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Substance Use Among Individuals with Eating Disorders

July 16, 2021

Stephanie N. Ferrin, MD, MS

Disclosure

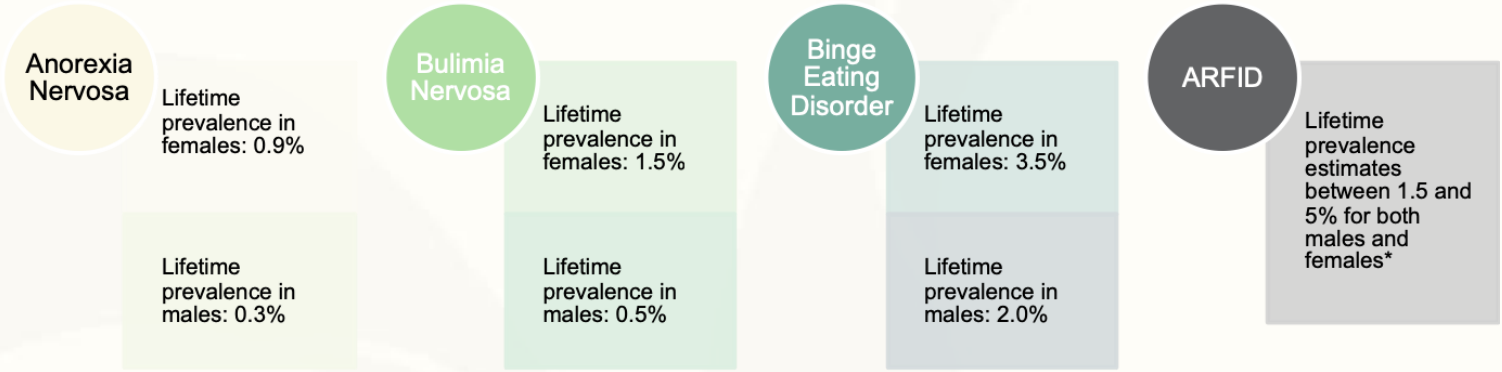
- **I have no financial interests or relationships to disclose.**

Objectives

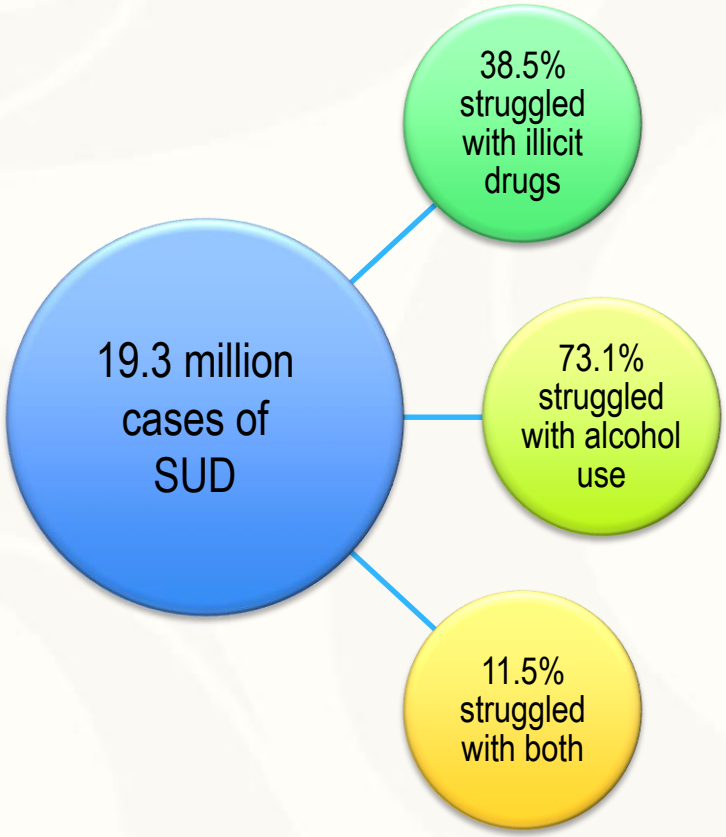
Following this presentation, attendees should be able to:

- Identify the risk factors for the development of both substance use disorders and eating disorders
- Describe the overlay between the addiction model found in individuals who have substance use disorder and those who have an eating disorder
- Plan how to approach an evaluation and intervention for a patient who may present with both an eating disorder and substance use disorder

