interest group in neuropsychological intervention. Dana is one of the co-chairs of that SIG. If you'd like to become a member, head over to the-ins.org/sigs.

Ryan Van Patten 01:52



Today's episode is part of one of our themes on NavNeuro. This theme is interventions in neuropsychology. A few other episodes in this topic area include [number 15](#) on compensatory cognitive training with Dr. Beth Twamley, [number 39](#) on behavioral interventions for mild cognitive impairment with Dr. Glenn Smith, and [number 54](#) [on] non-invasive brain stimulation with Dr. Adam Woods. And, with that, we give you our conversation with Dana Wong.



Transition Music 02:25



John Bellone 02:35

Dana, welcome to NavNeuro. We're really excited to have you on.



Dana Wong 02:38

Thank you so much. It's great to be here.



John Bellone 02:40

There are a lot of terms in this space, such as cognitive training, compensatory cognitive training, cognitive rehabilitation, cognitive remediation. Can you define and differentiate some of these terms for us?

Dana Wong 02:54

It's a great place to start. I think the terminology in this field is quite a problem and that causes a bit of confusion. There is some overlap in the way these terms are used, but also people use the terms quite differently as well. In my mind, I think the main distinction is about the purpose or the target of the intervention rather than the method per se. *Cognitive training*, I think, is about improving a skill or a function through learning and practice. And training can be restorative, so trying to restore something to its original state. *Compensatory*, we might define that as trying to work around the problem or find a new way to manage it and compensate for it. *Remediation*, I think, really means to fix something. The target usually is a restorative one - to return something to its usual or a normative state. But sometimes the term cognitive remediation is used in a broad umbrella way as well - to encompass a range of approaches to cognitive intervention. Then, *rehabilitation*, I would say, is a more two-way interactive process where the affected person works together with clinicians and others to achieve their optimum level of function and wellbeing. To me, that's more goal directed. It's more focused on optimizing function rather than restoring or fixing. We optimize in a way that's meaningful to the person rather than trying to just fix the impairment for the sake of fixing the impairment.



I think that those definitions are easier to distinguish in some areas of cognition than others. In memory rehab, for example, restorative cognitive training is usually computerized practice, or drills, and that's different to compensatory memory rehab where people learn external and internal memory strategies to work around a problem. But in other areas, I think it's less clear. One example is metacognitive skills training, like goal management training, for example, where you're trying to train someone to use a metacognitive process like "stop, plan, do, review". When you're trying to train someone to use a metacognitive process, some people call that restorative because you're practicing an explicit version of a previously implicit process to try and make it implicit again. Whereas others consider it compensatory because you're using an alternative method to circumvent an executive impairment. So, yeah, there's differences there. It can be a bit fuzzy and unclear. It is something that I think we need to work out as a field because to make progress with evidence we really need to agree what we're actually trying to achieve with these interventions.

John Bellone 05:42

When you use the terms just broadly, do you prefer a cog rehab? Or what do you use?



Dana Wong 05:47



That's usually what I use to describe what I do. Yeah. And that's certainly my aim because, in talking to clients, that's what they want. They want to be able to function in their lives, right? It's rare for somebody to say, "I want to improve my performance on memory tests or on attention tests." It's more common for people to say, "I want to be able to keep track of this conversation with my loved one or remember what I'm supposed to be doing at work." Those kinds of functional targets are, I think, what's most meaningful to the client.

Ryan Van Patten 06:22



We'll be talking about rehab for acquired brain injury today, which could include stroke, TBI, hypoxia, and there are other brain insults that could fall under that umbrella. As we move forward, we'll talk mostly about stroke, but let's start by having you talk a little bit about considerations based on different mechanisms of injury. So when engaging with patients in cog rehab, what are some aspects of their brain injuries that we should be thinking about?

Dana Wong 06:49



I think firstly, within acquired brain injury, the actual neuropathology - so whether it's stroke or TBI or hypoxia - I think is actually probably the least important thing. One thing that frustrates me a little bit about the field is this separation of research - evaluating people with stroke separate from people with TBI in different studies. This bleeds into meta-analyses, for example, where, if you're doing a meta analysis of memory interventions in stroke, all the studies that have been done in a mixed ABI sample. Unless they've separately reported the stroke cohort, they can't be included in meta-analyses and therefore can't be included in clinical guidelines. We have living stroke guidelines in Australia which only use stroke-only studies. That's a shame to me because I think there's so much overlap in the ways that people with different types of ABI respond to rehabilitation. I think more important than the neuropathology is the extent and the location of the neuropathology. If somebody has focal parietal pathology from a stroke, for example, and their main presenting problem is neglect or visual spatial impairment, then a really targeted intervention is warranted and can be effective. If there's really extensive diffuse axonal injury, like is common in TBI, then a really targeted cognitive training intervention focusing on only one cognitive domain is less likely to be effective simply because of the multifaceted and interrelated nature of the impairments. So I think that the extent and where the neuropathology is is important.

Another aspect is the time since injury, though there's mixed evidence about whether it's better to start early or later. I suspect that probably depends on the nature of the intervention - how important it is that the person has developed some

insight and awareness into their areas of difficulty and how they're functioning in their usual environments. Then, of course, there's all the other aspects about the person which influences how the brain injury affects them, including their age, their premorbid functioning, the related concept of cognitive reserve, and coexisting mental health and medical conditions.

Ryan Van Patten 09:05



Great. That's a helpful overview of the acquired brain injury mechanisms and how you think about some important factors. The other piece today is cog training, cog rehab, as you started to talk about at the beginning. You had mentioned metacognitive training, give us a broad overview of some of the most common training interventions that you use with acquired brain injury.

Dana Wong 09:28



In terms of my research, the most common area that I've worked in is memory. We've done a whole series of studies looking at compensatory memory rehabilitation intervention that actually was initially developed by a group in Sydney. Kylie Radford, Laurie Miller, and their colleagues developed the "Making the Most of Your Memory" program, which is a 6-week group program that incorporates psychoeducation about memory and the brain. It incorporates training in internal and external memory strategies and then lifestyle improvements in things like mood and exercise and sleep and so on. We've done a randomized controlled trial that found that intervention was more effective in helping people with stroke improve on memory-specific goals that were relevant to them and was more effective than a computerized cognitive training program, which in that case was Lumosity. We've then extended that research in a number of ways, looking at how to deliver that program over telehealth and do it one-on-one rather than group.

We've also then investigated other kinds of more specific elements of that group or types of memory intervention including using smartphone apps. We've done some work looking at how to train people with ABI how to use various smartphone apps to support their memory. We've also done some work looking at other specific interventions like wakeful rest. So this idea of taking a small rest, not asleep, but a rest after learning something new. We found that, at least in the short term, that improves retrieval of newly learned information. We also looked at retrieval practice. So this idea of exposing yourself to some information, like a name, and then testing yourself. So rather than just listening over and over to the same name - you know, taking away the name and then thinking, like you're doing when you're trying to study for something. So, again, [we] found that retrieval practice is effective, which makes sense. It fits with all our theories of memory. That's some of the work we've done in memory.

In clinical practice, besides the memory interventions, a lot of the interventions I use tend to be around planning and organization. Those strategies do tend to overlap a fair bit with the memory strategies, but include things like breaking down complex tasks into their component steps and keeping track of them, making them manageable. Then there's metacognitive skills training, like we mentioned before - goal management training, time/pressure management, those sorts of things. Another area that comes up a lot is strategies for keeping track of conversations. So maintaining attention and remembering, keeping track of what's going on in both an individual or a group conversation.

