



# Tourettic OCD: Updates and Insights

## Presented By:

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# DISCLOSURES

Dr. Tomczak has nothing to disclose

Dr. Katz has nothing to disclose



# OVERVIEW

- Background
- The unique symptomatology of Tourettic OCD
- Neurocircuitry
- Genetics
- Exacerbating factors:
  - Infectious/Inflammatory processes
  - Perinatal complications
  - Psychosocial stress
- Treatment
- Psychoeducation
- TOCD: a unique endophenotype

# BACKGROUND

- First described in the literature in 2005 (Mansueto et. al)
- Not currently recognized in DSM-V  
"Tic-related" OCD
- Mounting evidence of a distinct intermediate neuropsychiatric disorder distinct from either OCD or TS
- Under-recognized entity with few focused studies
- Extrapolation from studies of tic-related OCD and/or co-morbid tics and OCD

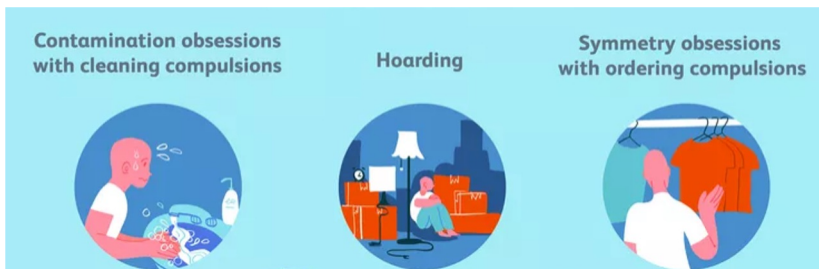


# SYMPTOM PRESENTATION

## OCD

Triggered by distressing anxious thoughts (obsessions)

Voluntary, Repetitive rituals intended to alleviate anxiety, typically multi-step behaviors



## TOCD

Triggered by premonitory urges/ somatic sensations

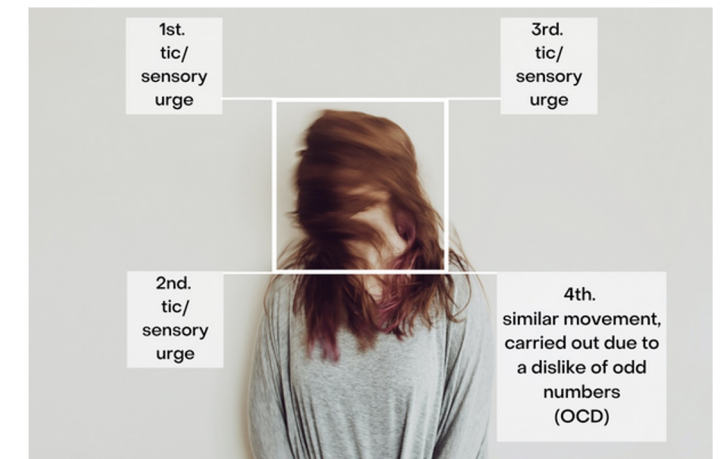
Involuntary, Sudden stereotyped, movements typically one body area



## Tic Disorder

Somatic urge often with recognition of needing to be "just so"

Repetitive complex movements often with several steps including tapping, arranging, repetitions

