Sex Addiction, Neuroscience
Trauma and More!

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Is Sex an Addiction?

- DSM III-R contained a category called "non-paraphilic sexual addiction"
- Various authors have argued for different terms
  - "Compulsive" (OCD, Coleman, 2003)
  - "Addictive" (Fenicehel, 1945, Carnes, 1983)
  - "Impulsive" (Barth and Kinder, 1987)
  - "Hypersexual" (Stein et al., 2000, Reid/Kafka)
- Criteria across these different conceptualizations are similar
- Is not in DSM-V
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<tbody>
<tr>
<td>Recurrent failure (pattern) to resist sexual impulses to engage in specific sexual behavior</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Frequent engaging in those behaviors to a greater extent</td>
<td>X</td>
<td>X</td>
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<td>Persistent desire or unsuccessful efforts to stop, to reduce, or to control behaviors</td>
<td>X</td>
<td>X</td>
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<td>Inordinate amount of time spent in obtaining sex, being sexual, or recovering from sexual experiences</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Preoccupation with the behavior or preparatory activities</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<td>Frequent engaging in the behavior when expected to fulfill occupational, domestic, or social obligations</td>
<td>X</td>
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<td>Continuation of behavior despite knowledge of having persistent or recurrent social, financial, psychological, or physical problem that is caused or exacerbated by the behavior</td>
<td>X</td>
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<td>Need to increase the intensity, frequency, number or risk of behaviors to achieve the desired effect or diminished effect with continued behaviors at the same level of intensity</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Giving up or limiting social, occupational, or recreational activities because of their behavior</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Distress, anxiety, restlessness, or irritability if unable to engage in the behavior</td>
<td>X</td>
<td>X</td>
<td>X</td>
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Sex Addiction Defined

A pathological relationship to a mood altering experience (sex) that the individual continues to engage in despite adverse consequences.
“Addiction is a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.”

“Addiction also affects neurotransmission and interactions between cortical and hippocampal circuits and brain reward structures, such that the memory of previous exposures to rewards (such as food, sex, alcohol and other drugs) leads to a biological and behavioral response to external cues, in turn triggering craving and/or engagement in addictive behaviors.”

4 years – 80 neuroscientists
Sex Addiction vs Alcoholism

- Numb feelings
- Escape painful parts of life
- Mood altering
- Becomes central to life
- Becomes most important need
Addiction Criteria
Loss of Control

Clear Behavior in which you do more than you intend or want.
Compulsive Behavior

A pattern of out of control behavior over time.
Efforts to Stop

Repeated specific attempts to stop the behavior which fail.
Significant amounts of time lost doing and/or recovering from the behavior
Preoccupation

Obsessing about or because of the behavior
Inability to Fulfill Obligations

The behavior interferes with work, school, family, and friends.
Continuation Despite Consequences

Failure to stop the behavior even though you have problems because of it (social, legal, financial, physical, work.)
Escalation

Need to make the behavior more intense, more frequent, or more risky.
Losing, limiting, or sacrificing valued parts of life such as hobbies, family, relationships, and work
Withdrawal

Stopping behavior causes considerable distress, anxiety, restlessness, irritability, or physical discomfort
Sex Addiction vs Sex Offending

- Antisocials (especially w/ sex offenders) w/out addiction
  - History of physical abuse
  - Lacking remorse an shame
  - More force/ violence in the offense
  - History of other types of offenses
  - More impulsive (not as many sexual urges)
  - Distortions and denial
  - Decreased amenability for treatment
Sex Addiction

- Sex Addicts
  - High shame
  - Emotional and sexual abuse in background
  - Highly sexualized (lots of preoccupation)
  - Multi-addicted
  - Less defenses
  - High potential for suicide
  - Increased amenability for treatment
Differential Diagnosis – DSM - 5

- DSM-5 - Possibilities:
  - Other Specified Disruptive, Impulse Control and Conduct Disorder
  - Other Specified Sexual Dysfunction
  - Unspecified Paraphilic Disorder

- Rule out/ or in:
  - Antisocial / Narcissistic personality disorder
  - Paraphilia
  - Bipolar affective disorder
  - PTSD
  - Substance induced disorder
  - OCD
  - Delirium, dementia, or other cognitive disorder
Paraphilias are not Sex Addiction

- DSM V Paraphilias include: exhibitionism, fetishism, frotteurism, pedophilia, sexual masochism, sexual sadism, voyeurism, and transvestic fetishism.

