

Your Complex Brain - Season 3 Episode 1 - The Lonely Brain Transcript

Dr Jaideep Bains 00:00

[Your Complex Brain theme music] Neuroscience is telling us that isolation or loneliness can decrease social motivation or the drive for social interactions, so it becomes a bit of a vicious circle, right? You become lonely and you have even less of a desire to go out and seek connections or to interact with others, which makes you more lonely. And so, this is something that is really important to try to understand why this happens.

Heather 0:32

[music continues] This is Your Complex Brain, a podcast all about the brain, the diseases that impact it, and the path to finding cures. I'm your host, Heather Sherman, and I have the great pleasure of working alongside the team at the Krembil Brain Institute in Toronto, Canada, a leader in brain research and patient care. In each episode, we'll take you behind the scenes into our clinics and research labs to meet the game-changers of the future. We'll empower you with the latest research to help you take charge of your own health. You'll also hear from people who are living with brain disease, as well as their loved ones and the care teams who support them. Join us on a journey to unravel the mystery of your complex brain. [theme music continues then fades out]

News Reporter #1 01:21

[up-tempo electronic music] With a population of more than 3 million, it's hard to imagine the number of people in Toronto that feel lonely.

News Reporter #2 01:28

We may be surrounded by people, but it seems we're lacking in real human interactions.

News Reporter #3 01:34

Dr Vivek Murthy, the US Surgeon General, says loneliness is an epidemic.

Dr Vivek Murthy 01:39

When you struggle with loneliness, when you're socially disconnected, it increases your risk of depression and anxiety, but it also increases your risk of physical illness, as well...

Heather 01:48

...including an increased risk of heart disease, stroke, and among older adults, dementia. That's according to the US Surgeon General Report. Around the world, there are efforts to combat loneliness. [bubbly electronic music] In the Netherlands, one grocery store chain has introduced chat checkouts where customers can take their time and socialize. It's part of a government initiative to address the growing issue of isolation. There are also a number of apps, including one called Nextdoor, that helps introduce you to your neighbours, anywhere you live in the world. And, a recent story in the Globe and Mail profiled a woman who rents out her time to those needing a dinner companion, a study buddy, or a listening ear. She's seen more than 60 clients so far. [music fades out]

[gentle, upbeat electronic music] Today on the podcast, we're going to talk about how loneliness impacts our brain chemistry, why social media seems to be making us lonelier, even as it's meant to connect us, and what you can do to exercise your social muscle and improve your overall health.

Dr Jaideep Bains is Co-Director of UHN's Krembil Brain Institute and a neuroscientist who studies the impact of stress on our brains, and Dr Hayley Hamilton is Associate Director and Senior Scientist with the Institute for Mental Health Policy Research at the Centre for Addiction and Mental Health, also known as CAMH. Thank you both for being here today.

Dr Jaideep Bains 03:25

My pleasure.

Dr Hayley Hamilton 03:26

Thank you for having me. [music continues then fades out]

Heather 03:34

So, what does loneliness actually mean? Can we define loneliness? Dr. Bains?

Dr Jaideep Bains 03:37

I think it's one of those things that, you know, you say, "I don't know what it is, but I know it when I see it." I would define loneliness as an absence of meaningful social connections. It's not the number of people you're around; it's actually those meaningful social connections.

Dr Hayley Hamilton 03:54

It's the feeling that individuals have. "I don't have anyone to speak to," or, "I don't have any close friends." But, it also could be a feeling that you have of feeling lonely because there's something missing, – a craving that you have for attention or for interactions that is not there.

Heather 04:11

In a world of endless opportunities to talk to and connect with others, you would think that loneliness isn't a problem, but we all know that it is. So, how big a problem is loneliness in our society today? Dr Bains?

Dr Jaideep Bains 04:25

Loneliness has become a huge thing. People have used the word "pandemic" around loneliness. I think it's also important when we think about loneliness to kind of differentiate loneliness from social isolation. So, for example, you can be in a very crowded city like we live in, yet still be very, very lonely. So, you're not isolated from other human beings, but there's this deep-seated absence that you're not connecting with people.

Dr Hayley Hamilton 04:55

I think that there are obvious concerns with respect to loneliness, and I think that concern was compounded at the start of the pandemic when people became far more aware of isolation and social isolation that occurred during that time period. So, I think there is a lot more interest in loneliness, which used to be something that people were most concerned about with respect to older adults, but we see that it is an issue for younger adults and for youth more generally because, again, we can see, with recent increases in loneliness over the last-- a little over a decade, and so that is of particular interest, I think, to researchers, and trying to assess the why of it with respect to that increase.

