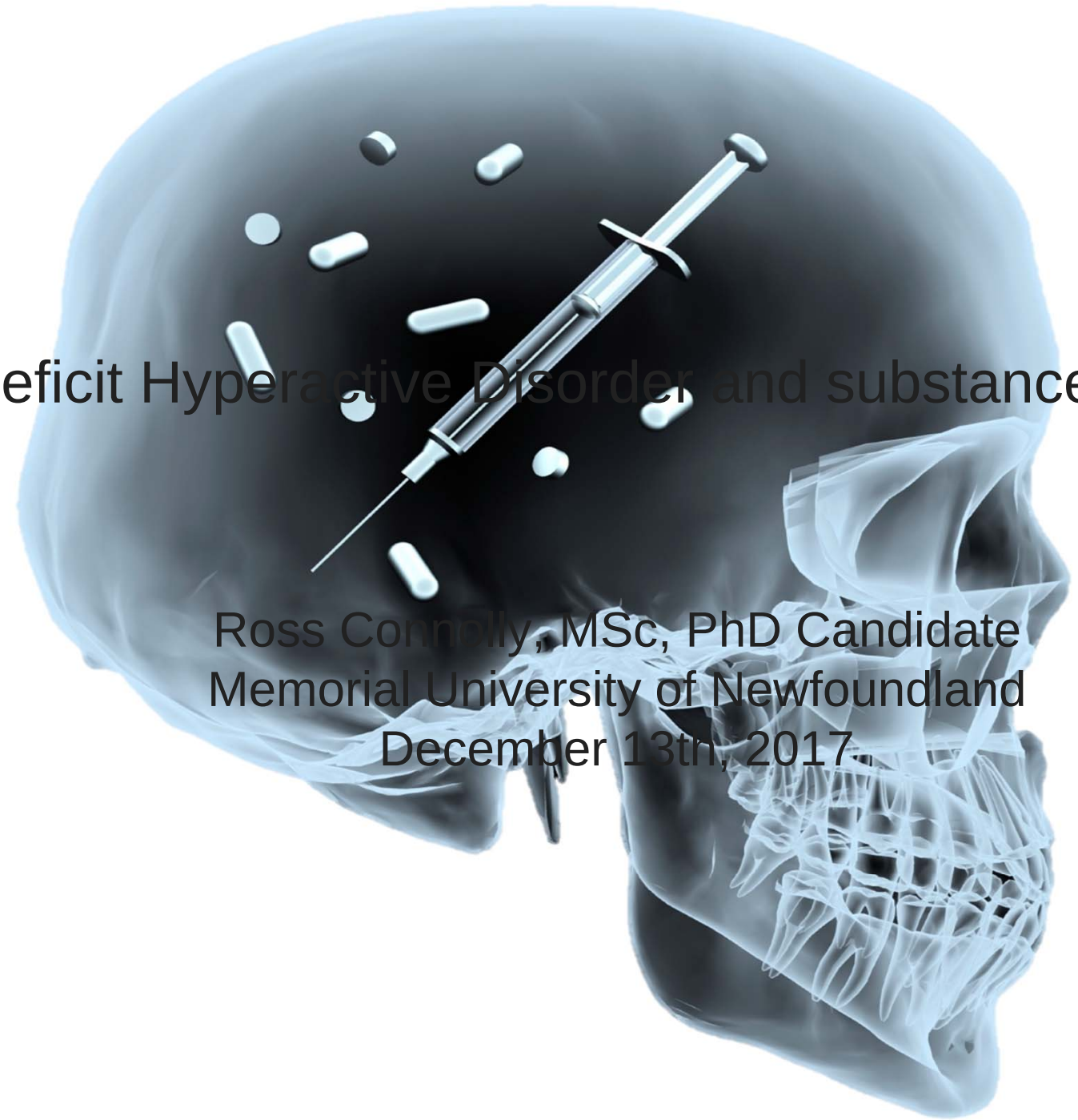
ttention-Deficit Hyperactive Disorder and substance use sympton



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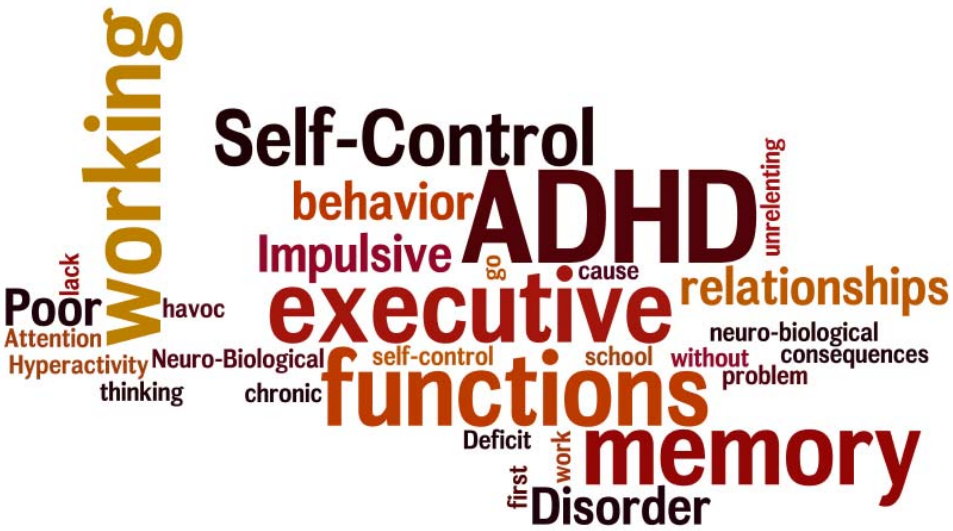
December 13th, 2017