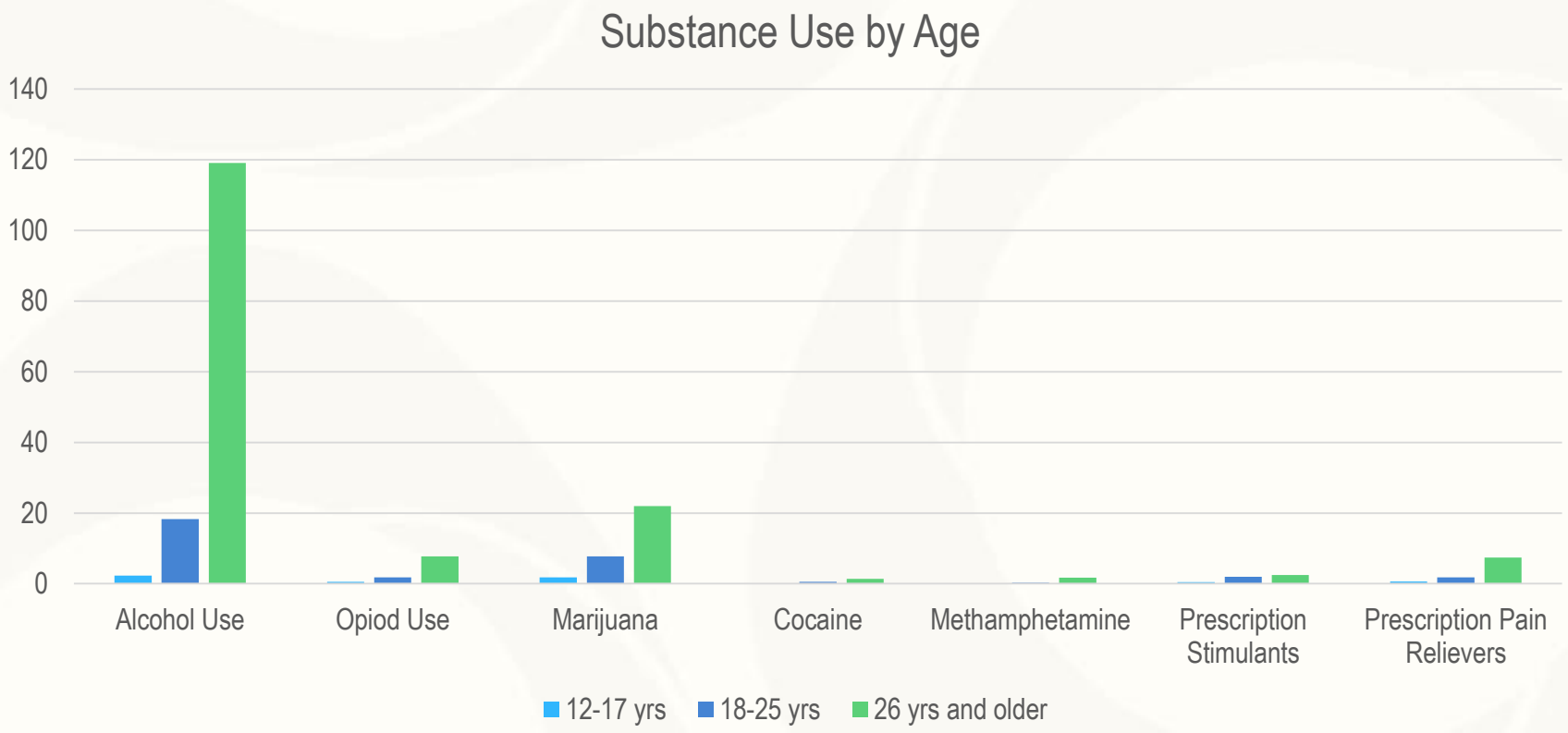
Epidemiology of Eating Disorders



Epidemiology of Substance Use Disorders



Statistics on Substance Use



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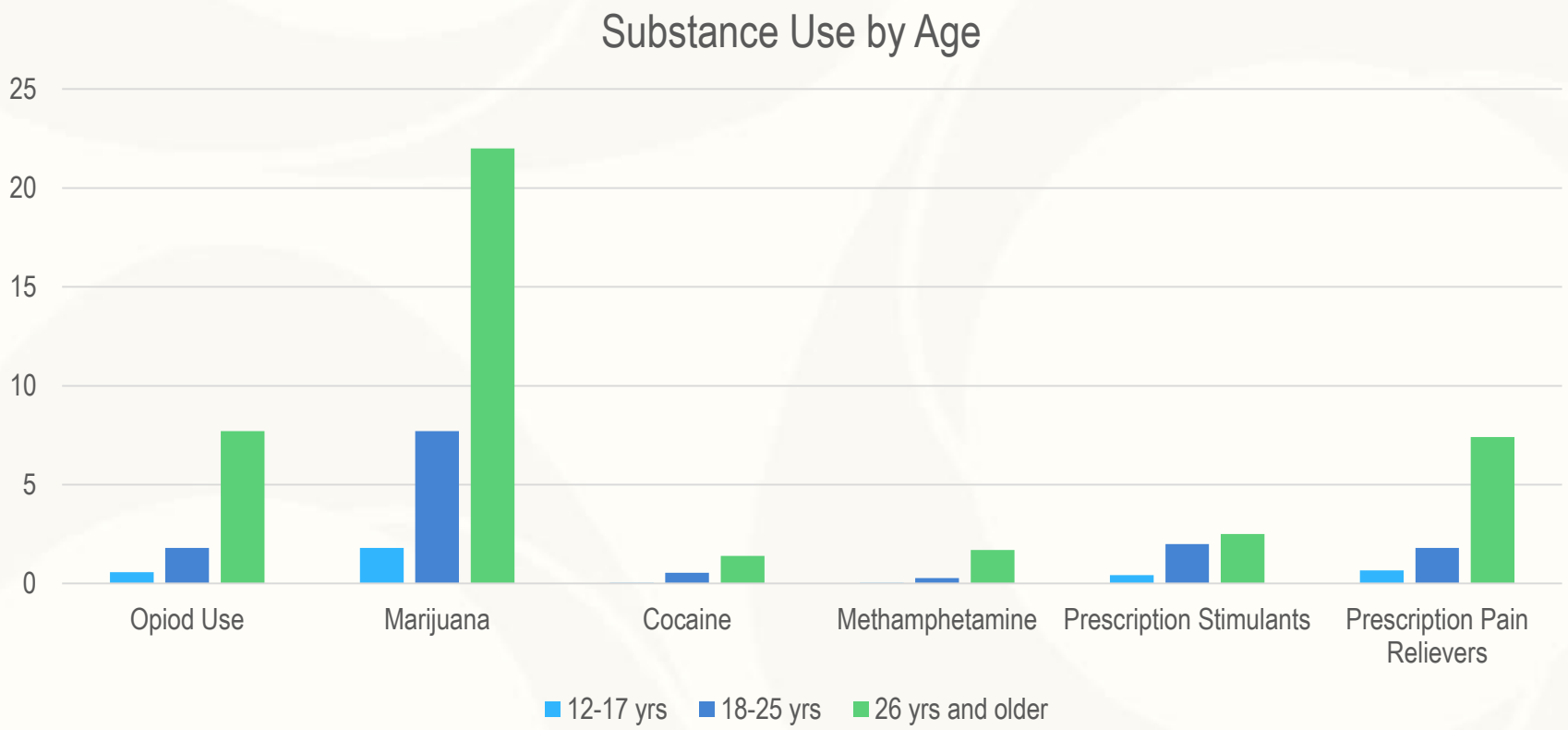
Statistics on Substance Use



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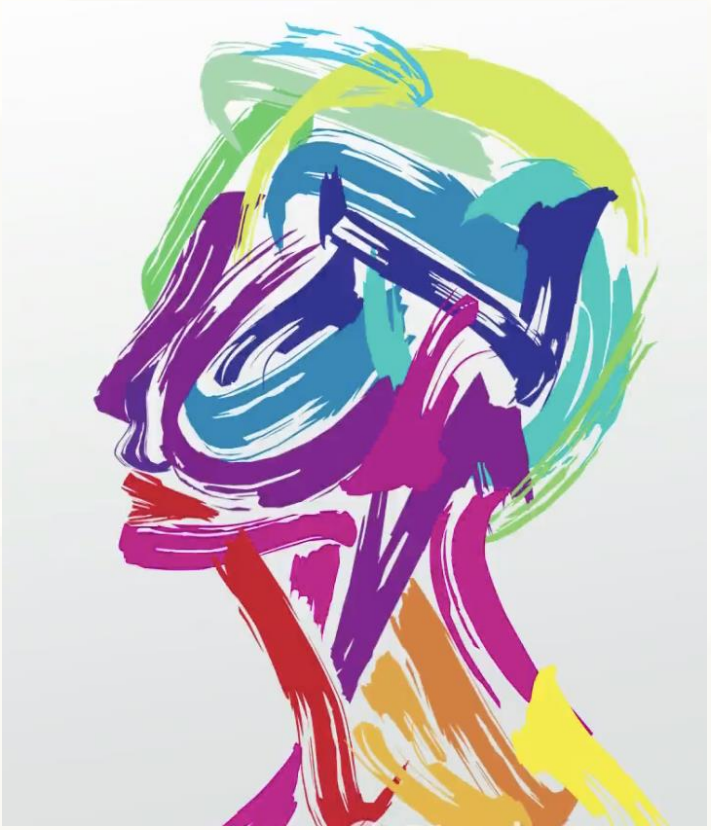
Biopsychosocial Model

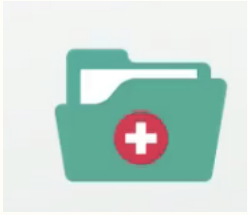


Biopsychosocial Model: Eating Disorders

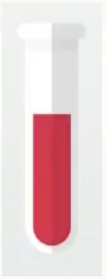
Biopsychosocial Model: Eating Disorders

Biological

- Genetics

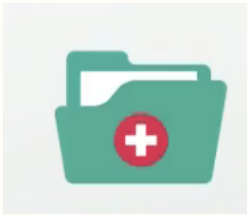


Biopsychosocial Model: Eating Disorders

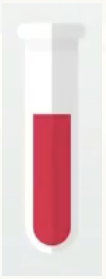


Biological

- Genetics
- Neurotransmitters



Biopsychosocial Model: Eating Disorders



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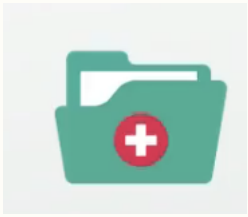

