

# **TAND: ADHD AND OCD**

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# Disclosures

- None relevant to the talk

# Talk Objectives

- Learn about TAND symptoms
- ADHD
- Executive dysfunction
- Obsessive-Compulsive Disorder

# TAND:

## Overactivity/hyperactivity, restlessness, and impulsivity

- TAND Checklist asks about overactivity/hyperactivity, restlessness and impulsivity as these behaviors overlap and form an **“Overactive/Impulsive Cluster”**
- Overactivity, restlessness, and impulsivity are the most commonly reported TAND behaviors
- Commonly seen in ADHD but can also be seen in:
  - Anxiety disorders
  - Intellectual Disability
  - Autism Spectrum Disorder
  - Executive Dysfunction

# Overactivity/Hyperactivity

- Describes behavioral pattern mostly in children
- Fidgeting/squirming
- Excessive running/climbing
- Excessive motor activity not modified by social contexts or demands
- Difficulty remaining seated (school, workplace)
- Difficulty playing/working quietly
- May talk excessively
- In teens and adults, hyperactivity is often replaced by a feeling of restlessness



# Impulsivity

- “Acting before thinking”
- Blurts out answers/difficulty taking turns in conversations
- Difficulty waiting his/her turn
- Interrupts or intrudes on others
- Invades personal space
- Behaviors may cause safety concerns (running into the road, touching a hot stove)
- May result in poor judgement