[electronic music plays]

From my perspective, and from the work that I do, which is monitoring for mental health and substance use within Ontario-- I'm specifically referring to the Ontario Student Drug Use and Health Survey. We've

been doing this work for many years and it is used to monitor the extent to which there are mental health or substance use concerns within the population, specifically, youth around grade 7 through 12, and we only added loneliness or a question with respect to loneliness in our 2021 survey, and we basically just asked people a very simple question – "To what extent do you feel lonely?" So, it's a simple question, but it speaks so much to what people are experiencing. And, in 2021, we found that about one in five students reported that they feel lonely.

We see the extent to which it is within our data and we have additional data that we collected during the pandemic on adults and we could see that loneliness was also evident among those who are more young adults—18 to 39 years of age—so it was particularly a concern among that group, as well. [music fades]

Heather 06:40

Dr Bains, I'm curious about what we know about how loneliness actually impacts our brain. Are there biological markers? Can you see it on a brain scan?

Dr Jaideep Bains 06:48

This has proven to be a real challenge. The concept of loneliness and, you know, this idea around social neuroscience or studying the brain of social species was put forward about 30 years ago. John Cacioppo is widely acknowledged to be the father of modern social neuroscience. So, he started to think a lot about questions around social behaviour and the brain beyond just what humans do, but around what many other species do, and he was very, very interested in this concept of loneliness, and he frames loneliness as a physiological need, much like hunger and thirst for physiological needs, and he reasoned that we have an internal drive to connect, to overcome this feeling of loneliness, and that's given rise to an entire field of neuroscience which is really intrigued by trying to answer these questions.

What Dr Cacioppo outlined was this idea that loneliness affects our brains, and that our yearning for loneliness is also written into our brain circuits, and so neuroscience has been trying to study around this framework, but it's been a challenge because, in most model systems that we study, we study social isolation. We don't know whether other organisms have the same yearning for connection that we do and that has proven to be a real challenge. But, for sure, there are many labs and many researchers who are trying to think about loneliness, isolation, how it triggers other types of feelings like anxiety. It may lead to depression.

You know, there are specific brain circuits that people have identified around loneliness, isolation, and social behaviour and I think what's becoming increasingly evident is that there are so many circuits in our brain that seem to turn on or turn off when we think about changing our social environment.

Heather 08:53

Can our brain differentiate between a virtual connection and then what's an actual connection, in-person? Dr Bains?

Dr Jaideep Bains 09:03

This is kind of really a hot area of research. How we view connections, perhaps in our generation, is different than how a younger generation views connections, but I think connecting in the real world, in three-dimensional space with actual human beings and all of the signals that they are sending out is extremely different than momentary connections online. Humans, as well as many other species, we

communicate in many ways that are non-verbal, and so we pick up those cues and those help shape our own behaviours, and I think these are the types of things you're missing out on.

The other part of this, that is very important is that one thing social connections don't allow you to do in the same way as to build trust in relationships, and often that trust in the real world is not just based on our one-on-one interactions but it's based on how a new individual is brought into a larger group you may have, and that helps you define a level of trust for that person. So, I think we're missing all of these cues in the online world.

Heather 09:52

And how much do you factor in social media and the irony that social media is really, you know, in essence, meant to connect us, but yet is it making us more lonely, especially the younger generation? Dr Hamilton?

Dr Hayley Hamilton 10:13

[up-tempo electronic music] Well, there is research suggesting that it is. The increase in loneliness occurred around the same time that there was an increase in social media use. Now, you know, the research today cannot really address causality but the fact that there are fewer alternate explanations for what's happening has led to more research to say, "Well, why is this happening? Are those who *are* spending more time on social media more likely to be lonely or to report loneliness? Does it matter the extent to which you are also engaged in in-person communication and in-person activities with others? And also online interactions through social media – what is the impact?" It's a complex relationship. It's not just if you engage in more social media use, you're more likely to be lonely. There are also extenuating circumstances that you have to think about.

Heather 11:55

Right. And I know you look at the impact of addiction. You know, oftentimes, we think of drugs or drinking or smoking as addictions, but what about addiction to devices and how that impacts our connection, as well? I'm curious, in your research, Dr Hamilton, what you found. [music fades out]

Dr Hayley Hamilton 12:13

Research is, I guess, continuing with respect to the extent to which it is an addiction or just problematic use, but there is research to show that there is an association with overuse and I think, for us, even though we have a measure of what we call problematic social media use, we tend to focus our research more on the number of hours that individuals spend online, which is where you see the real shift.

So, for example, if you think about individuals who spend seven or more hours online on a daily basis, versus those who don't spend much time online or less than two hours online, you can see the increases in risk with respect to the more time you spend—especially five or more—the greater your risk of experiencing loneliness, of experiencing psychological distress more generally, of experiencing low self-esteem. Those are real associations that we see in our research.

