

Behavioral Addiction - Chao

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SUMMARY KEYWORDS

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 00:00

This presentation is entitled behavioral addiction criteria, challenges and considerations. I will now turn it over to Dr. Faye Chow to begin our presentation.

 00:09

Hi, everyone. Thank you for joining us this afternoon. I will be talking about behavioral addictions. If you have any questions that come up during the presentation, please put that into the chat. And let's get started. I have no relevant financial disclosures. And learning objectives- So we are going to describe the theoretical framework for behavioral addiction, criteria for diagnosis, and review evidence-based treatment strategies.

 00:45

So, just to give you an idea of the presentation outline, I'm going to go over a little bit of the history of the inclusion of behavioral addictions in our diagnostic manuals, we're going to talk about the impulsivity-compulsivity spectrum, and then we're going to discuss gambling disorder and Internet gaming disorder.

 01:08

So just a little bit of history. So behavioral addictions are a relatively new group of disorders, and historically, kind of were a working class. So they were classified under a number of different categories of disorders. So originally under obsessive-compulsive spectrum disorders, then as impulse control disorders, and have also been conceived of as byproducts of mood disorders. But with a formal inclusion in the DSM-5... well, gambling disorder was actually included in DSM-4, but in DSM-5, it was re-categorized and put under substance-related and addictive disorders. So that's where they are at the moment.

 02:02

So there's actually only one behavioral addiction that's included in the DSM-5, under substance-related and addictive disorders, and that is gambling disorders. So we're gonna focus on that today. And we're also going to talk about Internet gaming disorder, because that is included in the appendix of the DSM-5 as a condition to further study and it actually a few years ago was included in the ICD-11. So worldwide, it is being, you know... there are diagnostic criteria that are being used to diagnose it. Using the DSM-5 though we do not have formal criteria, although there are some proposed criteria, which we'll talk about, and it is considered a condition for further study.

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Not included are all of the other behavioral addictions that we sort of hear about or think about, or are being researched. So that would be things like sex addiction, exercise addiction, shopping addiction, food addiction, and other internet or technology-related behaviors like social media and television. So this really is one of the younger areas of Addiction Medicine.

 03:10

So at its core, a behavioral addiction is a failure to resist an impulse drive or temptation to perform an act that is harmful to oneself or others. This is not so dissimilar from substance use disorders, where people are unable to resist a drive to use substances despite the fact that they may cause problems for them in their lives. But we do think about behavioral addiction as lying on this impulsive versus compulsive spectrum.

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So impulsivity versus compulsivity: both show an inability to refrain from repetitive behaviors. Impulsivity is more driven by an effort to obtain arousal and gratification, and compulsivity is driven by an effort to reduce anxiety or to treat negative affects. So if you think about this in behavioral psychology terms, people who tend to suffer from an impulse control disorder or disorders that fall more on the impulsivity end of the spectrum are seeking a positive reinforcement. So they want that euphoria. They want that rush, you know, they are adding an appetitive stimulus, and that's what reinforces their continued behavior.

 04:28

Compulsivity on the other end of the spectrum is more driven by negative reinforcement. So again, in behavioral psychology terms, this would be a behavior that is reinforced by the removal of an aversive stimulus. So somebody feels anxious, they do a behavior, the anxiety goes away, they're more likely to repeat that behavior.

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In substance use disorder terms: Somebody you know who... the impulsivity side is seeking that euphoria, the compulsivity side we'll be treating withdrawal symptoms. So if you have tremors and anxiety and sweats and you drink, that goes away, that is negative reinforcement.

 05:11

Looking at it on a dimensional approach- so as I mentioned, this is a spectrum from compulsive to impulsive, you can kind of slot in different disorders along this spectrum. On the compulsive side, you have things like OCD, body dysmorphic disorder, and anorexia. And these folks tend to over-exaggerate harm. So they are anxious, they have a, you know, sort of inflated view of something negative happening if they do not perform this behavior. And so that's really what drives their behaviors.