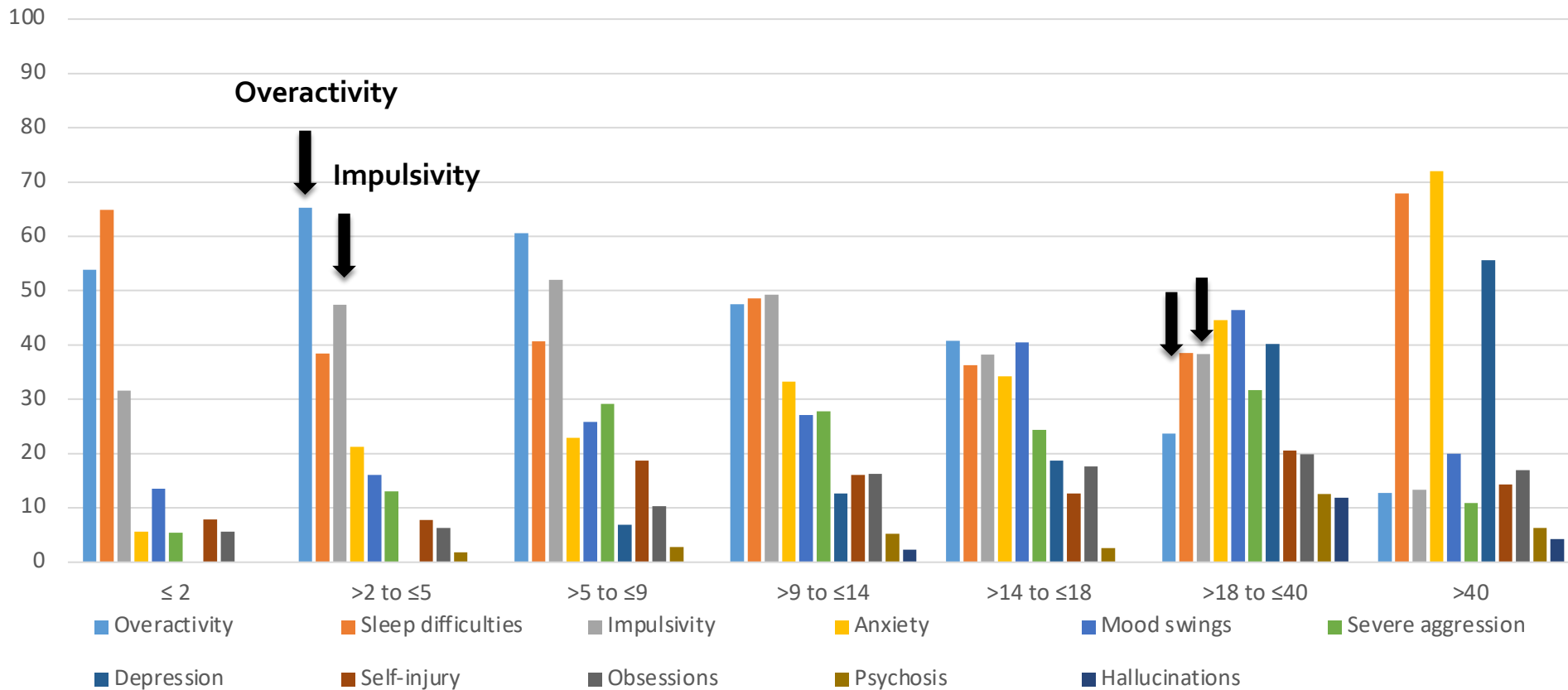


*“I found out the hard way what a short hop it is from ‘Seize the Day’ to ‘Seize the Money!’”*

# TuberOus SClerosis registry to increase disease Awareness (TOSCA)

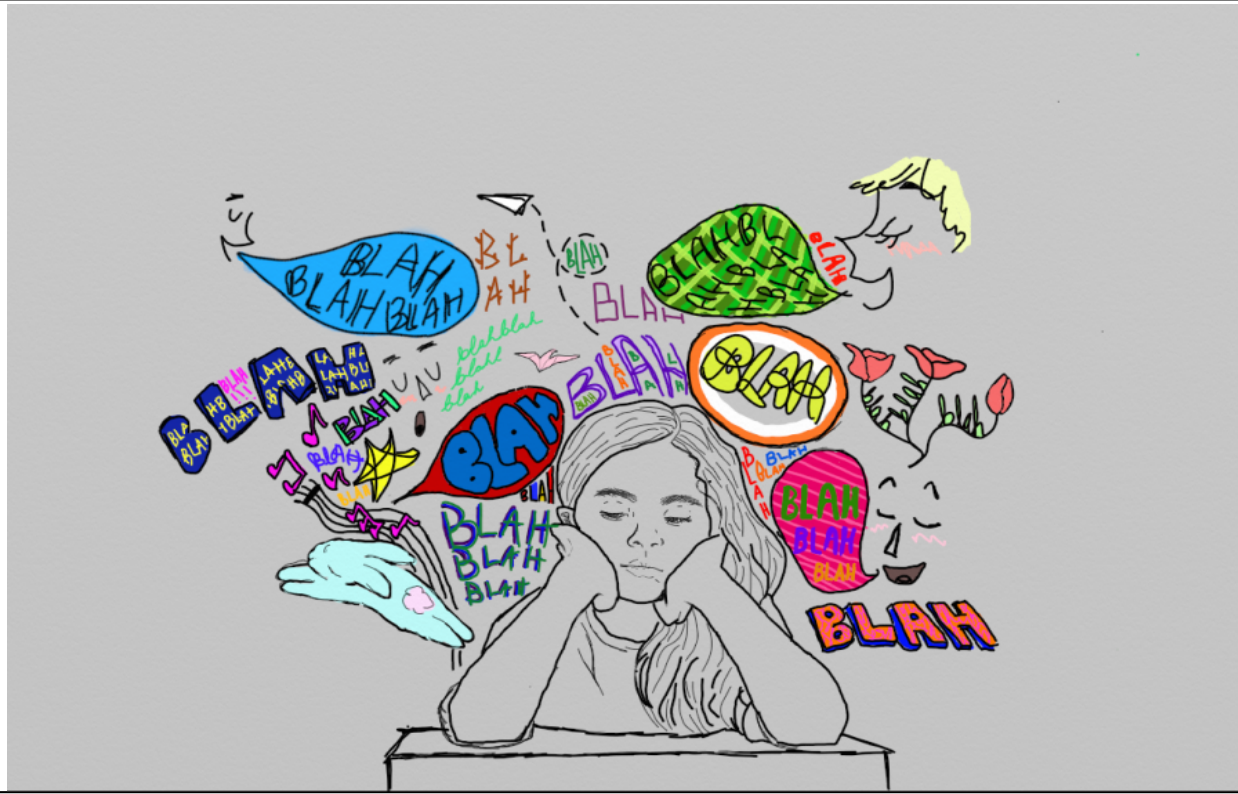
- International disease registry designed to address knowledge gaps in the natural history and management of TSC
- Baseline “core” data from 2093 patients from 170 sites across 31 countries
- Ages ranged from birth to 71
- **Overactivity** was the most reported behavior (45%)
- **Impulsivity** was reported at 43%
- **ADHD** was seen in 19.1% (median age of 6 years with a range from <1 to 38 years)