John Bellone 12:21



That's a good overview. We'll talk about a couple of your other interventions, too, in a little bit. You had mentioned that you had been using at least one of the interventions in a televideo conferencing sort of platform. Do you find that that worked as well? Or how did that work in comparison to an in-person group?

Dana Wong 12:39



Yeah, we did some work. A lot of this memory work I've done with my colleague, Rene Stolwyk, [and] the telehealth work was done with a doctoral student who's now graduated, David Lawson. So [in] this work, we looked at the memory skills group and transformed it into an individual in-person version and compared that to an individual telehealth version. What we found, which we didn't expect, was that the telehealth version was actually more effective than the in-person version. One of the reasons we thought that might be is because the in-person intervention was happening in the clinic setting away from the person's home and [in] the telehealth version they were usually in their home. So the level of generalization or transfer that you need to do with new strategies is reduced. They're in the user environment, they could pick up their diary that's just next to them. Or there might be a family member walking past who joins in the conversation and hears what's going on. It's more integrated into their usual life. That might be important. That idea of embedding strategies in the usual context, I think, is an important concept that telehealth can do really well.

Telehealth is something that clinicians often worry, "Can I develop a therapeutic relationship over telehealth as effectively?" There's a lot of concern that it won't work as well, but our experience has been - and we did some qualitative work on this as well - that once you get going, and COVID has forced our hand here, that many clinicians who previously didn't have experience in telehealth now do and usually find that actually is much easier, works much better than they expect. That kind of rapport building or relationship building might take a little bit longer and might be a little bit different, but it does happen. Sometimes, when you're reaching

your home environment, or at least the client is in their home environment, you get to know them on a different level and it's quite equalizing that they're there with their pets and their family and their kids wandering in. Even you, as a clinician, if you're working from home, some of that might happen, too. So, yeah, that human connection does happen in a different way.

John Bellone 14:58



Yeah. I found that as well. In terms of the ages or conditions or level of severity of impairments that you usually work with when you're doing some of these interventions, just give us a sense of those.

Dana Wong 15:10

My work is with adults. There's some great work happening with kids and the memory intervention I was describing has been used with adolescents and to good effect. They're great with their apps and the technology side of things. But, my work has been with adults.



In terms of the upper age limit, we don't usually set one. Sometimes we've said that [it] might be tricky for people, say, over 80 to participate in a memory group. There might be things like hearing issues, which makes it difficult for them to really feel part of the group and keep track of what's going on. Some of the app-based strategies - not going to say that older people can't benefit from those, because that's not true. It's more about experience with the technology rather than age per se. But that older or elderly cohort is more likely to have less experience working with smartphones and computers. So sometimes it might be tricky for that really older cohort. But, apart from that, any age is good, I think.

In terms of conditions, across the acquired brain injury spectrum that we've done work in included people with all sorts of diagnoses. I guess the one distinction is we wouldn't usually include people with degenerative conditions in our interventions. That's not to say they wouldn't benefit from similar interventions, and there's some great work happening in the mild cognitive impairment/dementia space with cognitive interventions, but my work is more in the acquired brain injury area.

Ryan Van Patten 16:52



Great. You had mentioned groups, and I'm curious about how often you use group formats versus individual delivery of the interventions and your perspective on pros and cons of those two approaches?

Dana Wong 17:05



It's a great question. I mean, I do run groups and I love groups. I think we've done a fair bit of qualitative research on the experience of groups and it's really striking how commonly the same themes come out. Group participants really like that sense of shared experience, knowing they're not alone and that others [are] describing things that they say. "Oh, yeah, that's happened to me, too." That sense of sharing the experience and feeling connected with others who understand them is really powerful. Also peer support, as well. A clinician who is suggesting a strategy, [they] might kind of go, "Maybe I'll try that, maybe I won't." But then if somebody that they relate to in the group says the same thing, they'll go, "Oh, yeah, I'll have a go with that."



Ryan Van Patten 17:52
[laughs]

Dana Wong 17:52



Sharing the ideas that have worked for other people who they relate to, that can be really important and powerful, too. Groups are cost and time efficient, too. You're working with multiple people at the same time, using fewer clinician hours. So there's lots of benefits to groups. But the main cost is the capacity to individually tailor. In groups, you're often dealing with people with quite varying levels of function. Some of the contents might be really relevant to one or two people in the group, but not the others. If there's a particular issue or difficulty that someone in particular is having, the time that you can spend on that one individual is limited. That's the real benefit of individual work. You just get to go much deeper with the things that are really important to them. I think there's a lot of scope for combining group and individual interventions, actually. I'd love to see more research actually on that - some of the benefits of running a group and an individual intervention concurrently. You're getting that group experience and then sort of extending the things that are necessary to individual sessions that happen at the same time.



John Bellone 19:09

What are the sizes of your groups usually?

Dana Wong 19:11



Usually between 3 and 8. Eight is quite big and there is less capacity to really attend to each person in the group. But [you] really can also have a bit of a buzz about it and be quite fun when there's a larger group. Three is pretty small. I think the sweet spot is about 4 to 6. I think that's a good size for groups.

Ryan Van Patten 19:35



Sounds good. Let's move into talking about psychiatric and emotional symptoms for a few minutes. As neuropsychologists we can become enamored with cognition, and sometimes maybe forget how important social and psychological issues are for brain injury patients. But depression and anxiety are common after brain injury, and, of course, mood and cognitive functioning interact with each other in complicated ways too. So talk about the importance of addressing both the psychological emotional piece and the cognitive issues in these patients.

Dana Wong 20:10

This is extremely important in my view and it's been the focus of a lot of my recent work. Cognition and emotion are interrelated at all levels. Biologically, the same networks underpin emotion regulation as what I call kind of non-focal or distributed cognitive functions like attention, working memory, processing speed, memory, executive functions. Those things that we see so commonly impaired across so many different conditions. Those cognitive functions and our emotions are so interrelated in their brain networks. Then, on the impairment level as well, people with cognitive impairment are more likely to experience depression and anxiety. And then people with depression [and] anxiety are more likely to experience cognitive impairments. So they co-occur very frequently.



Then at the functional level, as well. If somebody has memory difficulties, they might feel anxious about their performance at work, and so might avoid things and then that anxiety and avoidance will exacerbate their memory difficulties and become a cycle. Or if you're really anxious about keeping track of conversations, again, that sort of social anxiety and attentional issues will bounce off each other and exacerbate each other. I think if we silo interventions that address cognition and emotion and then separate them, we really miss important parts of the puzzle in each case. When you spend any time with somebody with an acquired brain injury, it's inevitable [that] if you're focusing on cognition, they're going to talk about the distress that that causes. The frustration that causes, how it impacts their social relationships - that's just inevitable. It'll always come out. I think it's really important to have your eye on both those elements and behavior as well.

As you know, people are complex and whole beings. It's a bit like the difference between cognitive testing and neuropsychological assessment. If we were trying to build a case formulation based on cognitive test scores only, then we're missing the clinical interview, we're missing the the corroborative history, we're missing the medical records, we're missing observations of they how they respond to the tests, all of those things contribute to our biopsychosocial case formulation. Similarly, with interventions, if we only address part of the puzzle, we're missing some really

important aspects that are really important for and meaningful to understanding that person and helping them.

John Bellone 22:41



I really like how you weave the social psychological aspects into your interventions, which we'll get to in a minute. Listeners with a rehab background will probably know that the term "adjustment" is very commonly used in rehab settings. A lot of the referrals that I get at the rehab hospital I work at are for helping patients adjust to their new difficulties or their new limitations, the role changes in the family, changes in identity - it's just a lot of change to adjust to. Maybe we can talk about adjustment and how both cognition and mood are related to overall adjustment after acquired brain injury.