ADHD

- Neurodevelopmental psychiatric disorder
- Defined by impairing levels of inattention, hyperactivity, and impulsivity that interferes with an individual's functioning or development
- Three presentations of ADHD
  - Predominantly inattentive
  - Predominantly hyperactive-Impulsive
  - Combined



SYMPTOMS OF INATTENTION

- Fails to pay close attention to details
- Makes careless mistakes
- Difficulty sustaining attention in tasks
- Appears to not listen when spoken to directly
- Failure to follow through on instructions and failing to complete chores or duties in the work place
- Difficulty organizing tasks and activities
- Often looses things
- Easily distracted by extraneous stimuli
- Forgetful

SYMPTOMS OF HYPERACTIVITY AND IMPULSIVITY

- Fidgeting
- Restlessness
- Inability to quietly engage in leisure activities
- Unable to remain still for extended periods of time
- Excessive talking
- Difficulty waiting one’s turn
- Interrupt or intrude on others

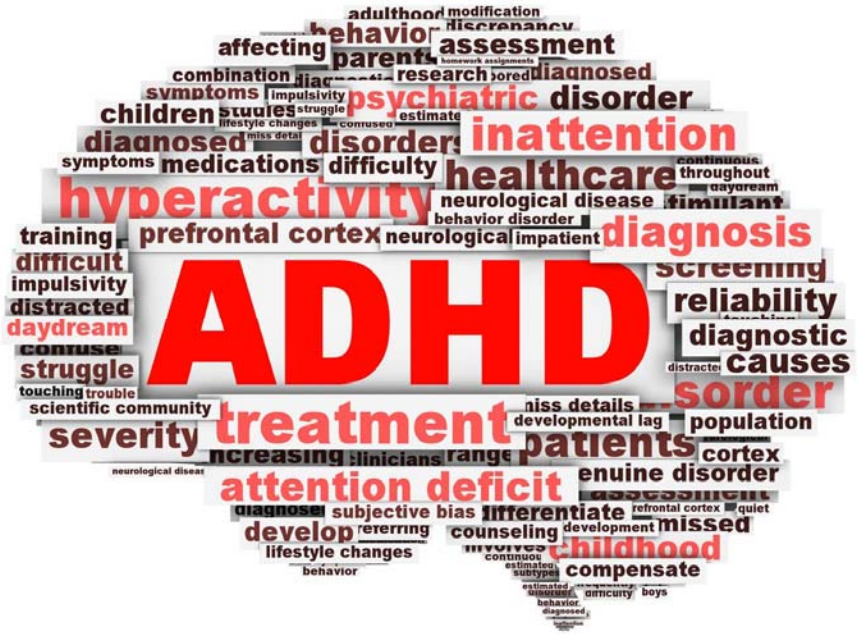
ADULT ADHD

- *DSM-5* (APA, 2013) includes diagnostic criteria that reflects adult ADHD
  - Symptoms persist beyond childhood
  - Symptom presentations change over time

MH COMORBIDITIES

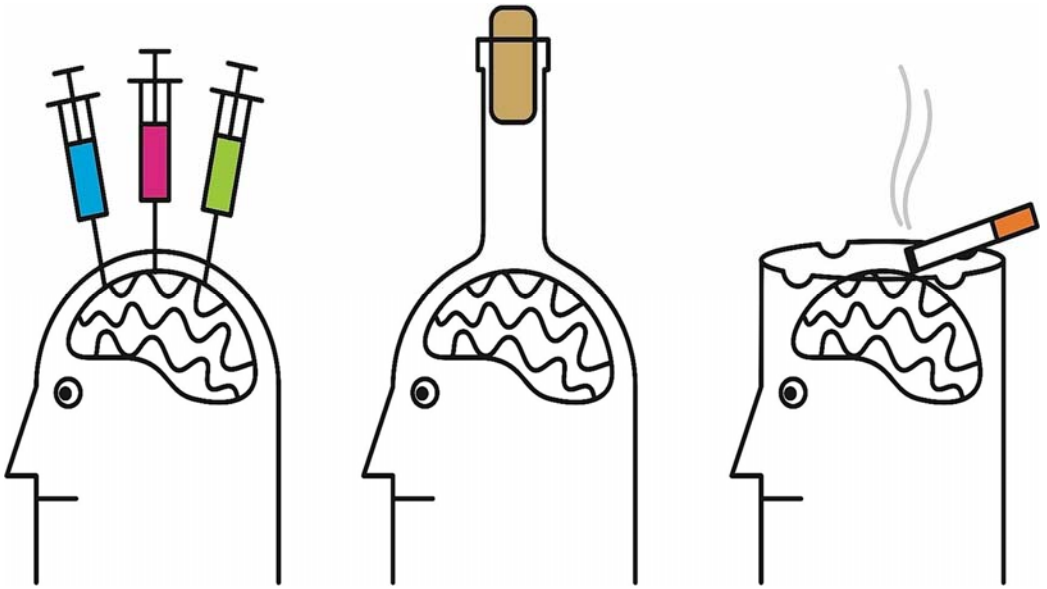
- Associated mental health (MH) disorders
  - Mood disorders
  - Anxiety disorders
  - Learning disorders
  - Substance use disorders

(Biederman et al., 2002; Novik et al., 2006; Rucklidge,2010)



