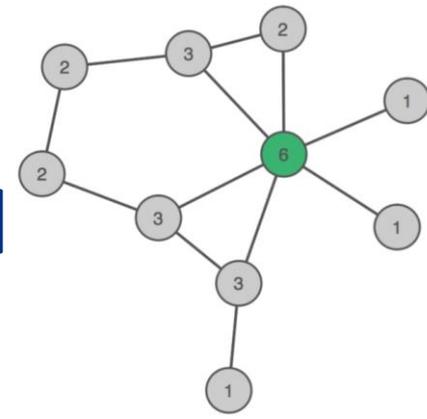


Anabolic-androgenic steroid dependence and muscle dysmorphia: an exploratory network analysis



Morgan Scarth, PhD student

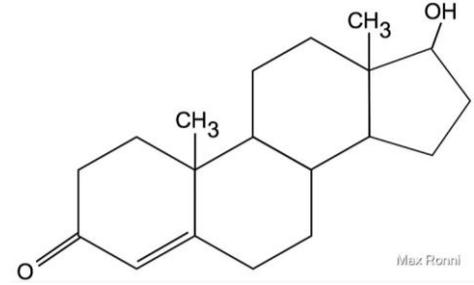


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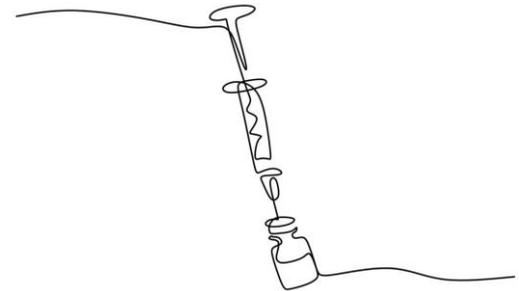
No conflicts of interest



Background: Anabolic-androgenic steroids (AAS)

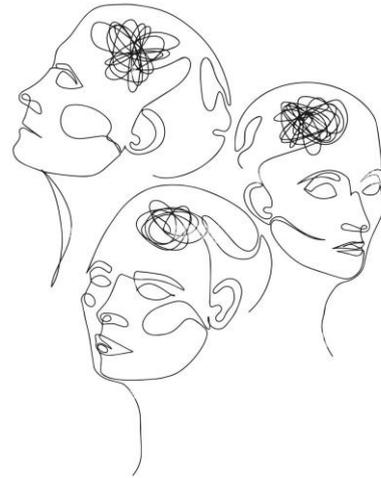


- AAS: testosterone and synthetic derivatives used to build muscle mass
 - Global lifetime prevalence 3.3% (6.4% male, 1.6% female)
- Somatic and psychiatric side effects are common: hypogonadism
- Approximately 1/3 of users become dependent
 - Withdrawal, continued use despite negative effects
 - Increases risk of side effects and further health problems



Background: muscle dysmorphia

- Preoccupation with not being muscular enough, fear of muscle loss
- Increases likelihood of risky practices
 - Diet/exercise
 - Image and performance enhancing drugs
- Unclear relationship with AAS dependence



