

ARTIST
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INTERVIEW SPOTLIGHT

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EXPLORING PSYCHOSIS IN YOUTH CANNABIS USERS

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Over the past two decades, the relationship between marijuana and youth usage has been evolving. Recent research suggests that marijuana use increases risk of psychosis, a state of impaired reality involving hallucinations, delusions, and thought disorganization. To explore such issues, we sat down with Dr. Suzanne Archie, an Associate Professor in the Department of Psychiatry and Behavioural Neurosciences and Clinical Director of the Cleghorn Early Intervention in Psychosis Program at St. Joseph's Healthcare Hamilton. She is also a psychiatrist at the Peterborough Centre for Addictions Research and a Brain and Behaviour Subunit Planner for the Undergraduate Medical Education Program at McMaster University. Her research interests include early intervention for youth marijuana use and ethnic diversity in pathways to care for first episodes of psychosis. Presently, Dr. Archie is leading a knowledge translation project using video games as a tool for youth to learn about early psychosis intervention.

WOULD YOU BE ABLE TO SHARE MORE ABOUT YOUR BACKGROUND AND WORK?

I'm a psychiatrist and I have been doing early intervention in psychosis for about 25 years. Over the years, I noticed that there were a lot of patients who were using cannabis at a very young age, so I became interested in [the] link between [cannabis] use and later development of psychosis. [...] If there was a link, we could help young people understand that, especially since many of them may actually not have a serious addiction, because they haven't been using it for very long. And if they can understand that, they can get better faster. [...] So I [focused my research on] different knowledge translation strategies for [helping youth understand] the link [between psychosis and cannabis use]. [...] I am also a member of the Peterborough Centre for Addictions Research, [as well as] the Brain and Behavior subunit planner for the Undergraduate Medical Education [Program]. Education and teaching is something that I'm very interested in.

■ LET'S TALK SPECIFICALLY ABOUT YOUR RESEARCH ON CANNABIS USAGE AND RISK OF PSYCHOSIS. WHAT'S THE RELATIONSHIP BETWEEN THE TWO? WHAT ARE SOME RISK FACTORS FOR DEVELOPING PSYCHOSIS AMONG CANNABIS USERS?

The relationship is actually complex and multidirectional. I should note that there are a few main risk factors for developing psychosis through cannabis use. First is the concentration of tetrahydrocannabinol (THC) in marijuana. In Canada, marijuana THC content has drastically changed over the years. In the '70s and '80s, THC, which is the active ingredient in marijuana that's related to psychosis and addiction, was about 2% for weed. But today in Canada, given the climate that we have here, the THC content has been genetically engineered so that it's 15% to 30% in order to get a good yield of the crop. In contrast, the cannabidiol (CBD) content, which has medicinal properties but also has antipsychotic and anti-anxiety properties, has remained low at 2%. So, the balance between THC and CBD is off compared to what it was like for centuries, when it was around 2% THC and 2% CBD. Hashish traditionally had 5% THC, and that was considered high in the '60s and '70s. But of course that's low today. So in conclusion, THC concentration is an important risk factor, since the higher the THC content, the more likely you are to find it appealing and use it more, which contributes to psychosis risk, especially for young people.

Secondly, there is an increased risk of cannabis use among people who have a genetic vulnerability for schizophrenia and serious mental illness. People who have a vulnerability for schizophrenia may have more cannabinoid type 1 (CB1) receptors in their brains, even before they develop psychosis or use marijuana. [...] People who have that genetic vulnerability use marijuana regularly. Not only do they have an increased risk of developing psychosis, they also have an increased risk of using more frequently. There are studies that show that as the risk for schizophrenia increases, there is an increased risk of using it regularly and more frequently. [...]

Thirdly, there's also the initial age of use. As people use it younger and younger, the risks of developing substance use issues and psychosis issues increase dramatically. The age of regular use has changed over the last 30 years. In the '70s and '60s the age of regular use was university years — people would use three times a week or more when they were in their early 20s. But when my daughter was born, in the '90s and early '00s, the age of regular use dropped to high school years. So, people might have been 16 or 17 years of age when they were using three times a week or more. Now, in the last 10 years or so, the age of regular use has dropped even further to about grade 7 or grade 9. We're talking 13 to 15 years of age. This is concerning, since the brain has a lot of developmental differences between a 14-year-old and a 21-year-old.

Of course, lots of people use marijuana and have no problems with it. The vast majority of people use marijuana without a lot of risk, but there are populations that are vulnerable. Most of us are not aware of the fact that there may be serious mental illnesses, such as schizophrenia, bipolar illness, or addiction in their families [...].

■ WHAT ARE SOME SYMPTOMS OF PSYCHOSIS? HOW CAN SOMEONE REALIZE THAT THEY HAVE GONE THROUGH A PSYCHOTIC EPISODE?

