

Screening for Sexual Addiction and ADHD in University Students

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Disclosure

- **Faculty:** Garima Aryal and Keanna Wallace
- **Relationship with commercial interests:**
 - Fellowship grant from Janssen Inc., Canada to support some data collection and analysis in the study (not related to the material being presented today)



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Dr. Aitchison's Declaration of Interests

Prior to 2011

- **Research grants:**
 - **Bristol-Myers Squibb and Otsuka Pharmaceuticals Limited; Johnson & Johnson Pharmaceutical Research and Development**
- **Research partnerships:**
 - **GlaxoSmithKline**
- **Invited member of Advisory Boards:**
 - **Johnson & Johnson, Lundbeck, Roche Diagnostics, and Bristol- Myers Squibb and Otsuka Pharmaceuticals Limited**
- **Consultancy fees:**
 - **Bristol-Myers Squibb, Lundbeck, Roche Molecular Systems, Roche Diagnostics, Johnson & Johnson Pharmaceutical Research and Development**
- **Consultancy fees and research support:**
 - **Roche Diagnostics and Roche Molecular Systems**

2017

- **Consultancy for Otsuka Canada Pharmaceutical Inc., and Lundbeck Canada**
- **Research grant from Janssen Inc., Canada**



Learning Objectives

- To become aware of a measure that may be used to screen for sexual addiction (SAST-R)
- To become aware of a measure that may be used to screen for attention deficit hyperactivity disorder (ASRS V1.1)
- To learn the prevalence of screening positive for both measures in a local student study
- To understand the clinical implications of screening positive on both the SAST-R and ASRS V1.1



AddGenes Project

- Genes Associated with Sexual Addiction and Related Conditions (“AddGenes”)
- Partnership between the American Foundation for Addiction Research, Fulbright Canada, the Palix Foundation, and the Government of Alberta*

*Alberta Centennial Addiction and Mental Health Research Chair to KJA, and matching funds for Canada Foundation for Innovation funded infrastructure from Alberta Innovation and Advanced Education



AddGenes Project Objectives

- **Primary aim:** To identify genetic markers associated with:
 - Sexual addiction
 - Other addictions
 - Related behaviours
 - Reward deficiency syndrome → including ADHD



AddGenes Project Objectives (continued)

- **Secondary aim:**

To explore the genetic influences on addictions and related phenotypes in a broader genetic context by conducting a genome-wide association analysis



AddGenes Project

Case Population:

- Adults meeting the diagnostic criteria for sexual addiction
- Recruited from treatment centers in the U.S.
- Recruitment goal → 500 cases, of which 350 have been recruited
- Such a large-scale study of sexual addiction is being conducted for the first time



AddGenes Project

Control population: Recruited at the University of Alberta and the University of Southern Mississippi

- Below threshold (score <6) on the Sexual Addiction Screening Test-Revised (SAST-R)
- Negative for a psychiatric or addiction diagnosis on MINI International Neuropsychiatric Interview version 7.0.2
- Below threshold on multiple measures screening for a reward deficiency phenotype:
 - <4 on the Pathological Gambling Diagnostic Form (PGDF)
 - <50 on the Internet Addiction Test (IAT)
 - <5 on the Fagerstrom Test for Nicotine Dependence (FTND)
 - <25 on the Richmond Compulsive Buying Scale (RCBS)
 - <4 on the ADHD Adult Self-Report Scale V1.1 (ASRS V1.1)
 - <4 on the Self-Administered Standardized Assessment of Personality-Abbreviated Scale (SA-SAPAS)



Control Recruitment

Email Invitation

48,000 emails sent through the Office of the Registrar

Phase 1

Self-report screening questionnaires (addictions and related behaviours)

1011 completed

Phase 2

MINI 7.0.2 to screen for major psychiatric diagnoses, alcoholism and substance abuse