Dana Wong 23:22



Yeah, absolutely. There's really strong meta-analytic level evidence now supporting an association between cognition and activity and participation. In the International Classification of Functioning model, you've got impairment, activity participation, and then there's quality of life, of course. We know that cognition predicts all of those. How somebody functions, how they feel about their life, and their sense of life being worth living and being worthwhile, there's a strong association there. Similarly with mood and distress and the same outcomes. They're very clearly linked to a sense of who you are as a person. It makes sense [that] cognition and emotion are so central to our inner life, it's the way we experience the world. If we're overwhelmed by information, we can't keep track or remember what's going on or integrate information to form a coherent narrative about ourselves. Then it's really difficult to adjust and build a new post-ABI identity. Similarly, if our inner life is constantly stormy and we're feeling angry and frustrated, anxious, low, usually that's because we're ruminating on how we wish things were different. That makes it really difficult to adjust and build a new sense of, "Okay, this is who I am now, and this is okay."

John Bellone 24:44



I like how you incorporate ACT, acceptance and commitment therapy, and it's very much in that vein in some of your interventions. I am curious, though, about CBT for acquired brain injury treatments as well and in what way CBT might be adapted to account for cognitive difficulties in these clinical populations.

Dana Wong 25:04



We've done a fair bit of work on this, looking at adapted CBT. We've done some trials led by professor Jennie Ponsford. I'll talk a bit about those findings in a

moment, but basically, with the adaptations, they can broadly be divided into general adaptations to the way you're delivering CBT sessions and then specific adaptations to particular CBT components. In our CBT work, we've looked at actually the most common types of general adaptations that therapists made in their sessions. What we found with the most common ones were repetition of information and session content, which is a really easy one to implement. Just reviewing things more than once and going over the same content to consolidate it. Also referencing previous sessions and making sure there's some continuity from week to week and reminders about what's happened before. That's really, like I said, a straightforward one to use.

Another really common one was using examples. The therapist would use an example that highlights a concrete instance to explain an abstract concept. So, for example, if I'm explaining the CBT model and the link between thoughts and emotions and behavior, I might either give a personal example, like one I often use is being stuck in traffic and going, "Argh. I can't. This is so frustrating. I'm going to be late." And then deciding, "Actually, there's nothing I can do about this traffic. So I might as well just put on some music or a podcast and spend this time just letting it be what it is."



John Bellone 26:40

Hopefully NavNeuro...



Dana Wong 26:41

Yeah, exactly. That's it, of course. [laughs]



Ryan Van Patten 26:45

[laughs]



Dana Wong 26:45

Or you might use an example that the person's already given you when you've been talking to them. So, for example, recently I had somebody talking about going for a bike ride. They used to be up the front racing and always whizzing past everybody else, and now it's others who are whizzing past them. They were talking about feeling that bit of like, "Oh, that used to be me", but then saying to themselves, "Look, it's not a race. Just take it easy. Enjoy the ride". If they've given you that already, that's a perfect opportunity to go, "Okay, this is a great example of that link between thoughts and emotions. How you felt in that moment, and what you did in response." Using examples to make an abstract concept come to life in a concrete way, that's a really important strategy in CBT. Another one is about giving

potential response options to help the client answer a question or generate an idea. Turning an open question into a multi-choice question, basically.

There's some general strategies and then you've got specific strategies to adapt the various components. Some of these are quite straightforward. So, for example, if you're using relaxation exercises, then we really recommend that you give a recording to the client so that they can practice at home using a guided voice, preferably yours so it's familiar. Making the relaxation exercises short and tailoring them according to need and areas of difficulty. So, for example, not using progressive muscle relaxation for somebody with hemiparesis, or not using visualization for somebody with visual spatial impairments. Those ones are fairly straightforward. Others are more complex and require some more therapist training and skill. An example of that is giving the appropriate level of scaffolding for cognitive restructuring, for example. You're helping people generate alternative ways of thinking about something that are relevant to them without putting words in their mouth. So that's some ways that CBT can be adapted really effectively.

The other key thing is giving booster sessions. [In] the main randomized controlled trial of our adapted CBT program that I mentioned before, we saw the treatment effects only after booster sessions. So there was a chunk of therapy, and then a 9-week delay, and then three booster sessions. I think that that might have a really important role to play because you're then giving time for strategies to sink in and for people to try them out in a range of different situations. Then in the booster sessions, you can talk about how that went and problem solve any barriers or issues that came up and really consolidate what was before. That idea of making sure there's the capacity to top up and have these kinds of booster sessions available, I think, is also important.

Ryan Van Patten 29:43



I like your examples of using CBT and tailoring it to cognitive functioning. You know, it's not entirely a coincidence that CBT, cognitive behavioral therapy, might be useful in people with issues with cognitive functioning. [laughs]

Dana Wong 30:01



[laughs]

Ryan Van Patten 30:00



It's not a huge insight there. Of course, you know, in one way we use those terms differently when we're thinking about neuropsychological testing, cognitive testing of memory, or CBT, cognitive behavioral therapy, for emotional symptoms, automatic thoughts and cognitive restructuring. But, as you said very well earlier, emotions

and cognition are closely related. They're not in separate buckets the way we might sometimes think about them. So it does make sense that cognitive behavioral therapy might be helpful for people with cognitive deficits. [laughs]

Dana Wong 30:04



Yeah, and the CBT model - often when I give presentations about it, I show a triangle where you've got the thoughts and emotions and behavior all linked together. It makes complete sense and fits with so much of what we observe clinically, as well as the research evidence that these concepts are all related. Like you say, I like the idea of what you said, they're not separate buckets. They're all in the same pool. [laughs]



Ryan Van Patten 31:05

Right. For sure.



Dana Wong 31:06

Yeah.



Ryan Van Patten 31:06

Another therapy that we'd like you to talk about, John mentioned, ACT, acceptance and commitment therapy. I know you've done some cool work in this area, combining ACT with cognitive rehab to improve overall adjustment and wellbeing following acquired brain injury. This is the VaLiANT intervention. What's the importance of so-called valued living? What did you find with respect to the VaLiANT intervention?



Dana Wong 31:33

It has been a really fun piece of work that we've been doing over the last few years with a PhD student and an international team of clinical psychologists, it's been a great team to work with. What we've done in VaLiANT - value living is the idea of doing things in your life that are consistent with your personal values. So, you guys do this podcast, presumably, because you've got values about making an impact with your work and fostering curiosity and learning those sorts of things, I'm guessing here. Those values guide your action and help you do things that take time and effort and that you're not necessarily getting paid for. But they give you a sense of meaning and satisfaction, right? We've found a bit of work that we did before that valued living, or the more somebody is doing things in their everyday lives that are consistent with their personal values, the better their outcomes are both psychologically - so there is reduced depression, anxiety - and also functionally - so they're more likely to be working or engaging in productive

activities, like volunteering, for example. This is an important concept and it's at the heart of acceptance and commitment therapy. I think with the VaLiANT intervention, what we're trying to do is really identify, after an ABI, what value living looks like. It's often very different. It's a process of trying to guide people to say, "Okay, maybe I can't be a classroom teacher anymore. But my values around my work were about educating others and helping people grow. Maybe I can do that through other things like individual tutoring or being a volunteer or teacher's assistant at a school." Even though that looks different to what you were doing before, it is still a valued action that is consistent with your personal values, what's meaningful, what's most important to you.