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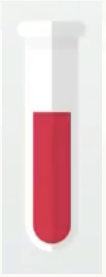
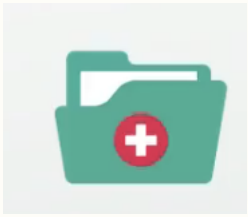


Biological

- Genetics
- Neurotransmitters
- Medical Conditions



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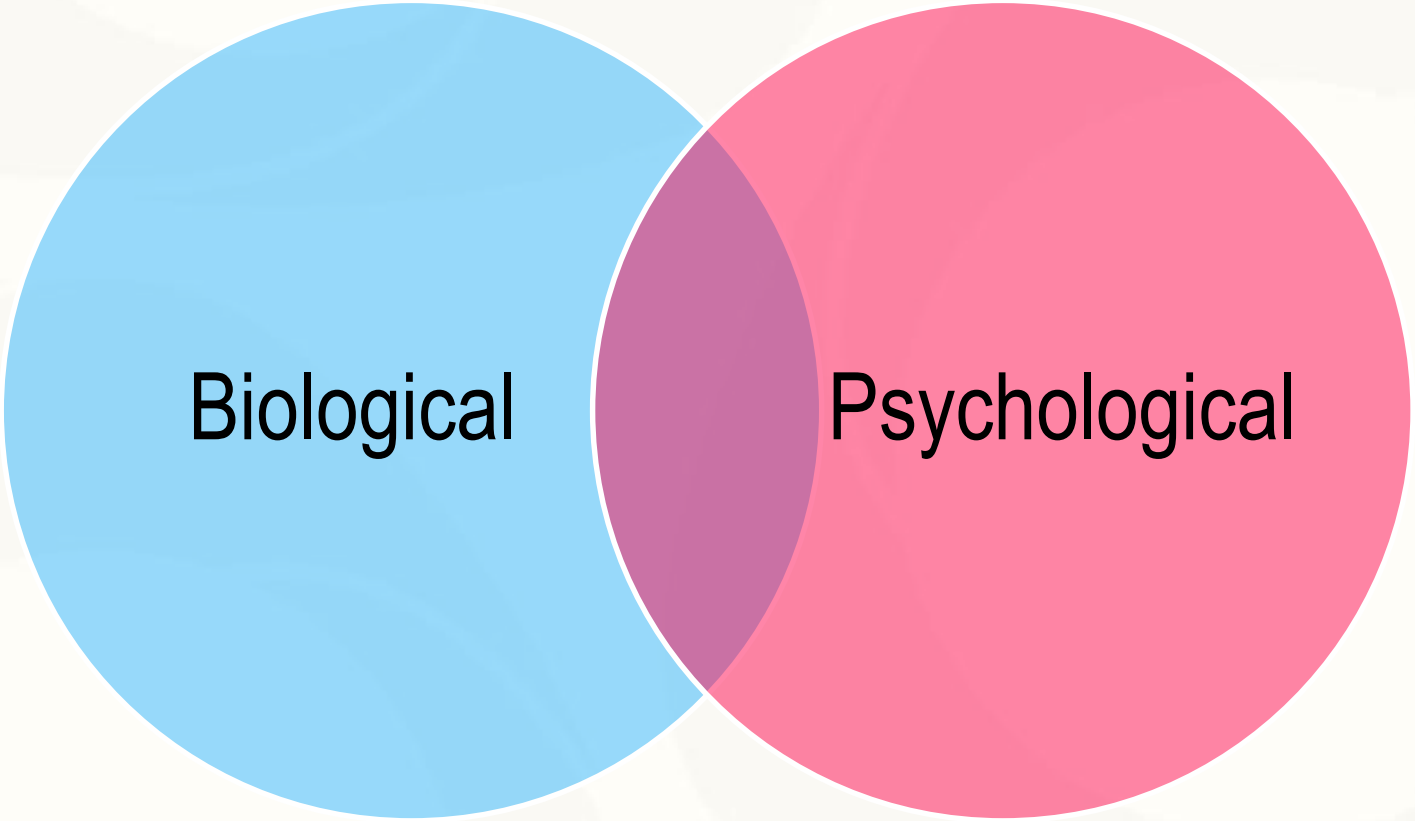


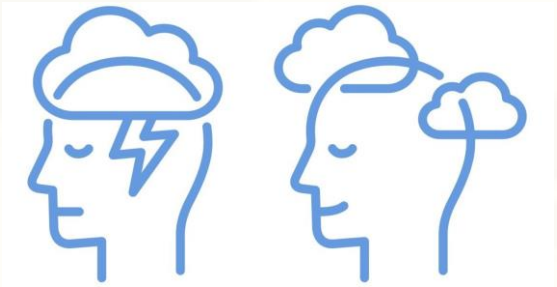
Biopsychosocial Model: Eating Disorders

Biopsychosocial Model: Eating Disorders

Psychological

- Temperament

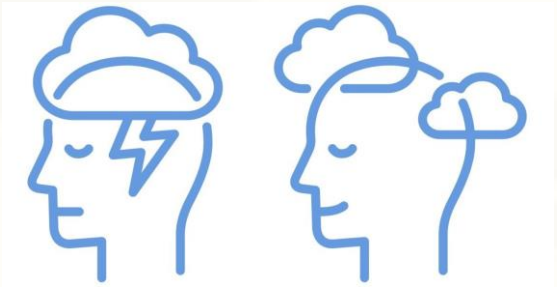
Biopsychosocial Model: Eating Disorders



Psychological

- Temperament
- Coping skills and emotional regulation

Biopsychosocial Model: Eating Disorders



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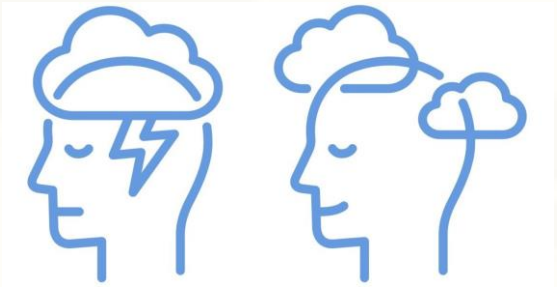

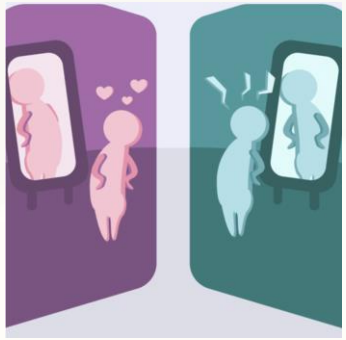

Psychological

- Temperament
- Coping skills and emotional regulation
- Self-esteem and body satisfaction

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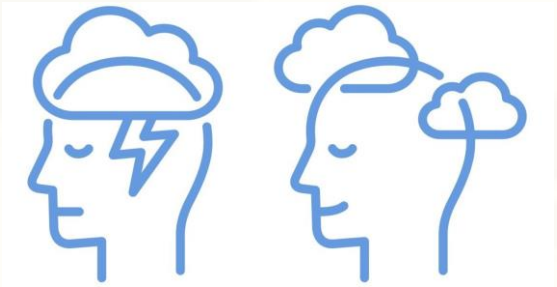
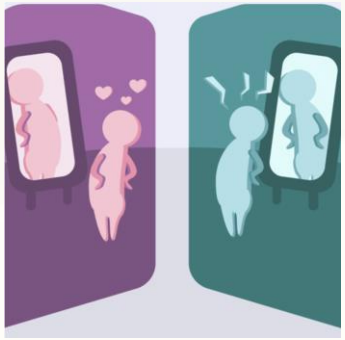
Biopsychosocial Model: Eating Disorders



Psychological

- Temperament
- Coping skills and emotional regulation
- Self-esteem and body satisfaction
- Trauma



Biopsychosocial Model: Eating Disorders

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Biopsychosocial Model: Eating Disorders

Social

- Family Pressure

Biopsychosocial Model: Eating Disorders

Social

- Family Pressure
- Peer Pressure and Bullying

Biopsychosocial Model: Eating Disorders

Social

- Family Pressure
- Peer Pressure and Bullying
- Social Media

Environmental Risk Factors

- The best-known environmental contributor to the development of eating disorders is the sociocultural idealization of thinness.