COMORBID SUBSTANCE ABUSE AND ADHD

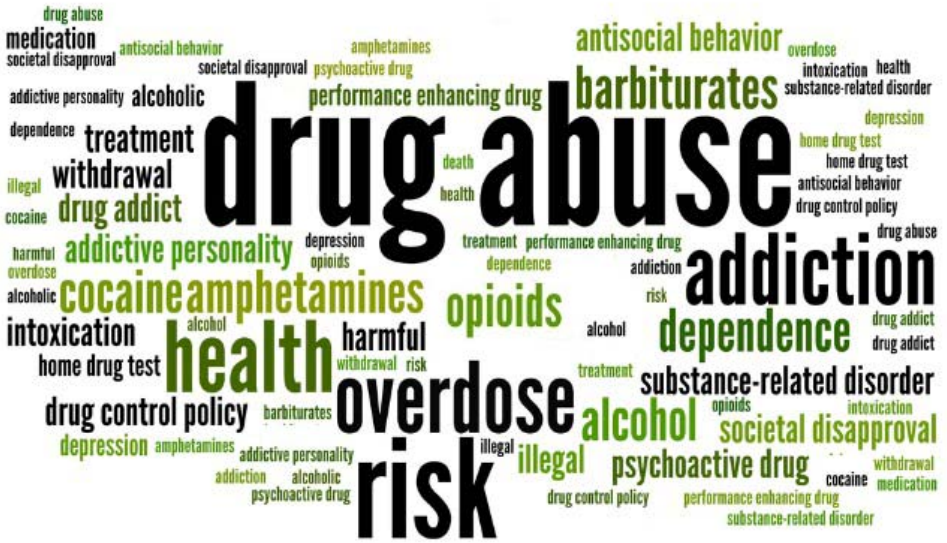
- Prevalence of substance use among those with ADHD is greater than there non-ADHD peers
  - Smoke more cigarettes
  - Consume more alcohol more frequently
  - Use drugs more frequently
- Self-medication
  - Neurotransmitter deficits
  - Relief from negative symptoms
- Self-regulation
  - Inhibitory control deficits
  - Inability to self-manage behaviour or consider their behaviour in the context of past events or future consequences (Michenbaum, 1977)



SUBSTANCE USE

- Nicotine, alcohol, and other drug use can induce sensations of euphoria and well-being, and are able to reduce symptoms of ADHD
- Benefits are generally outweighed by negative consequences
  - Physical health
  - Cognitive ability
  - Work and social life

(McKee, 2001)



NICOTINE

- Naturally derived from the tobacco plant
- Absorbed orally, inhaled intranasally, or smoked
- Binds to nicotinic acetylcholine receptor sites
  - Increases levels of acetylcholine
  - Increased cardiovascular and cortical arousal
- Individuals with ADHD use nicotine to cope with emotional and cognitive deficits
- Health consequences related to cancers and respiratory disease

ALCOHOL

- Depressant with addictive properties
- Produced by fermenting sugars
- 27% of adults with ADHD meet alcohol abuse criteria compared to over19% among non-ADHD individuals
  (Hesson & Fowler, 2015; Wilens, 2011)
- Temporarily alleviates negative symptoms of ADHD
- Health consequences related to liver disease, cardiovascular issues, and cognitive decline

CANNABINOIDS

- Chemical compounds derived from the cannabis sativa or cannabis indica plants
- Tetrahydrocannabinol (THC) is the primary psychoactive compound in cannabis
  (Aizpurua-Olaizola et al. 2016)
  - Binds to cannabinoid receptors throughout the nervous system
  - Calming effect and increased appetite
- Prevalence rate of approximately15% for individuals with ADHD compared to 7% among non-ADHD individuals
  (Hesson & Fowler, 2015; Loflin, Earleywine, De Leo, & Hobkirk, 2014)
- Temporary hallucinations, paranoia
  respiratory problems from long-term smoking

STIMULANTS

- Chemical compounds that cause increased energy and a heightened sense of alertness
  (King & Ellinwood, 2004)

- Activation of the CNS by blocking dopamine receptor sites and preventing reuptake

  - Increases extracellular levels of dopamine
    (Kish, 2009)

- Stimulants have an oppositional effect on those with ADHD

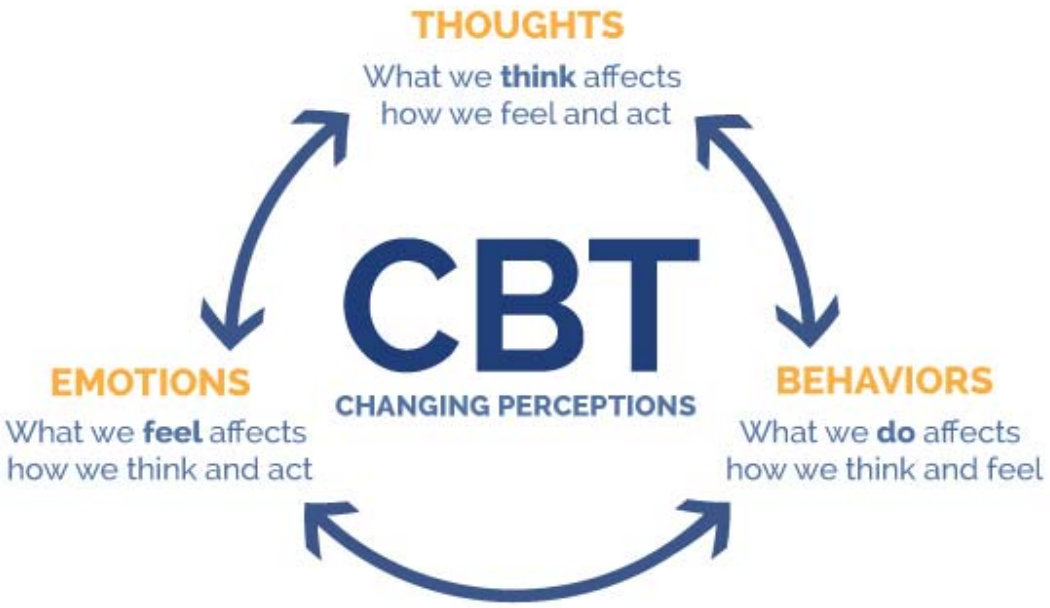
  - Stimulant use can be an indicator of potential ADHD