In VaLiANT, the way we combine ACT and cognitive rehab is that we help people first clarify what's important to them, then identify committed actions or small things that they can do every week in line with those values, and then identify the cognitive and emotional barriers to those actions and provide strategies for doing those things. It might be making a call to investigate a job and there might be cognitive barriers about remembering what to ask or remembering what the answers to the questions were. We might have memory strategies to support that. Or they might feel really anxious about losing their words on the phone or something like that. We might use mindfulness strategies or use action metaphors like a "passengers on the bus" metaphor to try and guide them towards valued action and let those passengers be there. That's the idea with VaLiANT.

What we found in the initial single case experimental design study was that there were meaningful changes on outcomes like wellbeing and anxiety. We were quite excited about the wellbeing finding because this idea of an overall kind of quality of life outcome, which I think is the thing that we're striving for in rehab. One of the other things that we found is that we were using a valued living questionnaire, which was a bit all over the place. We've done some work now to adapt that questionnaire because I think the problem was with the measurement tool that wasn't sufficiently suitable for people with cognitive impairment. So that primary outcome was a bit all over the place. With our secondary outcomes of, like I said, well being, we're looking at those outcomes in more detail. I've also included some additional measures about identity to see what those findings show.



John Bellone 35:31

That was an 8-week intervention. Is that right?



Dana Wong 35:34

Yeah, it's a group intervention as well. And because this trial has been happening over the last couple of years, we've had to also adapt it via telehealth as well. So

it's been given both in-person and via telehealth and hybrid as well. So some sessions in person, some sessions telehealth, depending on what's happening with restrictions.

John Bellone 36:00



I see. I want to start maybe moving into talking more specifically about stroke. I know that you had mentioned that the mechanism of injury is maybe less important in general as the area affected and the severity, which I agree with, but we do see stroke patients quite often. I wanted to maybe just briefly talk about the typical or the expected recovery trajectory post stroke. This is not including any formal interventions like those that we've been talking about, just what we might expect to see cognitively and emotionally as somebody is recovering spontaneously. I realize that the answer is going to depend on a lot of factors, but just kind of the big picture.

Dana Wong 36:45



I think stroke is a little bit different to TBI in that you get these really focal deficits that often are quite isolated, actually. Things like aphasia and visual spatial neglect, and those sorts of things, they are very common, those focal areas of difficulty. But you also see the same types of diffuse difficulties very commonly as well. So, you know, attention, memory, executive functions, processing speed. Actually, processing speed is one of those things that stroke survivors often say is actually really impactful for them. It's one thing that they report as an unmet need quite frequently along with memory. In terms of recovery trajectories, again, you will see more significant difficulties in the acute stages, which do show a trajectory of recovery. But there's often lasting difficulties. The timing of intervention can be important and might vary depending on the nature of the intervention and what you're trying to achieve with it.

Ryan Van Patten 37:53



Thanks for setting the baseline for us. We can now move into interventions. We know that the cog rehab does improve cognitive functioning post stroke to a greater degree than treatment as usual. I've seen highly cited review papers, for example, by Keith Cicerone and others that have shown this, but there are a myriad of other important factors to consider. So, for example, we want to select the intervention characteristics that will maximize positive outcomes, of course, and all interventions are not created equal. There's a lot of nuance there. Do we know which factors make cog rehab most effective in stroke?

Dana Wong 38:31

It's a really great question and a really important one. Like you say, it's not a one size fits all. I think what we need to move towards as a field is this idea of precision rehabilitation. You've got this whole suite of factors that you are considering and using the combination of existing factors to inform your treatment approach based on evidence, as well as, of course, the client preference. In terms of the important factors to consider, absolutely the person's goals. That's number one to me, so that's always the place I start. Of course, you need to have your comprehensive biopsychosocial case formulation to work out what areas are impaired and what they might benefit from, but none of that matters if they don't really care about it or if they're not motivated to work on a difficulty that is actually not really relevant for their everyday function. The process of sort of setting goals and working out what's important to the person is really the most important starting point.



In terms of other characteristics of the person to consider, in terms of things like sex and race, those kind of features, there's nothing in the literature that suggests there's any biological reason why some people might benefit, as opposed to sex differences or racial differences in response to intervention biologically, but certainly societal and cultural differences, of course. So, for women, brain injuries can be caused by family violence more often than men, which, of course, is associated with a whole host of other psychological and environmental factors that influence their capacity to engage in and respond to rehabilitation. And then culturally, you know that the cultural appropriateness of our interventions is a huge issue and a major priority for our field. The vast majority of our interventions are Western. I think there's actually enormous scope to benefit from the sorts of cognitive strategies that are used by First Nations people. Our Aboriginal Australians, for example, have a really deep connection to place. They have incredibly effective memory strategies that go well beyond something like method of loci, and much more about embedding concepts and ideas into places and features of the environment in this really kind of amazing, intricate way that's really effective and has meant that they have these stories that are passed down generation to generation without anything being put into writing. So, yeah. I think that that's a real area of need. Making our interventions more culturally safe is really important and there is some work going on in that area at the moment.

John Bellone 41:22



You mentioned the biopsychosocial case formulation. I know in past lectures you've said that that's really the starting point for neuropsych intervention. Can you talk a little bit more about that model?

Dana Wong 41:33

Yeah, absolutely. Just like we would do with a neuropsych assessment, we need to think about the biological factors, the psychological factors, cognitive factors, and the social context that all influence somebody's presenting difficulties and how we understand what's going on for them. In contrast, [in] a psych assessment, where we often focus on cognitive impairment, the formulation for an intervention needs to be much more attentive to psychological processes, to beliefs and schemas, to the history of coping with difficulty, their experience of cognitive impairment in their everyday lives, and the history of dealing with psychologists and with other health professionals, and their family support and all those sorts of things, of course, and their context, too.



All of these things are really important as a way to understand and have a narrative about what's going on for that person, which you share with that person. You say, "Here's what I understand about what's going on for you." That is a really powerful intervention in and of itself because often their conception of themselves is, it might be about, "I'm lazy", or "I'm not trying hard enough," or "I'm incompetent, I can't, I'm useless. There's no point to me existing." There's all these kinds of really strong negative beliefs that can occur, understandably, after an ABI. By giving a formulation, it's a point of education to say, "Well, here's maybe another narrative that you could use to understand what's going on for you." That's a really, really important and powerful starting point that can be the basis for helpful ways of thinking about themselves and their difficulties and move towards living with those and managing them in valuable ways.

John Bellone 43:34

I like that way of starting things out. In terms of the initiation when to initiate these interventions, I know we alluded to this a little bit before, but I just wanted to ask more specifically because there's this negatively accelerating curve where people make most recovery early on and it tends to slow down, but people do recover for 6, 9, 12 months, even more - it's quite variable. Do you prefer to start these interventions as soon as possible? Or is there a kind of an optimal window that you target?



Dana Wong 44:09

I think the answer is it depends on the intervention. We did a meta-analysis led by my colleague Jeff Rogers in Sydney that showed that there was a moderating effect of initiation point of intervention, where the acute interventions were more effective. But when we drill down into that, it was the interventions for aphasia and attention and visual spatial function that were driving those effects. Those kinds of focal interventions that take a lot of practice. [For] aphasia, for example, there's quite a



bit of evidence that the dose of aphasia rehab needs to be quite high. So starting early with that is important. But for something like the memory group, for example, generally for people in our studies that there's a requirement that they have at least three months post injury. The reason for that is that I think there's some benefit in a period of settling. After three months, you have more of an idea of what you're left with after that kind of initial brain recovery. They've usually had the experience of being at home and experiencing what life is like now. "What barriers am I facing?" There's some insight and awareness being developed about that. I think that's a really helpful starting point for these more complex interventions that are about everyday life and how that looks and adjusting and living with that. I think the time point of - we've had people in the memory group who are 15 years post stroke and have learned new strategies that have really been quite transformative for them. So it's never too late. I think that's a really important point. For people who might be a bit anxious that they've missed the boat, I think there's really quite significant changes that can happen that are usually about compensating, adjusting, reformulating what their life is now and that can happen really many years down the track.