Culbert, K. M., Racine, S. E., & Klump, K. L. (2015). Research Review: What we have learned about the causes of eating disorders - a synthesis of sociocultural, psychological, and biological research. J Child Psychol Psychiatry, 56(11), 1141-1164.

- 79% of weight-loss program participants reported coping with weight stigma by eating more food.

Andreyeva, T., Puhl, R. M. and Brownell, K. D. (2008), Changes in Perceived Weight Discrimination Among Americans, 1995–1996 Through 2004–2006. Obesity, 16: 1129–1134. doi:10.1038/oby.2008.35

- Up to 40% of overweight girls and 37% of overweight boys are teased about their weight by peers or family members. Weight teasing predicts weight gain, binge eating, and extreme weight control measures.

Golden, N. H., Schneider, M., & Wood, C. (2016). Preventing Obesity and Eating Disorders in Adolescents. Pediatrics, 138(3). doi:10.1542/peds.2016-1649

Environmental Risk Factors

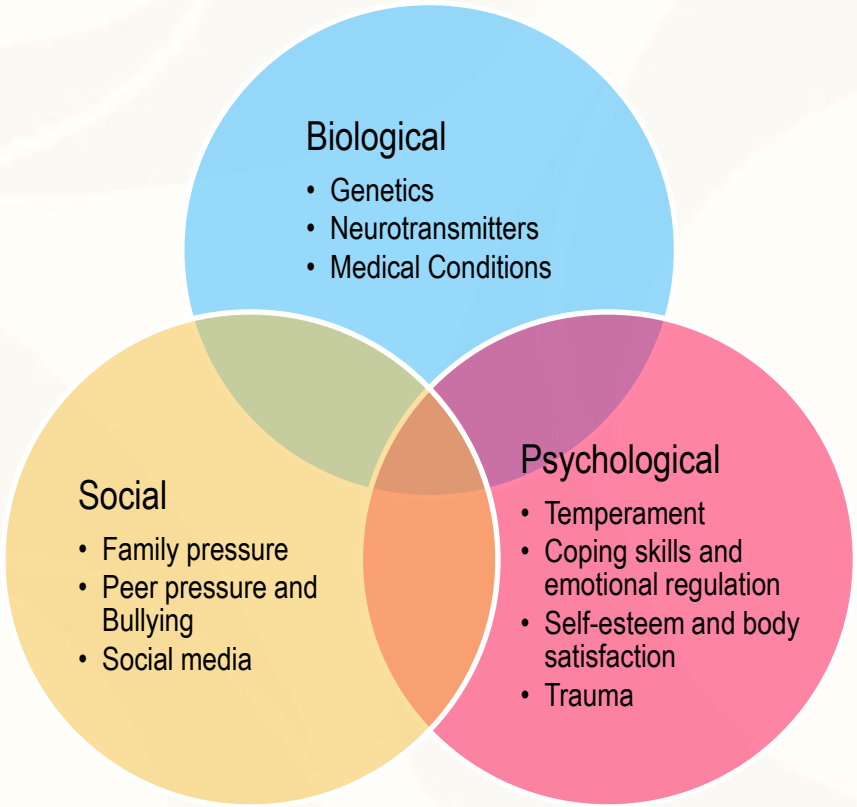
- Weight-based victimization among overweight youths has been linked to lower levels of physical activity, negative attitudes about sports, and lower participation in physical activity among overweight students. Among overweight and obese adults, those who experience weight-based stigmatization engage in more frequent binge eating, are at increased risk for eating disorder symptoms, and are more likely to have a diagnosis of binge eating disorder.

Andreyeva, T., Puhl, R. M. and Brownell, K. D. (2008), Changes in Perceived Weight Discrimination Among Americans, 1995–1996 Through 2004–2006. Obesity, 16: 1129–1134. doi:10.1038/oby.2008.35

- Multiple studies have found that dieting was associated with greater weight gain and increased rates of binge eating in both boys and girls.

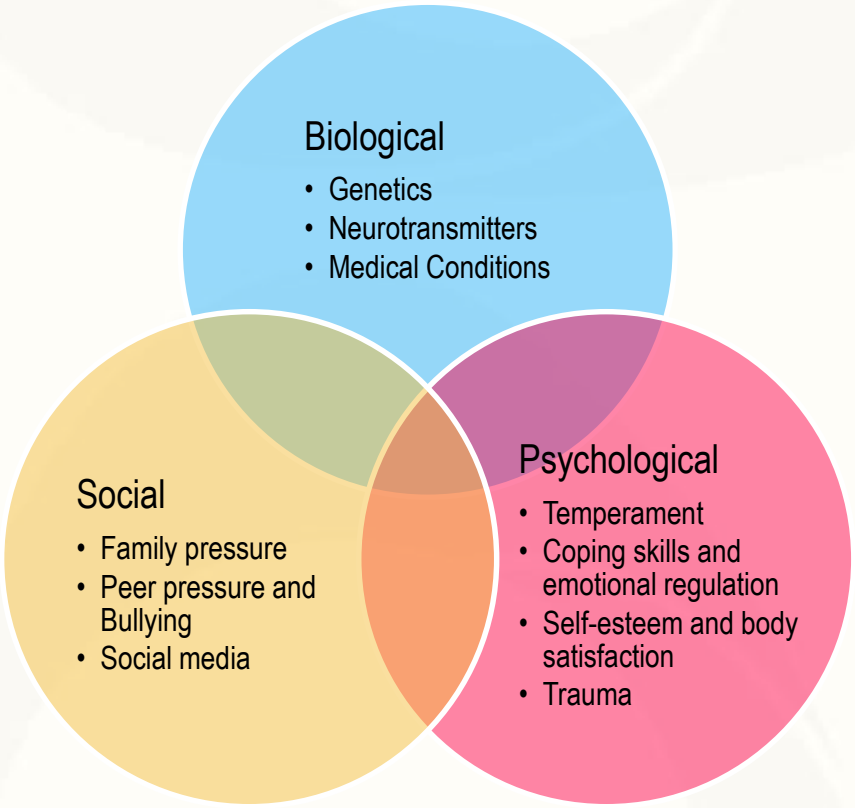
Golden, N. H., Schneider, M., & Wood, C. (2016). Preventing Obesity and Eating Disorders in Adolescents. Pediatrics, 138(3). doi:10.1542/peds.2016-1649