I'll give you an example. A few years ago, we asked about problematic use of technology within our survey – neglecting other aspects of your life to stay on social media or to stay on electronic devices. "Do you neglect doing your homework because you are on these devices? Do people tell you that you spend too much time online or on these devices? Do you feel nervous when you're not using the devices?" You know, those are the kind of things that reflect problematic use. You lose sleep because

you're on these devices. It's ways in which the use is impacting your relationships and other aspects of your life.

Heather 13:01

There seems to be a strong correlation between mood disorders like anxiety and depression as well, and loneliness. So, does that mean that people who are living with mental illness are more susceptible to loneliness?

Dr Hayley Hamilton 13:24

Research has shown an association between loneliness and depression and anxiety. With respect to depression, it's about how individuals are feeling and their emotional state at the time that you're asking. If you feel lonely, there might be a sense that you are more susceptible to feelings of depression. Those who are high in social media use tend to also be high in loneliness, especially if they're not engaging in in-person social interaction with others. The associations are the same, suggesting that there is a connection between loneliness and depression and anxiety, et cetera, et cetera.

Heather 13:57

I know we've talked in the past too about the whole idea of perception versus reality when it comes to our brain. In the context we've spoken about previously, it's stress, but I'm curious how that relates to loneliness and whether the perception of loneliness is just as important as the reality.

Dr Jaideep Bains 14:16

Yeah, I think it very likely is. We're also beginning to understand that loneliness can beget loneliness. [gentle electronic music] There's some really nice evidence now that chronic loneliness actually decreases social motivation, so it becomes a bit of a vicious circle, right? You become lonely and you have even less of a desire to go out and seek connections or to interact with others, which makes you more lonely.

I think we're just scratching the surface. I think this is really a fascinating, fascinating area of research. I think we're beginning to understand that social circuits, loneliness, social interactions seem to involve much of the same circuitry as reward and addiction, so to Dr Hamilton's point, areas known as the mesolimbic dopamine system, for example, are implicated in all of these things. So, how do these circuits interact? Does loneliness begin to predispose you towards behaviours that might lead to addiction? Is addiction more likely to kind of become entrenched [music fades out] if you are lonely and do not have social interactions and social supports? So, these are fascinating questions for us at the human level, but there's also really unique biology to try to understand here.

Dr Hayley Hamilton 15:38

When you are lonely and you are isolated and you are less willing to go out, it become so entrenched, then it has additional impact because it's impacting your social skills, which means that when you are required or have opportunities to interact in person with others, then you're less able to. You're less skilled at it. And therefore, that possibly will increase your stress when you do have to engage in those kinds of activities. It has impacts on other areas of your life. You're losing your social skills, you're less likely to interact when you do, then it increases your stress. So then, that's just another issue and concern that has to be dealt with by that individual.

Dr Jaideep Bains 16:21

We need to start thinking about social engagement and social interactions as a skill that we can develop, just like, let's say your child is not good at basketball and so they don't want to play basketball, so their chance of getting better is zero. But, if they go and continue and practice, they will improve, and I think social interactions and developing these connections, for some people, it's intuitive but, for the vast majority of us, it's a learned skill and it's a skill that we can really hone.

Heather 16:50

And so what you're saying is just that focusing on some of these social skills earlier in life can make that much of a difference?

Dr Jaideep Bains 16:57

Earlier in life, but continually through life. As we grow older, have responsibilities, have time pressures, we almost choose not to focus on continuing to maintain and develop those social skills.

Heather 17:09

We're too busy.

Dr Jaideep Bains 17:12

[Heather and Dr Bains chuckle] Yep. To our own detriment. [chuckles]

Heather 17:15

Dr Hamilton, what do parents need to know as we're talking about children and social media and some of the impacts for loneliness and some of the other mental health concerns that you've mentioned?

Dr Hayley Hamilton 17:25

Parents need to be aware that there are a lot of stresses in young people's lives right now. Social media and the amount of time they spend on social media is a concern for youth, or even adults, but also for parents themselves. When you're thinking about social media, you have to recognize and be cognizant of your own use – parents, especially. So, in other words, model what you preach to your kids [laughing] when it comes to social media. I think that's an important point.

But, with respect to social media, itself, and how much time individuals spend on it, I think everybody needs to be aware that spending time on social media, just like other behaviours, should not interfere with the rest of your life. It should not affect your relationship. It should not affect your schoolwork. It should not affect the time you spend with families, your work, and your employment. It should not affect your sleep. And, when it begins to impact more and more of those areas, that's when it becomes problematic. Be very much aware of the time that you're spending on social media. Be very much aware of how you feel when you go on and how you feel when you leave because, if you feel worse, then think about where you were and what sites you were on, and what were you doing there. Those are, I think, important things for individuals to think about, as well as for parents to think about.