John Bellone 46:15



Yeah, I agree. I think I see a lot of people for neuropsych evaluations, like you said, three months post, four or five, six months post stroke or other injury, and by then they're back home. Physically, they've healed quite a lot. They've kind of adjusted back home. Medically, they're stable, but they're really noticing those cognitive difficulties in their everyday life. That's usually when I see them and they're kind of at their peak of distress over those symptoms and worries about the future. I think that's a good time to intervene, too.

Dana Wong 46:51



Absolutely. Groups can be quite powerful at that time as well. Because when you've got a group of people and some people quite early post stroke or ABI and others [are] a few years down the track, there can be this sense of "Oh, that's maybe me in a few years time" and see that progress. That gives a sense of hope and momentum. Yeah. That kind of exposure to what a possible future might look like is quite helpful in that three to six months arena, I think.

Ryan Van Patten 47:22



You were just talking about when to initiate some of your interventions. Let's talk about the dose response literature now, like how much of the intervention is best? From what I've seen, evidence suggests a plateauing effect where treatment tends to be more beneficial to a point. But after that, there are diminishing returns. This is,

again, a general question and your answer will be that it depends, but generally, how much treatment should we plan to give these patients?



Dana Wong 47:52

You're amazing. How did you know that would've been the answer? [laughs]



Ryan Van Patten 47:54

[laughs] You're a psychologist, so it always depends.



John Bellone 47:57

[laughs]

Dana Wong 47:57

[laughs] Exactly. No, that's a great question. It's really important to highlight that it's not always the case that more is better. I think we always have to think about resource allocations because these interventions take time, they take money. The more time and money you're spending with one individual extending their therapy is potentially time and money not being spent on somebody who can't access rehab at all, so there does need to be a balance. But, it depends. There's no magic number. It does depend on the person and their formulation. But having said that, some people who are quite, I guess, on the more high functioning end of the spectrum can respond to really brief interventions. There's some really great work done by a group in New Zealand led by Vivian Fu, there's an intervention called "Take Charge", which was a single session intervention post stroke where they were encouraging a sense of purpose and autonomy and for people to take charge of their recovery. They showed some incredible outcomes from that that lasted for a year. They've done a cost effectiveness intervention that showed really positive results. So it is possible to make changes in a short amount of time.



But others, of course, will need longer and it does depend on both the person and the nature of the intervention. I mentioned aphasia interventions before, for example, where they probably do need a larger dose. Visual spatial interventions might be better when they're shorter according to our meta-analysis. But other complex interventions that have been evaluated can last up to a year or more. These tend to be the more holistic ones that do encompass more and they're not so focal or specific. With some colleagues, Kate Gould, Jennie Ponsford, and Tim Feeney have done some work on a year-long, complex behavioral intervention after TBI and found some great results from that. It's really all encompassing and it's about really changing a person's whole life. The length of the intervention does depend on its nature and what the person's needs are. But I think whenever

progress has plateaued, and perhaps you've reduced the frequency of your intervention sessions and that doesn't result in harm or decline, that's probably a sign that it can reduce and perhaps stop. I'm a big fan of booster or top up sessions. Usually, if I'm doing an intervention, I'll have a high frequency at first and then taper off to less frequent and see how they're managed with that. Then if we can stop, it's never that you can never see me again, it's always that there might be an opportunity for a booster down the track or if things change - there's a transition in their lives or change jobs or houses or relationships, then that might be a time to have a another bout of sessions.

John Bellone 51:00



I'm glad you mentioned that Take Charge single session. I was going to ask you about any suggestions regarding best practices when there's a limited time to work with patients. So, for example, I'm on a post-acute inpatient rehab unit where I'm only able to see people a few times, maybe two to three times prior to discharge, we only have them for a week or two on our unit. I have to do psychoeducation and some degree of cognitive assessment and mood adjustment intervention and behavior management and family support. So I often can't do any formal manualized interventions. Do you have any other recommendations for me specifically, and people who are more time limited?

Dana Wong 51:43



Yeah, it's a really common story. I would say do what you can in the time that you have. You've listed some really powerful brief interventions there. Psychoeducation and feedback are, I think, our profession's most commonly used intervention tools, and can have quite a profound effect on people by helping them conceptualize their narrative. I think there is a lot you can achieve in a short amount of time, but there's also the need for longer interventions too. I think we do need to do work as a profession to advocate for more resources, more funding for neuropsychological positions that incorporate intervention as part of their core business. Whenever I talk about or research this issue, I think time is the number one barrier that people say. You've just listed off all the things that are competing for your time, and neuropsychs talk about their huge waiting lists for assessment that they can't service, let alone having time for intervention. But, I think sometimes time can also mean priority. You wouldn't say, "I don't have time to do the assessments." So it might reflect that neuropsychs see assessment as more important than intervention or more in their wheelhouse. I think this is something that I would encourage people to reconsider. I think there's a lot of value in redescribing what we do as assessment and intervention as equally important in our package of offerings. So maybe there's a woman in her late 50s who's referred for assessment for subjective cognitive decline, but it's pretty clear that they don't have dementia. Rather than do

three hours of cognitive tests that will confirm that, maybe you might be better off doing some psychoeducation about the impact of menopause, or stress, or poor sleep, learning some sleep or stress management strategies, some organizational strategies, and that might result in a better outcome for that woman than doing a really comprehensive assessment. So, yeah. I think sometimes it's just asking yourself, "How can I use my time with these people that need it in the best possible way to create the biggest impact for them?" Sometimes that might mean doing an intervention instead of an assessment or making the assessment a bit briefer to allow more time for the intervention.

John Bellone 54:20



I like that a lot. I very much found that to be the case, especially in my inpatient role, where the people, they're making so much progress every day in terms of their cognitive abilities. Even the assessment that I do on one day is going to change the next week. I prefer to focus on their emotional needs. No one else is really asking them about how they are coping, and how their family is coping, and really diving into that with them after this terrible thing just happened to them. So I like to focus on that as well. I've had to beef up on my ACT skills and my therapeutic skills that were a little rusty before that.

Dana Wong 55:02



Oh, that's great. What's your experience of that? Do you find that a satisfying, meaningful thing to do?

John Bellone 55:09



Very much so. Yeah. I still have the comprehensive assessments that I do as an outpatient clinician, but in the hospital, unless there's a real need that I see for more comprehensive testing while in inpatient, I'm primarily - I mean, 80% of what I do, I think, on the inpatient unit is intervention and adjustment work and coping. I found that incredibly rewarding. I've had good feedback from patients and staff, too. So I'm happy with that.

Dana Wong 55:39



That's great to hear. Yeah. I agree. That's kind of why I do a lot of interventional work, too, because I find it really satisfying and rewarding. You feel like you've landed with the person that you're working with in a quite significant way. That can't always happen in this similar vein after an assessment.

John Bellone 56:01



Yeah.



Ryan Van Patten 56:02

To your earlier point, Dana, I think that neuropsychology is evolving over time, slowly, but we are embracing intervention more from what I see. I mean, John and I feel that way for sure, but I see that in other clinicians and other programs and in trainees across time. More and more people are getting trained in cog rehab, I'm sorry, cognitive training. I think it's good, as you said, that we're moving into being assessors and interventionists both. I wanted to follow up with a few questions about training, but before we get there, I just wanted to briefly touch on if there's any neuroimaging, neuromonitoring data - I know there is - to suggest changes in neural structure or function that are tied to gains from these cog rehab interventions?