 05:49

On the other end of the spectrum, you have people who are more impulsive and the disorders that tend more towards impulsivity. So you've antisocial personality disorder, borderline personality disorder, and again, these are more of the sensation and thrill-seeking folks who underestimate harm. And a number of disorders sort of fall in between on the spectrum, looking at it in a different way. Compulsive and again, OCD, body dysmorphic disorder, anorexia, and then kind of moving along the spectrum towards the impulsive ends.

 06:24

There are some gender differences as far as which disorders are more common in men versus women. So for women, anorexia is far more likely to be diagnosed than in men. Although on- for men, body dysmorphic disorder is- is more common, and both anorexia and body dysmorphic disorder are on the compulsivity end of the spectrum. In women, binge eating, kleptomania, compulsive buying, and trichotillomania are more commonly diagnosed than in men, and those kind of falls in the middle of that spectrum that I showed. And for men, sexual compulsion, pyromania, gambling, and problematic gaming all fall more towards the impulsive side of the spectrum.

 07:07

So I'm going to move on now to talk specifically about gambling disorder. So again, this is the only one that is formally included in the DSM-5 as a diagnosis. On that spectrum that we were talking about, that tends to fall a little bit more towards the impulsive side, although, as we'll talk about in a minute, there are different phases where someone might engage in problematic gambling in a more compulsive way. And as I mentioned before, that it was included in the DSM-5, in that iteration, it was called pathological gambling, and it was classified as an impulse control disorder. In the DSM-5, it got renamed as gambling disorder, and it is reclassified as a substance related and addictive disorder.

 07:56

Oops, I skipped a slide there. So you can see the substance related and addictive disorders everything is a substance except for gambling disorder. And so the clinical presentation actually draws from the substance use disorder criteria. So five of the DSM-5 addiction criteria will be familiar

to you from diagnosing substance use disorders. So those five are tolerance, withdrawal, multiple attempts to cut back, preoccupation with the behavior, and failure to fulfill major role obligations.

 08:34

And then there are four criteria which are unique to gambling disorders. So chasing one's losses, lying to conceal the extent of their gambling, relying on others for money, and gambling when feeling distressed, and there are some specifiers so it's either episodic or persistent.

 08:54

There are different phases, although these phases are not in the DSM-5, but they are sort of worth considering when you're working with someone with gambling disorder. So there's winning phase, loss phase, desperation phase, and hopelessness phase. Winning phase is pretty self-explanatory. So that's in when you're gambling and they're actually winning and making money and they're getting that rush. Loss, desperation, and hopelessness phases are more when they have-

 09:23

are no longer winning. They're starting to get into that hole of significant debt that many people with gambling disorder suffer from. And they're sort of chasing that loss trying to catch up but being unable to. People who are in that loss, desperation, hopelessness phase may be at increased risk for suicide. So that is an important thing to keep an eye on.

 09:51

I'm not going to spend a lot of time on the neurobiology of gambling disorder. You know, what we understand of the neural circuitry and gambling disorder is that it is very similar to what you see in a substance use disorder. So you will see the reward pathway light up, you will see it light up in response to gambling-related cues. The neurotransmitters that are involved are very similar to what we see in substance use disorders, the most sort of relevant being dopamine, although norepinephrine and cortisol and serotonin all are involved to some extent. And the areas of the brain that are involved, again, are very similar to what we see in substance use disorder. So that reward pathway,

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the ventral tegmental area projecting to the nucleus accumbens, there is involvement of the prefrontal cortex, there's involvement of the learning circuitry and memory circuitry. So amygdala, hippocampus, all of it is- is should be familiar from substance use disorders.

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That's a little bit about epidemiology. So gambling is very popular in the United States; it's a huge

business. So US gambling statistics- \$73 billion per year in just casino gaming revenue. That doesn't even include online gambling. About 82% of US residents either gamble currently or have gambled in their lifetime. And about 1-2% of the general population meets criteria for gambling disorder. Problematic gamblers tend to have \$40,000

 11:31

average individual debt, and spent about 25 hours per week, on average, on gambling. And those are really, you know, again, those aren't necessarily criteria for diagnosing gambling disorder, but it is a significant amount of money, time, money and time spent on gambling. And, you know, most people probably could not sustain that for very long.