# TOSCA TAND Data



Overactivity and impulsivity decreased with age





# ATTENTION DEFICIT- HYPERACTIVITY DISORDER

# ADHD

- Childhood-onset neurodevelopmental disorder
- Types → Inattentive only, hyperactive/impulsive only, or both
- Can continue into adulthood
- Diagnosis is based on meeting behavioral criteria
- No laboratory, imaging, or EEG test can definitively rule in or rule out ADHD
- 70% of school-aged children with ADHD have at least one other psychiatric disorder (anxiety, oppositional defiant disorder, obsessive compulsive disorder, tic disorder, depression)

# Inattention Symptoms

- Careless mistakes/overlooks details
- Difficulty listening to instructions
- Difficulty attending to tasks or activities
- Failure to follow through with instructions or tasks
- Difficulty with organization
- Difficulty with time management
- Avoids/dislikes mentally sustaining tasks (e.g., homework)
- Loses things (wallet, paperwork, keys)
- Easily distracted
- Forgetful in daily activities



# ADHD: Important Points for Diagnosis

- Impairing: negatively impacts social and academic/occupational activities
- Inconsistent with developmental level
- Persistent: symptoms need to be present for greater than 6 months
- Pervasive: symptoms need to be present in two or more settings—school/work, home, with friends or relatives, in other activities
- Not better accounted for by something else
- Having ADHD does not mean that someone is not smart
- ADHD is not attention ***deficit***; rather, attention ***regulation***

# ADHD symptoms change over time and environment

- Structure of school or work setting puts demands on ability to sit still and pay attention
- Attention demands increase with grade level
- For adults, attention demands increase with more things (work, family, other responsibilities)
- Novel, high reward situations may temporarily improve symptoms
- Overactivity is replaced with a feeling of restlessness and drive as people age
- Teens and adults can continue to struggle with poor planning ability, decreased frustration tolerance, and emotional lability

# ADHD

Inattention

Hyperactivity

Impulsivity

**But also...**

Emotional dysregulation

Social impairment

Sensory dysfunction

Sleep problems

Poor self-esteem

Oppositional defiant behaviors

Difficulty transitioning

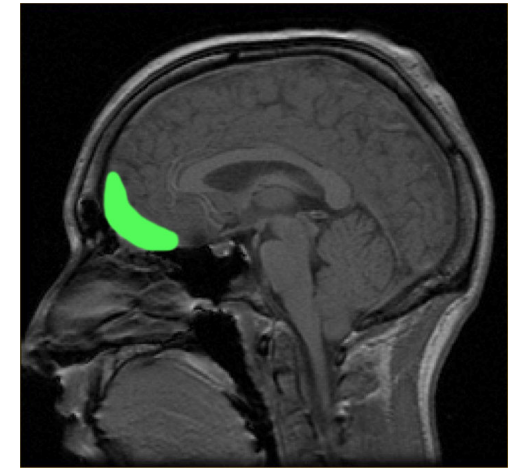
# ADHD in TSC

- ADHD occurs in 30-50% of individuals with TSC
- 10 times more prevalent than in the general population
- Rates are higher in individuals with DD/ID
- Significant overlap with other TSC comorbidities
  - ASD
  - Developmental delay/intellectual disability
  - Epilepsy
- Risk for ADHD in TSC:
  - Frontal lobe epilepsy and/or EEG abnormalities
  - TSC2 mutations?

In addition, individuals with TSC are at risk for overall **executive dysfunction**

# What is Executive Functioning?

- Directing attention
- Regulating emotions
- Controlling impulses
- Keeping track of information to complete a task (working memory)
- Multi-tasking
- Planning
- Organization
- Self-monitoring
- Anticipating consequences



"Think this is bad? You should see the inside of my head."