PHARMACOTHERAPY

- Pharmacotherapy treatment using psychostimulant medications is the mainstay of therapy for ADHD
  (Silver, 2000)
  - Methylphenidate (Ritalin)
  - Dextroamphetamine (Adderall)
- Enhanced attention, better academic performance, and improvements in working memory
  (Adler, Cohen, 2004)
- Reduces psychomotor activity, decreases aggression, and decreases disruptive behaviour
  (Sadock & Sadock, 2000)
- Side-effects and potential for abuse and misuse

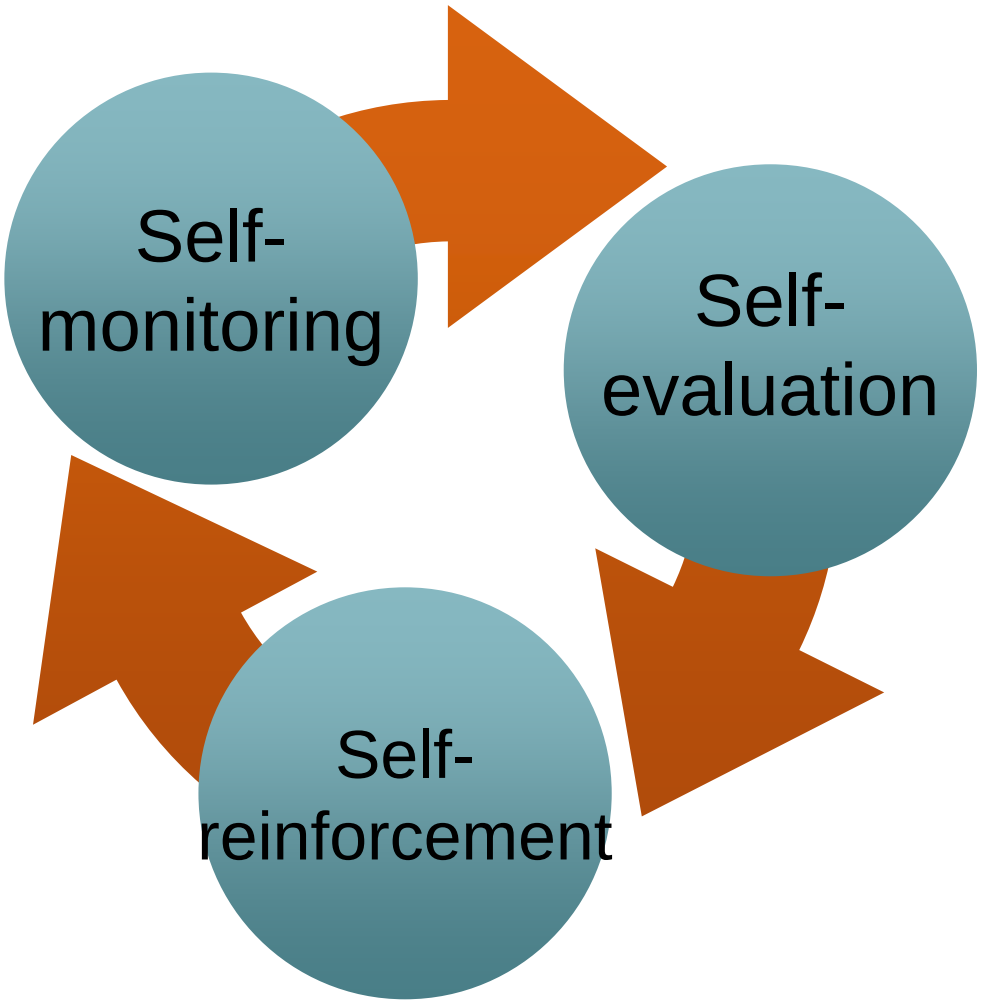
PSYCHOTHERAPY

- Cognitive Behavioural Therapy (CBT)
  - Involves training clients in cognitive and behavioural skills to address ADHD symptoms
    (Knouse, Teller, & Brooks, 2017)
  - Includes skills training in:
    - organization
    - planning
    - time management
    - cognitive reappraisal strategies
    - mindfulness



SELF-MANAGEMENT

- Defined as a high-level executive control process, whereby individuals regulate their own behaviour through a process of negative feedback
- Behaviour is regulated by three independent processes
- Self-management provides a framework for one to formulate and evaluate goals, and is successful because it provides a course of action to reach those goals



STUDY 1

PROBABILITIES OF ADHD AND RELATED SUBSTANCE USE

- Estimate the prevalence and probabilities of smoking, binge drinking, and drug use as it relates to ADHD in a nationwide Canadian sample

PURPOSE

- Examine whether the frequency of smoking, alcohol binge drinking, and illegal or non-prescribed substance use increases with a diagnosis of ADHD

HYPOTHESES

- Hypothesis 1: Increased levels of smoking will be observed more frequently among individuals who report an ADHD diagnosis than among individuals without an ADHD diagnosis

- Hypothesis 2: Increased levels of alcohol binge drinking will be observed more frequently among individuals who report an ADHD diagnosis than among individuals without an ADHD diagnosis

- Hypothesis 3: Substance use will be observed more among individuals who report an ADHD diagnosis than among individuals who did not report an ADHD diagnosis

RESEARCH DESIGN

- Public Use data from the 2012 Canadian Community Health Survey (CCHS; Statistics Canada, 2013)
- Focus of the research was on adults
  - Age categories “15 to 19 years” and individuals aged 65 years and older were not included in the analyses
  - 16 569 respondents included in the study

