

65| Neuropsych Bite: Pediatric Teleneuropsychology – With Dr. Lana Harder

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Speakers: Lana Harder, 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. One quick housekeeping item. The INS Student Liaison Committee, or SLC, is looking for applicants for a Global Engagement

Representative position where the person would gain leadership experience, network with international leaders in the field, and advocate for students and early career professionals. Applicants for this position must be located in Europe, Africa, or Asia. If you're interested in applying you can find more information at navneuro.com/SLC. We will also link to the call for applications information sheet at navneuro.com/65.

Ryan Van Patten 01:06



Today, we have a Neuropsych Bite with Dr. Lana Harder. It is about pediatric teleneuropsych assessment. Dr. Harder is board certified in clinical neuropsychology and in pediatric neuropsychology, and she is also an associate professor at UT Southwestern. She's our guest for today's episode and she will also be our guest for four upcoming episodes on demyelinating conditions in children. These are all great conversations, so we hope you'll listen to the upcoming Neuropsych Bites with Dr. Harder as well. And if you're especially interested in teleneuropsych we have another episode with Dr. Munro Cullum that focuses more on adult populations. You can find that at navneuro.com/41. And, now, we give you our conversation with Lana.



Transition Music 01:56



Ryan Van Patten 02:05

All right, well, we are here with Lana Harder on NavNeuro. Thank you for coming and making the time.



Lana Harder 02:11

Well, thanks so much for having me.



Ryan Van Patten 02:12

Great. So we'll start with pediatric teleneuropsych today. A lot of neuropsychologists, undoubtedly, have become familiar with teleneuropsychology in the last year, in the context of a pandemic. There's a pretty decent literature supporting its use in adults, but far less in children from what I've seen. It doesn't take a whole lot of thought to imagine how it might be particularly challenging for kids to do assessment this way, but let's be thorough and make it explicit. So what are a few of the challenges to conducting a pediatric teleneuropsych evaluation?

Lana Harder 02:50



Sure, yeah, it's a great question. I think one of the things that rises to the top of the list in my mind has to do with access to technology, as well as access to a quiet environment at home. I think that this is probably the case across the lifespan, not just for children. In our study that we recently published, we found that a fourth of our participants did not have the needed technology to participate, so we were able to lend them a device with wireless service that would work for that. So that's one thing I think of right off the bat for anyone that we're thinking about providing a virtual service to. The other thing, though, that I think stands out to me about working with kids in particular is they often need more assistance than maybe the average adult. And so we, I think, need to think about that in terms of their age, cognitive level, developmental levels - to think about if we need assistance on the other side. And in our work, in our research study, we did have the parents leave the room. Our goal was to simulate the clinic environment where we don't have parents present for testing. So that's something to really think about when working with kids or, again, for those who need more help in the room. One other thing that came to mind is just language and nonverbal communication. We lose a lot of nuance, nonverbal communication, when we're set up virtually. And, as the examiner, we're giving a lot of verbal instructions. So if kids are having trouble following those instructions, I think it would be difficult to proceed with assessment.

Ryan Van Patten 04:31



Yeah, those caveats make sense. You referenced your 2020 paper in Archives of Clinical Neuropsychology, so I'd love to ask you more about that. So you compared remote administration of a battery of tests in children's homes to the same battery administered in the clinic. Walk us through a bit more of the study design and then your primary findings.

Lana Harder 04:52



Sure, yeah. And I'd like to mention that this work came about a few years ago based on working with kids with rare disorders who are traveling from all over to be seen. So our goal was to develop tools to reach them in the comfort of their own home. To do that we evaluated 58 participants, and they were aged 6 to 20 years old. We did recruit from our demyelinating disorders program. So we had the participants complete those two sessions, like you mentioned - a virtual session and one at home - and we counterbalanced them for order of session and put them into two groups, those who had the virtual assessment first and those who had the in-person session first. The sessions were separated by an average of 16 days. We sampled areas like attention, verbal memory, processing speed. We were able to

look at academic skills, verbal abilities, visual motor integration, and executive functions. And, overall, when we compared participants in the group that had face-to-face first versus virtual first, we didn't find any differences there. We also didn't find differences from session one to session two. So we generally came away with some initial support, we felt, for this modality in pediatrics. But also importantly, we wanted to know how this was for our participants and their parents. And the vast majority, when asked about overall satisfaction with the remote testing, told us they were satisfied or very satisfied with the experience. So that was really encouraging to see.

John Bellone 06:34



That's very encouraging. Given the support for pediatric teleneuropsych in your study, as well as other evidence in working in this modality with adults, I'm curious how you'd characterize the literature broadly. Are there other studies in kids specifically looking at teleneuropsych assessment?