Dana Wong 56:51

I think this is an area where there is more evidence from the more restorative interventions. Partly that's because that's their target. Restorative training interventions tend to be specific and focused in really practicing the same thing over and over, repeatedly. It's not surprising that when you do that, just like learning the piano and practicing it, those networks that underpin that will strengthen and that will be evident on the functional imaging, at least, if not structural. There's certainly evidence to support that. I think with the more compensatory and holistic interventions, yes, there can be evidence for underlying neurological changes, but there's a) not as much work being done on that, partly because that's not the main target. With those interventions, the outcomes measured tend to be more about quality of life and activity and participation. So, a) not as much evidence in that area. But, b) you will probably expect that it's more about strengthening broad networks. It'll be harder to see a specific area of change that's localized. You more expect kind of a network change and that nodes in the network might be weighted differently. I think this is a really important area that there's a lot of network mapping work that's been going on. I think marrying up the complex interventions with that network mapping work is a really ripe area. It'd be really interesting to see how networks change in response to these more complex interventions that do address things that [have] multiple areas of function. It's an exciting prospect, but it's also expensive research to do and not popular with funders. They like nice, neat, focused studies. These big messy ones are difficult to fund and argue for, but I certainly... [laughs]



Ryan Van Patten 58:57

[laughs]



Dana Wong 58:57

I think there's good reasons to try and convince the people holding the purse strings that it's worth doing.



Ryan Van Patten 59:03

Sure. To circle back around to training, you've done some cool work in this area on training, teaching students to become more effective interventionists in neuropsychology. I'm sure this is tied to your passion that you mentioned earlier about how important treatment intervention is in our field. What are important characteristics of a successful neuropsych interventionist? How well are training programs doing in preparing students to deliver treatment? How could training programs improve?

Dana Wong 59:37

Yeah. It's a really important question and one that historically, I think, has been sadly neglected. Identifying what the characteristics and competencies of an effective neuropsychologist are is actually really not very well specified in our field. I think this is something that we really need to work on and improve. In terms of what competencies a successful neuropsychologist has that conducts interventions, we've done some work on this. There's a group facilitation competency checklist that I've developed that is out there, published, that defines particular therapists' competencies that are important for running effective groups. That's things like giving relatable explanations, coordinating group discussions so that you're not having too much dominance for people, being able to cut off people who talk a lot and so on. So there's that.



We've developed competency checklists also for both cognitive assessment and feedback. The assessment one is just about to be published and the feedback one is on its way, and hopefully soon. Again, feedback, like we were talking about before, is one of our most often used and powerful interventions as neuropsychologists, but there's such little research that's actually been done on what an effective feedback session looks like. I know there's great work done by Karen Postal and others who characterize that in a narrative way, but we haven't really evaluated it very systematically. There are trials underway and just about to be published on that, too, which is great. But certainly identifying what are the things that we do as neuropsychologists that make a feedback session effective is really important. That's a piece of work.

Then we've also done some work on how to train people to do adapted CBT. Identifying some of the competencies that are important, and then what training methods we might use to train people to achieve those competencies. That

includes training workshops, that includes observations, so people have videos or see things in action, it's really important to be able to see what it looks like, and having experiential learning as well, so being able to have a go at roleplays, that, that practice these skills. And then also supervision. So being able to give it a go, and then ideally be observed doing that either through video recording or audio recording or live observation and get supervision on what the supervisor sees. That's how I learned and it's super effective. Those are, I think, important elements. That observation, experiential learning, and supervised practice are really key elements of how to train people to do intervention successfully.

In terms of our current training programs, I think you've identified that it is changing. And I agree. I've definitely seen a shift over the last probably 10 years about the emphasis on interventions. I know training models are a bit different in America and the UK than Australia where we don't do clinical psychology training first. We just do a neuropsychology training program. But it's been very much historically the case that those training programs do focus primarily on assessments. The survey studies that I've done on graduates of our training programs have identified that the experiences that they get to deliver interventions on their clinical placements in particular is really limited. But the people that have said that they got to do interventions on their placement more, were also the ones that were then later delivering those interventions more frequently and more confidently, which is not really that surprising. The more you get to practice something, the more confident you are to do it. This is a really key thing that, I think, we need to make sure we're building into our training programs right from the beginning. We can do that through case analysis, for example. When somebody is talking about a case presentation, even if it's about assessment, not spending so much time talking about all the test scores, but more focusing on the formulation and then what interventions might actually be suitable for this person and making that just part of the standard package of how you present a case. And then weaving in training in the interventions right from the beginning, and not just being isolated into one rehab subject. It's embedding it, weaving it all the way through, and then extending that training also after our postgraduate training. Doing things like short courses, workshops, seeking out supervisors who have expertise in the intervention that you're trying to learn. So, yeah. There's lots of ways to extend your skills. It's not the end of the line when you're finished your post grad trainee, that's for sure. [laughs]



John Bellone 1:04:34

We all know that quite well. [laughs]



Dana Wong 1:04:36

Absolutely. [laughs]



John Bellone 1:04:37

Those are all excellent ideas. I know I've talked about my job being in the rehab hospital and I know much cognitive rehabilitation takes place in rehab hospitals and there are usually interdisciplinary teams of physicians and psychologists and neuropsychologists, occupational therapists, speech language pathologists, many others in these settings. What do you envision as the role of neuropsychologists in cognitive interventions compared to speech therapists, OTs, other general psychologists?



Dana Wong 1:05:08

It can be a bit blurred sometimes. I think sometimes the divisions, we get a bit stuck on divisions based on what title you have. This person is an OT, and this person is a speech pathologist, this person is a neuropsychologist, and so they must be able to do X Y Z. But, in reality, I think it's more about the competencies and the experience of the individuals in those positions. When I learned brain injury rehab and how to talk to patients about brain injury, I learned the most from our team leader who was a speech pathologist who was just amazing in how she communicated about brain injury to patients. That's just one thing to consider, who's in your team and what are their competencies and experiences? I think often the value that we have as neuropsychologists [is] it can be about this comprehensive biopsychosocial formulation that we've been talking about that, that we're really good at weaving together lots of information into an idea of the patient that incorporates their cognitive function, the psychological function, and their behavioral function and putting that all in context. Where an occupational therapist might be great at helping practice a cognitive strategy on public transport or shops, you as a neuropsychologist might have been able to feed them those strategies based on your formulation and your work with the client. Come up with some helpful coping statements and some nuanced memory strategies that take into account their strengths and weaknesses in visual and verbal domains, for example, but they might be great at then applying those strategies with them in vivo in those everyday environments. I really love working in a multidisciplinary team. I think that's where we achieve our best outcomes. If we're all working together on the client's goals, starting with, "What does the client want?" And then working out, "Okay, how will we each contribute to achieving those goals?" I think that the best work is done together. Some of the great work that I've done has been with a speech pathologist on cognitive communication strategies, or with a physiotherapist on somebody who's got fear of falling and trying to learn to walk. It's not necessarily that the physiotherapy stops here and the psychology starts there, you know? It's

blended together. Having multiple people with different eyes on the matter is usually really important.