- In DSM – V – new definition must include “psychological distress” or “distress, injury or death of unwilling persons – or those not of legal age”
Etiology

The making of a sex addict
Etiology

- Trauma and abuse
- Biology/Neuroscience/Sexual Conditioning
- Family Dynamics/Attachment
Trauma
Trauma and Abuse History

- Most came from families were abuse and trauma were present.
- 72% experienced physical abuse
- 81% experienced sexual abuse
- 97% experienced emotional abuse
- In addition, they came from families where shame was present.
“CSB (Compulsive Sexual Behavior) has been strongly linked to early childhood trauma or abuse, highly restricted environments regarding sexuality, dysfunctional attitudes about sex and intimacy, low self-esteem, anxiety, and depression.”

“Sexual addiction is strongly anchored in shame and trauma. Research conducted over the last fifteen years has consistently shown the prevalence of emotional, physical, and sexual abuse in this population.”

Recent Research

- Recent Study (2012) found 39% of gay and bisexual men with compulsive sexual behavior had experienced childhood sexual abuse.
- These findings are “largely consistent with previously studied self-identified community samples of individuals with CSB (Black et al., 1997; Kafka & Prentky, 1992).
- This finding is in line with Briere and Runtz’s (1990) report that childhood sexual abuse was uniquely associated with maladaptive sexual behavior, and with previous literature supporting childhood sexual abuse as a possible etiological factor in CSB development (Perera et al., 2009) (p.419).”

Neuroscience & Sexual Conditioning
Addictions start in the reward center

- Neuroanatomically known as the mesolimbic dopamine pathway
- Connects the Ventral Tegmental Area to the Nucleus Accumbens
  - These areas are tied to impulsivity, pleasure reinforcement learning and reward
- Also interacts with amygdala, hippocampus, frontal cortex
- Together these areas modulate pleasure, memory, attention, and motivation
The reward center serves an evolutionary purpose

- Encourages activities necessary for survival
- Food, Sex, “Natural addictions”
- “Reptilian Brain”
Addiction Involves…..

- **Sensitization** – repeated administrations of a stimulus results in amplification of a response
  - Cues create cravings
  - The addiction becomes more compelling than other areas of life

- **Desensitization** – The more consumed – the less activity in the reward circuit
  - Less sensitive to pleasure
  - Tolerance develops after desensitization

- **Hypofrontality** – Decreased executive control functioning
Koob: “The dark side of addiction”

- When the reward center can no longer be returned to its homeostatic set point it enters an “allostatic” state
- Reward system has an altered set point
- Leaves the individual susceptible to dependence and relapse
- Withdrawal is not about the physiological effects of a specific substance — it is the negative affect resulting from this allostatic state
"The truth is that just liking sex a lot doesn't make you a sex addict, and just cheating or engaging with prostitutes or other anti-social behavior doesn't make you a sex addict. If you are a sex addict, just like a heroin addict ... you are at the point where you are having sex not because you are deriving pleasure from it, but because you need to do that just to fall asleep at night and face the day, and not have withdrawal symptoms. So while true sex addiction is rare, it is one of many very real addictions that stem from the way the human brain feels - or doesn't feel - pleasure."

- The Compass of Pleasure: How Our Brains Make Fatty Foods, Orgasm, Exercise, Marijuana, Generosity, Vodka, Learning, and Gambling Feel So Good
Red indicates a high number of receptors for dopamine. People short of dopamine have difficulty feeling joy.

Hans Breiter, director of the Motivation and Emotion Neuroscience Center at Massachusetts General Hospital
“An orgasm is the primary natural blast of dopamine available to all of us. Accordingly, J.R. Georgiadis (2006) scanned the brains of people having orgasm. He said they resembled scans of heroin rushes. These individuals experienced one of the most addictive substance ever produced: dopamine. Orgasms and addictive substances or behaviors have two things in common. They produce an initial pleasurable experience, and both are followed by neurochemical fluctuations that appear to continue for a week or two (p.137).”