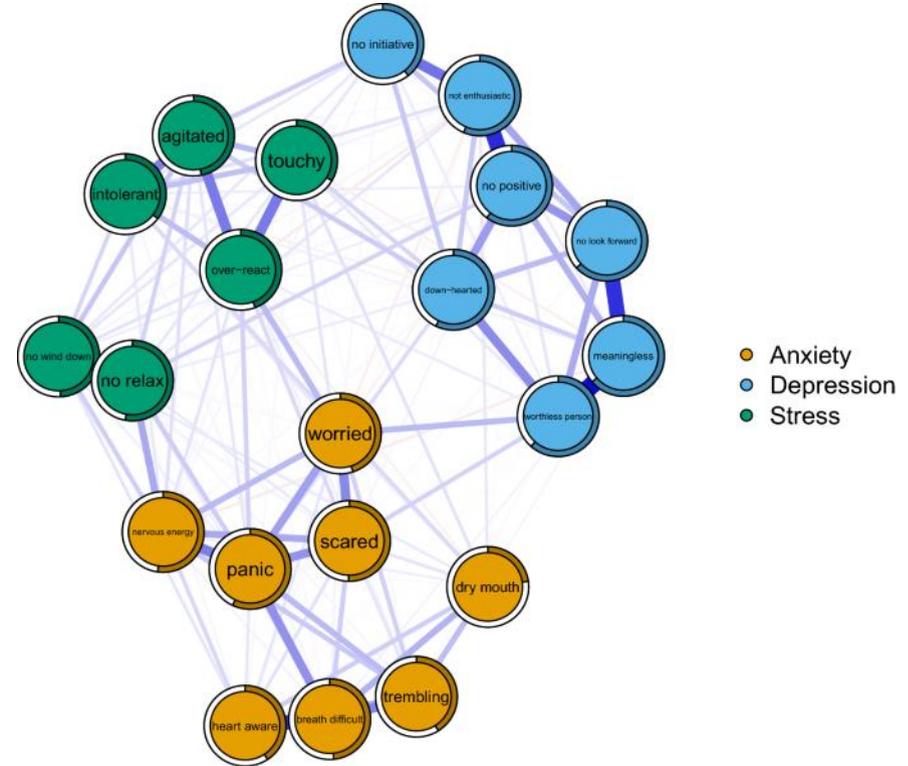
Aim: Use network analysis to better understand relationships among AAS dependence and muscle dysmorphia symptoms

How do these groups of symptoms interact? What are potential clinical targets to prevent/treat AAS dependence?



What is network analysis?

- Psychiatric disorder = dynamic system of interrelated symptoms
- **Nodes:** circles (symptoms)
- **Edges:** lines (strength of association)
- **Bridges:** connect communities of symptoms (comorbidity?)
- **Centrality:** measures of how connected or influential a given node is



Aim: Use network analysis to better understand relationships among AAS dependence and muscle dysmorphia symptoms

Network 1

Symptoms of AAS dependence among men who use(d) AAS

Network 2

Compare muscle dysmorphia symptom networks between men who use(d) AAS and weight-lifting controls (WLC)

Network 3

Combine AAS dependence and muscle dysmorphia symptoms in one network with data only from those who use(d) AAS



Methods

- Sample: 119 AAS, 88 weight-lifting controls (WLC)

SCID/AAS dependence

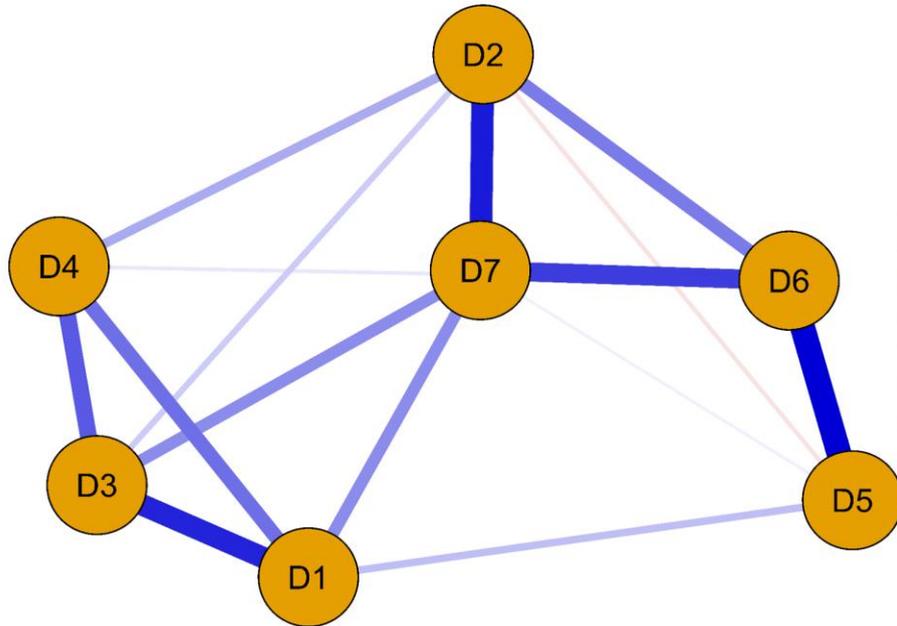
- Tolerance
- Withdrawal
- Use longer than planned
- Unable to stop
- Time
- Interferes with work/life
- Physical/mental problems