# Executive Dysfunction

- Difficulty controlling emotions and showing self-restraint
- Goal-directed behaviors
  - Plan, organize, execute, and monitor goal-directed activities and anticipate consequences
- May be able to perform individual parts of a task but struggle with putting it together
- Difficulty with problem-solving, time management, decision-making
- Difficulty multi-tasking
- Stress, fatigue, and boredom all make it worse



# ADHD and Executive Dysfunction Treatment Principles

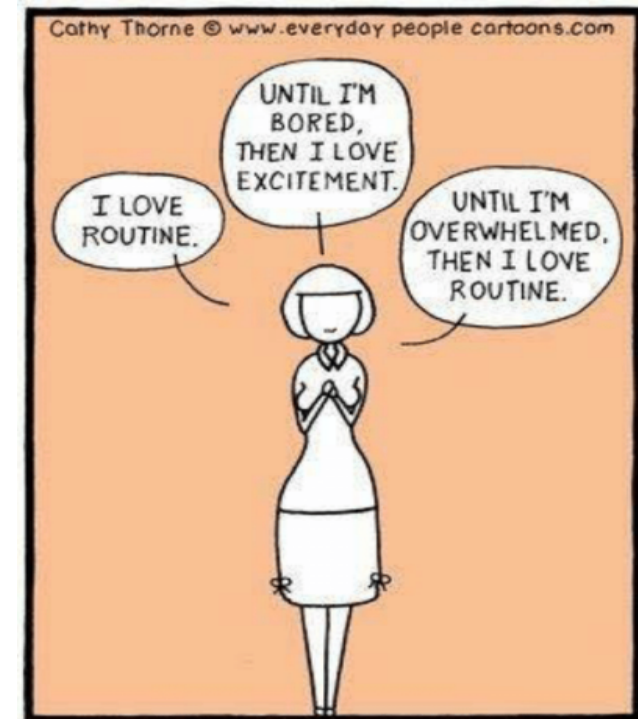
- Keep a consistent routine
- Break tasks into smaller tasks
- Make information external (sticky notes, lists, phone apps)
- Make time external (timers, computers, counters)
- Develop accountability to others to help reach goals

## Resources:

[www.chadd.org](http://www.chadd.org)

[Understood.org](http://Understood.org)

[www.russellbarkley.org](http://www.russellbarkley.org)



# Environmental Interventions at School

Place child close to teacher and away from distractions

Provide verbal or physical cues to stay on task

Visual schedules

Teacher should frequently check to see if the child understands instructions

Graphic organizers for older children/adolescents to help with organization

Chunk assignments

Cover parts of a larger worksheet to help the student only focus on one problem at a time

Frequent motor breaks

# Environmental Interventions at Work



KEEP YOUR WORK  
SPACE CLEAN AND  
CLUTTER-FREE



BREAK LARGER  
WORK TASKS INTO  
SMALLER,  
MANAGEABLE  
TASKS  
*(THINK "RECIPE")*



IF YOU ARE  
FRUSTRATED, DO  
SOMETHING THAT  
YOU ARE GOOD AT  
FOR 10-15 MINUTES.  
THEN, RETURN TO  
THE MORE  
CHALLENGING  
TASK.



SET ACHIEVABLE,  
REALISTIC, AND  
SPECIFIC GOALS

# Environmental Interventions at Home



Use simple, clear, specific, and consistent commands



Break up tasks into smaller steps



Set a consistent time for homework



Create a quiet, organized place to work



Frequent reminders to bring home and complete assignments



Use a calendar/daily planner to help organize assignments



Praise positive behaviors and effort

# Strategies to help with emotional dysregulation

Provide as much stability and consistency as possible

Recognize your child's (or your) emotions and responses are not intentional

Talk about their feelings and provide words/labels

Model positive coping strategies

Teach how to use positive self-talk

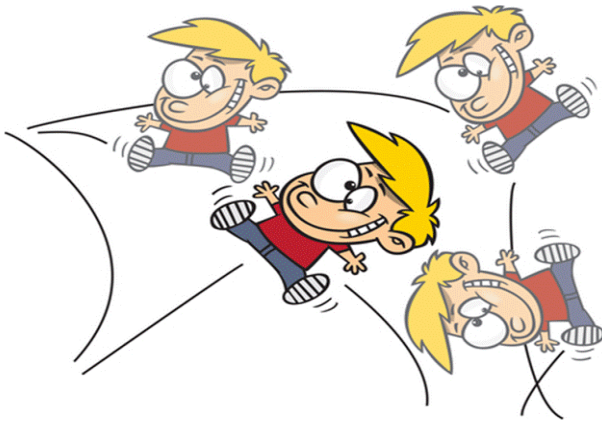
Teach relaxation and calming techniques

Praise effort

"Remote control" example

# Medication Treatment of Inattention, Hyperactivity and Impulsivity

**Medications are used when environmental interventions alone are not enough**



I think this might adversely affect my educational performance

- Stimulants (methylphenidate, amphetamines)
  - First-line medications to treat ADHD
  - Work quickly
  - Short- and long-acting formulations
  - Only take them when you need them
- Non-stimulants (Guanfacine, clonidine, atomoxetine)
  - Guanfacine, clonidine → Alpha-2-agonists used off-label in preschool ages; also help with sleep
  - Atomoxetine → used in ADHD for those whom stimulants are not effective or tolerated
  - May also help with anxiety
  - Need to take everyday