Biopsychosocial Model

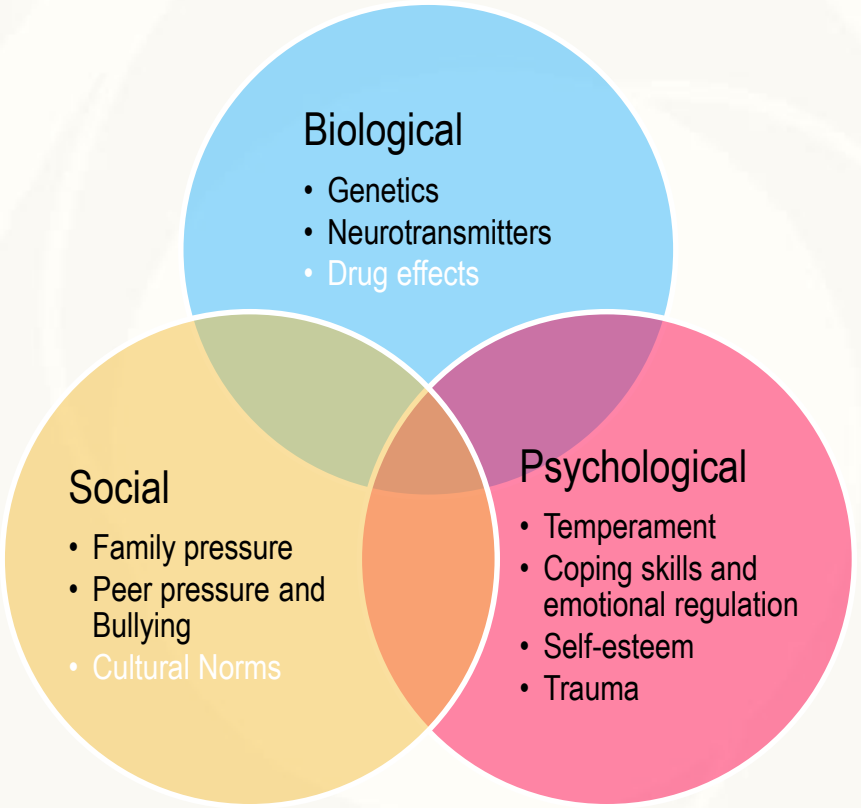


Biopsychosocial Model

Eating Disorders



Substance Use



Overlapping Environmental Factors

- A study by Baker and colleagues found that there is an association between childhood sexual abuse and the development of comorbid BN and SUD
- A study by Corstorphine and colleagues found an association between a history of childhood sexual abuse, SUD, and impulsivity in patients with EDs
- Other factors that impact the risk of development of SUD and EDs include:
    - poor paternal education
    - close maternal relationship
    - SUD or EDs behavior modeling
    - maternal concern about weight loss and appearance

Genetic Predisposition

- A study by Slane and colleagues found a significant overlap in genetic factors between binge eating and compensatory behaviors in BN and AUD, suggesting that there is a hereditable link in these two disorders
- A study by Redgrave and colleagues found that patients with EDs who had first degree relatives with AUD are more likely to use alcohol than those without. The study concluded that having first degree relative with AUD was more likely to exacerbate the ED than to cause it

Why do we care?

- Research has shown that eating disorder (ED) patients who abuse substances demonstrate:

1. Worse ED symptomatology
2. Poorer outcomes than those with EDs alone, including increased general medical complications and psychopathology
3. Longer recovery time
4. Poorer functional outcomes
5. Higher relapse rates

Comorbidity

- Approximately 12% to 18% of adults with anorexia nervosa (AN) and 30% to 70% of adults diagnosed with bulimia nervosa (BN) have SUD
- Women with eating disorders are more likely to abuse substances than women with no eating disorders.
- One-fourth of individuals with BED reported SUD
- Men with BED have higher rates of SUD compared to women

Adolescents

- Several studies in adolescents found that approximately:
  - 2/3 of those with BN have used alcohol
  - 1/3 of those with BN have used cigarettes at least once
  - 1/3 of those with BN have used illegal drugs at least once.

    Marijuana>>cocaine>amphetamines

Substance Use in Eating Disorders

- Substances such as caffeine, tobacco, insulin, thyroid medications, stimulants or over the counter medications (laxatives, diuretics) may be used to aid weight loss and/or provide energy
- Alcohol and other psychotropic substances are commonly used by individuals with eating disorders for emotional regulation or as part of a pattern of impulsive behavior, as well as methods to aid in their disordered eating

American Society of Addiction Medicine (ASAM)

- “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 Pathway

Brain imaging studies show physical changes in areas of the brain when a drug is ingested that are critical to:

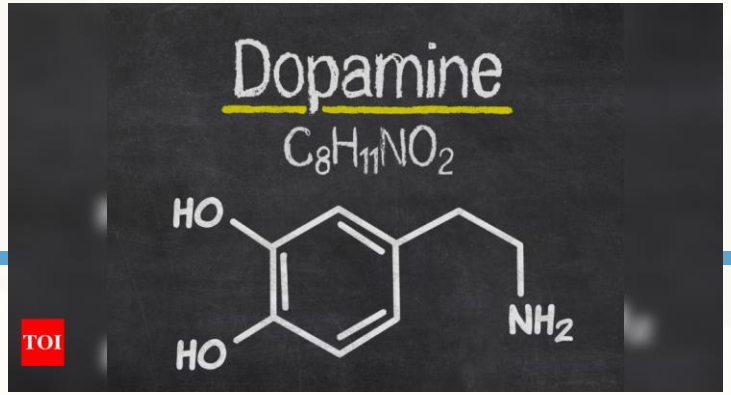
- Judgment
- Decision making
- Learning and memory
- Behavior control

These changes alter the way the brain works and help explain the compulsion and continued use despite negative consequences

