Beyond the Physical Injury:
Mental Health after Traumatic Brain Injury

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Disclosures

Relevant financial relationships

- Salaried clinical psychologist at UL Health – Frazier Rehabilitation Institute

Relevant non-financial relationships

- Clinical faculty – Gratis in the Department of Neurological Surgery (Physical Medicine/Rehab) at the University of Louisville School of Medicine
- Serve on the Practice Committee Member for American Psychological Association Division 22 Rehabilitation Psychology

"Try this—I just bought a hundred shares."

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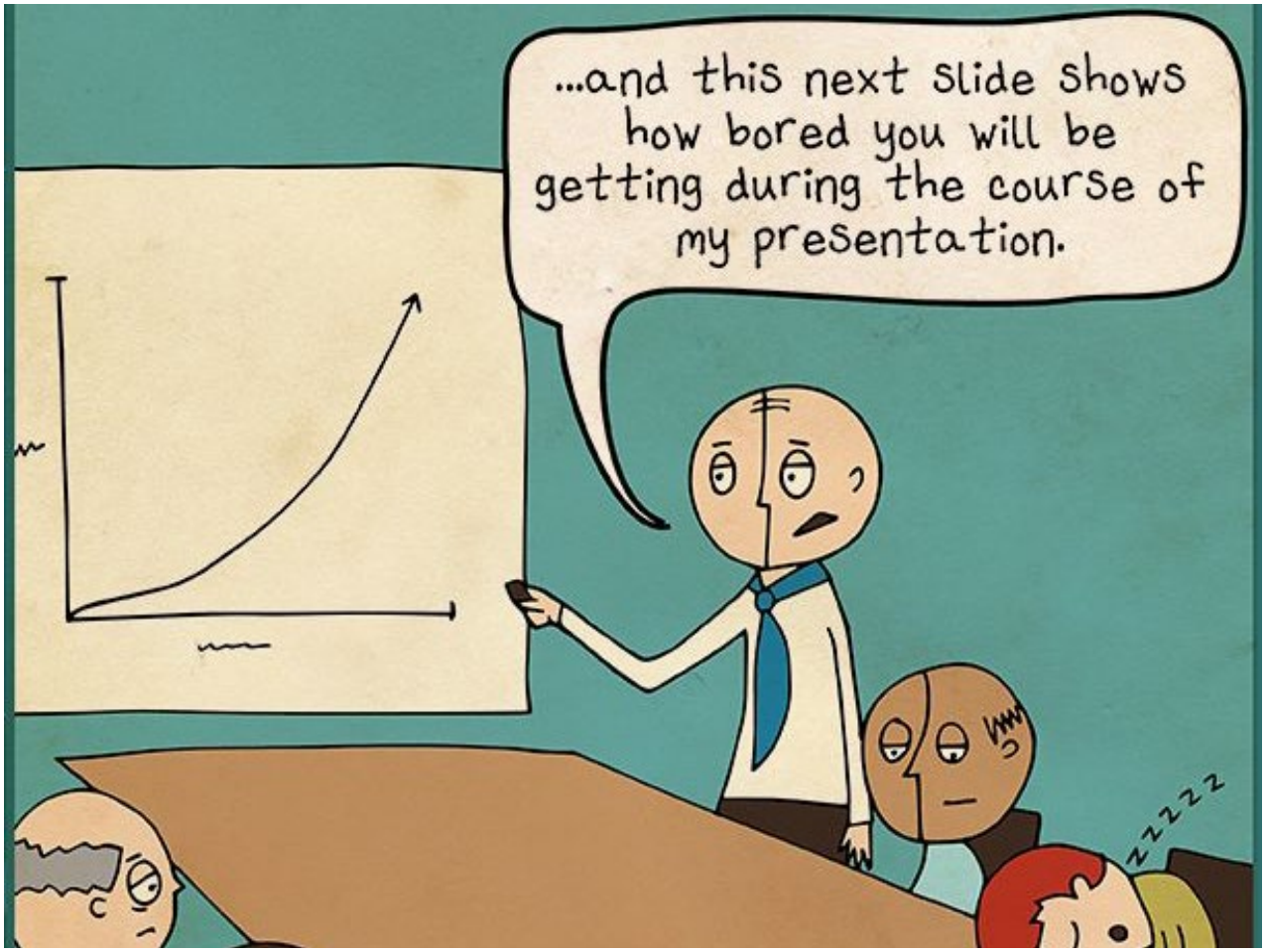
...and this next slide shows how bored you will be getting during the course of my presentation.
zzzzz

Learning Objectives

01

Identify common mental health conditions associated with TBI.

02

Describe the psychosocial challenges that individuals with TBI may face.

03

Identify evidenced-based therapeutic approaches to addressing mental health concerns after TBI.

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Traumatic Brain Injury

- A brain injury caused by an outside force.[1]
- Approximately 214,110 TBI-related hospitalizations in 2020[2]
- 69,473 TBI-related deaths in 2021[2]
- These estimates do not include the many TBIs that are only treated in the emergency department, primary care, urgent care, or those that go untreated.[2]

Persistent post-concussive syndrome and post-concussive symptoms are beyond the scope of this presentation.

Mental Health

- About 23% of U.S. adults experienced mental illness in 2021.[3]
- 5.5% of U.S. adults experienced serious mental illness in 2021. [3]
- 7.5% of U.S. adults experienced a co-occurring substance-related disorder and mental illness. [3]

In the interest of time, depression, anxiety, and substance-related disorders will be the main mental disorders covered.