Psychosis usually involves three main symptoms. First is a disturbance in perception. [For example], a person will hear sound as though it's coming from the outside world, but actually it's coming from a chemical imbalance in their brain, so they may hear it just like you're hearing my voice now. It can be very difficult for someone experiencing psychosis to actually recognize that the experience is coming from a disorder in their brain as opposed to it really happening. Other people won't hear what they are hearing so that is one of the ways that people figure out that they're experiencing things different[ly]. [Secondly], people will come to different kinds of conclusions [or have delusions] because of their perceiving reality differently. So, if a person is seeing shadows, or seeing people and they think that they're following them, then they're going to believe that [...] somebody is trying to kill them or harm them. If you understand the perception that a person with psychosis is experiencing, then their belief systems actually do make sense because their beliefs are based on what they're experiencing. The reason why it seems so odd is because in the regular reality, other people aren't perceiving things the way *they* are, but once you kind of understand how they're perceiving things, then their reality starts to make sense, because often it's based on a disturbance of perception. [Finally], the other component is thought disorganization and behavior disorganization. The parts of the brain are not processing information properly. The person's having disordered perceptions, all of that contributes to thought disorganization, and that also can lead to changes in their speech and changes in their behaviors.

■ WHAT IS CBD AND THC AND WHAT ARE THE DIFFERENCES IN THEIR EFFECTS? HOW DO THEIR CONCENTRATIONS CONTRIBUTE TO PSYCHOSIS AND ADDICTION?

[...] We know that THC has a dose-dependent effect on mental health symptoms. At low levels, THC can induce relaxation and a sense of calm. At higher levels, it starts to impair concentration and memory —particularly [...] emotionally difficult [and] painful memories— and it can induce a sense of euphoria. Then, at very high [...] intoxication levels, people can develop symptoms consistent with psychosis, such as paranoia. So they become suspicious, they misinterpret reality, they can have perceptual changes [in that] they can hear or see things differently, and their thoughts can become disorganized. [The] medical term

[for this is] cannabis-induced psychosis, which can occur up to a month after using marijuana. [However], people can also simply have cannabis intoxication, like other substances of abuse. [In general], if you consume too much, you can induce psychosis [via] alcohol, cocaine, and other substances of abuse as well. CBD, on the other hand, does not have any addictive properties [...]. But, CBD is being studied for being used for post-traumatic stress disorder (PTSD). So there is some evidence that it may be helpful for PTSD and, certainly, I think the US veterans have been using that. CBD has [also] been associated with a number of medicinal purposes, as well. It's known to be effective for epilepsy, for example, in children who have severe epilepsy. It [and THC are] also helpful for chronic pain as well.

■ YOU CREATED A GAME RELATING TO EARLY PSYCHOSIS INTERVENTION, THE BACK TO REALITY SERIES. COULD YOU EXPLAIN WHAT THE GAME IS AND WHAT THE INSPIRATION WAS BEHIND IT?

We created the Back to Reality Series to specifically focus on marijuana and psychosis because we wanted to translate knowledge of the research previously mentioned to youth. I have also done some research on pathways to care for a first episode of psychosis. In this research, we were able to show that Black youth were more likely than other ethnic groups to experience police involvement in their pathways to care for the first episode of psychosis, and were less likely to be involved with family doctors. We thought that it would be important to not just educate youth about the risks, but also educate them about how to seek care in addition to mental health and addictions services. That way, you don't end up having police involvement in order to get the kind of addiction and mental health care that you need [...].

We felt we needed something that the target audience would be able to use. A study in 2015 showed that 32% of youth who have had an episode of psychosis play video games on a daily basis, [with] 100% of them [having] access to a laptop or computer; 92% play video games on their cell phone and 83% had [a] console. Video games were a good way of reaching youth where they were at. Also, the nice thing about video games is that they can simulate visual and auditory experiences in a format that people can perceive, which helps more effectively communicate what psychosis symptoms can be like. A lot of people don't understand what it means to have a psychotic episode. They may think that people are imagining it, or that they're making it up.

The game is helpful because it teaches people mental health literacy, so they have a better understanding when doctors use words like "hallucinations" or "depression." Another great thing noted was that people could see, hear, [and] read about mental health and addictions services in a format that was user-friendly and didn't involve reading pamphlets. It's great because you get to know what the services are like a little bit before you actually utilize them [...].

■ WHERE DO YOU HOPE TO TAKE YOUR RESEARCH IN THE FUTURE?

[...] I have a partnership with the Free For All Foundation, which is a charitable organization that works with Black families in the Bradenton area. We're going to be recruiting about ten to twelve high school students associated with this organization and they are going to be participating in some tutorials. We'll be using the Back To Reality Series like a homework assignment in order to provide a springboard into discussions about marijuana and psychosis. We're going to do before-and-after testing to see if we can learn something about educating youth, not just using the video games, but also through the experience of having this discussion in a tutorial led by other young people.

[...] The other is a study for young people going through their first episode of psychosis, [where] they will be involved in individual interviews [...] to talk about what their understanding is between cannabis and psychosis. [...] We're going to get a sense of what their beliefs are about this area. After having them play the game in another session, we'll see whether it shapes or influences their thoughts, feelings, and beliefs about the relationship and whether they feel that they have learned anything from using the video games [...].



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