 12:00

The rise of online has increased access to gambling, or sorry, the rise of the internet and online gambling has just overall increased access to gambling. And brings it into the home, makes it even easier for folks to gamble. And, as we know, from a lot of different substances, increased access tends to increase the number of people who could potentially develop a problem with with- that substance or with gambling.

 12:36

There are some interesting sequelae to gambling being legalized, and there are some vested some organizations and sort of institutions that have a vested interest in keeping gambling legal. So this is an article from the Albany Times Union in 2019. And essentially, what it said in this article was that there was not enough revenue from gambling taxes to continue funding certain school programs. So the fiscal plan projected that school aid from state casinos was going to be 161 million in 2020, and 100- and it was going to drop to 155 million in 2022 and 2023. And because part- that sort of informs the state budget for other programs, that decrease in gambling revenue meant that they had to cut it somewhere and end up being cut from schools. So it's sort of interesting, because gambling is legal in certain states. It is state-funded. So a good example is the state lotto. So there is kind of a vested interest from the state and state government to keep it legal and to have people partake in it.

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So I just kind of bring that up as an interesting parallel to substance use disorders where many substances are illegal, and generally speaking, you know, the states are not benefiting from continuing substance use and so they're trying to keep it illegal. Gambling: that is not the case.

 14:09

So what's available varies from state to state. There's different venues where you can gamble: land-based casinos, as I mentioned, internet gambling, unregulated gambling, and online fantasy sports, which also is extremely popular and another form of gambling that is easy to access and many people are involved in. So overall gambling is more available and accessible now than ever before.

 14:39

Because of that, because of increased access, and because that increase in access may lead to rises in gambling disorder, it's important to have good screening tools. So a very good screening tool which is fairly accurate and does not take very much time is called the lie-bet test. It has 99% sensitivity and 91% specificity, and it consists of only two questions. The one is have you ever felt the need to bet more and more money? And the other is, have you ever lied to people important to you about how much you gambled? So these are pretty quick questions. And, you know, it's something that you can ask even in a short visit with someone. So if you know somebody is a gambler, or suspect that they might, you know, be gambling or have money issues related to gambling, these are good questions to ask, so that you can investigate that further.

 15:40

All right, so there are some gambling cognitive distortions that are common. And I like to start with this. It's sort of a riff on the quote from *The Hunger Games*, which if you've never seen the movie, the picture there is a screen-grab from the movie. One of the things they say is, "May the odds ever be in your favor." So one thing that we know about the games that are played in casinos is that "The house always wins." And you may have heard this quote before. But it's true.

 16:14

So the house edge is the ratio of the average loss of the initial bet, essentially the average gross profit that the casino expects to make from each game. So as long as the house edge is a positive percentage, that means that the house is more likely to come out as a winner than the person who is playing the game. See, I gave some examples of house edges, you can see none of them are negative, so none of the games ever fully favor the gambler. And that kind of makes sense. Again, gambling is a business and casinos are not in the business of trying to lose money.

 16:49

Essentially, the longer you play, the greater the odds are that the results of your play will match up with the house edge. So most people who gamble right- I think most lay people even who don't gamble, sort of know this to be true. And people who spend a lot of time gambling cognitively know this to be true. So in order to kind of override the fact that they are likely to lose the longer they gamble, they have- kind of have to trick themselves into continuing to gamble, despite losses, despite knowing that the house edge does not favor them.

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So we're gonna look at some of these cognitive biases right now. So there's several interpretive biases that people sort of believe about wins versus losses. And some of these may be some things that are- you know, in sort of everyday life can be helpful in maintaining a healthy narcissism.

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So, you know, attributing wins to skills

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and losses to fluke: I think we all do this sometimes, to a certain extent. You know, if you do something well, or something goes your way, you might be likely to think like, okay, this is because of something I did. Whereas if something doesn't go your way, you're sort of like, okay, well, that wasn't meant to be, that wasn't fated to be. And again, if you do this occasionally, not a big deal, you know, again, helps you maintain some sense of self esteem. But if you take it to an extreme and always attribute your wins to skills and losses to flukes, again, that is not true, because we know that the house edge favors the house. But if you take it to an extreme, then you may be more inclined to gamble continuously despite evidence to the contrary that you are able to win through skill alone.