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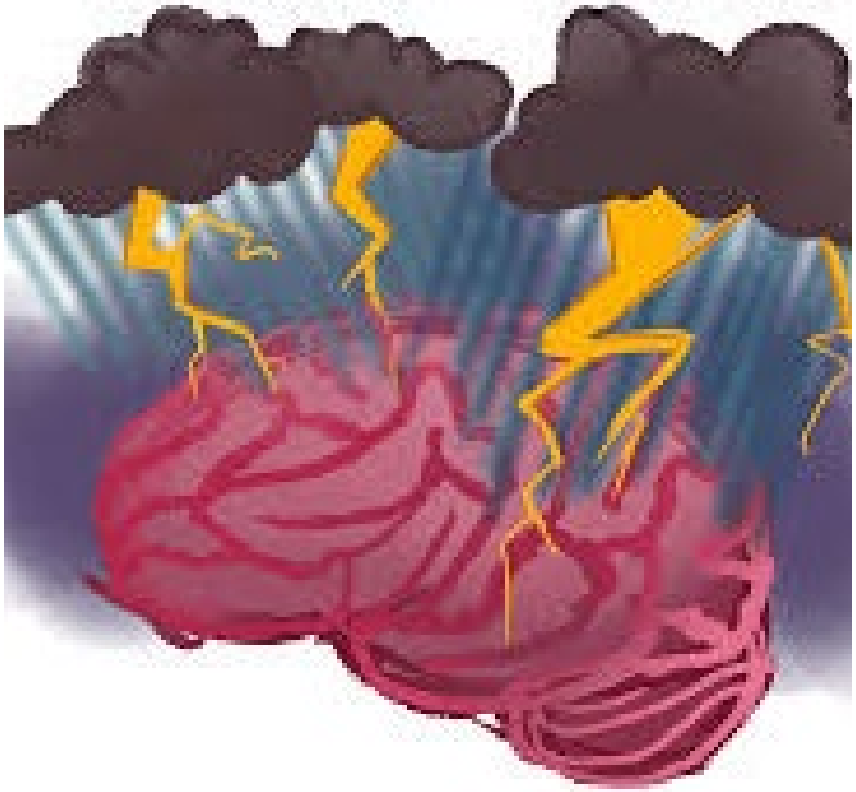
Depression



- Depressive disorders are serious mental health conditions.[4]
- Symptoms may present differently, depending on the person.
- A depressive disorder changes how one functions day-to-day.[4]

Main Types of Depressive Disorders

Major depressive disorder (MDD): characterized by discrete episodes of at least 2 weeks duration, though usually considerably longer, with clear changes in affect, cognition, neurovegetative functions, and interepisode remission.[5]

Persistent depressive disorder: more chronic form with mood disturbances continuing for at least 2 years in adults.[5]

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Symptoms of MDD[5]

- Five or more symptoms, nearly every day, in 2-week period, that is a change from prior functioning and cause clinically significant distress or impairment.
- One of the symptoms must be either
  - Depressed mood most of the day, or
  - Marked diminished interest or pleasure in all, or almost all, activities most of the day.
- Other symptoms must not be clearly attributable to another medical condition
  - Significant weight loss or gain or decrease/increase in appetite
  - Insomnia or hypersomnia
  - Psychomotor agitation or retardation
  - Fatigue or loss of energy
  - Feelings of worthlessness or excessive or inappropriate guilt
  - Diminished ability to think or concentrate, or indecisiveness
  - Recurrent thoughts of death, suicidal ideation, or suicide attempt/plan

MDD Statistics

- In 2021, the annual prevalence of major depressive episode was 8.3%.[3]
- Prevalence is threefold higher in those aged 18-29 compared to 60 and older.[5]
- Women are twice as likely to develop MDD compared to men.[5]
- Having a first degree relative with MDD puts ones' risk 2-4x higher than the general population.[5]

SDoH and MDD

- Adverse childhood experiences, especially when multiple and of diverse types, constitute a set of potent risk factors.[5]
- Low income, limited formal education, racism and other forms of discrimination, are associated with higher risk.[5]
- Higher levels of income inequality are associated with higher prevalence.[5]
- The chronicity of MDD appears to be higher in African Americans and Caribbean Blacks compared to non-Latinx Whites.[5]

Functional Consequences of MDD

- Impairment can range form mild to complete incapacity.[5]
- For individuals seen in general medical settings, those with MDD have more pain and physical illness and greater decreases in physical, social, and role functioning.[5]

Comorbidities with MDD

- MDD frequently co-occurs with substance-related disorders, panic disorder, generalized anxiety disorder (GAD), posttraumatic stress disorder (PTSD), obsessive-compulsive disorder (OCD), anorexia nervosa, bulimia nervosa, and borderline personality disorder.[5]
- Women are more likely to report comorbid anxiety disorders, bulimia nervosa, and somatoform disorders.[5]
- Men are more likely to report comorbid alcohol and substance use.[5]

Anxiety

- When feelings of intense fear and distress become overwhelming and prevent us from doing everyday activities, an anxiety disorder may be the cause.[6]
- All anxiety disorders have one thing in common: persistent, excessive fear or worry in situations that are not threatening.[6]
- Anxiety disorders differ from one another in the types of objects or situations that induce fear, anxiety, or avoidance behavior, and the associated cognition.[5]

Main Types of Anxiety Disorders

Social anxiety disorder: fearful or anxious about or avoidant of social interactions and situations that involve the possibility of being scrutinized.[5]

Panic disorder: recurrent unexpected panic attacks and persistently concern or worry about having more panic attacks or changes behavior in maladaptive ways because of the panic attacks.[5]

Agoraphobia: fearful and anxious in many different situations, and symptoms in two or more of the following: using public transportation, being in open spaces, being in enclosed places, standing in line or being in a crowd, or being outside of the home alone in other situations.[5]

Generalized anxiety disorder (GAD): persistent and excessive anxiety and worry about various domains, including work and school performance, that is difficult to control.[5]

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Symptoms of GAD[5]

- Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities that cause significant distress or impairment.
- Worry is difficult to control.
- Additionally, 3 or more symptoms that are not attributable to the effects of a substance or another medical condition.
  - Restlessness or feeling keyed up or on edge
  - Easily fatigued
  - Difficulty concentrating or mind going blank
  - Irritability
  - Muscle tension
  - Sleep disturbance

GAD Statistics

- In 2021, the annual prevalence of anxiety disorders was 19.1%.[3] The annual prevalence for GAD is 2.9% for adults.[5]
- Women are twice as likely to experience GAD than men.[5]
- Genetics account for one third of the risk of developing GAD. [5]