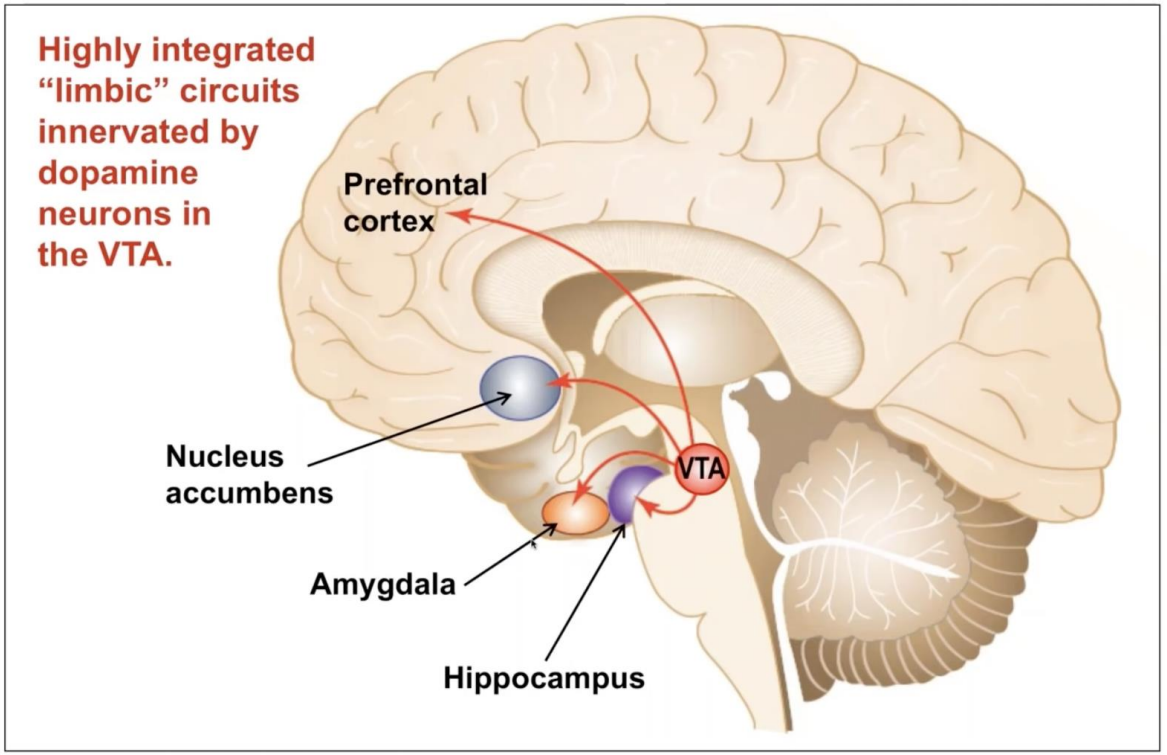
Dopamine and Substance use

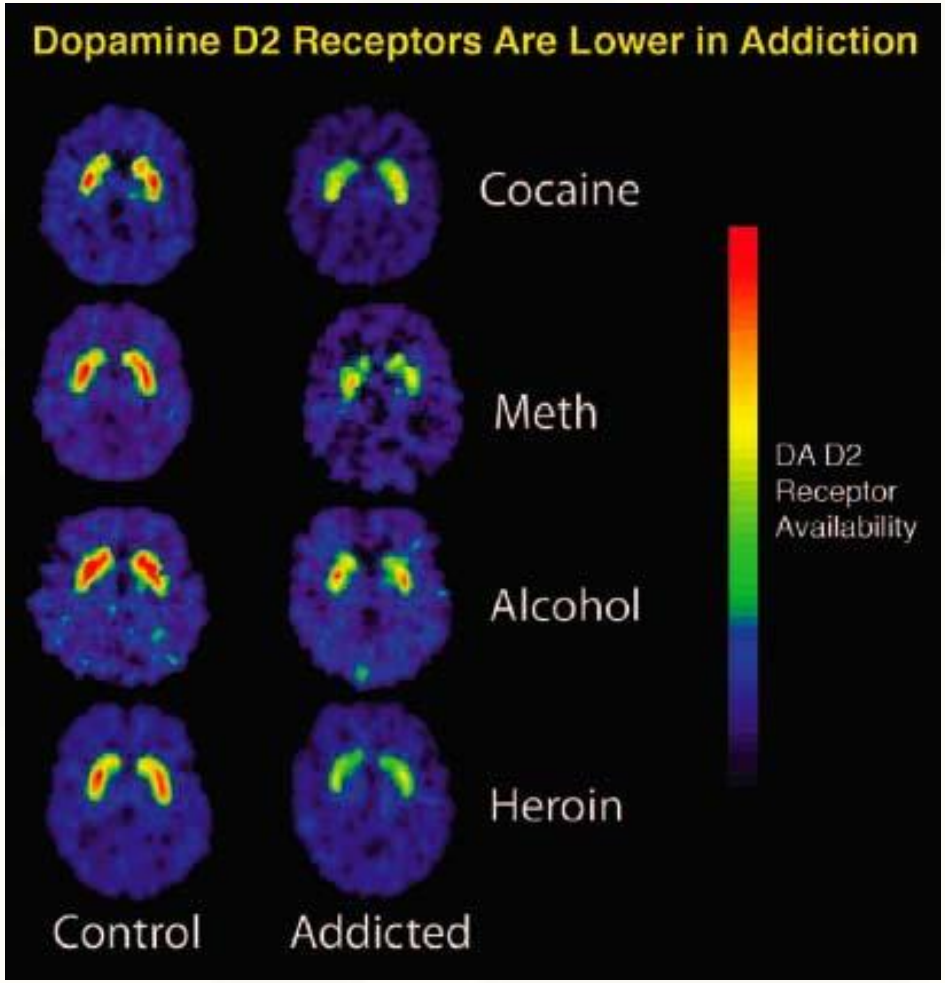
Dopamine:

- A neurotransmitter that is released during a pleasurable experience
- Connected to the reward circuit of the brain
- Acts by reinforcing behaviors that are pleasurable
- Leads to neural changes that help form habits
- Released during substance use and reinforces the connection between the substance and the pleasurable experience
- Trains the brain to repeat the pleasurable experience



Reward Regions




Dopamine D2 Receptors Are Lower in Addiction
Cocaine
Meth
Alcohol
Heroin
DA D2
Receptor
Availability
Control
Addicted

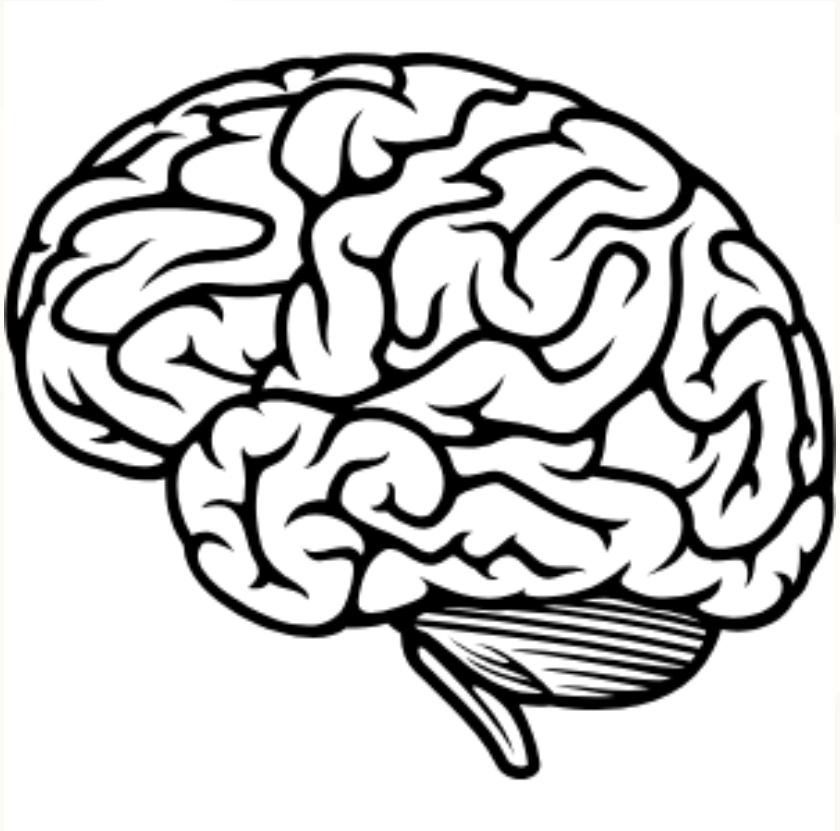
(Davis, 2007)

The Addiction Model

- The addictive process involves dysfunction in three domains:
  1. The motivation and reward system
  2. Affect regulation
  3. Behavioral inhibition
- Both SUD and EDs share a common neurobiological process that includes disturbances in neurotransmitter functions such as dopamine, serotonin, endogenous opiates, and gamma amino-butyric acid
- Several studies have discussed the possibility that opioid system dysregulation could underlie addictive binge eating