425 completed

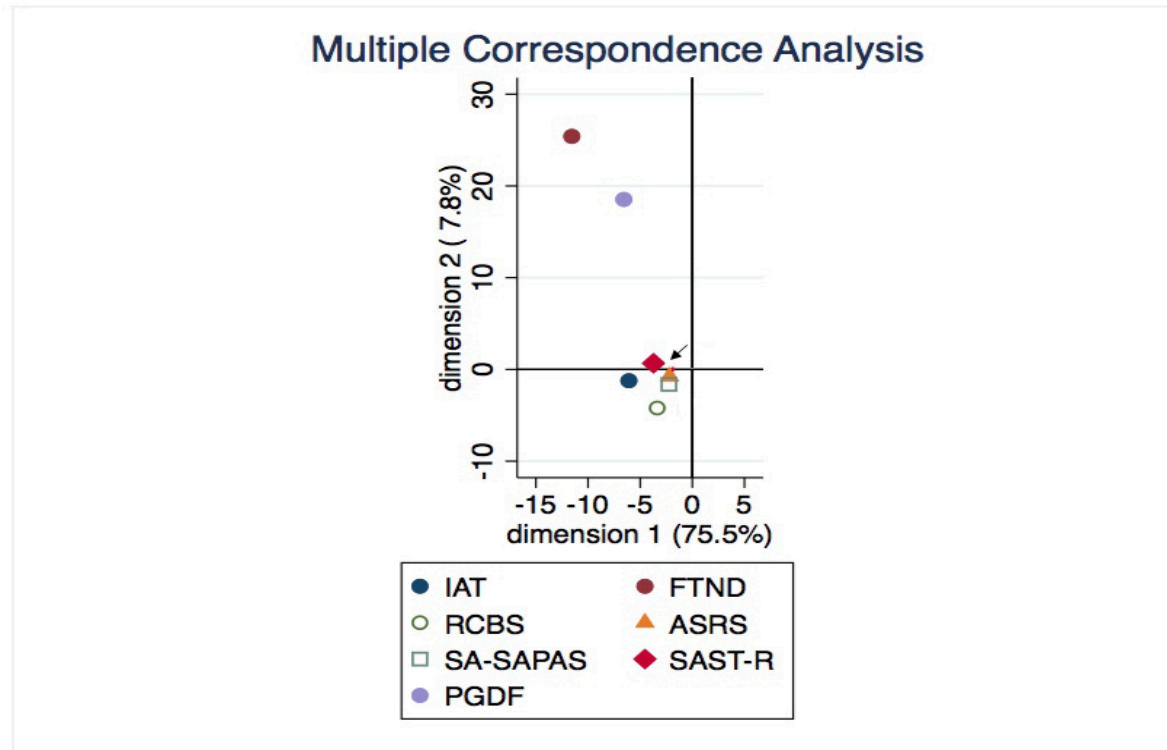
Phase 3

Collection of cheek swabs and/or saliva specimen for genetic analysis

350 control samples collected



Clustering of Phase 1 Screening Data



Sexual Addiction Screening Test – Revised (SAST-R)

- Hypersexuality, compulsivity, preoccupation & ritualization of sexual activity, experience of tolerance and withdrawal, inability to stop or decrease both internal and external behaviours despite negative consequences¹
- Addictions, including sexual addiction, are associated with excessive activity in dopamine-rich areas of the brain²
- **SAST-R:**
 - 45-item self-report questions
 - 20-item core subscale administered
 - Dichotomous scale (Yes/No)

Threshold in controls³

Score of 6 or above → Screen positive
Score below 6 → Screen negative

Predictability³

Sensitivity: 81.7% (in men); 73.7% (in women)
Specificity: 77.8% (in men); 79.2% (in women)



PATHOS Items in the SAST-R³

PATHOS Questionnaire Items

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 others]
5. Do you feel controlled by your sexual desire? [Out of control]
6. When you have sex, do you feel depressed afterwards? [Sad]



Adult ADHD Self-Report Scale (ASRS V1.1)

- Characterized by symptoms of inattention and/or hyperactivity-impulsivity⁴
- **ASRS V.1.1:**
 - 18-item self-reporting tool
 - First 6 items → screening measure

Threshold⁴

Score of 4 or above → Screen positive
Score below 4 → Screen negative

Predictability⁴

Sensitivity: 68.7%

Specificity: 99.5%



Adult ADHD Self-Report Scale - Screening (ASRS V1.1)⁴

Please answer the questions below, rating yourself on each of the criteria shown using the scale on the right side of the page. As you answer each question, place an X in the box that best describes how you have felt and conducted yourself over the past 6 months. Please give this completed checklist to your healthcare professional to discuss during today's appointment.