SDoH and GAD

- Individuals of European descent are more likely to meet criteria for GAD compared to those of Asian or African descent.[5]
- Considerable cultural variation in the expression of GAD, in some cultural contexts somatic symptoms predominate expression of GAD, whereas other culture the cognitive symptoms are most prevalent.[5]
- In the US, higher prevalence of worry is associated with exposure to racism and ethnic discrimination.[5]

Functional Consequences of GAD

- Excessive worry can impair one's capacity to do activities quickly or efficiently as worry takes time and energy. [5]
- Associated symptoms of muscle tension and feeling on edge, tiredness, difficulty concentrating, and disturbed sleep may also contribute to impairment. [5]
- Associated with significant disability and distress that is independent of comorbid disorders.[5]
- Linked to decreased work performance, increased medical resources use, and increased risk for coronary morbidity. [5]

Comorbidities with GAD

- Those with GAD likely have met, or currently meet, criteria for other anxiety or unipolar depressive disorders. [5]
- Comorbidity with substance use, conduct, psychotic, neurodevelopmental, and neurocognitive disorders is less common. [5]

Substance-Related Disorders

- A cluster of cognitive, behavioral, and physiological symptoms indicating that the individual continues using the substance despite significant substance-related problems.[5]
- Often occur simultaneously in individuals with mental illness, usually to cope with overwhelming symptoms.[7]

Will focus alcohol use disorder, as most research regarding substance use after TBI has focused on alcohol use.

Symptoms of Alcohol Use Disorder[5]

- A problematic pattern of alcohol use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:
  - Often taken in larger amounts or over a longer period than was intended.
  - Persistent desire or unsuccessful efforts to cut down or control alcohol use.
  - A great deal of time is spent in activities necessary to obtain, use, or recover from its effects.
  - Craving, or a strong desire or urge to use.
  - Recurrent use resulting in a failure to fulfill major role obligations.
  - Continued use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects.
  - Important social, occupational, or recreational activities are given up or reduced because of use.
  - Recurrent use in situations in which it is physically hazardous.
  - Use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by use.
  - Tolerance, as defined by either of the following:
    - A need for markedly increased amounts to achieve intoxication or desired effect.
    - A markedly diminished effect with continued use of the same amount.
  - Withdrawal, as manifested by either of the following:
    - The characteristic withdrawal syndrome for alcohol (refer to Criteria A and B of the criteria set for alcohol withdrawal).
    - Alcohol (or a closely related substance, such as a benzodiazepine) is taken to relieve or avoid withdrawal symptoms.

Alcohol Use Disorder Statistics

- In the US, lifetime prevalence rates among adults were estimated to be 29.1%. [5]
  - 8.6% mild,
  - 6.6% moderate
  - 13.9% severe.
- Twelve-month prevalence in the US was 16.2% among individuals ages 18–29 years, and 1.5% among individuals 65 years and older.[5]
- In the US, lifetime prevalence was greater among men (36.0%) than among women (22.7%).[5]
- Likelihood of developing is three to four times higher in close relatives of individuals with alcohol use disorder.[5]

SDoH and Alcohol Use Disorder

- Among US adults, the 12-month prevalence [5] :
  - 14.4% in African Americans
  - 14.0% in non-Hispanic Whites
  - 13.6% in Hispanics,
  - 10.6% in Asian Americans and Pacific Islanders.
- Risk factors may include poverty and discrimination (including structural inequities such as differential incarceration rates and differential access to medications for addiction treatment), unemployment and low levels of education.[5]

Functional Consequences of Alcohol Use Disorder

- Associated with a significant increase in the risk of accidents, violence, and suicide.[5]
- It is estimated that one in five intensive care unit admissions in some urban hospitals is related to alcohol. [5]
- It is estimated that 40% of individuals in the US experience an alcohol-related adverse event at some time in their lives, with alcohol accounting for up to 55% of fatal driving events. [5]

Comorbidities of Alcohol Use Disorder

- Bipolar disorders, schizophrenia, and antisocial personality disorder are associated with alcohol use disorder, and most anxiety and depressive disorders are associated with alcohol use disorder as well.[5]
- Severe, repeated alcohol intoxication may also suppress immune mechanisms and predispose individuals to infections and increase the risk for cancers. [5]

Suicide

- Suicidal ideation is thinking about, considering, or planning suicide.
- Suicide intent is a clear desire to attempt suicide.
- Suicide attempt is intentionally trying to end one's life.

Individual Risk Factors[8]

- Previous suicide attempt
- History of depression and other mental illnesses
- Serious illness such as chronic pain
- Criminal/legal problems
- Job/financial problems or loss
- Impulsive or aggressive tendencies
- Substance use
- Current or prior history of adverse childhood experiences
- Sense of hopelessness
- Violence victimization and/or perpetration

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Relationship Risk Factors[8]

- Bullying
- Family/loved one's history of suicide
- Loss of relationships
- High conflict or violent relationships
- Social isolation

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Community Risk Factors[8]

- Lack of access to healthcare
- Suicide cluster in the community
- Stress of acculturation
- Community violence
- Historical trauma
- Discrimination

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Societal Risk Factors[8]

Stigma associated with help-seeking and mental illness

Easy access to lethal means of suicide among people at risk

Unsafe media portrayals of suicide

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Individual Protective Factors[8]

Effective coping and problem-solving skills

Reasons for living (for example, family, friends, pets, etc.)