 18:43

You might be wrongly believing that a series of losses increases the chance of a subsequent win. So there is this sort of belief that you're due for a win. So this is very common in slots you know, you've been feeding this machine for an hour and you keep losing and keep losing, and people believe "I'm priming it for a win. The next one is going to be a win." However, statistics which would suggest that that is not true. And again, in order to override that, you're sort of having this fixed false belief that you are quote "due for a win."

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Near misses: I was only one number away. People believe "Okay, I was so close. The next one, I'm going to get. The next one I'm gonna get. When playing the lottery, I picked five numbers. The sixth one was wrong. So the next time I do it, I'm going to because I got so close, I'm going to win the next time."

 19:41

Well, I don't know if you've heard the saying "Close only counts in horseshoes and hand grenades." But that I think applies to gambling. Just because you were one number off... One number off is one number off. You were wrong. There's no reason to believe that the next time you play you're going to get any closer, or that it makes any difference in the following outcome.

 20:03

And then there is the sunk cost effect. And there's a little cartoon I like to show to illustrate that. And this is the idea of chasing one's losses- you can't walk away from your loss because you believe that you have to correct it. So here's the dog, he buried his bone somewhere, he's not sure where it is, and he starts digging and digging and digging. His friend is like, I don't think you're on the right track. But because the dog has already started digging and has dug such a deep hole, he can't stop now.

He's got to keep going, even though you can see over here in the bottom right panel, and he's way off. And again, I think this is pretty common. Even in everyday life, I find myself doing this sort of thing, when I'm waiting for the elevator and debating whether or not to take the stairs. Like, well, I've already waited five minutes for the elevator, if I wait one more minute, it's gonna come as opposed to having- just taking the stairs and save myself all those minutes. But these sort of, kind of normal behaviors get taken to an extreme with gambling disorder.

 21:09

Superstitious beliefs, again, pretty common. You know, if you're a sports fan, and you're supporting your team, there's lots of superstitious beliefs about wearing a certain jersey or eating a certain food when your- your team is playing. And actually, I, when I was giving this lecture to some residents, they reminded me of superstitions while on call, and I certainly have superstitions on call: never use the q-word, never say the name of a patient that you don't want to show up in the ER, knock on wood if someone does say the q-word. So again, these are sort of normal things that people engage in, but may be taken to extreme in gambling disorder.

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This is a way for people to sort of feel like they're exerting some kind of control over their situation. And I think you you know, as we know, from Addictive Disorders, there is this loss of control over behavior. So falsely believing that you have control over something perpetuates the behavior even in the face of negative consequences. So to get back to superstitious beliefs, you may get- someone with gambling disorder may believe in good luck objects, like lucky rabbit's foot, certain behaviors and routines that they have to engage in. And they believe that these may have some sort of control over the outcome.

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Selective memory- remembering wins while ignoring losses, and totaling wins without correcting for the amount lost. So what we know about memory in general is that anything that is very affectful, or has intense affect behind it, get- tends to get encoded more regularly than sort of just everyday memory. So that includes both positive and negative memories. So if something really scary happens, very traumatic, then you tend to remember that longer than just kind of an everyday occurrence. But also something really wonderful happens where you feel euphoric and happy, then that is something that tends to get encoded, as well.

 23:16

However, with gambling disorder, they're only remembering those highs of winning and not thinking about the times when they've lost \$10,000 in one hand, or you know, whatever. They also will total wins without correcting for the amount lost. So they win \$10,000- that feels amazing. Look at all the money they won. But if you look at their track record, they've lost \$100,000 in getting to that \$10,000 win. But that doesn't sort of play into how they're feeling at the moment or them perpetuating the behavior.

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And then there's a phenomenon known as tele- temporal telescoping, which is expecting that a naturally occurring event will happen sooner rather than later. So this is sort of similar to believing that you're due for a win. You know, it- but based more on the fact that a certain amount of time has passed rather than a certain amount of money has been invested into it.