Muscle Dysmorphia Index

- Diet
- Supplement
- Physique concealment
- Exercise dependence
- Size/symmetry
- Pharmacology

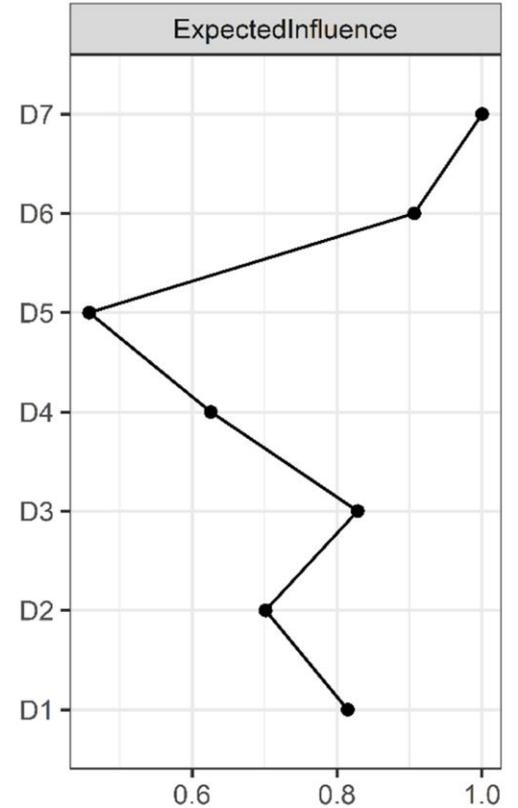


Network analysis of steroid dependence

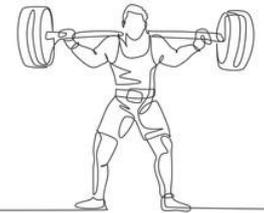
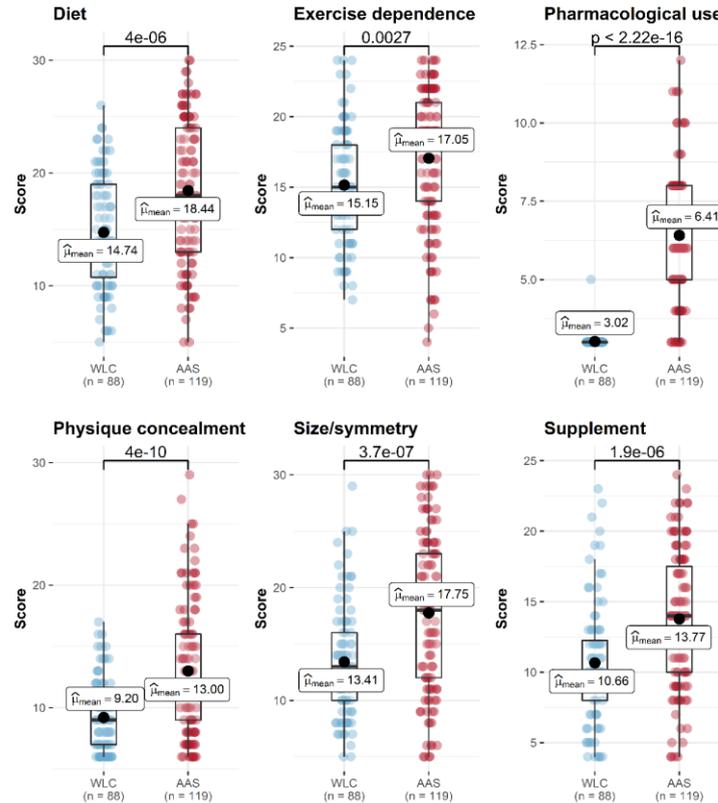


SCID

- D1: Tolerance
- D2: Withdrawal
- D3: Use longer than planned
- D4: Unable to stop
- D5: Time spent
- D6: Interferes with work/life
- D7: Physical/mental problems