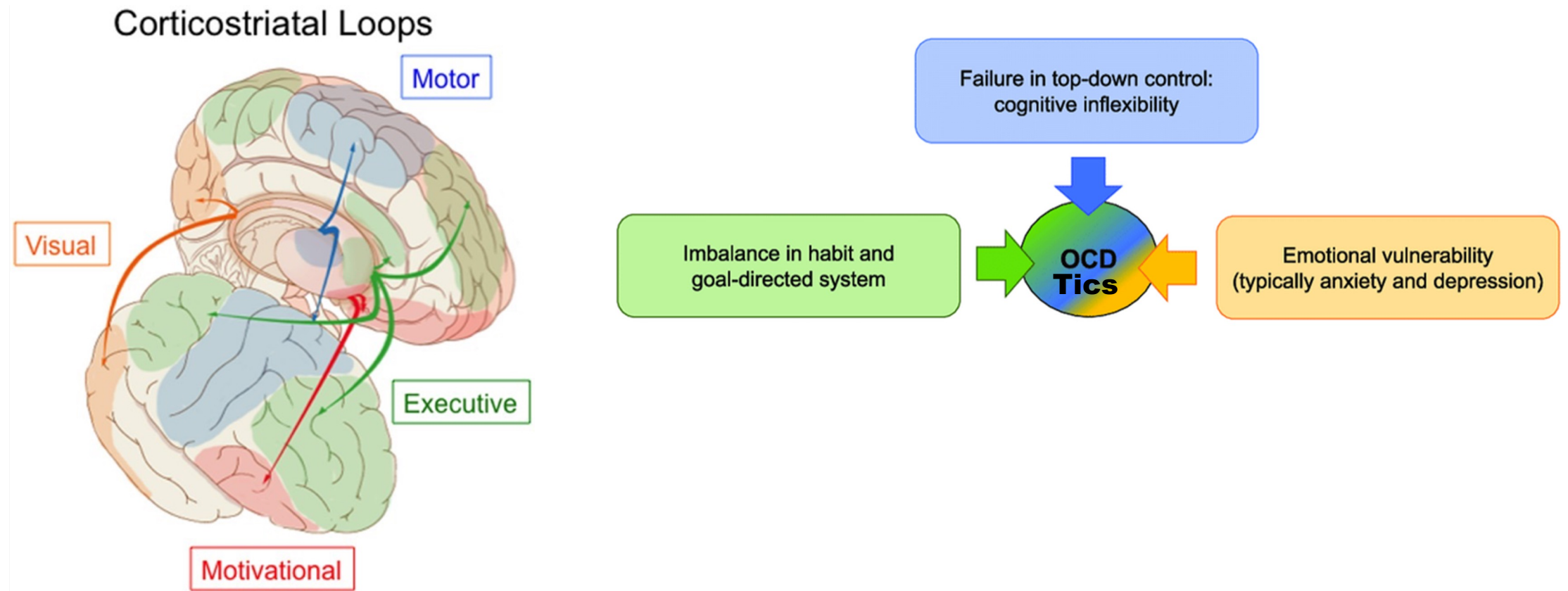


# Specific Symptoms of TOCD

- Age of onset 7-13 (between OCD and TS)
- Complex multi-step behaviors
- Rituals preceded by uncomfortable sensation, *not* intrusive anxious thoughts “Just so”
- No “bad” outcome if ritual not completed, but feeling of discomfort persists

# NEUROCIRCUITRY

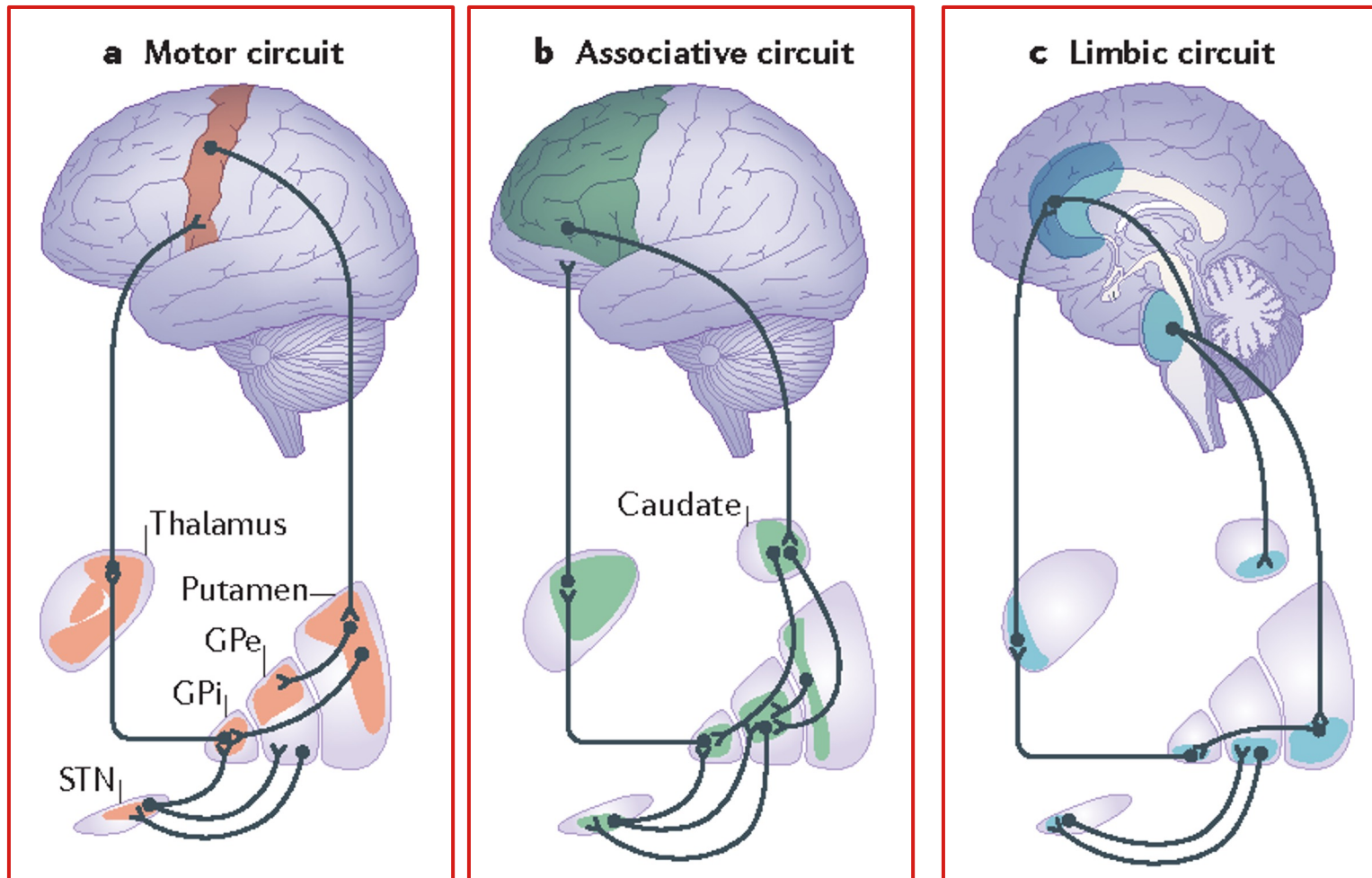
The Cortico-Striatal Cortical Circuit (CSTC) is involved in both OCD and Tics