 24:19

All right, so I'm going to move on to treatment. So the main two treatments that have been investigated are obviously therapy and medication. Within therapy, behavioral therapies...cognitive behavioral therapy and family therapies have shown the best evidence for efficacy in treating a gambling disorder.

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With medications a number of medications have been looked at: anti-psychotics, mood stabilizers, opioid antagonists and SSRIs. And of those opioid antagonists and SSRIs have the best evidence, and we'll review that in a second. None of them are FDA-approved for the treatment of gambling disorder though. And we also have mutual help groups. So Gamblers Anonymous, the 12-step model is also available to people suffering from gambling disorder.

 25:16

So with the medication again, thinking about gambling disorder on that impulsivity-compulsivity spectrum, if we think of it as an impulse- impulsive disorder, then again, these- these folks are sort of seeking that rush, looking for that euphoria, and looking for, you know, a hit on that reward pathway. And just like with substance use disorders, if we block the endogenous opioid system, it may reduce the high that they're getting from, from a gambling win.

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So the two substances that have been studied for this, naltrexone and nalmefene, only naltrexone is available PO in the US. And so mostly we'll be talking about naltrexone. And as we know these- these medications block the opioid receptors, decrease dopamine function, and tend to reduce reward cravings. So naltrexone is FDA-approved for opioid and alcohol use disorder. It is not FDA-approved for gambling disorder, but we do have some evidence that it may be helpful. So the studies that we have available show a reduction in gambling outcomes and urges to gamble with daily naltrexone administration. You know, there are some protocols where naltrexone is used as needed. So prior to a gambling episode, someone might start taking naltrexone in order to dampen that reward. But the results from studies using that kind of dosing paradigm have been more mixed. Dosing-wise, there's a pretty large range that has been studied anywhere from 25 to 250 milligrams PO daily, but most of the evidence seems to suggest that naltrexone- a 50 milligram PO daily seems to be as effective as the higher doses. And it appears to work best in patients with either a comorbid alcohol use disorder on their own or a family history of alcohol use disorder. And again, this kind of makes sense. Because,

you know, there may be something about the reward pathway and the reasons for their- their gambling that have some overlap with alcohol use disorder. And we know naltrexone can be helpful for alcohol use disorder.

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One other thing to mention is that there commonly can be comorbid alcohol use disorder with gambling disorder because one of the things that casinos tend to do to kind of hook people and keep them gambling is to offer free alcohol. So again, it's an access issue. It's you know, waitresses are coming- waiters, waitresses are coming around with- offering you alcohol while you're gambling. You know, kind of disinhibits you, relaxes you, makes you more likely to make big bets, that sort of thing. So the casino is very incentivized to kind of give you alcohol to keep you gambling.

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On the other side of the spectrum, treating gambling disorder as a compulsive disorder, we think about SSRIs for that. They are frequently investigated for- investigated and used for compulsive disorders like OCD, hoarding and trichotillomania. As we know they block serotonin reuptake, increasing serotonin function, and they're used for treatment of mood and anxiety disorders. Again, they are FDA-approved for mood depression and anxiety but not for gambling disorder. Fluvoxamine, paroxetine, and escitalopram are the most studied for gambling disorder. It's unclear if the use of SSRIs helps decrease urges to gamble, but it may reduce that self-medication behavior.

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So again, if we're thinking of gambling disorder, as a compulsive disorder, we're thinking about it... People are using it to decrease negative aspects like anxiety and depression. And so we treat that anxiety and depression even if it's not rising to the level of an actual comorbid, pathologic depression or anxiety, then it may reduce the gambling behavior, and it may require higher- higher than usual doses for treatment.

 29:17

So we're gonna switch gears and talk briefly about internet gaming disorder. And I say briefly, because this is not a formal diagnosis in the DSM. As I said before, it is included as a condition for further study. So we do have some information about it, but as far as an actual diagnosis, we- you know, there is not even agreement necessarily on the criteria. So the proposed criteria are- includes seven of the DSM-5 addiction criteria. Again, these should be familiar to you, but they are tolerance, withdrawal, excessive time spent on gaming, unsuccessful attempts to cut back, loss of interest in other activities, continued use despite negative psychosocial consequences, and failure to fulfill major role obligations.