RESEARCH DESIGN

- Relative Risk Ratio's
  - Hierarchical multinomial logistic regression was used to explore whether or not a diagnosis of ADHD predicted cigarette smoking and binge drinking
- Odds Ratio
  - Hierarchical binary logistic regression was used to explore whether or not a diagnosis of ADHD predicted drug use

RESEARCH DESIGN

- ADHD was assessed as a predictor in Block 1
- Demographic covariates (age, sex, race, marital status, household income, education, and province of residence) were assessed in Block 2
- Mental health covariates were assessed in Block 3

RESULTS

- Type of Smoker
  - ADHD predicted daily smoking in Block 1, and after the inclusion of demographic variables in Block 2
  - ADHD no longer predicted daily smoking with the inclusion of mental health variables in Block 3

RESULTS

- Alcohol Binge Drinking
- ADHD was a significant predictor of the “More than once a week” binge drinking category in Block1, and after the inclusion of demographic variables in Block 2
- The predictive relationship of ADHD and the “More than once a week” category was reduced, but persisted with the inclusion of MH covariates in Block 3
  - 243% more likely to report binge drinking more than once a week than to report binge drinking only once a month

RESULTS

- Substance Use
- ADHD predicted non-prescribed medication and illicit substance use when substance use was regressed onto ADHD in Block 1
- ADHD remained a significant predictor of illicit substance use with the inclusion of demographics covariates in Block 2
- ADHD remained a significant predictor of substance use with the inclusion of MH covariates in Block 3
    - 93% more likely to report substance use than to report no substance use

DISCUSSION

- Individuals self-reporting a diagnosis of ADHD have a greater likelihood of engaging in alcohol binge-drinking behaviours and are more likely to engage in illegal or non-prescribed substance use
- Light to moderate binge drinking was not associated with MH symptoms, while more extreme levels of binge drinking are associated with an increased prevalence of poor MH
- Co-occurring MH disorders may play a significant role in the relationship between smoking and ADHD

STUDY 2

SELF-MANAGEMENT AS A MEDIATING VARIABLE BETWEEN SYMPTOMS OF ADHD AND SUBSTANCE USE

- Investigate whether self-management has potential as a treatment to reduce symptoms of co-occurring ADHD and substance use

UNIVERSITY STUDENTS

- University students are at an increased risk for psychological issues and substance abuse
  - Independent decision making
  - Establish new peer groups
  - Manage unstructured social and academic environments
  - Increased academic rigour of higher education

ADHD STUDENTS

- Particularly vulnerable due to poor time-management, organization, and planning
  (Weyandt & DuPaul, 2009)
- Simultaneous loss of structure and support from parents and educators
  (Eddy, Canu, Broman-Fulks, & Michael, 2015)
- Increased risk of academic failure
  - Lower grade point averages
  - More likely to be on academic probation
  - Less likely to complete their program

RESEARCH QUESTIONS

- Is self-management related to ADHD symptoms, nicotine use, alcohol use, and drug use?
- Is self-management a mediating variable in the relationships between ADHD symptoms and nicotine dependence, alcohol use, and drug use?

HYPOTHESES

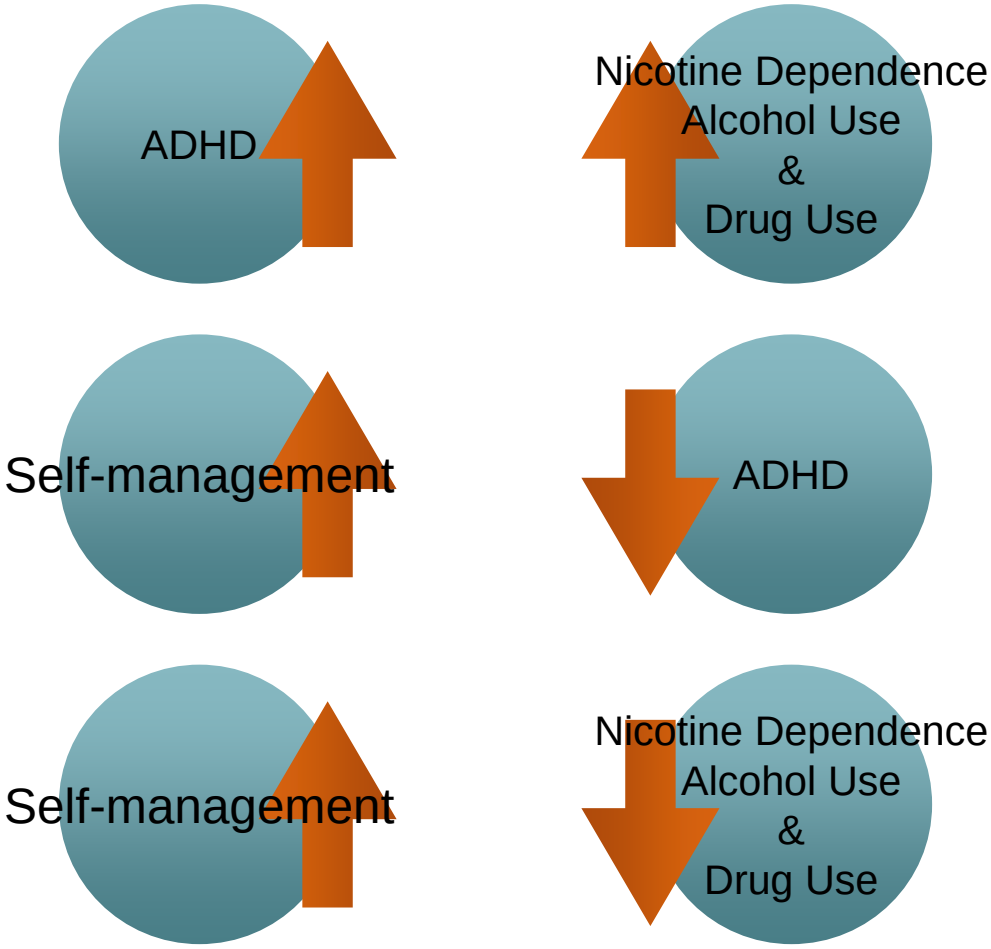
- Hypothesis 1: Higher levels of ADHD symptoms would be positively related with higher levels of nicotine use, alcohol use, and drug use
- Hypothesis 2: It is predicted that self-management will be negatively related to ADHD, nicotine use, alcohol use and drug use
- Hypothesis 3: Relationships between ADHD and nicotine use, alcohol use, and substance use will be mediated by self-management