	Never	Rarely	Sometimes	Often	Very Often
1. How often do you have trouble wrapping up the final details of a project, once the challenging parts have been done?					
2. How often do you have difficulty getting things in order when you have to do a task that requires organization?					
3. How often do you have problems remembering appointments or obligations?					
4. When you have a task that requires a lot of thought, how often do you avoid or delay getting started?					
5. How often do you fidget or squirm with your hands or feet when you have to sit down for a long time?					
6. How often do you feel overly active and compelled to do things, like you were driven by a motor?					



Analysis of Data

1011
Survey
responses

990
Included in
analysis

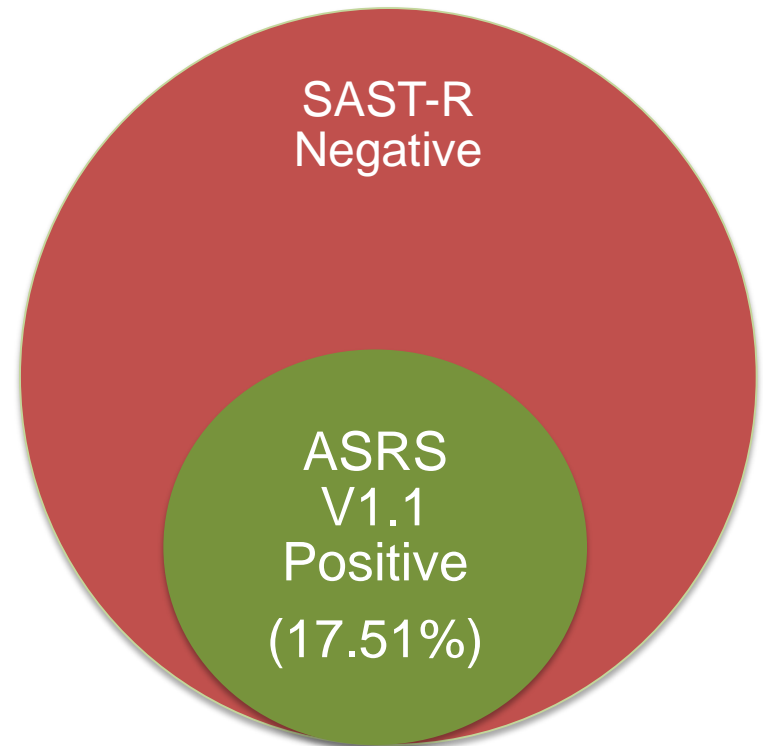
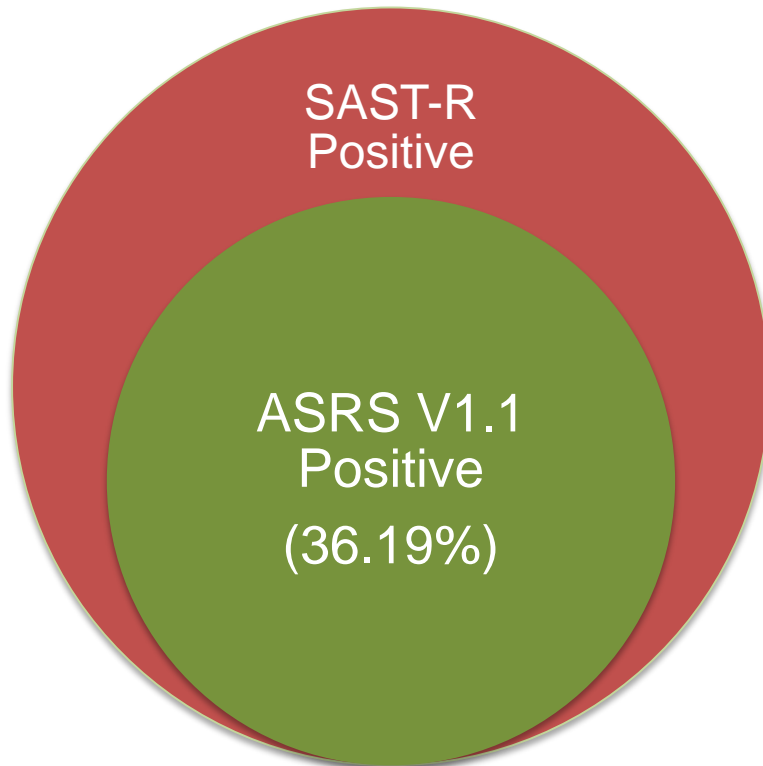
***105 (10.61%)**
SAST-R Screen
positive