Strong sense of cultural identity

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Relationship Protective Factors[8]

Support from partners, friends, and family

Feeling connected to others

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Community Protective Factors[8]

Feeling connected to school, community, and other social institutions

Availability of consistent and high quality physical and behavioral healthcare

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Societal Protective Factors[8]

Reduced access to lethal means of suicide among people at risk

Cultural, religious, or moral objections to suicide

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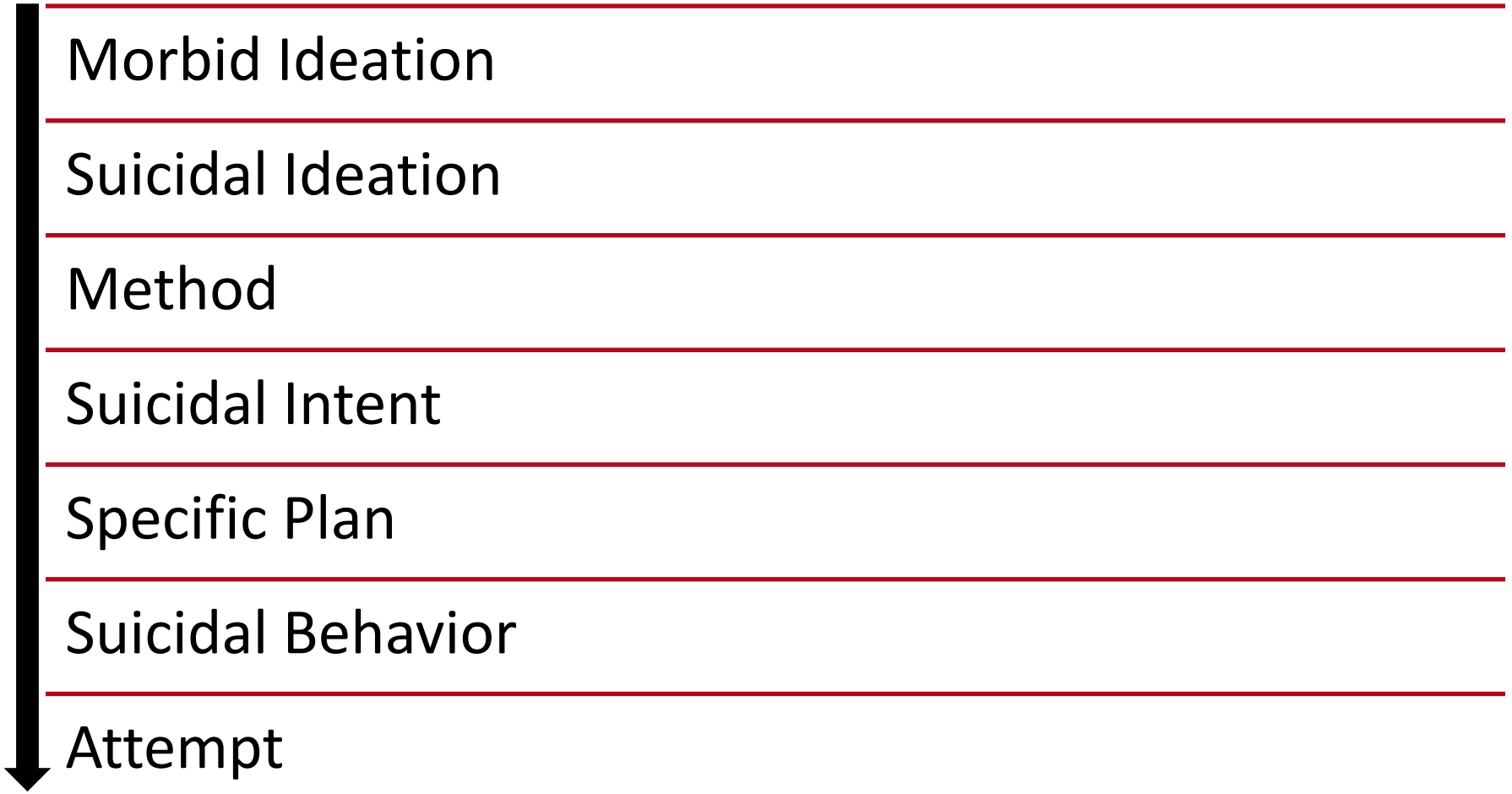
Suicide Statistics

- In the US in 2022 [9],
  - 13.2 million seriously thought about suicide.
  - 3.8 million made a plan for suicide.
  - 1.6 million attempted suicide.
  - Over 49,000 died by suicide.

SDoH and Suicide

- Racial/ethnic groups with the highest rates in 2022: non-Hispanic American Indian, Alaska Native people, and non-Hispanic White people.[9]
- Rate among males in 2022 was approximately four times higher than females.[9] However, women are more likely to report suicidal ideation.
- Americans with higher-than-average rates of suicide are veterans, people who live in rural areas. [9]
- Young people who identify as lesbian, gay, or bisexual have higher prevalence of suicidal thoughts and behavior.[9]
- Between 2018-2021, suicide rates significantly increased overall among non-Hispanic AI/AN (26%) and non-Hispanic Black (19.2%) people, and declined by 3.9% among non-Hispanic White people.[10]