Lana Harder 06:53



So we've seen this emergence of pediatric teleneuropsych papers in 2020, which has been awesome. There are a couple special issues, if people haven't seen them, in the Archives of Clinical Neuropsychology and also TCN. So I would encourage those who are interested to look up those pediatric papers, some really exciting work. And, you know, we were the only ones looking at this prior to COVID-19. So I think we've all kind of accelerated our efforts around publishing these things, and even integrating it into our practice. I think if I were going to summarize it all, as I mentioned before, I think we have some growing support for this practice in kids but we need a lot more research moving forward. I think, just like what's been discussed in the adult world, teleneuropsychology in kids can be a wonderful tool for cognitive screening and that's definitely the approach we took in my research study. But certainly for other aspects of neuropsychological service, I think we were all reminded that we do a lot more than testing. Because I think testing over video gives us all the most pause as we think about trying this new modality of service, but we also provide a lot of great services like consultation or interviews around differential diagnosis, understanding referral questions better, and then treatment planning and feedback that we give our families from the results that we get. So there's a lot that we can do and a lot that we can provide even if we remove the standardized testing from the equation. But I would say going forward, it would be really helpful to see studies in pediatrics, in particular, with larger and more diverse samples in terms of age, race, ethnicity, SES, cognitive level, medical problem. Also examining more tests and exploring different models of

teleneuropsychology - whether that's in-home, in-clinic, hybrid models, use of the telephone. There are so many different ways we could take this research. Even to further explore our technology - things like screen size, internet speed, and so forth. But I do think this has great promise in terms of reducing the burden on families and then reducing wait times and getting to more timely interventions.

John Bellone 09:17



Yeah, I'm glad you mentioned the applications outside of just the assessment process because I'm sure parents like this modality. You can incorporate more extended family participation, too, in a way that maybe you couldn't in the past. It's hard to make everyone's schedule align and drive all the way to the office. So I can see a lot of applications here.

Lana Harder 09:37



Yeah, and I think we get some more rich information about the child and their family in their home environment when we are right there with them over video. So I think that's also an exciting element as well.

John Bellone 09:50



That's true. They can show you around their room and, you know, whether it's organized or not, or their activities...

Lana Harder 09:58



That's right. Meet the family pets... Things like that. [laughs]

Ryan Van Patten 10:00



[laughs]

John Bellone 10:02



True. I'm curious what tests might be most amenable to these evaluations?

Lana Harder 10:08



Yeah, I think the ones that come to mind most immediately are those auditory-verbal measures. The measures where you don't really need much other than just to talk the patient through those tasks, give them the instructions. We do have - I guess, depending on your virtual platform, if it has screenshare capabilities - we have emerging tools that allow us to project a visual stimulus to the patient, which I think opens up a whole additional area of assessment possibilities. I think

we've seen our publishers release these digital assets for us to use. There's a lot of concern about test security and one thing I always say is, when in doubt, speak to the publisher, which is something I did throughout my research study and also in my clinical practice. So those are some of the measures that come to mind.

John Bellone 11:01



Yeah, that's a good caveat to always talk to the publishing companies making sure we're following guidelines that they've put out. One of the tests that you used in your battery, I believe, was the Symbol Digit Modality Test. I'm curious how that might be administered remotely, or how it was administered in your study?

Lana Harder 11:22



Yes, thank you for asking that question. We had a design that we were able to send test materials to the participants. So they had a packet going into it and were able to use the stimulus that we're probably all familiar with from SDMT, or the visual-motor integration where they draw the shapes. So they had some information provided to them. There was a lot of care taken to make sure they didn't open that ahead of time, and that they sealed it while they were on camera to then ship it back via priority mail that was tracked. So we were very, very careful around that. You know, going forward, I have not administered the Symbol Digit Modalities Test clinically, just because of the reason that it is a little more challenging with the stimulus and I am not mailing out any materials in my clinical practice. That's a big burden and starts to introduce all kinds of concerns that we've talked about.

Ryan Van Patten 11:22



Yeah, test security, for example.

Lana Harder 11:29



Exactly. Yeah.

John Bellone 11:31



So it sounds like you're mailing a test packet, are there any other precautions or proactive measures that you have to take before the evaluation - informed consent or talking with parents? Walk us through what happens before we even start the administration.

Lana Harder 12:41



Yes, and just to clarify, the mailing of packets was restricted to the research study but, going forward, we have stayed away from that. So in terms of precautions when engaging in teleneuropsychology clinically, informed consent, as you mentioned, and highlighting the potential concerns around security and confidentiality, which are different in the virtual environment. We also will acknowledge that we've altered the assessment methods and that's important to note, I think, to families. But other things that we do in preparation, we make sure our patients have the materials that they need - if that's glasses, writing utensils, other things like that. I make sure I have a way to independently reach the parent and we also ask that they don't leave the house. So, in case of an emergency, or if the child is unable to get the parent, I make sure of a way to call them. We confirm the address of the patient for licensure purposes, but also for crisis management. If we had to call emergency personnel, we would know just where to send them. And then we also come up with a plan in case we're disconnected - so we always want them to know what we will do if that happens.