Effects of Drugs on Dopamine Levels

**AMPHETAMINE**
- DA: orange line
- DOPAC: blue line
- HVA: green line
- Time: 0-5 hr
- Basal Release: %

**COCOAINE**
- DA: orange line
- DOPAC: blue line
- HVA: green line
- Time: 0-5 hr
- Basal Release: %

**NICOTINE**
- Accumbens: red line
- Caudate: blue line
- Time: 0-3 hr
- Basal Release: %

**ETHANOL**
- Dose (g/kg ip)
  - 0.25: orange line
  - 0.5: blue line
  - 1: green line
  - 2.5: yellow line
- Time: 0-4 hr
- Basal Release: %

Source: Di Chiara and Imperato
Natural Rewards Elevate Dopamine Levels

**FOOD**

- Graph showing the time (min) on the x-axis and % of Basal DA Output on the y-axis.
- NAc shell
- Empty Box and Feeding

**SEX**

- Graph showing DA Concentration (% Baseline) on the y-axis.
- Sample Number from 1 to 17.
- Copulation Frequency from 0 to 15.
- Events: Mounts, Intromissions, Ejaculations

Source: Di Chiara et al.

Source: Fiorino and Phillips
Reward deficiency syndrome

- Genetic pre-disposition to addiction
- Carriers of the DRD2-A1 gene have fewer dopamine receptors
- More likely to have disruption in mesolimbic reward system
- Results in hypodopamnergic state that yields a predisposition to addiction
- Congenital chemical imbalance
- Over-represented in samples of drug and alcohol addiction, gambling, CSB, compulsive gaming, work and shopping
Higher hours per week/more years of porn viewing correlated with a reduction in grey matter in sections of the reward circuitry (translates into sluggish reward activity, or a numbed pleasure response – desensitization)

Simone Kühn - "That could mean that regular consumption of pornography more or less wears out your reward system."

Simone Kühn continued - "We assume that subjects with a high porn consumption need increasing stimulation to receive the same amount of reward."
Compulsive porn users react to porn cues in the same way that drug addicts react to drug cues.

Compulsive porn users craved porn (greater wanting), but did not have higher sexual desire (liking) than controls. This finding aligns perfectly with the current model of addiction.

Over 50% of subjects (average age: 25) had difficulty achieving erections with real partners, yet could achieve erections with porn.
Enhanced Attentional Bias towards Sexually Explicit Cues in Individuals with and without Compulsive Sexual Behaviors – Voon et al. 2014

“Our findings of enhanced attentional bias in CSB subjects suggest possible overlaps with enhanced attentional bias observed in studies of drug cues in disorders of addictions. These findings converge with recent findings of neural reactivity to sexually explicit cues in CSB in a network similar to that implicated in drug-cue-reactivity studies and provide support for incentive motivation theories of addiction underlying the aberrant response to sexual cues in CSB.”
Sex addicts focus a higher-than-normal share of their attention on addiction related cues (i.e., pornography), doing so in the same basic ways and to the same basic degree as other addicts.

The brain response of sex addicts exposed to sexual stimuli (i.e., pornography) mirrors the brain response of drug addicts when exposed to drug-related stimuli. For example, the dorsal orbital prefrontal cortex lights up just as it does with substance addicts. Equally important is the fact that this region goes below baseline for neutral stimuli, the same as with substance abusers. In other words, the dorsal orbital prefrontal cortex overreacts to addiction cues and underreacts to neutral cues in all forms of addiction, including sexual addiction.
Laier, Schulte and Brand (2013) examined the effect of sexual arousal during internet sex on Working Memory (WM).

- Found worse performance of WM for pornographic pictures compared to neutral, negative and positive stimuli.
  - Results moderated by need to masturbate and sexual arousal suggesting this arousal interferes with working memory processes.

- Authors concluded that the cognitive problems often reported by people with sexual addiction following pornography consumption (forgetfulness, neglecting responsibilities, missing appointment, etc.) may be accounted for by the interference with WM related to pornographic material.

Sexual Picture Processing Interferes with Decision-Making Under Ambiguity

- Decision-making research has shown that decisions under ambiguity are influenced by consequences received following earlier decisions. Sexual arousal might interfere with the decision-making process and should therefore lead to disadvantageous decision-making in the long run.

- Results demonstrated an increase of sexual arousal following the sexual picture presentation. Decision-making performance was worse when sexual pictures were associated with disadvantageous card decks compared to performance when the sexual pictures were linked to the advantageous decks. Subjective sexual arousal moderated the relationship between task condition and decision-making performance.

- This study emphasized that sexual arousal interfered with decision-making, which may explain why some individuals experience negative consequences in the context of cybersex use.

Important findings in this study are that neither time spent viewing porn on the Internet nor personality factors were associated the level of reported problems with Internet porn use.

Instead, it was intensity of the experience and amount of novelty (different applications opened).

“It has generally been assumed that predisposing personality problems are what make porn addiction possible, but it may be dopamine levels, quite apart from personality.”