Continuum of Suicidality



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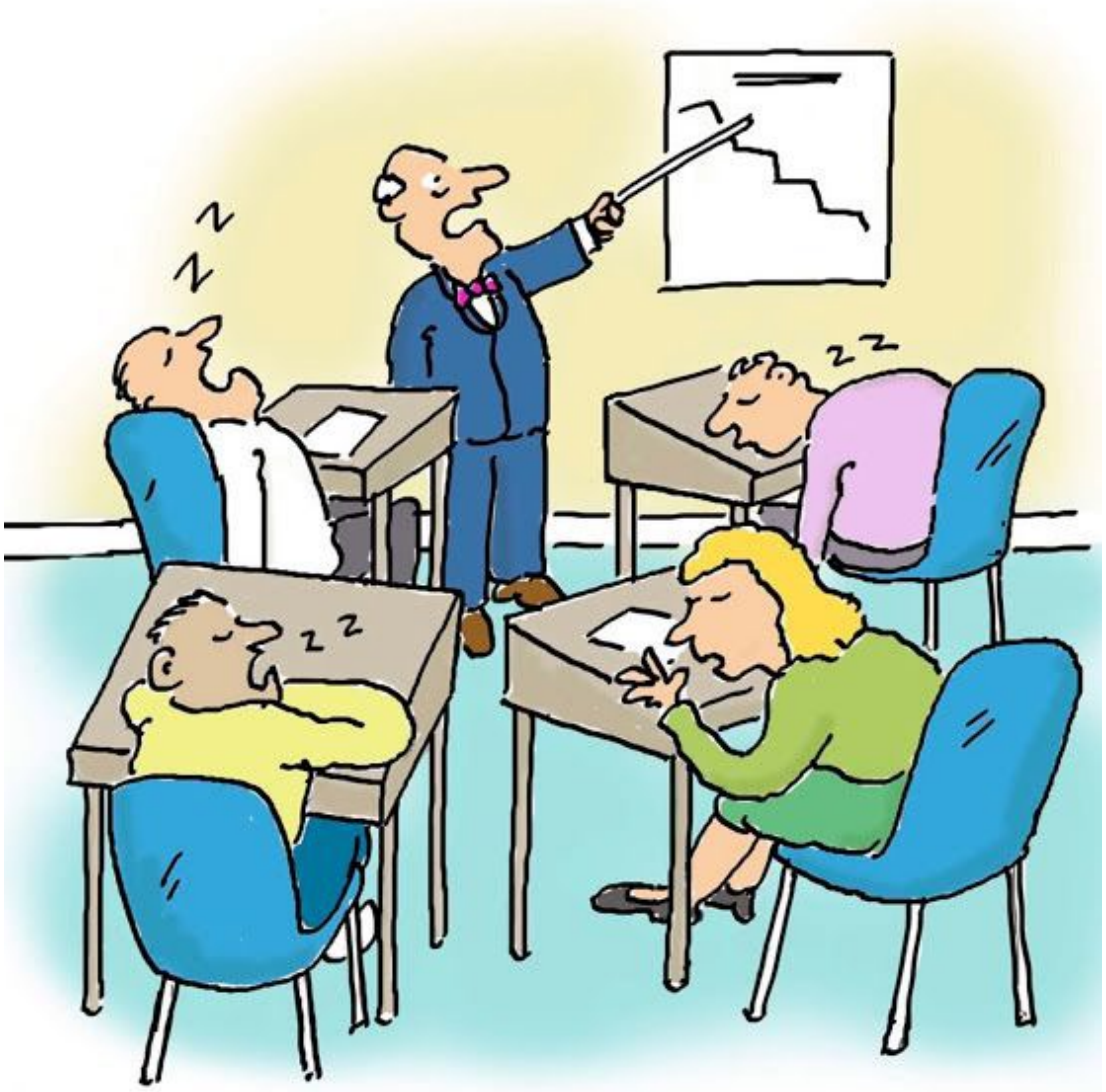

NORMAN NEEDED SOME HELP WITH
HIS PRESENTATION TECHNIQUE!

Mental Health Prior to TBI

- Those with TBI were 4x more likely to have depressive symptoms year prior to TBI compared to matched controls.[13]
  - These odds were significantly higher males with TBI v control, but not significant in females.[13]
- When stratified by age, those ≥65 years old with TBI were 7.32x more likely to have pre-injury depression compared to controls.[13]
- Those ≥65 with TBI were 6.58x more likely to report excessive alcohol use compared to controls. [13]

Mental Health Prior to TBI

- In a sample of patients with TBI, 15.7% were depressed at the time of injury.[22]
- In this same sample, about 27% had a history of depression prior to TBI.[22]

Mental Health Prior to TBI

- In first year post-TBI, up to 77% receive a psychiatric diagnosis: anxiety, mood, and substance-related disorders are common and often present comorbidly.[23]
- Pre-injury psychiatric illness was a strong predictor of experiencing post-TBI psychiatric disorder. [19]

Depression After TBI

- A meta-analysis[15] revealed
  - On average, across studies, 27% diagnosed with MDD or dysthymia after TBI (range: 9-67%).
  - Average prevalence seems to increase in first 5 years post-TBI (21-43%), then decline to acute/post-acute levels (22%).
  - Mild TBI with significantly lower prevalence of MDD and dysthymia (16%) compared to mixed sample of mild/mod/severe TBI (30%).
  - Persons with TBI 1.66x more likely to develop MDD or dysthymia, compared to controls.

Depression After TBI

- During the first year after TBI, 53.1% met criteria for MDD. [22]
- Point prevalence for MDD was highest first month after TBI.[22]
- For those screening positive for MDD in first 3 months, median time depressed was 4 months.[22]
- About a quarter screened positive for MDD at only one time point and more than a third screened positive for 6 months or more.[22]
- The rate of new MDD was 49%.[22]

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Depression After TBI

- Prevalence of depression diminished gradually over time, with rates of returning to near the population base rate at 5 for depressive disorder.[19]
- Most prevalent diagnosis is MDD, which typically emerges 3 months post-injury for mTBI. In moderate to severe TBI, symptom onset is often delayed between 6 to 12 months post-injury.[20]

Depression After TBI

- MDD within first year after TBI is associated with increased problems with mobility, usual activities, role functioning, and poorer self-reported health. [22]
- TBI patients with depression have poorer functional and psychosocial outcomes.[18]
- Risk factors for post-TBI depression include stress, social isolation, and maladaptive coping styles, suggesting that reactions to injury-related deficits drive depressive symptomatology. [18]

Depression After TBI

- Challenge with depression criteria is that the effect of TBI on somatic and motivational symptoms may occur independently of the effects on mood.[18]
- Fatigue, sleep disturbance, concentration difficulties, and apathy are common signs and symptoms in TBI survivors, both with and without mood disorder. [18]

Depression After TBI

- Cognitive changes associated with TBI can lead to fewer reports of depression.[15]
- If the measure was created for the general population and incorporates items that are physical or cognitive TBI symptoms, this could inflate self-reports of depression. [15]
- Prevalence changes over time underscore the importance of monitoring individuals over an extended period and providing ongoing access to mental health support services.[15]

Anxiety After TBI

- A meta-analysis[16] revealed:
  - The incidence rate of novel anxiety after TBI is 17.45% (95% CI 12.59%-22.31%).
  - Those with TBI are 1.9x more likely to be anxious compared to non-TBI counterparts.
  - No significant differences were noted regarding prevalence of anxiety between mild and moderate-severe TBI.