Ryan Van Patten 13:56



I'm thinking about rapport, which is challenging in children anyway. But I imagine even typically developing children, especially if they're young enough, it must be hard to keep them engaged and maintain good rapport over video. I mean, to some degree, younger people tend to be more familiar with technology, but also children tend to be a little more hyperactive, even normatively. So can you talk through rapport?

Lana Harder 14:25



Yes, yes. I think it's been interesting doing this work because I think there's a tendency to maybe rush into the test that you want to give a child, but we have to remember to take a minute and engage in that casual conversation like we might do if they come to the clinic. You know, usually asking things like, "How was your drive? Did you have trouble finding the clinic?" In this setting, we don't really have those topics, but there's many other things we can ask about. So stopping to take the time to get to know the child and the parent before the parent leaves the room. With kids, I think it goes a really long way to help them know what to expect, what the activities we're going to do today, what that's going to look like, that we can take breaks if we need to. And also to let the child know what happens if we lose our connection, like we would talk to the parents about that as well. So I think it's really relying on the things we do in-person clinically and that carries over to the virtual setting as well.

Ryan Van Patten 15:28



Right. And we haven't really asked you about age thus far, but obviously, that plays a huge role. A 7 year old and a 16 year old are very different. So your answers to these questions could differ depending on what age we're talking about. But I guess my question is, how far down the age spectrum might we be able to go with teleneuropsych, do you think?

Lana Harder 15:50



Yeah, so I'm glad you asked that question. Our study went down to age 6, and about 40% were 12 or under, so kind of on the younger side. I'm aware of teleassessment studies that went down to age 5 but the difference was they had an adult in the room, which was not the case for our study. So I think that school age is probably pretty safe, unless there are other factors like developmental delays or behavioral dysregulation, things of that nature. I think this is really a critical element for us to address in research going forward, to answer that question of how far down can we go? Because our kids are more comfortable with technology and able to use that in really sophisticated ways. So I think about when I evaluate young children in my clinic. Thinking about toddlers, the parents are able to leave the room for those sessions in most cases, but a lot of times they need that in-room support to help them stay engaged. So I think once you go below about age 6, it gets a little bit tricky and becomes an individual difference.

John Bellone 17:02



I'm assuming for those younger kids, maybe even if the parent is not in the room, they're nearby in case you need them to run back in and help you.

Lana Harder 17:10



Yes, certainly, and I think another direction for research would be to consider the use of parents or caregivers in that remote assessment with young children. I believe my colleagues are already doing this in other areas.

Ryan Van Patten 17:23



Yeah. I know in your study, you focused primarily on demyelinating conditions in children, that they were your participants. I'm wondering if you could talk through the utility of teleneuropsych in different childhood disorders - like ADHD comes to mind, not surprisingly. Hyperactivity, in particular, or children with oppositional defiant disorder or conduct disorder may not do very well with teleneuropsych. But are there certain types of referral questions where this is more amenable and certain where it's less amenable?

Lana Harder 17:56



You know, I think that's really difficult to say, and I know that's not a very satisfying answer. I think it depends - you know, as you think about a given pediatric condition, there can be such incredible variability across those children. So I think, instead, I've looked at it on a case by case basis. I know we all in my clinic use our clinical judgment to determine who might be a candidate for remote assessment and that's just based on a whole variety of individual factors.

John Bellone 18:29



How frequently are you doing this clinically? Just to give us a sense.

Lana Harder 18:33



I would say virtual care is now a staple and I'm using it weekly in my practice.

John Bellone 18:40



Okay, excellent. So, clinically, I'm wondering if you have any pearls for listeners? You mentioned how access to the required technology can be limited - the camera, the internet connection. Can you walk us through maybe some other barriers and how you've worked around them?

Lana Harder 18:59



Yeah. I would say one thing I encourage all of us to do when we're encountering a barrier with the virtual environment is to think about what we would do if the patient were in the room with us. So, again, this idea of simulating the clinical experience. I think that will often take you through a helpful problem solving process. So that's one thing we've been working on. We did talk about access, I think that's probably among the largest barriers that we see just because there's great variability. I mentioned, in our study, a quarter didn't have the needed technology. I suspect this number can really vary and it's probably much higher depending on the region and the setting, and so it's something we are very sensitive to when we talk to families about this service. We also want to be very respectful about the fact that we are "entering their home" in a sense with our work, and that not everyone is able to find this quiet space in their home to talk to us. So we work with them to think about times of day or location in the home - you know, putting a sign up on a door just like we would in a clinic. Different problem solving strategies for that, so that we can have that needed visit with the family. Those are some things that come to mind.