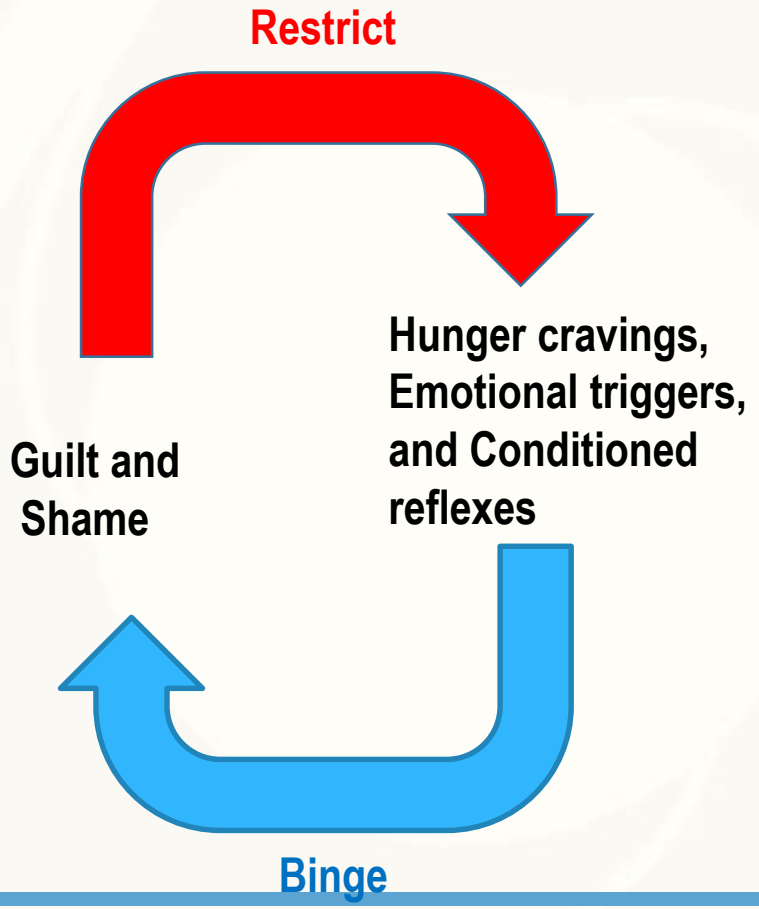
Binge-Purge Behavior

- Binge-purge behavior in AN and BN is associated with a high risk of tobacco, alcohol, and other substance use
- SUD and BN are associated with emotional dysregulation, novelty-seeking traits, and impulsivity
- The opioid system is implicated in the reward circuit that drives compulsive binge eating and purging



Drivers of Binge Eating Behavior

- Hunger
- Distressed Mood
- Habit patterns



Alcohol Use

- Alcohol can be used by women with EDs to suppress their appetite or to avoid and restrain from food as a compensatory behavior
- In one study 30.1% of women who presented for treatment from AUD were diagnosed with Eds
- AUD in adolescents with BN is associated with an increase in risk-taking behaviors such as attempting suicide and risky sexual behavior

Tobacco Use

- Tobacco can be used as an appetite suppressant and as a distractor from thinking about food
- An observational study (n = 1524) found that smoking is prevalent in women with BN and in AN - purging and binging type

Other Substances

- Studies found amphetamine use is higher among women with AN than those with BN and it is more associated with dieting and purging than binging behaviors
- Cannabis and opiates use are also common among women with EDs especially among those with AN
- Binge eating disorder is more prevalent in male patients with heroin use disorder (21%) than in control subjects (8%) (odds ratio 3.1, 95% confidence interval 1.3-7.3; $p < 0.01$).



Screening for Eating Disorders

- SCOFF questionnaire

SCOFF Questions

- Do you make yourself **S**ick because you feel uncomfortably full?
- Do you worry that you have lost **C**ontrol over how much you eat?
- Have you recently lost more than **O**ne stone (14 lb) in a 3-month period?
- Do you believe yourself to be **F**at when others say you are too thin?
- Would you say that **F**ood dominates your life?

Screening for Eating Disorders

- SCOFF questionnaire
- Eating Disorder Screening for Primary Care (ESP)

Eating Disorder Screening for Primary Care

- Are you satisfied with your eating patterns?
- Do you ever eat in secret?
- Does your weight affect the way you feel about yourself?
- Have any members of your family suffered with an eating disorder?
- Do you currently suffer with or have you ever suffered in the past with an eating disorder?

Screening for Eating Disorders

- SCOFF questionnaire
- Eating Disorder Screening for Primary Care (ESP)
- Eating Attitudes Test (EAT-26)

Eating Attitudes Test

	Part B: Please check a response for each of the following statements:	Always	Usually	Often	Sometimes	Rarely	Never
1.	Am terrified about being overweight.	❑	❑	❑	❑	❑	❑
2.	Avoid eating when I am hungry.	❑	❑	❑	❑	❑	❑
3.	Find myself preoccupied with food.	❑	❑	❑	❑	❑	❑
4.	Have gone on eating binges where I feel that I may not be able to stop.	❑	❑	❑	❑	❑	❑
5.	Cut my food into small pieces.	❑	❑	❑	❑	❑	❑
6.	Aware of the calorie content of foods that I eat.	❑	❑	❑	❑	❑	❑
7.	Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.)	❑	❑	❑	❑	❑	❑
8.	Feel that others would prefer if I ate more.	❑	❑	❑	❑	❑	❑
9.	Vomit after I have eaten.	❑	❑	❑	❑	❑	❑
10.	Feel extremely guilty after eating.	❑	❑	❑	❑	❑	❑
11.	Am preoccupied with a desire to be thinner.	❑	❑	❑	❑	❑	❑
12.	Think about burning up calories when I exercise.	❑	❑	❑	❑	❑	❑
13.	Other people think that I am too thin.	❑	❑	❑	❑	❑	❑
14.	Am preoccupied with the thought of having fat on my body.	❑	❑	❑	❑	❑	❑
15.	Take longer than others to eat my meals.	❑	❑	❑	❑	❑	❑
16.	Avoid foods with sugar in them.	❑	❑	❑	❑	❑	❑
17.	Eat diet foods.	❑	❑	❑	❑	❑	❑
18.	Feel that food controls my life.	❑	❑	❑	❑	❑	❑
19.	Display self-control around food.	❑	❑	❑	❑	❑	❑
20.	Feel that others pressure me to eat.	❑	❑	❑	❑	❑	❑
21.	Give too much time and thought to food.	❑	❑	❑	❑	❑	❑
22.	Feel uncomfortable after eating sweets.	❑	❑	❑	❑	❑	❑
23.	Engage in dieting behavior.	❑	❑	❑	❑	❑	❑
24.	Like my stomach to be empty.	❑	❑	❑	❑	❑	❑
25.	Have the impulse to vomit after meals.	❑	❑	❑	❑	❑	❑
26.	Enjoy trying new rich foods.	❑	❑	❑	❑	❑	❑

- B (bulimia) 13 items
- D (dieting) 6 items
- O (oral control) 7 items

Screening for Eating Disorders

- SCOFF questionnaire
- Eating Disorder Screening for Primary Care (ESP)
- Eating Attitudes Test (EAT-26)
- Questionnaire for Eating Disorder Diagnosis (Q-EDD)

Screening for Eating Disorders

- SCOFF questionnaire
- Eating Disorder Screening for Primary Care (ESP)
- Eating Attitudes Test (EAT-26)
- Questionnaire for Eating Disorder Diagnosis (Q-EDD)
- Eating Disorder Examination (EDE) and Eating Disorder Questionnaire (EDE-Q)

Eating Disorder Examination and Eating Disorder Questionnaire

	ON HOW MANY OF THE PAST 28 DAYS ...	NO DAYS	1-5 DAYS	6-12 DAYS	13-15 DAYS	16-22 DAYS	23-27 DAYS	EVERY DAY
1	Have you been deliberately **trying** to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
2	Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?	0	1	2	3	4	5	6
3	Have you **tried** to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
4	Have you **tried** to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?	0	1	2	3	4	5	6
5	Have you had a definite desire to have an **empty** stomach with the aim of influencing your shape or weight?	0	1	2	3	4	5	6
6	Have you had a definite desire to have a **totally flat** stomach?	0	1	2	3	4	5	6
7	Has thinking about **food, eating or calories** made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
8	Has thinking about **shape or weight** made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?	0	1	2	3	4	5	6
9	Have you had a definite fear of losing control over eating?	0	1	2	3	4	5	6
10	Have you had a definite fear that you might gain weight?	0	1	2	3	4	5	6