Anxiety after TBI

- Prevalence of anxiety diminished gradually over time, with rates of returning to near the population base rate at year 2 for anxiety.[19]

Alcohol Use After TBI

- TBI was significantly positively correlated to days of alcohol use in the past 3 months.[14]
- TBI was significantly positively correlated to number of days of alcohol use on which ≥5 drinks were consumed. [14]

Suicidal Ideation after TBI

- Rates have been found to exceed 20% in some studies.[21]
- Risk factors appear to align with those that have been identified among the general population.[21]

Suicide Risk after TBI

- A meta-analysis[16] showed:
  - Those with TBI had a pooled prevalence if 19.1% for suicidal ideation and 2.1% for suicide attempt.
  - These prevalence rate are significantly higher than the general population.
  - Those with severe TBI were 1.4x more likely to die of suicide than those with mild injury.

Suicide Risk After TBI

- In a population-based cohort study in Taiwan[17]:
  - All TBI subgroups had a higher-than-normal risk of attempted suicide.
    - Mild TBI: 2.22-fold increase
    - Moderate TBI: 2.23-fold increase
    - Severe TBI: 2.32-fold increase

Hope After TBI

- Hope is essential to the rehab and recovery process for persons with TBI. [24]
- Those 3 years post-TBI had significantly lower hope and significantly higher depression compared to the general population. [24]
- Hope and dispositional optimism predict depression severity. [24]
- Higher depression predicted lower dispositional hope. [24]

SDoH, Mental Health, and TBI

- As adults with TBI age, they are less likely to obtain mental health services which may be due to physical or cognitive problems affecting service access.[23]
- Lack of insurance is one barrier to seeking mental health services.[23]

SDoH, Mental Health, and TBI

- Females, those without employment, and those with a history of psychiatric disorders or substance use disorders pre-TBI were at higher risk for psychiatric disorders post-TBI.[25]
- Less education was associated with prevalence of anxiety and depressive disorders post-TBI.[25]

SDoH, Mental Health, and TBI

- Black patients with TBI had a greater rate of depression than non-Hispanic White, and similar rate as Hispanics.[27]
- Black patients with TBI had lower life satisfaction rates over time compared to non-Hispanic White.[27]
- Racial/ethnic minorities more likely to report higher levels of caregiver burden after TBI. [27]
- Black patients with TBI more likely to report challenges coping with depression. [27]

SDoH, Mental Health, and TBI

- Compared to men, women frequently report more symptoms of depression and perceived stress after TBI and higher rates of anxiety.[24]
- Women with TBI report multiple challenges after injury, including [24] :
  - an altered sense of self
  - issues with power and control
  - Isolation
  - alteration in caring and gender roles.
  - Isolation
- Compared with controls, more women with BI had less emotional support postinjury.[24]

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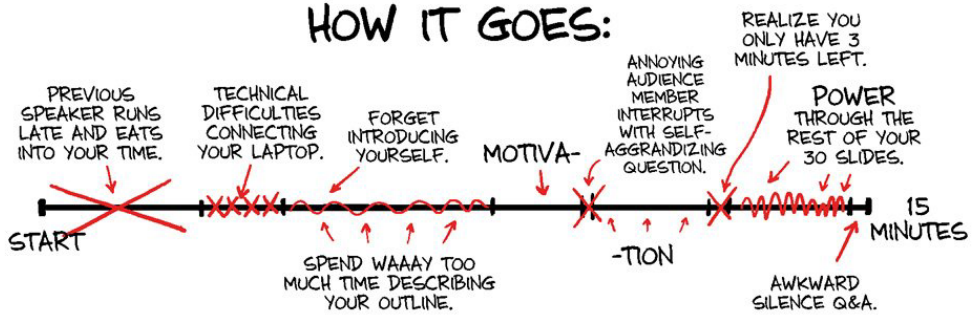
SDoH, Mental Health, and TBI

- SDoH associated with psychological distress generally are similar in adults with and without TBI.[26]
- Therefore, opportunities to adapt existing population level mental health services and supports for individuals with TBI should be explored.[26]

YOUR CONFERENCE PRESENTATION

HOW YOU PLANNED IT:

HOW IT GOES:



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Motivational Interviewing (MI)