Ryan Van Patten 20:21



Yeah, before COVID-19, a lot of what I would read about teleneuropsych was around serving people in rural areas. These days, we think about it because of the pandemic, understandably, but even when the pandemic is over, hopefully soon, it will still be relevant to people who live far away from major medical centers where traveling or driving there as a major burden, so we can reach more people this way. I believe that's your situation - a lot of the children that you see don't live near the hospital, is that right?

Lana Harder 20:52



That's right. I think that reaching folks in rural areas is a significant benefit to this model. I would point out, none of the teleneuropsychology studies prior to ours were home-based. They used things like in-clinic models to evaluate the technology for understandable reasons. So there are some things I think in the home setting that present more challenges - like distractions, as well as variable technology performance because you're completely relying on whatever system they have set up. You're thinking about other people in the house, especially with all the remote work going on, taking up that bandwidth. So we noted those things in this study. I would say distractions came up in almost 50% of virtual sessions, and technology glitches came up in close to maybe 25% of those remote sessions. But, fortunately, those things were typically fleeting and didn't interfere with the session or the data that we could collect.

Ryan Van Patten 21:58



Yeah, as you alluded to, those distractions are good pieces of clinical information when we're seeing patients, right? If they have scheduled and planned this research study with a doctor, they're probably doing everything they can to reduce distractions. If they're still getting distracted, imagine what it's like on a Tuesday afternoon trying to do homework.

Lana Harder 22:19



Yeah, that's right. That's that richness of behavioral observation that you get in the home setting.

Ryan Van Patten 22:26



Yeah.



John Bellone 22:27

Well, we can keep asking you questions, but it's not going to be a Neuropsych Bite anymore if we did. [laughs]



Lana Harder 22:32

[laughs]



Ryan Van Patten 22:35

Thank you, John. [laughs]



John Bellone 22:39

Ryan, stop asking questions. [laughs]



Ryan Van Patten 22:41

I can't help it. I will transition then and we'll ask you a few bonus questions. These are about the field of neuropsychology broadly, they don't need to be specific to teleneuropsych although they can be. If you could improve one thing about neuropsychology what would it be?



Lana Harder 22:59

So I think creating more access to neuropsych services, and I mean that as broadly as I could possibly state it. So, certainly, in terms of the technology we've been talking about, but also in the people and the folks that we recruit and train to come into our field. So creating that access, but doing so in relevant and appropriate ways that reflect the diversity of our patient populations.



John Bellone 23:27

Yep, I agree. Much needed. We talked with Dr. Tony Stringer about Relevance 2050 and we'll continue to talk about this topic.



Lana Harder 23:32

Yes.



John Bellone 23:32

For the second bonus question, what's one bit of advice you wish someone told you when you were training or someone did tell you that really made a difference, just an actionable step that trainees can take?

Lana Harder 23:46



Sure. I think thinking about what you value and what is meaningful, and working to align that with your daily activities. Not only that, but revisiting that on a regular basis and then creating a narrative to your work - ideally, tying in all the pieces. In neuropsychology, we are clinicians or researchers, we teach, we engage in service. So someone said to me once, "As you embark on your career, be sure that you have a narrative, these threads that kind of tie everything together." And I think that's really important for professional development and growth.

John Bellone 24:23



Yeah, have a story with your training and trajectory. I like that.

Ryan Van Patten 24:27



Yeah, and stay values-based. It can be easy to sort of succumb or allow yourself to be influenced by what other people might want or what seems easiest, but think about what's most important to you. If you want to teach or you want to do clinical work, then do that.

Lana Harder 24:43



Exactly. And I would say there are always many more opportunities than any of us could take advantage of. I think that, as time goes on, that only increases or that's only true or that we are pulled in lots of different directions. So really, you know, reflecting on what matters to you on a regular basis will help ground you there.

John Bellone 25:03



Yeah, excellent.



Transition Music 25:04

Ryan Van Patten 25:08



Well, that does it for our first conversation with Lana. We hope you enjoyed it and continue to tune in for the rest of our Neuropsych Bites with her. Also, as we mentioned in the intro, if you're interested in teleneuropsych assessment, you can go to navneuro.com/41 for another episode on this in adults with Dr. Munro Cullum. And, as always, join us next time as we continue to navigate the brain and behavior.



Exit Music 25:35



John Bellone 25:59

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Ryan Van Patten 26:10

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