# Stimulant and Non-stimulant Medication Effects

- Decrease in core ADHD sx

- Inattention
- Hyperactivity
- Impulsivity



- Improvements also seen in

- Noncompliance
- Impulsive aggression
- Social interactions
- Academic productivity
- Academic accuracy

} In lab settings



# Choosing Psychostimulant Medications

70-75% of will have a beneficial response to any given stimulant

≥90% will respond if both methylphenidates (MPH) and amphetamines (AMPH) are tried

- Note that up to 25% may respond to *only* MPH or AMPH but not both
- ~50% who do not respond to one class (MPH or AMPH) will respond to the other

# Stimulant Side Effects

- More common
  - Decreased appetite (14-22% vs 2-6% placebo)
  - Trouble falling asleep (8-17% vs 2-7% placebo)
  - Stomachaches (11-14% vs 7-10% placebo)
  - Headaches (15% vs 8% placebo)
  - Nervousness (8-17% vs 2-7% placebo)
  - Irritability (17%)

**Side effects tend to be more common with amphetamines compared to methylphenidates. However, this is not always the case, and each person is different.**



# Non-stimulant Side Effects

## **Alpha-2-agonists**

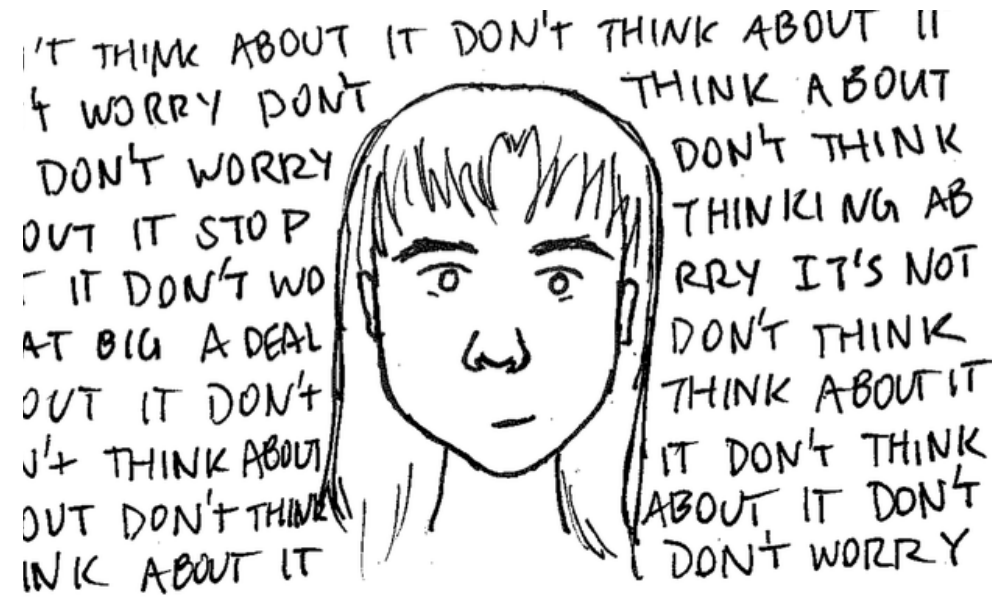
- Drowsiness
- Low blood pressure
- Nausea
- Stomach pain
- Constipation

## **Atomoxetine**

- Abdominal pain
- Dizziness
- Loss of appetite
- Nausea
- Constipation
- Rarely, can develop a rash or swollen, red, itchy skin (angioedema)
- Use with caution in individuals with a family history of Bipolar disorder