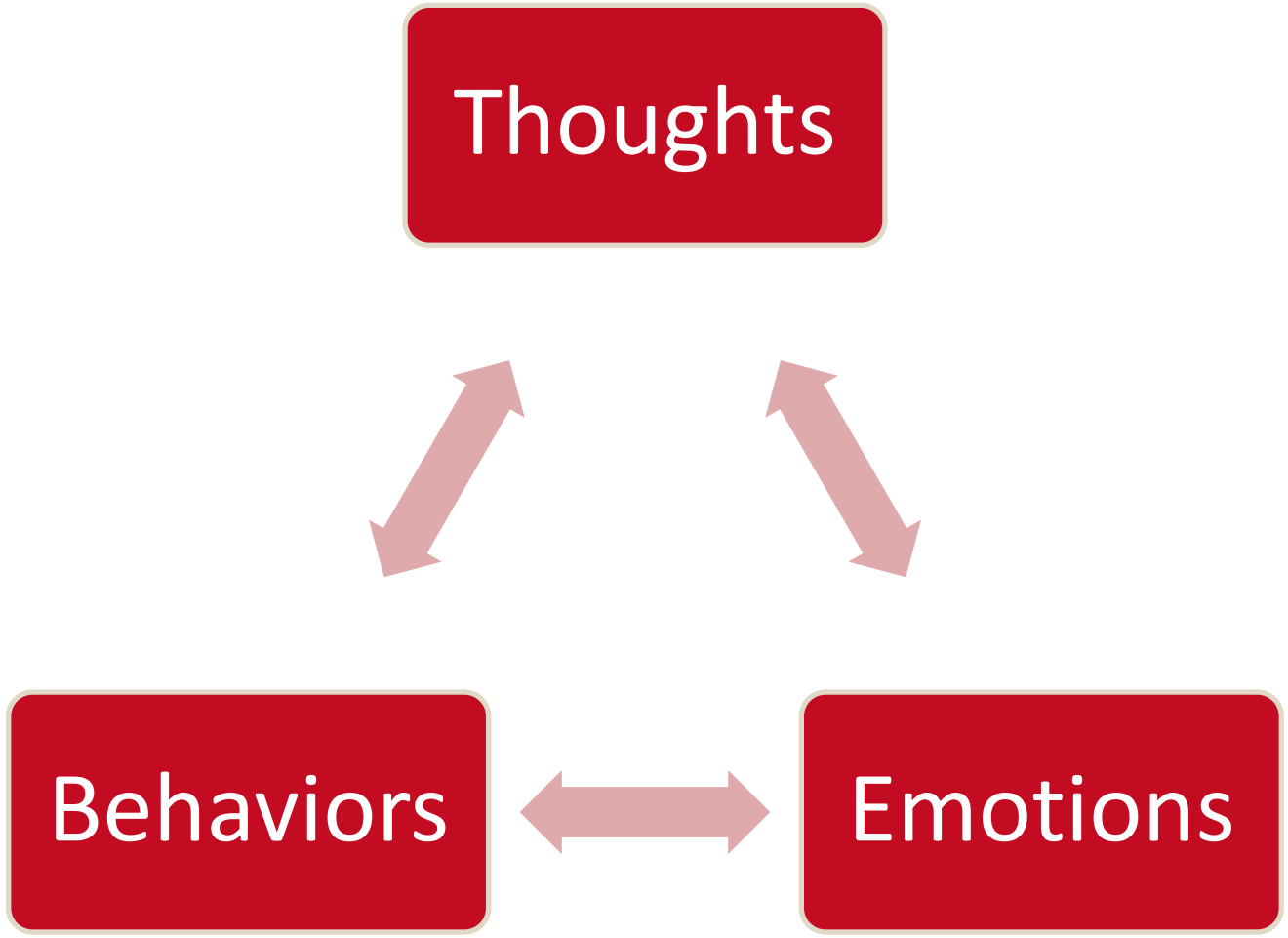
- A directive, client-centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence.[10]
- Spirit of facilitating interpersonal relationship.[10]
  - **A**cceptance
  - **C**ompassion
  - **E**vocation/Understanding

*If you have **ACE**, you create **Partnership** *

Cognitive Behavioral Therapy (CBT)

- Based on several core principles, including:
  - Psychological problems are based, in part, on faulty or unhelpful ways of thinking. [11]
  - Psychological problems are based, in part, on learned patterns of unhelpful behavior. [11]
  - People suffering from psychological problems can learn better ways of coping with them, thereby relieving their symptoms and becoming more effective in their lives.[11]

CBT Model



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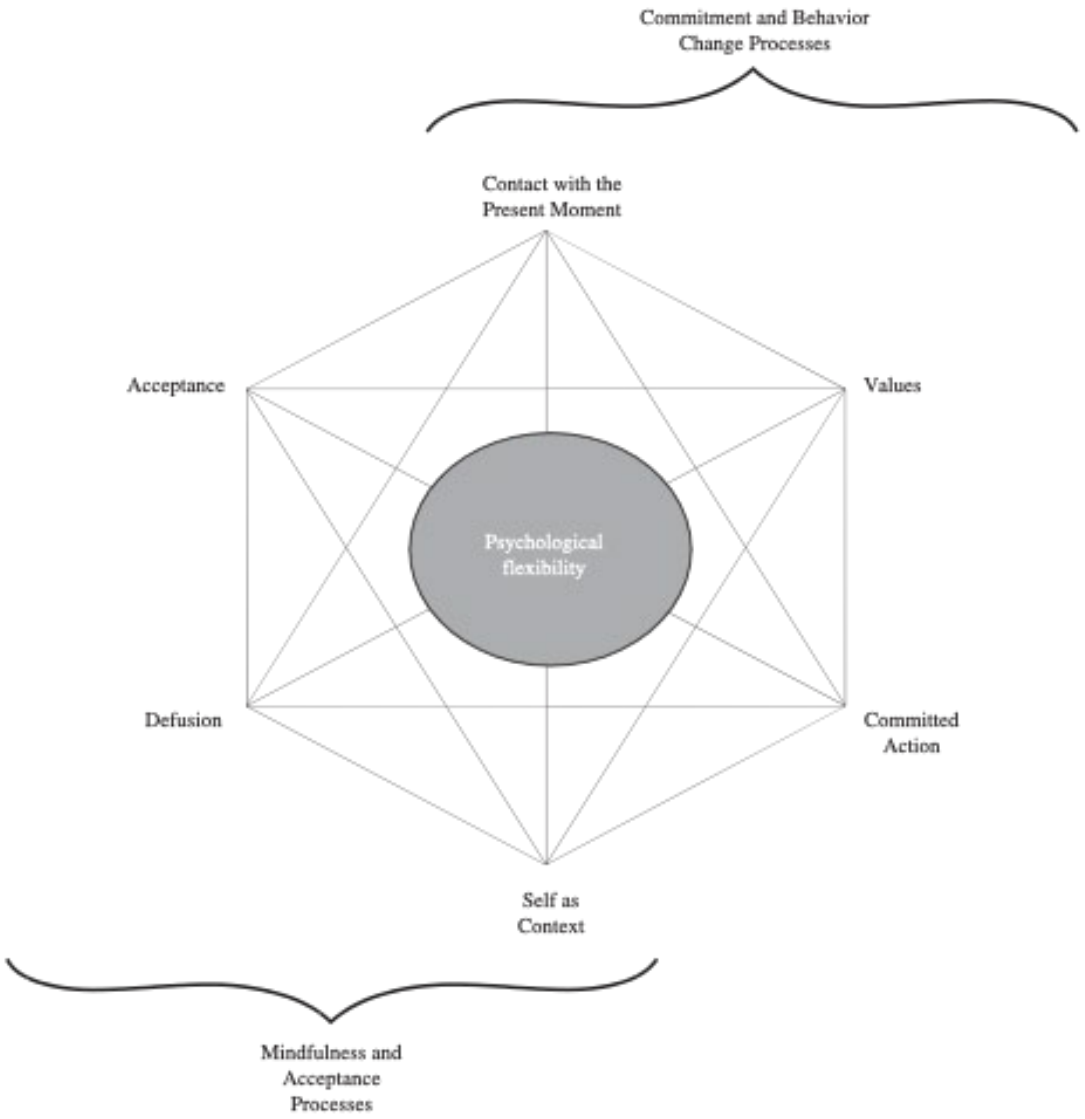
Acceptance and Commitment Therapy (ACT)