RESEARCH DESIGN

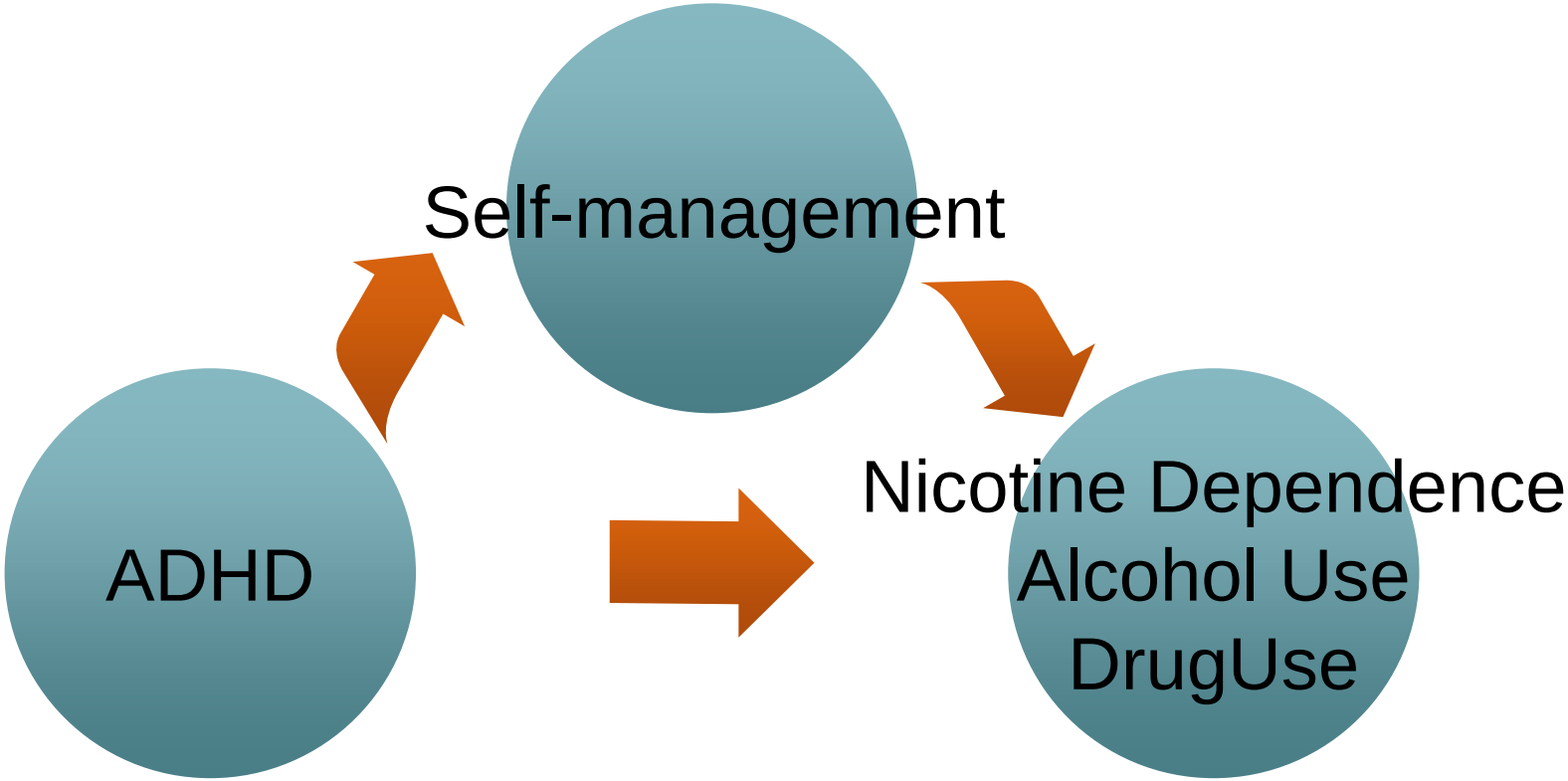
- 141 Undergraduate students
- 6 measure questionnaire packet
  - Demographics
  - ADHD
    - Conners Adult ADHD Rating Scale – Self-Report: Short Version (CAARS-S:S; Conners, Erhardt, & Sparrow, 1999)
  - Self-management
    - Self-Control and Self-Management Scale (SCMS; Mezo, 2009)
  - 3 substance use measures
    - Fagerström Test for Nicotine Dependence (FTND; Heatherton, Kozlowski, Frecker, & Fagerström, 1991)
    - Michigan Alcoholism Screening Test (MAST; Selzer, 1975)
    - Drug Abuse Screening Test (DAST-20; Skinner, 1982)

CORRELATION RESULTS

- ADHD was positively related to nicotine dependence, alcohol use, and drug use
- Self-Management was negatively related to ADHD
- Self-Management was negatively related to nicotine dependence, alcohol use, and drug use