Lawrence et al. (1998) and Seger (2008, 2013).

# NEUROCIRCUITRY

The Cortico-Striatal Cortical Circuit (CSTC) is involved in both OCD and Tics



Jahanshahi et al, 2015  
Nature Reviews Neuroscience



# GENETICS

- Tourette syndrome - 70-80% heritability
- Tourette Syndrome Association International Consortium for Genetics (TSAICG) identified numerous genetic mutations in the dopaminergic, serotonergic and glutamatergic pathways of families with Tourette Syndrome.
- Multiple Genome wide association study (GWAS) did not identify specific significant SNPs but the top variants were in genes regulating expression and methylation of genes in the frontostriatal circuitry
- TIC GENETICS WES found histaminergic pathway genes were highly enriched. Histamine is involved in inflammation, and smooth muscle tone

# GENETICS

- OCD heritability 37% in adults with OCD and 43% in childhood onset OCD
- The age of onset linked to familial genetic loading
- Pediatric OCD - two-fold higher risk of having first degree relative
- Tics and OCD share some genetic blueprint
- Monozygotic twin show only 50% concordance rates in tic-related OCD
- TOCD genetics still unknown

# INFECTIOUS OR INFLAMMATORY PROCESSES

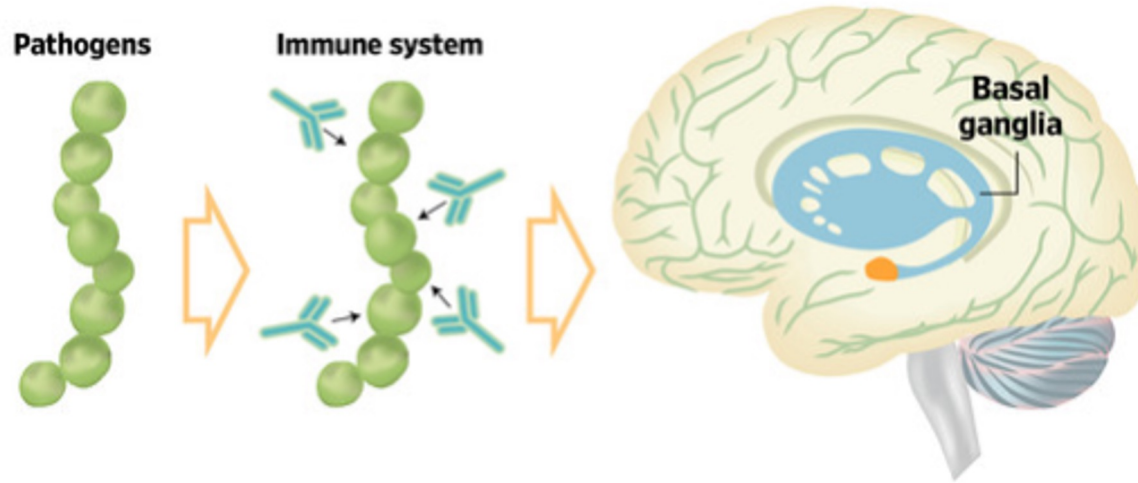


- Danish OCD and Tic Study:
  - > 1 million children aged birth - 17
  - documented history of infections
  - streptococcal and non-streptococcal
  - increased risk of both tic and OCD symptoms