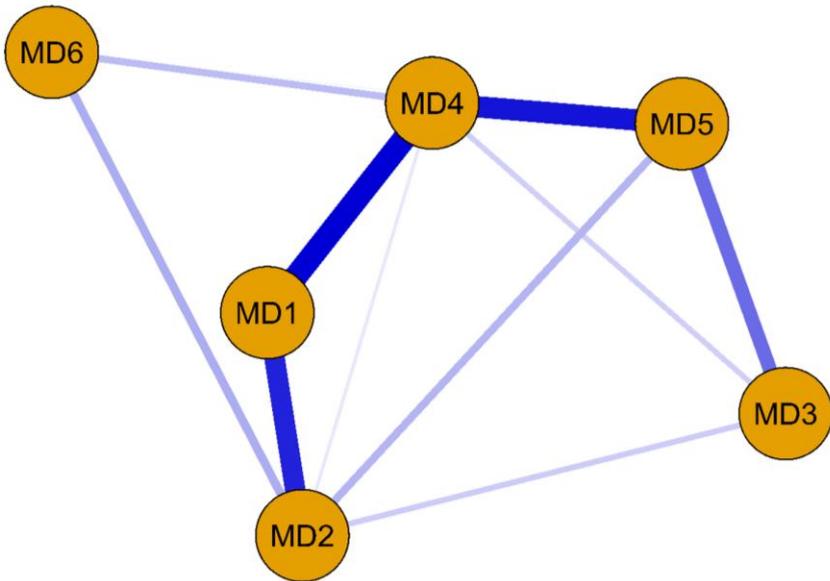


Comparison of muscle dysmorphia symptoms

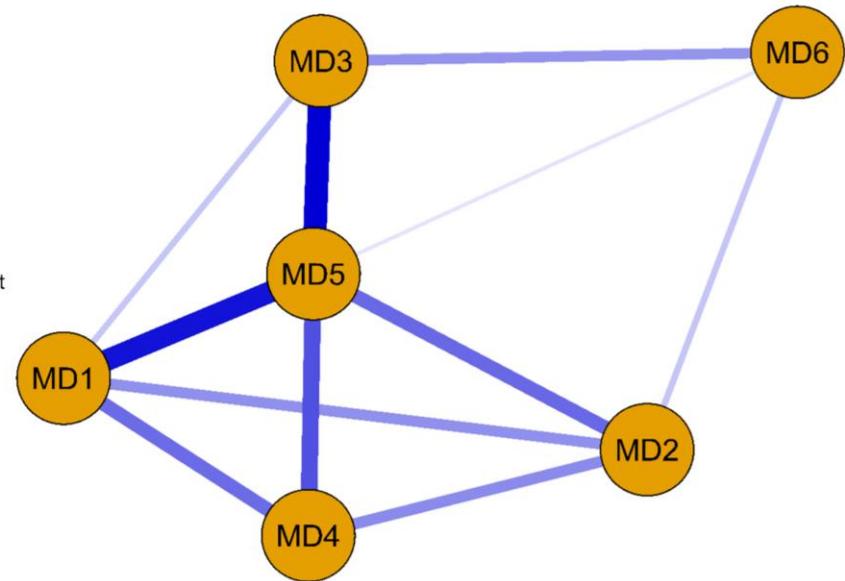


Comparing networks of muscle dysmorphia

AAS



WLC

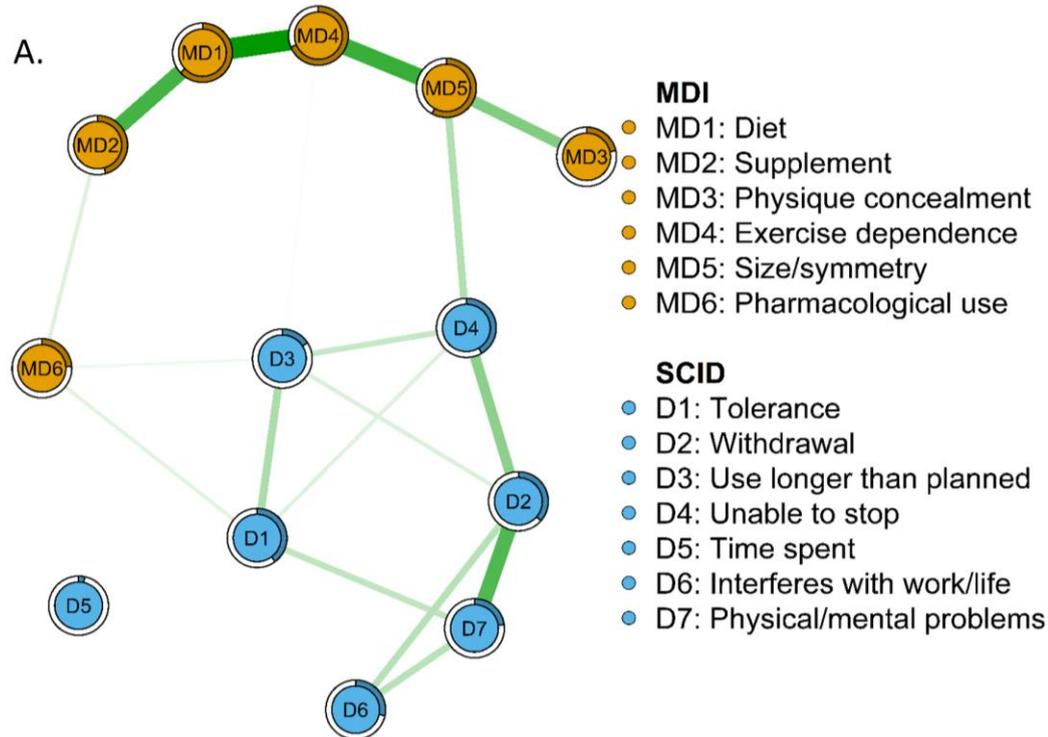


MDD

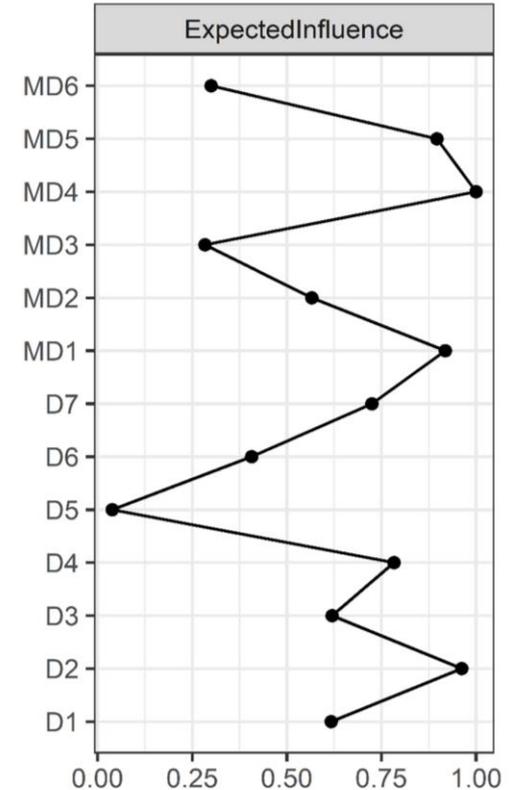
- MD1: Diet
- MD2: Supplement
- MD3: Physique concealment
- MD4: Exercise dependence
- MD5: Size/symmetry
- MD6: Pharmacological use

Network comparison test: *Exercise dependence* most central in AAS, *Size/symmetry* in WLC. Significant differences in edges: MD1-M4, MD1-MD5

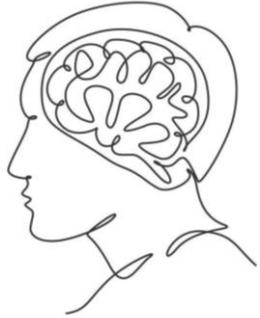
Muscle dysmorphia and AAS dependence



B.



Conclusions



- *Continuing use despite side effects* highly central: **motives?**
 - Relieve withdrawal? Fear of muscle loss?
- Muscle dysmorphia symptoms associated with AAS use
 - Size/symmetry concerns may be associated with dependence
- Psychiatric + somatic (endocrine) treatment for those looking to quit



Thank you for your attention!

Questions?



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