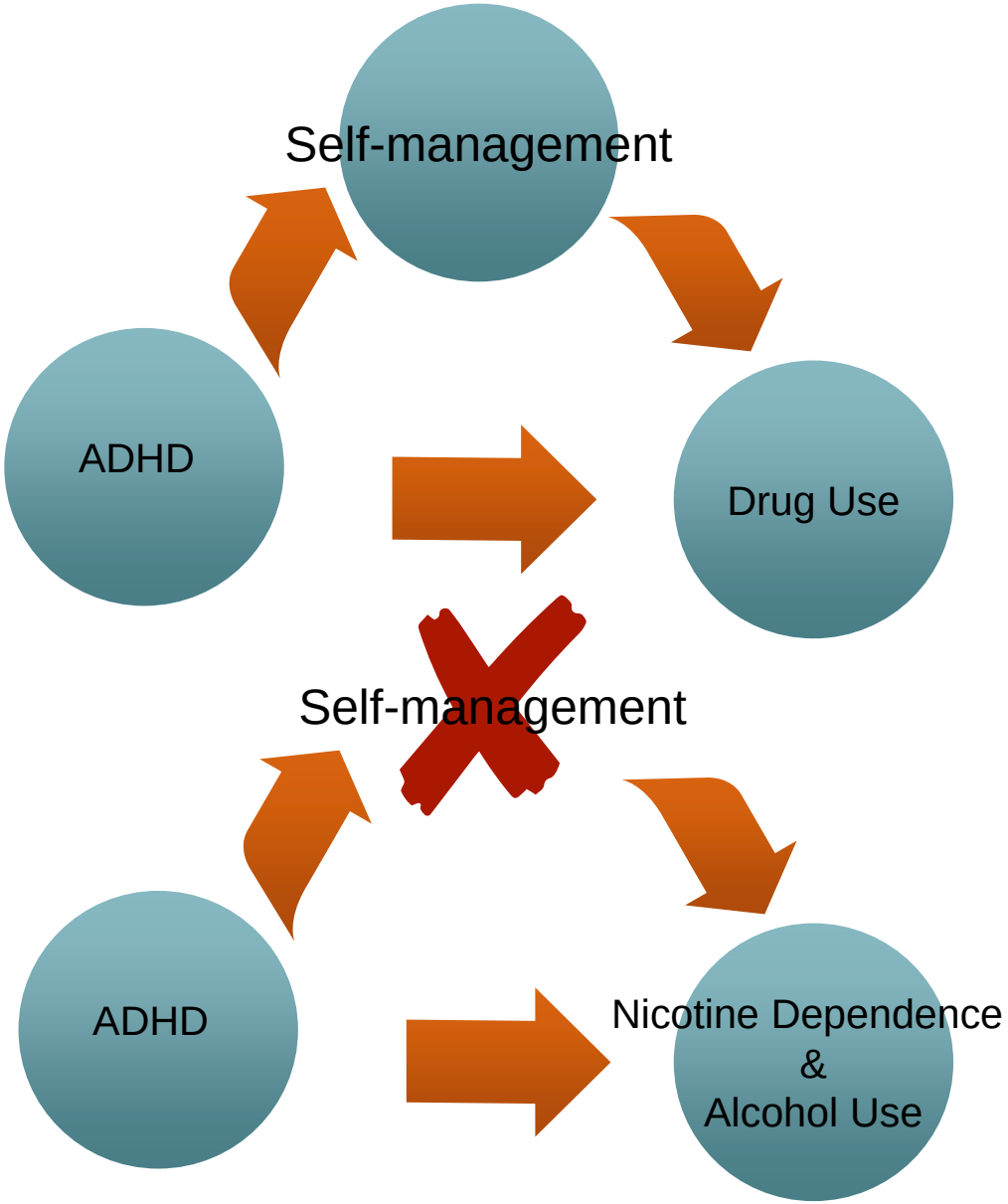
MEDIATION ANALYSES



- Examine the mediating effects of self-management between ADHD and nicotine dependence, alcohol use, and drug use

MEDIATION RESULTS

- Self-Management was a significant mediator between ADHD and drug use
- Self-Management was not a significant mediator between ADHD and nicotine dependence or alcohol use



STUDY 2 DISCUSSION

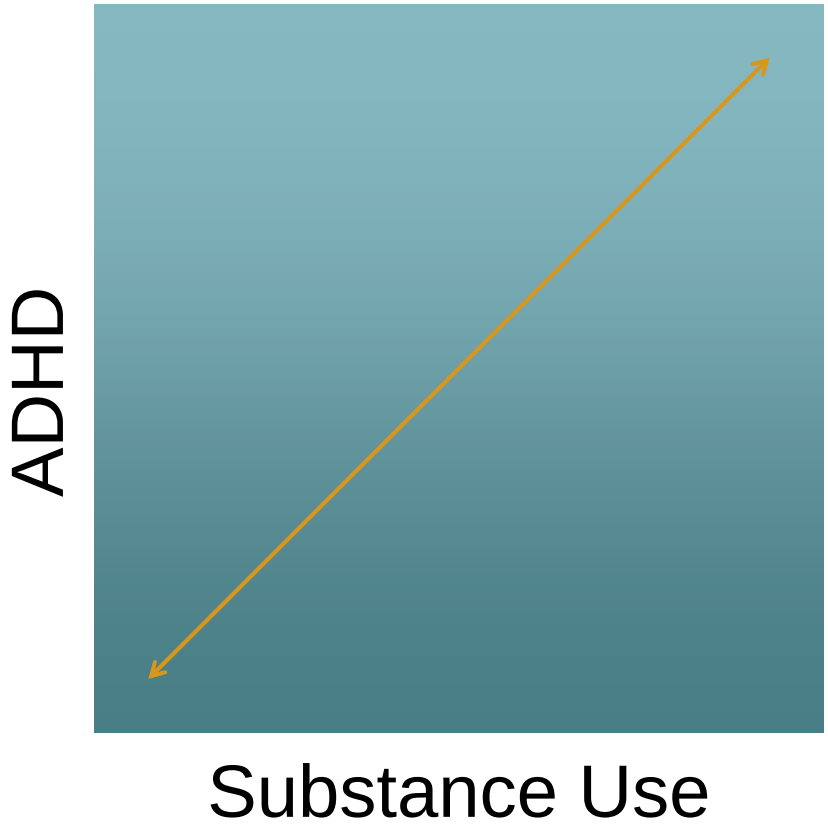
- Why didn’t self-management mediate ADHD and nicotine dependence?
- Student norms
  - Skewed distribution of male and female students
  - Undergrads smoke less compared with the general population
    - 13% versus 23%
      (Kwan, Faulkner, Arbour-Nicitopoulos, & Cairney, 2013; Statistics Canada, 2015)