# Predictors of Increased Side Effects with Stimulant and Non-stimulant Medications

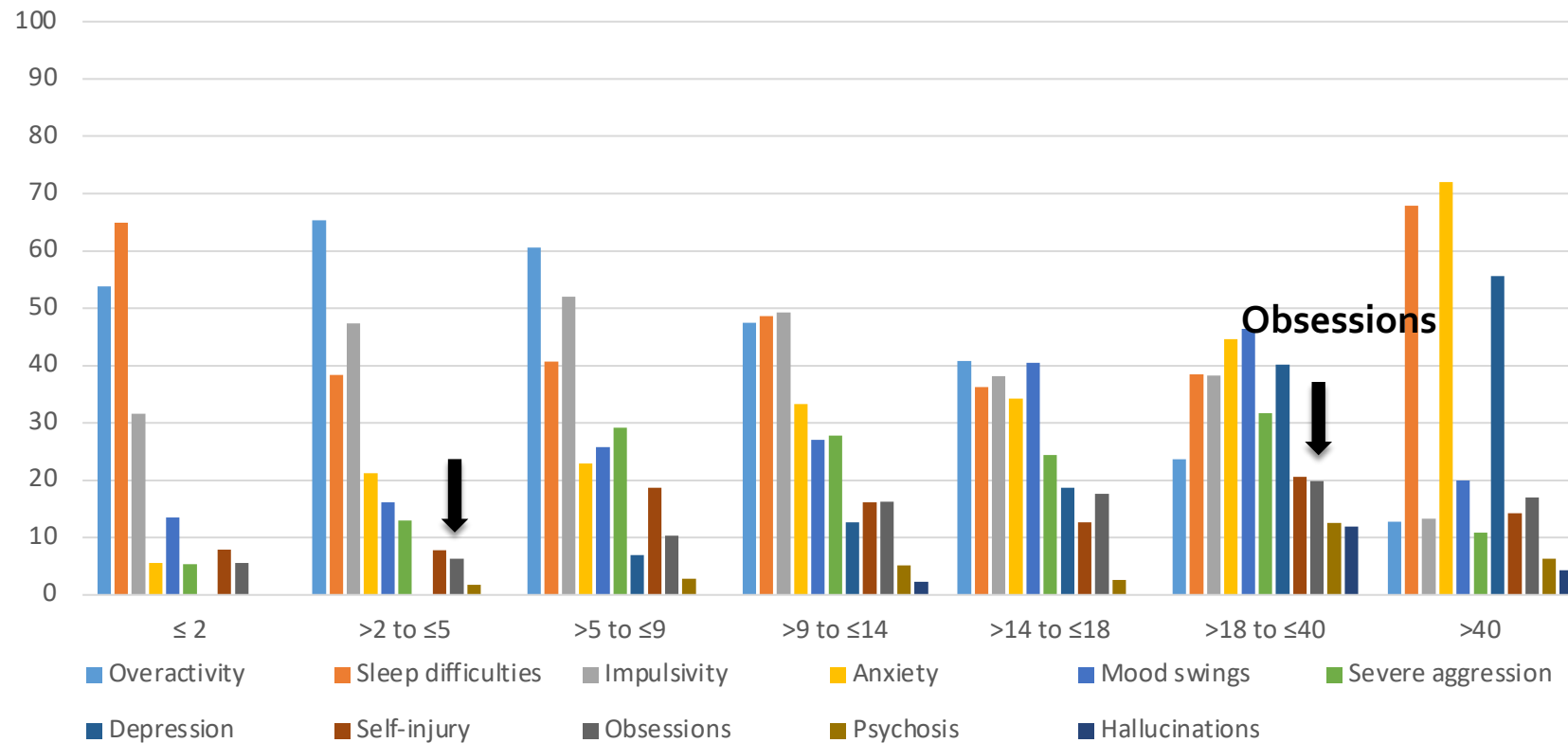
- Increasing dose
- Younger age (preschool vs. school age)
- Developmental comorbidities
  - Autism Spectrum Disorder
  - Intellectual Disability