193 (19.49 %)
ASRS V1.1 Screen
Positive

- *Comparable to prior data¹
- 16.9% scored above threshold on SAST-R
 - Males: 17.8%
 - Females: 15.5%



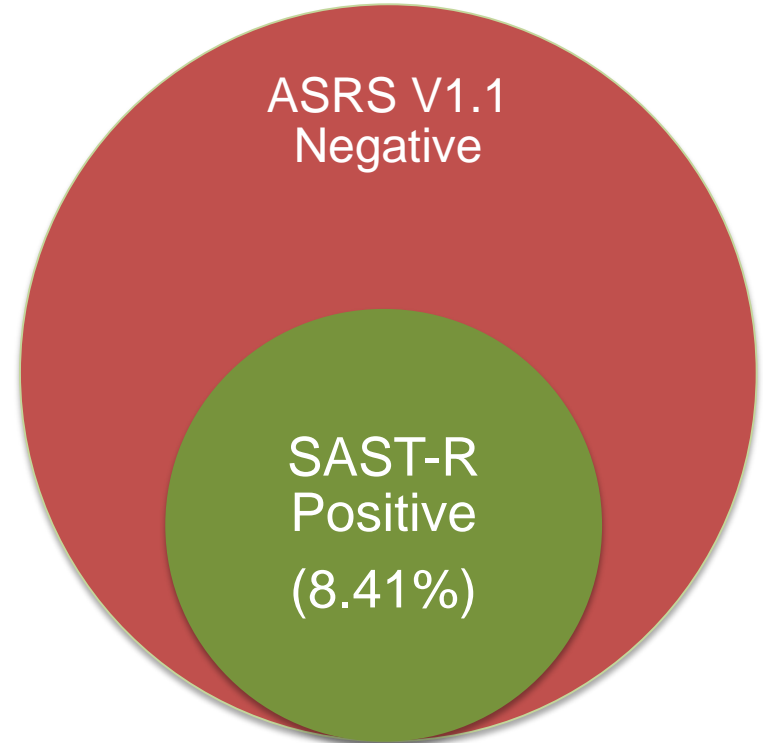
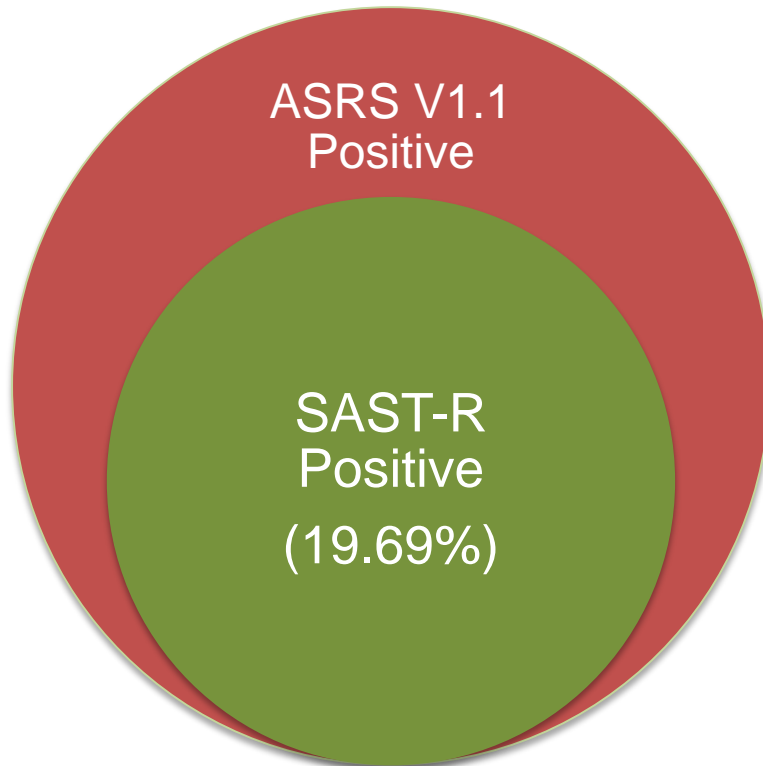
Results