 30:05

In addition, there's two criteria specific to internet gaming disorder, which are that someone has lied to their family, therapists, or others about the amount of gaming, and that they use games to escape

to their family, therapists, or others about the amount of gaming, and that they use games to escape or relieve negative moods. And that's not- that's pretty much the same as a couple of the gambling disorder criteria about lying about use and using gambling or using the behavior to escape negative moods. This specifically excludes internet gambling, so if someone has a problem with internet gambling that would actually fall under gambling disorder. It excludes social and recreational internet use and sexual websites.

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So it is in the ICD-11. Here are the criteria for it. So: pattern of persistent or recurring gaming behavior, which may be online or offline, manifested by impaired control over the gaming, increased priority given to gaming and continuation or escalated- escalation of gaming despite the occurrence of negative consequences. It is sufficiently impairing to result in significant impairment in personal, family, social, educational, occupational, or other important areas of functioning. So sort of generally speaking, again, these are familiar from other, you know, addiction diagnoses. You have a lack of control over the behavior, and you have continued use despite negative consequences, and you have significant impairment in functioning.

 31:34

Who's playing? So the Entertainment Software Association conducts a survey each year. It is a very popular pastime and increased in popularity over the pandemic. But 226.6 million Americans play video games. The average player tends to be white, maybe of either gender and is- skews perhaps a bit older than what people might think. So average age is 31 actually, and in 2021 28% of people who played video games were actually over the age of 45.

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As I said before, the clinical presentation has more to do with life impact than the amount of time played, although that is controversial. So in some proposed criteria, the amount of time played actually is included as a criteria, and others do not feel that it's necessarily relevant, it more has to do with what are they giving up because of their play.

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It often but not always occurs in patients with other comorbidities, especially substance use disorders and mood disorders. And the global prevalence appears to be about 2-3%, with males 2.5 times as likely to be diagnosed as females.

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It seems to be more common in Asian countries, especially China, Taiwan and South Korea. Although internet access in those countries is... especially in South Korea, is more available, and gaming is a viable profession in those countries. We do have some eSports and things here but it's not as robust as it is in Asia.

 33:07

Risk factors for problematic play include certain personality traits, including neuroticism, aggression, and hostility and sensation-seeking. Motivation- certain motivations for play might put people more at risk for problematic play, so escapism, ways of manifesting control and avoiding dissatisfaction, and some structural game characteristics, such as the games being online, the ability to customize a virtual game persona, and specific game reinforcement structures. If you do not play games, this might not make a lot of sense to you. But we don't have time to kind of go into that today. But massively multiplayer online role playing games are a particular area of interest in research, because of the way the games are designed and the way they tend to hook players.

 33:56

Imaging studies: just like with gambling disorder, the imaging studies are essentially what you would see with other addictions. So the same structures are involved: ventral tegmental area and nucleus accumbens, the prefrontal cortex- cortex, the orbitofrontal cortex, and so on. So I'm not going to get into too much of the nitty-gritty there. Here's just a few studies for your reference.

 34:23

And treatment: Again, similar to gambling disorder consists mainly of behavioral therapies, cognitive behavioral therapy, and just straight- straight behavioral therapy, and 12-step approaches.

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Medication management: again, off-label just like gambling disorder, and the evidence base is actually even poorer than for gambling disorder. So potential agents are mainly the same ones as we see research for substance use disorder. So again, the SSRIs and the opioid antagonists, but there really isn't enough research to strongly support their use. And there are treatment centers that originally arose in Asia and Europe, but they now exist in North America as well. These are essentially rehabs for Internet gaming disorder.

 35:10

So in summary, behavioral addictions fall on an impulsivity-compulsivity spectrum of illness. The DSM-5 only recognizes one disorder officially: gambling disorder. Although another one, Internet gaming disorder, is included as a condition for further studies. Psychosocial treatments, especially behavioral therapies do work. Medications have fallen short so far, but if you are considering a medication, the ones that have the best evidence for efficacy are naltrexone and SSRIs. And that is it. Thank you very much. And again, any questions you have, please put them in the chat