As it turns out, the level of reported psychological problems (e.g., social anxiety, depression, and compulsivity) appears to be related to how intense the arousal produced, and the number of applications used (degree of novelty).

"Although we did not examine brain correlates of watching Internet pornographic pictures in our study, we found the first experimental evidence for the potential link between subjective reactivity on Internet pornographic stimuli and a tendency toward cybersex addiction."

Gary Wilson: “It's already established in studies on both internet porn addiction and internet videogaming addiction, that symptoms do not correlate with "hours of use." Instead of just current hours of use, a combination of variables appear to correlate best with porn-induced ED.

1. Ratio of masturbation to porn versus masturbation without porn
2. Ratio of sexual activity with a person versus masturbation to porn
3. Gaps in partnered sex (where one relies only on porn)
4. Virgin or not
5. Total hours of use
6. Years of use
7. Age started using porn
8. Escalation to new genres
9. Development of porn-induced fetishes (from escalating to new genres of porn)
10. Addiction-related brain changes or not
11. Presence of hypersexuality/porn addiction
Our clients experience

- Powerful sexual conditioning and learning
- Neuroplastic change
- Structural changes in the brain
- Deficits in areas of functioning (e.g. memory, decision making)

- 23 articles on the neuroscience of sex addiction…
  - Embedded in a large body of research on behavioral addictions (130 behavioral addiction articles - e.g. 70 brain articles on internet addiction)
  - Longitudinal research in other areas
Families & Attachment
Families of Sex Addicts

77% RIGID
87% DISENGAGED
Attachment varies by gender and sexual orientation
Attachment Style - Norms vs. Addict Sample

Secure

Preoccupied

Anxious

Avoidant

Men - Norms

Women - Norms

Men - Addict Sample

Women - Addict Sample

Dismissive Avoidant

Fearful Avoidant

Assessment
Assessment Tools

- SAST-R 2.0
- PATHOS
- SDI-R
1) Do you often find yourself preoccupied with sexual thoughts? (Preoccupied)
2) Do you hide some of your sexual behavior from others? (Ashamed)
3) Have you ever sought help for sexual behavior you did not like? (Treatment)
4) Has anyone been hurt emotionally because of your sexual behavior? (Hurt)
5) Do you feel controlled by your sexual desire? (Out of control)
6) When you have sex, do you feel depressed afterwards? (Sad)
Comprehensive battery of tests

- SAST
- Diagnostic Criteria, Anorexia, Collateral Indicators
- Co-morbid Addiction screen
- Financial Costs
- Consistency, exaggeration
- Attachment Style
- Readiness for Change
MULTIPLE ADDICTIONS
Frequencies of Multiple Addictions
\(N = 1604\)

- Alcohol was the most frequently co-occurring addiction in both males and females at 46\%, however in gay males drug abuse was most frequent 54\%.
- Gay males also scored higher on high risk/dangerous behaviors
- Women scored higher on compulsive spending, compulsive eating, and compulsive cleaning
Collateral Indicators
\((N = 1604)\)

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<th>Heterosexual Males</th>
<th>Heterosexual Females</th>
<th>Homosexual Males</th>
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<tr>
<td>Meets diagnostic criteria for another addictive disorder</td>
<td>69%</td>
<td>79%</td>
<td>80%</td>
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<td>Simultaneously uses sexual behavior in concert with other addictions</td>
<td>40%</td>
<td>40%</td>
<td>60%</td>
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<td>Reports other family members are addicts</td>
<td>48%</td>
<td>63%</td>
<td>55%</td>
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Figure 7.1

ACTING OUT

EXTREME CONTROL
- Dieting
- Sex Avoidance
- Alcohol Avoidance
- Drug Avoidance
- Saving, Hoarding
- Risk Aversion
- Compulsive Athleticism

OUT OF CONTROL
- Eating
- Sex and Romance
- Alcohol
- Drugs
- Spending, Debting
- Risk Taking
- Work
- Gambling

ACTING IN
Treatment

- Programmatic care
  - Group
  - 12 step support
  - Educational component
- Celibacy agreement
- Sexual health plan
- Task methodology
- 12 step
- Mindfulness, CBT
- IFS, Trauma treatment, EMDR
- Family / Couple treatment
  - Partner Trauma Treatment
  - Disclosure
For Healing...Three Legged Stool

- Addict’s therapist
  - Individual therapy
  - Support Groups/12 step support
- Partner’s therapist
  - Individual therapy
  - Support Groups
- Couples therapist
Thank you!