Students screening positive on the SAST-R are **twice as likely** to screen positive for ADHD than students who do not screen positive on the SAST-R.



Results



Students screening positive on the ASRS V1.1 are **more than twice as likely** to screen positive for Sexual Addiction than students who do not screen positive on the ASRS V1.1.



Significance of Results

	ASRS V1.1 Negative (N)	ASRS V1.1 Positive (N)
SAST-R Negative (N)	730	155
SAST-R Positive (N)	67	38

- The observed distribution of the data differed significantly from that expected by chance:

$$X^2 (df = 1, N = 990) = 20.8, p < 0.001)$$



Clinical Implications and Conclusion

- There may be an overlap between ADHD and a risk for sexual addiction
- May be worth considering in the treatment of ADHD
 - Specifically, screening for sexual addiction (using the PATHOS) and other addictions might be helpful prior to prescribing a stimulant type of medication for ADHD
 - A stimulant (e.g., Adderall XR, which contains amphetamines) increases dopaminergic transmission
 - Non-stimulant medications (e.g., Concerta) are available
 - Suggest monitor for addictions pre- and post-treatment of ADHD



Future Directions

- Investigation of the overlap between ADHD and other addictions
 - e.g. IAT (internet addiction) and ASRS V1.1 (ADHD)⁵
- Analysis of medication use data
- Analysis of substance use data
- Analysis of genetic underpinnings of overlapping phenotypes



References

1. Cashwell, C. S., Giordano, A. L., King, K., Lankford, C., & Henson, R. K. (2017). Emotion regulation and sex addiction among college students. *International Journal of Mental Health and Addiction*, 15(1): 16-27.
2. Voon, V., Mole, T. B., Banca, P., Porter, L., Morris, L., Mitchell, S., et al. (2014). Neural Correlates of Sexual Cue Reactivity in Individuals with and without Compulsive Sexual Behaviours. *PLoS ONE* 9(7): e102419. <https://doi.org/10.1371/journal.pone.0102419>
3. Carnes, P., Green, B. & Carnes, S. (2010). The same yet different: Refocusing the Sexual Addiction Screening Test (SAST) to reflect orientation and gender. *Sexual Addiction & Compulsivity*, 17: 7–30.
4. Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., Walters, E. E. (2005). The World Health Organization Adult ADHD Self-Report Scale (ASRS): a short screening scale for use in the general population. *Psychological Medicine*, 35: 245–256.
5. Tateno, M., Teo, A.R., Shirasaka, T., Tayama, M., Watabe, M., Kato, T.A. (2016). Internet addiction and self-evaluated attention-deficit hyperactivity disorder traits among Japanese college students. *Psychiatry Clin. Neurosci.*, 12: 567–572.