	ON HOW MANY DAYS OF THE PAST 14 DAYS ...	NO DAYS	1–2 DAYS	3–6 DAYS	7 DAYS	8–10 DAYS	12–13 DAYS	EVERY DAY
1	...Have you been trying to cut down on food to control your weight or shape?	0	1	2	3	4	5	6
2	...Have you gone for long periods of time (8 hours or more) without eating anything to control your shape or weight?	0	1	2	3	4	5	6
3	...Have you tried not to eat any foods you like to control your weight and shape?	0	1	2	3	4	5	6
4	...Have you tried to keep to any strict rules about eating to control your shape or weight? For example, a calorie limit, a set amount of food, or rules about what and when you should eat?	0	1	2	3	4	5	6
5	...Have you wanted your stomach to be empty?	0	1	2	3	4	5	6
6	...Has thinking about food or calories made it much harder to concentrate on things you are interested in; for example, reading, watching tv, or doing your homework?	0	1	2	3	4	5	6
7	...Have you been scared of losing control over eating?	0	1	2	3	4	5	6
8	...Have you had eating binges?	0	1	2	3	4	5	6
9	...Have you eaten in secret? (Do not count binges.)	0	1	2	3	4	5	6
10	...Have you really wanted your stomach to be flat?	0	1	2	3	4	5	6

Total of 28 questions

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Comparison

	Better for identification	Can data be trended?	Validated population	Limitations
SCOFF	+++	--	Already dx with ED	No adolescents
EDS-Primary Care	+++	--	No previous dx and previous dx	No adolescents
EAT-26	++	Yes	Already dx with ED	Few adolescents included
EDE-Q+EDE	+++ (gold standard due to exam component)	Yes	No previous dx and previous dx	Few adolescents included

Screening for Substance Use

Choose evidence-based screening tools and assessment resource materials

Tool	Substance type		Patient age		How tool is administered	
	Alcohol	Drugs	Adults	Adolescents	Self-administered	Clinician-administered
Screens						
Screening to Brief Intervention (S2BI)	X	X		X	X	X
Brief Screener for Alcohol, Tobacco, and other Drugs (BSTAD)	X	X		X	X	X
Tobacco, Alcohol, Prescription medication, and other Substance use (TAPS)	X	X	X		X	X
NIDA Drug Use Screening Tool: Quick Screen (NMASSIST)	X	X	X	See APA Adapted NM ASSIST tools	See APA Adapted NM ASSIST tools	X
Opioid Risk Tool (PDF, 168KB)		X	X		X	
Helping Patients Who Drink Too Much: A Clinician's Guide (NIAAA)	X		X			X
Alcohol Screening and Brief Intervention for Youth: A Practitioner's Guide (NIAAA)	X			X		X
Opioid Risk Tool – OUD (ORT-OUD) Chart		X	X		X	

https://www.drugabuse.gov/nidamed-medical-health-professionals/screening-tools-resources/chart-screening-tools

SBIRT

- **Screening**: quickly assess use and severity of alcohol, illicit drugs, and prescription drug abuse
- **Brief Intervention**: a 3-5 minute motivational interview and awareness-raising intervention given to risky or problematic substance users
- **Referral to Treatment**: referrals to specialty care for patients with substance use disorders

Screening to Brief Intervention (S2BI)

Screening to Brief Intervention (S2BI) Tool

The following questions will ask about your use, if any, of alcohol, tobacco, and other drugs. Please answer every question by checking the box next to your choice.

IN THE PAST YEAR, HOW MANY TIMES HAVE YOU USED:

Tobacco?

- Never
- Once or twice
- Monthly
- Weekly or more

Alcohol?

- Never
- Once or twice
- Monthly
- Weekly or more

Marijuana?

- Never
- Once or twice
- Monthly
- Weekly or more

Prescription drugs that were not prescribed for you (such as pain medication or Adderall)?

- Never
- Once or twice
- Monthly
- Weekly or more

Inhalants (such as nitrous oxide)?

- Never
- Once or twice
- Monthly
- Weekly or more

Illegal drugs (such as cocaine or Ecstasy)?

- Never
- Once or twice
- Monthly
- Weekly or more

Herbs or synthetic drugs (such as salvia, "K2", or bath salts)?

- Never
- Once or twice
- Monthly
- Weekly or more

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CRAFFT

The CRAFFT Interview (version 2.0)

To be orally administered by the clinician

Begin: "*I'm going to ask you a few questions that I ask all my patients. Please be honest. I will keep your answers confidential.*"

Part A

During the PAST 12 MONTHS, on how many days did you:

1. Drink more than a few sips of beer, wine, or any drink containing **alcohol**? Say "0" if none. ☐ # of days
2. Use any **marijuana** (pot, weed, hash, or in foods) or "**synthetic marijuana**" (like "K2" or "Spice")? Say "0" if none. ☐ # of days
3. Use **anything else to get high** (like other illegal drugs, prescription or over-the-counter medications, and things that you sniff or "huff")? Say "0" if none. ☐ # of days

Did the patient answer "0" for all questions in Part A?

Yes ☐ → **Ask CAR question only, then stop**

No ☐ → **Ask all six CRAFFT* questions below**

Part B		**No**	**Yes**
C	Have you ever ridden in a **CAR** driven by someone (including yourself) who was "high" or had been using alcohol or drugs?	☐	☐
R	Do you ever use alcohol or drugs to **RELAX**, feel better about yourself, or fit in?	☐	☐
A	Do you ever use alcohol or drugs while you are by yourself, or **ALONE**?	☐	☐
F	Do you ever **FORGET** things you did while using alcohol or drugs?	☐	☐
F	Do your **FAMILY** or **FRIENDS** ever tell you that you should cut down on your drinking or drug use?	☐	☐
T	Have you ever gotten into **TROUBLE** while you were using alcohol or drugs?	☐	☐

***Two or more YES answers suggest a serious problem and need for further assessment. See back for further instructions →**

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Treatment

- Very few studies regarding treatment of concurrent ED and SUD
- Both should be addressed simultaneously using a multi-disciplinary approach, which may require a dual diagnosis program
- Cognitive behavioral therapy has been frequently used in the treatment of co-morbid EDs and SUDs, however there are no randomized controlled trials
- More recently evidence has been found for the efficacy of dialectical behavioral therapy in reducing both ED and substance use behaviors

Treatment

- Naltrexone, an opioid antagonist, has been used to treat binge eating and purging associated with eating disorders in adults
- Few controlled studies have been conducted, and there remains uncertainty regarding effective doses and treatment durations
- A recent 2019 study conducted by Stancil and colleagues suggests that the use of Naltrexone may be beneficial to decrease purging behaviors in adolescents with binge eating and/or purging behaviors

Treatment

- SSRI –Only if premorbid anxiety/OCD after re-nourishment
  - Fluoxetine 60 mg is a drug of first choice for bulimia nervosa, but can consider trial of another antidepressant (SSRI)
- Promethazine or hydroxyzine –For anxiety or insomnia
- Olanzapine –For severe anxiety, severe over-concern with body image/shape/weight, excessive exercise urges

- Lisdexamfetamine* - 50-70mg for BED

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