John Bellone 1:07:50



You kind of answered my next question that I was going to ask you about what would happen if rules are unclear, because they often are. If the speech therapist and the neuropsychologist are both doing cognitive intervention and assessment, which is kind of the case of my facility, it's hard to know when speech therapy's role stops and mine starts. Or if there's disagreement among team members. If the occupational therapist does a brief cognitive assessment and they think there's impairment, but I feel like it's more that the patient is at their baseline level, what do we do with that? I don't know if you have any pearls of wisdom or other advice. I think that's just part of being on a team and having the patient's goals and just doing what's best for the patient at all times. I think that's probably the best place to land.

Dana Wong 1:08:37



Exactly. That's exactly what I was going to say. Sometimes I think if you get stuck on who's right, or get into a bit of a turf war, it might mean that the client's goals and what they want, we've lost sight of. Sometimes just revisiting the goals, working together on the best way to achieve them can help bring everyone back together onto the same page. The other thing is, I think, I'm a big fan - I've got a friend who is an author and she always says, "Show, don't tell." I really liked that concept. I think rather than say, "I'm a neuropsychologist, and this is my training, and this is my job, so I should do this." Instead, talk about your thoughts about the case formulation and your ideas for intervention and talk about how the client responded to that and what you did with them. Invite your team members to come and watch a session that you do, so they can see what you're about, and ask to watch what they do as well. You're showing them curiosity and respecting their expertise and asking them for their opinion too. In that way, they're experiencing it. They can see what you can offer and what you do and they know that you've also seen what they can do. There's that kind of mutual, "Yeah, okay, now we've watched it in action," and that might help guide some of the decisions going forward. "John's really great at having those adjustment conversations, and the OT is really good at talking about what things are going to be like at home, remembering to turn off the stove or whatever." It can sort of emerge from that encouragement of just showing what you can do rather than telling.



John Bellone 1:10:18

Yeah.



Ryan Van Patten 1:10:30

We've talked about a number of different interventions today - the metacognitive training, VaLiANT, CBT plus cog rehab, retrieval practice, and you've mentioned others. If clinicians and/or researchers are listening to this, and they're interested in getting trained to deliver some of the interventions that you have talked about today, are there formal training sessions or readily accessible manuals that you can refer people to?

Dana Wong 1:10:56

There are manuals for the adapted CBT for brain injury program that I was talking about before and also for the memory skills group. That's the original version that was developed in Sydney, our adapted version is from that. And [the] telehealth and so on, they're not published manuals, but they're available. I often get requests and I'm happy to share those. The VaLiANT program has a manual, but it's not published yet. We're waiting for the trial to finish, but that is the intention.



So, yes, there are manuals, but I think for these kinds of complex interventions, it also really helps to have some training. It's difficult to just pick up the manual and then go off and running and be really competent at these interventions. So, like I was saying before, that training, incorporating observation and experiential learning and supervised practice is really important. We have offered workshops in the CBT and in memory groups. I've done a study implementing the memory group into various stroke services. In that study, we did a process where they watched videos of memory groups that I had run, and then they videoed themselves running the memory group and I watched the videos and rated them on the competency checklist and provided supportive supervisory kind of feedback. That was successful and they were able to run it competently and have effective outcomes similar to our trial. These training programs work, but they're not constantly on offer. I know that there's some online cognitive rehab training courses that you can do at any time. They will have merit, but I think sometimes it's helpful to have a live clinician that you can bounce off and practice with and ask questions of.

I'm actually just about to start two short courses for established clinicians. One on adapting psychological therapies and one on cognitive rehabilitation. I hope to be able to run those more than once. There's been quite a fair bit of interest in Australia on those. I think any kind of training workshops that pop up it's a great opportunity to participate. Historically, I think, particularly with psychological therapies, often the training that out there is from clinical psychologists that haven't necessarily had much experience with brain injury or people with cognitive impairment. There's been some frustration out there about, "Oh, we want this training, but where is it?" We are trying to fill those gaps and gradually trying to do

so. We've also, along with a bunch of other experts in interventions across Australia, recently written a clinical guidance paper on neuropsychological interventions, which hopefully will be published soon. That gives a number of different tips about what competencies are required, what are evidence based interventions, and how you might develop the competencies and also implement these interventions into clinical practice. Hopefully, that'll be a useful resource also.



Ryan Van Patten 1:14:05

Well, as you're running these training sessions, you can expect John to be sitting at the front of the class, eagerly raising his hand. [laughs]



Dana Wong 1:14:13

Oh, I'd love it.



John Bellone 1:14:14

Especially if I have to do them in person in Australia. I mean, that would be just awful. [laughs]



Dana Wong 1:14:19

[laughs]



Ryan Van Patten 1:14:19

[laughs]



John Bellone 1:14:22

Maybe I can make a trip out of it.



Dana Wong 1:14:24

Yeah, I'd love that.



John Bellone 1:14:26

Do you offer those trainings to clinicians outside of Australia as well? Or remotely?



Dana Wong 1:14:32

Those choices are available for international participants. The word hasn't probably gotten out there because they've just been advertised in Australia, but actually some of our mailing lists in Australia do have international members and I have had some international registrants, but the time is a bit of an issue. Particularly for

America and the UK, it ends up that you're probably doing things in the middle of the night, which isn't ideal. I think it is something that I'm keen to develop going forward, maybe having some asynchronous elements. Some recorded lectures and videos and things, but then a live element where you get to practice and get feedback on roleplays and things as well. So there's lots of scope for this. It's not just me, of course, that can provide this training. I'd love to see more courses and workshops pop up all around the world.

John Bellone 1:15:26



We're happy to include any links in our show notes. We always have a selected resources section and any training or other resources for clinicians who want to be trained or links to manuals or whatever you think would be helpful, we'll throw in the resource list for this episode.



Dana Wong 1:15:44

Awesome. Yeah, I'll send you those.

John Bellone 1:15:46



Awesome. Maybe just one more question before we get to the bonus questions, because I know Ryan's fading here. It's late for him, given that we had to coordinate three time zones.



Ryan Van Patten 1:15:57

[laughs] I'm a morning bird, yeah.



John Bellone 1:15:58

[laughs]



Dana Wong 1:15:58

Sorry, Ryan.



Ryan Van Patten 1:15:58

No, no problem. John is a night owl and we've done some very early recordings for him, so it's my turn. [laughs]



Dana Wong 1:16:06

Balance each other wherever possible. [laughs]



John Bellone 1:16:09

Oh, yeah. [laughs] Do you have any recommendations for clinicians who want to assess the effectiveness of their interventions? What specific methods might they use to collect valid outcome data?

Dana Wong 1:16:20

A really important question. You know, when we do interventions, it's easy to forget to actually collect outcome data. But we should be doing this as a matter of course in our clinical practice. Another thing that can get in the way is just time and having the opportunity to collect outcome measures. But I think one of the really important things that we should always measure is goal attainment. Setting goals is a crucial part of an intervention and then looking to see whether somebody has attained those, perhaps using goal attainment scaling, for example. So that would be a key outcome measure that I would recommend. And then whatever is meaningful to whatever you're targeting. When you're doing things like subjective questionnaires, one important thing is just to make sure that they are valid and suitable for people with cognitive impairment. I mentioned before about the value of living questionnaire. We did a bit of work on that to identify how well it was being understood by people with ABI and we identified eleven different comprehension errors that were commonly being made in response to that questionnaire. We've now developed an adapted version that's much more valid and reliable. That's just a point to remember. Make sure you're using valid questionnaires. Also, not just measuring impairment. Not just repeating an attention test or a memory test, but measuring activity, participation, wellbeing, quality of life - those more meaningful outcomes.