STUDY 2 DISCUSSION

- Why didn’t self-management mediate ADHD and alcohol use?
- Student norms
  - Undergrads consume greater volumes of alcohol more frequently compared to the general population
  - Alcohol binge drinking is a normalized and regularly occurring behaviour
    - 60% consume more than five alcoholic drinks in a single occasion over a two week period (Kwan et al., 2013)

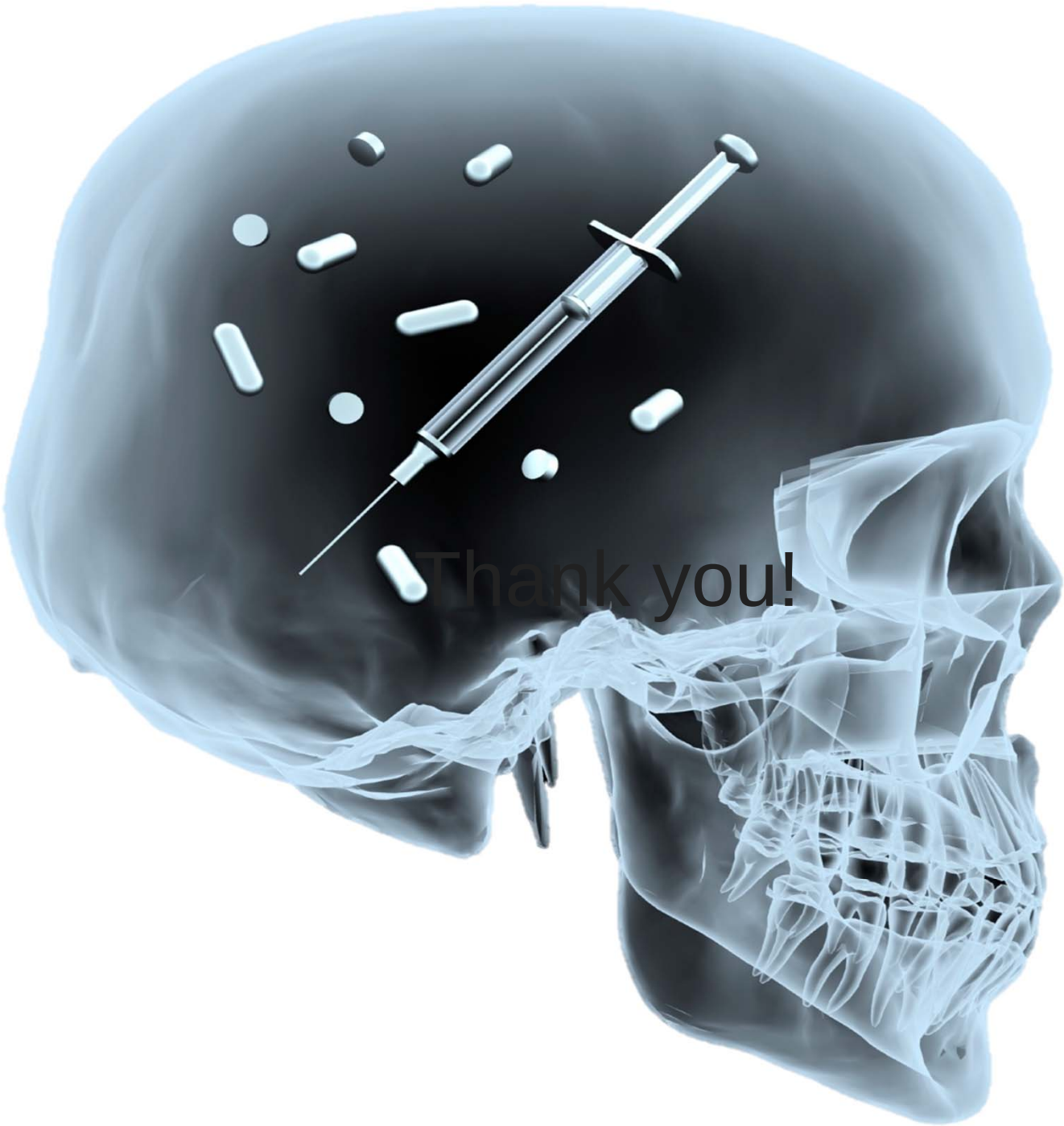
CONCLUSION

- ADHD is related to increased levels of smoking, alcohol binge drinking, and other drug use



CONCLUSION

- Self-management has potential as an effective behavioural intervention to reduce substance use related to ADHD symptoms


Thank you!