Heather 18:41

That's great advice, especially for parents – to model the behaviour that you want to see. Good reminder. Dr Bains, you and I have talked in the past about the whole idea of introverts versus extroverts, and, you know, sometimes you hear people talk about the fact that you can be alone without feeling lonely. What's the line there?

Dr Jaideep Bains 18:58

I think, increasingly, we understand that it's not the number of social connections that matters as much as having high-quality connections. So, you can have a lot of people who spend a vast majority of time on their own but have one or two really key social connections that allow them to either talk out their problems or just pick up the phone and have a chat and things like that, so I mean, nothing kind of affirms the importance of having social connections as living in a big city. I think the loneliest people are in big, crowded cities because they don't have those really tight connections with a few select group of individuals.

Heather 19:42

That's right. It's usually the Uber delivery person.

Dr Jaideep Bains 19:44

Yes. [laughs] [Heather laughs]

Dr Hayley Hamilton 19:50

[bubbly electronic music] With respect to social media and young people, especially, you can have a lot of friends [chuckles] – "friends" online and social media. But, how many true friends do you really have? How many people do you have that you can actually pick up the phone and they will actually answer the phone if they see that you're ringing and speak to you one-on-one? And those connections, the ability to get social support, in-person, or even just by speaking to someone is, I think, very important to our well-being and to mental health. It's important for us to think about "friends" that are online, versus real friends that will actually be there for you, that you can pick up the phone, you can speak to, you're able to get together with them, in-person, and show real emotions, and there is a great degree of trust there.

Heather 20:36

I know my mom is always going to pick up if I call, [laughs] at the very least. Last question... We are recording this episode almost four years to the day since COVID. What are your takeaways at this point? After all that you have learned and all that you have researched in the last four years, and read about and experienced, what do people need to know about the impact of loneliness so that they can change their own behaviour and be healthier for it?

Dr Hayley Hamilton 21:04

[music continues] I am hoping that COVID and that whole period has made people realize the importance of this in-person getting together with people in-person to actually see someone's face, speak to them, see them. I'm hoping that the social isolation that many of us experienced during that time, with social distancing and everything else that went along with that, has made people recognize importance of it. We saw tremendous increases in social media use during this time among youth, tremendous increases in video gaming among youth – things that they do alone might be interacting with others, but it's not necessarily in-person. [music fades out]

So, we saw also increases in mental health concerns among young people. We are having more conversations about mental health and I see that as a positive in reducing stigma and making people more open to seeing the importance of social support, social interactions, in-person.

Dr Jaideep Bains 22:03

The pandemic, obviously, has profoundly reshaped our lives, globally, at a scale never seen before. One of the things coming out of the pandemic that has become evident is that it's created a polarization, and what I mean by that is, in terms of social behaviour, those who tend to be less social, going into the

pandemic, are even less social, and those who were yearning for social interactions have come out of it really driving social interactions, seeking new relationships, closer relationships.

But, there is definitely, you know, strong evidence that a number of people actually just don't want social relationships in the same way that they had before the pandemic. So, this goes back to what neuroscience is telling us – that isolation or loneliness can decrease social motivation or the drive for social interactions. We're going to have to find a way to manage this over the next few years and I think it's particularly important for two groups – one, children and teens and, two, older people. [gentle electronic music] I think those are the two who were most affected by the social impacts of the pandemic and it's going to take some time for us to recover from that.

Dr Hayley Hamilton 23:14

And I think it's important to have data that will allow us to examine those changes over time, pre-pandemic, during the pandemic, and as we move forward.

Heather 23:23

Well, when I mentioned to some of my colleagues the topic for today, everyone seemed to have a question or a comment or, you know, have some feedback, so I think this is a topic that really resonates with people, so we will definitely be keeping a close eye on the data coming out and I just want to thank you both for joining me. Today, thank you so much.

Dr Hayley Hamilton 23:40

Thank you for having me.

Dr Jaideep Bains 23:41

Thanks, Heather. My pleasure. [music fades out]

Heather 23:44

[Your Complex Brain theme music] Thanks so much to Dr Jaideep Baines and Dr Hayley Hamilton for joining me on the podcast today.

[music continues] This episode of Your Complex Brain was produced by Jessica Schmidt. Dr. Amy Ma is our Executive Producer. Thanks also to Kim Perry, Meagan Anderi, Sara Yuan, Liz Chapman, and Lorna Gilfedder for their production assistance.

[music continues] For more information about the Krembil Brain Institute, please visit uhn.ca/krembil, and you can reach us by email – krembil@uhn.ca. If you enjoyed this episode of Your Complex Brain, please tell your family and friends, and don't forget to leave a rating and review on your favourite podcast listening app. We'll be back in two weeks with another exciting episode. Have a great day. [music continues then ends]