The other thing that sometimes we forget to measure, but I think it's actually really important, is self efficacy. That's one of the things that I think often is an outcome of our interventions. [The] sense of, "Oh, I can manage this, and maybe I can keep managing this in the future." Being able to identify those changes in self efficacy, I think, can be a useful signal that you've done some good work. But, in general, I think we need better and more consistently used outcome measures for our field.

Currently, I'm a bit excited about some work I'm doing with a student, Thomas Goodwin, and my colleague, Kelly Allen, to develop an outcome measure for neuropsych assessments. We identified in some earlier work two key outcomes of assessment that clinicians thought were important. That was understanding of presenting problems, so the person's understanding, and also them understanding of how to manage those problems. We've done some work to try and develop an outcome measure of those two key outcomes, and conceptualize assessments as an intervention. When you do an assessment, you give feedback, what are we

doing that for? What are we targeting there? Sort of conceptualizing it as well. We're trying to help people understand what's going on for them, and then to understand what to do about it. Capturing that change, I think, is something that was going to be really important going forward for our field. That's a long answer to the question. But, yeah, in general, I think there's lots of areas of our practice where the evidence is still developing and something really important that we can do is collect that evidence ourselves, not even necessarily as part of a research trial, but just with our individual clients, testing stuff out. Is this working? And using that feedback from our outcome measures to guide our future decisions about how we work with our clients.

Ryan Van Patten 1:19:56



Great. Well, we just have two bonus questions for you, Dana, before we let you go. The first one - and these two bonus questions are about the field of neuropsychology broadly. So if you could improve one thing about neuropsychology, what would that be?

Dana Wong 1:20:12



It's a great question. I could rant on for a long time, but I was thinking about this and I think what I will say is that the thing that I would change is our tendency as a field, as a profession, to want to compartmentalize and separate and isolate and classify things and put things into these separate buckets. I think our greatest strength is actually our capacity to integrate information from lots of sources to form this comprehensive biopsychosocial case formulation. To use that to guide decision making and action about management. I think that pulling together these different threads that we do - you're using that to offer up this bouquet, I've picked all these flowers, here's my bouquet for you. I think that's what we should see as our core value and our special power. I think we should do better at communicating that to others and evaluating it with studies that don't try to isolate out impairments and train specific impairments. But instead, look at the outcome of what happens when you pull together that narrative and help the person or the family understand their story, how to live with their condition, and so they can do what matters to them. So that includes assessment, that includes feedback, psychoeducation, includes cognitive, psychological, and behavioral interventions. We need to evaluate those holistically. Some people say, "Oh, we can't do that. It's not feasible." Or they might shy away from it because it's harder than doing a nice, neat, specific study. But it's not impossible. CBT is an example of a complex intervention with multiple elements that looks different when you tailor it to individuals. But there's great strong evidence for its efficacy. So it's a bit strange to me that we're a profession that values evidence-based practice so highly, but we haven't really collected that

evidence about our key service roles in an optimal way. So that's what I would change.

Ryan Van Patten 1:22:19



Yeah. To some extent, it's an aspect, a part of the human mind, our tendency to categorize. These are heuristics. They're mental shortcuts to put things into groups, into buckets. You've given several good examples during the course of our conversation - we talked about acquired brain injury and the different mechanisms, and you talked about integrating them in complex ways instead of separating them. Similar to cognitive training, CBT, you know, cognition and emotion, and we talked about integrating them instead of artificially separating them because in reality in our brains, the neural networks and how they exist in function, it's more of an integrated set of circuits. So that's a good theme for our conversation today and good advice, I think.

Dana Wong 1:23:06



Yeah. And, you know, we do need to understand the buckets. If we think about a Venn diagram, we need to understand what's in each of the circles and what those contents are. But I think our unique value is in that middle, the middle part of that Venn diagram. We should champion that and celebrate that. That's our best place where everything comes together.

Ryan Van Patten 1:23:27



Yeah. Well said.

John Bellone 1:23:29



What is one bit of advice that you wish someone had told you, or maybe someone did tell you, when you were in training that really made the difference? Just an actionable step that trainees can take.

Dana Wong 1:23:39



I think probably here, again, there's lots of bits of advice, but I think probably what I would have liked to hear is that it's okay not to specialize early. I did my honors project on how kids understand television programs, I did my PhD on parents and siblings of kids with autism spectrum disorder and their theory of mind and executive functions. They're really completely different areas to what I've ended up in now. My early clinical work was in drug and alcohol service in a general diagnostic clinic, and then in aged care and psychiatry. So I did spend a bit of time worrying [about] that. Especially when I got into academia, [they] want to see a spread [of] a specialized track record, which I didn't have. It was hard for me to not

see that as a weakness. Now I see that as a real asset. I know that I've really learned from each of those experiences, each of those research projects, each of those jobs. Every job, everything that you do is a learning opportunity even when it doesn't go well, and maybe especially when it doesn't. I've learned so much from the things [where I try] something out and go, "Oh, maybe that's not for me." Or, "That's not the way I'd like to practice." Or, "Yeah, that's not something that I want to do more work in." It helps define what you do want to do and how you do want to be. So, yeah. I think embracing diversity of experiences is a great thing.

John Bellone 1:23:50



Excellent. I agree. I think it's good to keep that broad scope, especially initially, and then to further and further narrow it down as you go along. But to maintain some exposure also throughout your whole career to different ideas.

Dana Wong 1:25:30



Absolutely. It is all played in. All the things that I've learned from all those different experiences do factor into how I work now, so it's all been worth something. Yeah.

Ryan Van Patten 1:25:41



Yeah. Well, Dana, thanks so much for your time. This has been a great conversation. You're our first Australian guest, and we're very excited about that. [laughs]

Dana Wong 1:25:50



Yeah, I thought that might be the case. I feel very honored. Thank you so much for reaching out to us Aussies. I feel really chuffed to be the first Aussie to be on the show. So thank you for having me.

Ryan Van Patten 1:26:00



Yeah. Thanks for making the time. We're interested in going more global over time with NavNeuro and having more guests from all over the world, so I really appreciate your time. It's been great.

Dana Wong 1:26:12



Brilliant. Thanks, guys.

John Bellone 1:26:14



Well, Ryan's got to go to bed before he... [laughs]



Dana Wong 1:26:16

Definitely do. Sorry to keep you up. [laughs]



Ryan Van Patten 1:26:19

No, no, no, don't apologize. I appreciate you making the time. It's not that late. I'm okay. [laughs] Great to meet you, Dana.



Dana Wong 1:26:30

Yeah, you too. It's been fun.



John Bellone 1:26:32

Yeah, really a pleasure.



Ryan Van Patten 1:26:33

Take care.



John Bellone 1:26:33

Thanks so much.



Dana Wong 1:26:34

Absolutely. See ya.



John Bellone 1:26:36

Bye.



Transition Music 1:26:36



John Bellone 1:26:40

Well, that does it for our conversation with Dana. Upcoming content includes conversations about polypharmacy and older adults with Drs. Michael Steinman and Matthew Groudon, working memory with Dr. Alan Baddeley, and additional clinical case presentations. As always, thanks so much for listening, and join us next time as we continue to navigate the brain and behavior.



Exit Music 1:27:04



John Bellone 1:27:28

The Navigating Neuropsychology podcast and all the linked content is intended for general educational purposes only, and does not constitute the practice of psychology or any other professional healthcare advice and services.



Ryan Van Patten 1:27:40

No professional relationship is formed between us, John Bellone and Ryan Van Patten, and the listeners of this podcast. The information provided in Navigating Neuropsychology in the materials linked to the podcasts are used at listeners' own risk. Users should always seek appropriate medical and psychological care from the appropriate licensed healthcare provider.

End of Audio 1:27:58