# OBSESSIVE-COMPULSIVE DISORDER

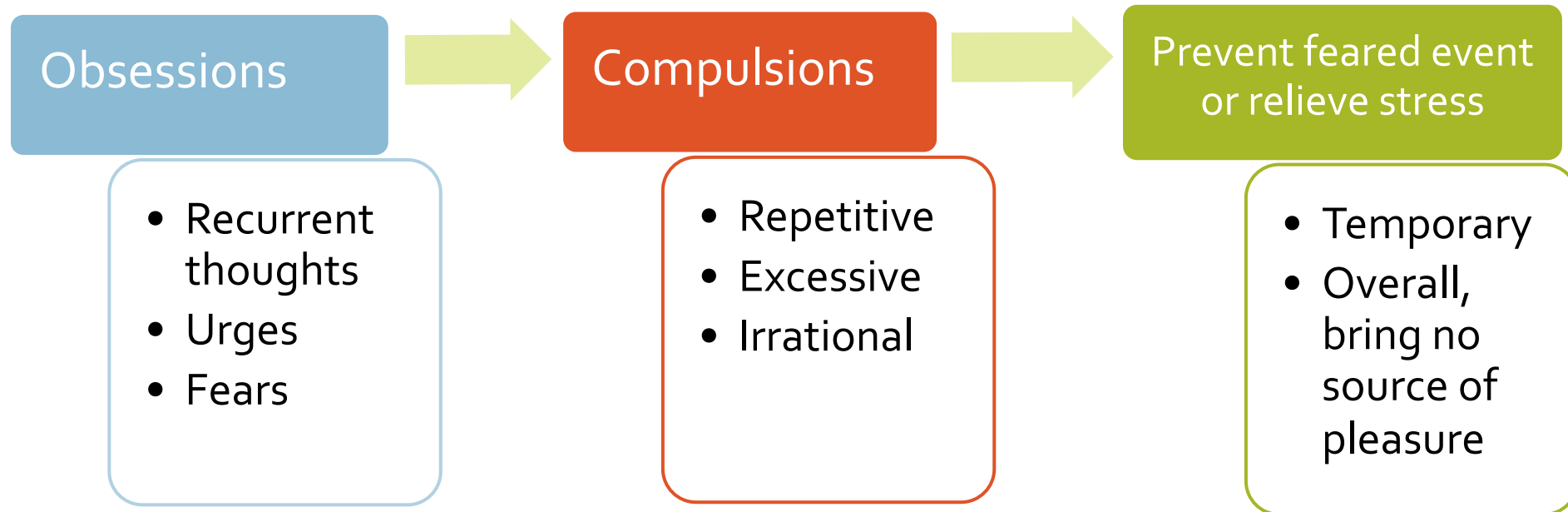
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# TOSCA TAND Data for Obsessions



Obsessions were seen in 14%  
More commonly reported in adults

# Obsessive-Compulsive Disorder



## Obsessions

- Symmetry
- Germs and contamination
- Forbidden thoughts (violent, religious)
- Harming someone
- Losing control
- Fears

## Compulsions

- Repetitive counting and ordering of objects
- Excessive cleaning
- Checking (stove, door, etc)
- Tapping (surfaces)
- Undoing and repeating
- Hoarding

- **Compulsions do not need to have a logical connection to the obsession**
- **Compulsions need to take up to at least 1 hour per day**
- **Generate stress and impair overall functioning**



# What is not OCD?

- OCD is not enjoying neatness, cleanliness, and order
- Anxiety
  - Recurrent thoughts or worries
  - Can be particular about order or routine
- Autism Spectrum Disorder
  - Unusual repetitive interests
  - Stereotyped motor behaviors (hand flapping, rocking, spinning)
  - Insistence on sameness (rigid with specific routines)
- Tic Disorders
  - Repetitive motor or vocal behaviors
  - Sometimes an urge to do the behavior
  - Tics change, wax and wane



**BUT...**

OCD can be associated with anxiety disorder, ASD, major depressive disorder, and tic disorders

# Executive Function Issues in OCD



- Difficulty shifting attention to a new idea
- Get “stuck” in a repetitive cycle
- Difficulty prioritizing and ordering specific actions
- Recurrent thoughts make it difficult to stay on task and be productive

# Treatment of OCD

- Cognitive behavioral therapy
  - Increase exposure to what causes the problem while not allowing the repetitive behavior to occur
- Medications (SSRIs, clomipramine)
- Medication alone does not help, and OCD recurs with stopping the medication
- Include lifestyle habits to reduce anxiety (good nutrition, regular exercise, sleep)
- Appropriate social support

# Conclusions

- Individuals with TSC struggle with a range of neuropsychiatric difficulties, which often change throughout life
- ADHD is very common in TSC; executive function deficits even more so
- OCD can occur in isolation or in combination with other TAND-related diagnoses
- TAND-related behaviors often co-occur, which can make both identification and treatment more challenging
- HOWEVER, treatment does exist for these disorders

# QUESTIONS?

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