- Rather than focusing on changing psychological events directly, ACT seeks to change the function of those events and the individual's relationship to them.[12]
- Aims to promote psychological flexibility by teaching individuals to accept their thoughts and feelings while committing to actions aligned with their personal values.
- Based on a psychological flexibility model.[12]

ACT Model of Behavior Change[12]



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Psychotherapy after TBI

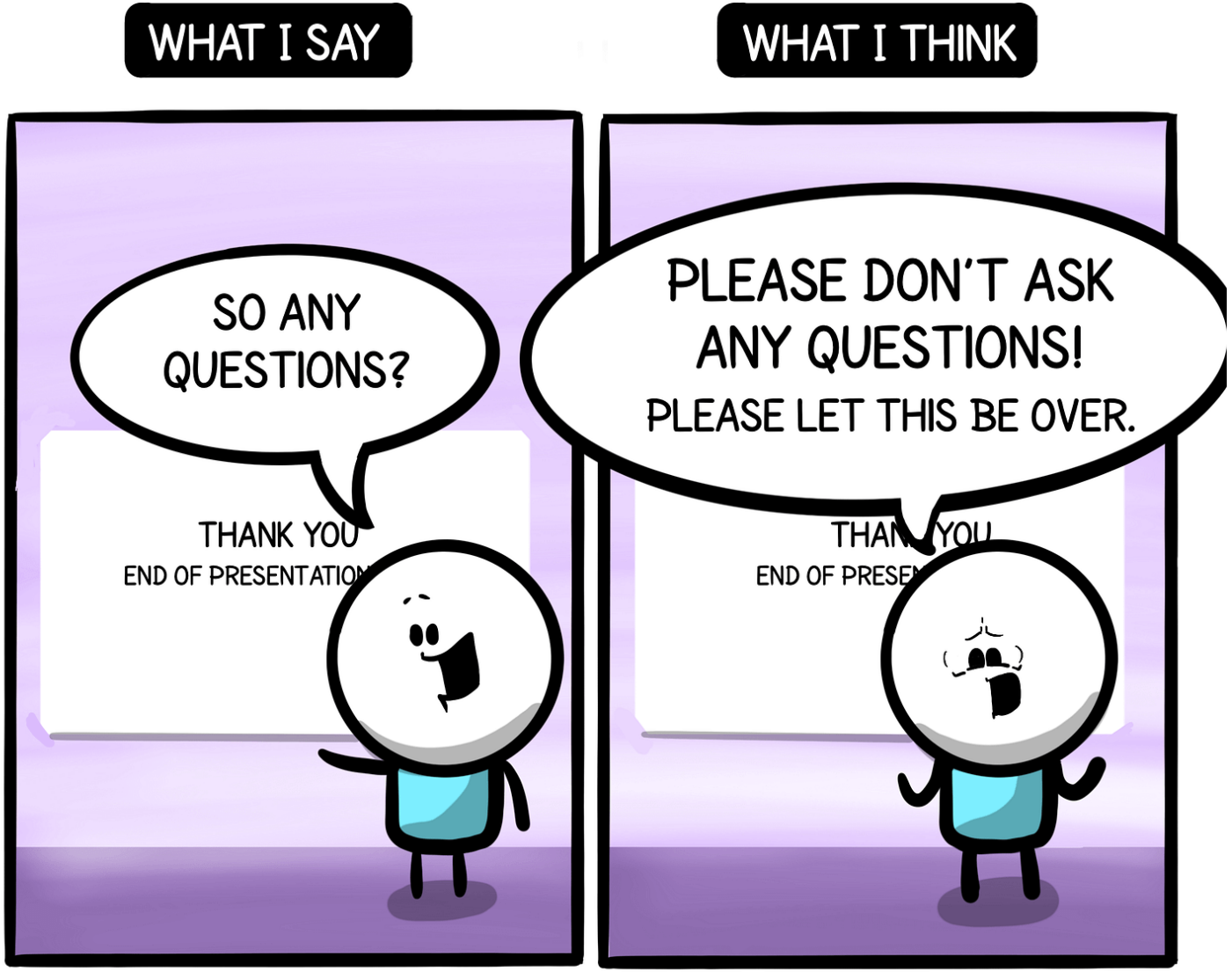
- CBT was found to be effective for hopelessness, stress, and anxiety, compared to usual care; however, it may be as effective as supportive psychotherapy for depression.[28]
- CBT combined with MI may be as effective as CBT combined with nondirective counseling for depression, stress, and anxiety. [28]
- Acceptance and commitment therapy was effective for anxiety, stress, and depression. [28]

BrainACT

- BrainACT is a modified ACT for people with ABI to address possible needs related to cognitive deficits.[29]
- Adaptations may include memory aids, simplified tasks, repetition of content, concrete examples, involving caregivers, adjusting duration/number of sessions. [29]

Main Take Aways

- Depression, anxiety, alcohol use, and suicidal ideation are more common after TBI compared to the general population.
- These challenges occur across all severity levels of TBI, can occur soon after injury, and may persist for some time.
- Consider the impact of mental health on functional outcomes.
- Highlight the importance of ongoing mental health screening with referral to an appropriate provider as needed.



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