*Not always recapitulated in the literature*

- European Multicentre Tics in Children Study (EMTICS)
  - 259 children aged 3-10
  - first degree relative with tics but no personal history
  - no correlation with prior GAS infection

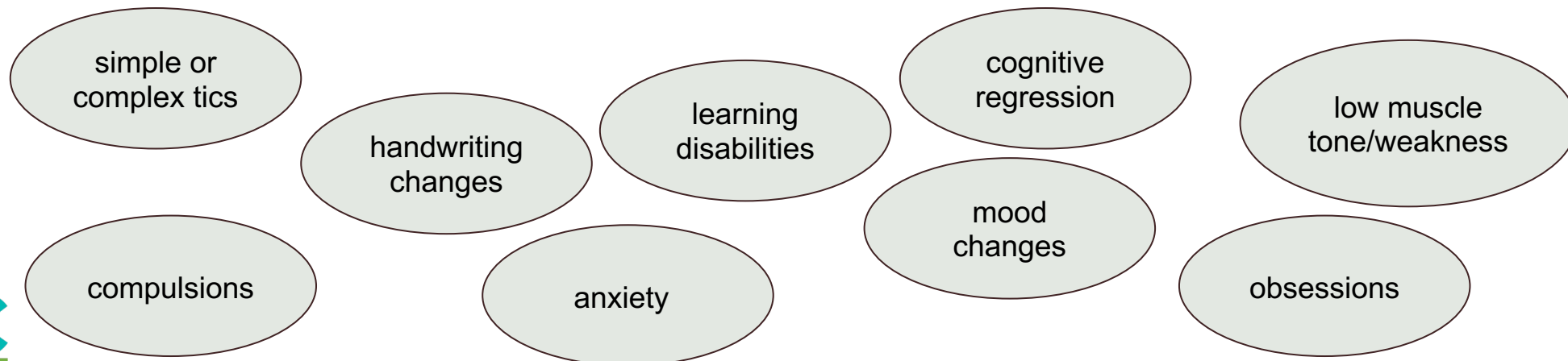
# INFECTIOUS OR INFLAMMATORY PROCESSES



The Wall Street Journal, July 12, 2015

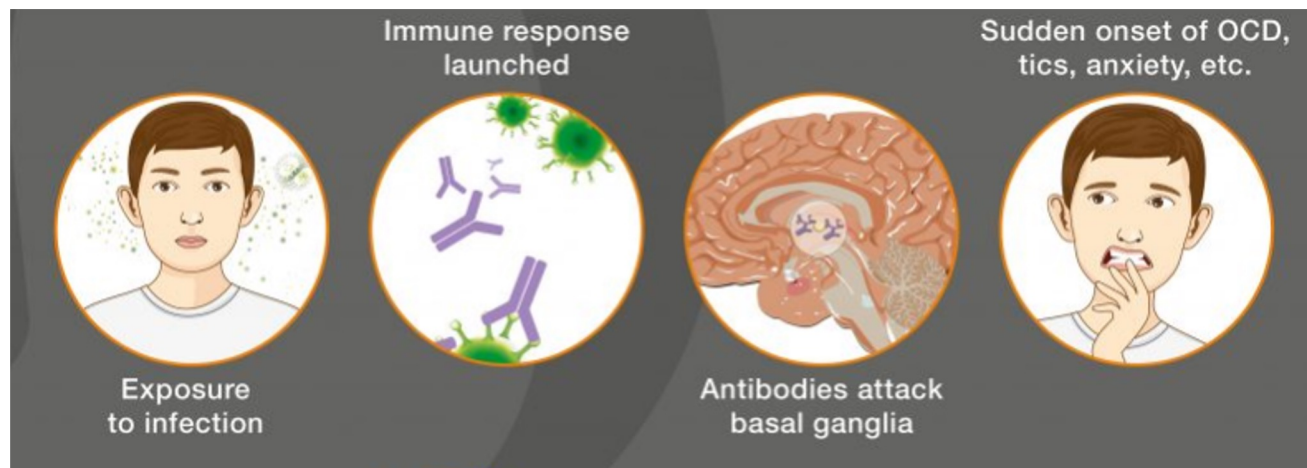
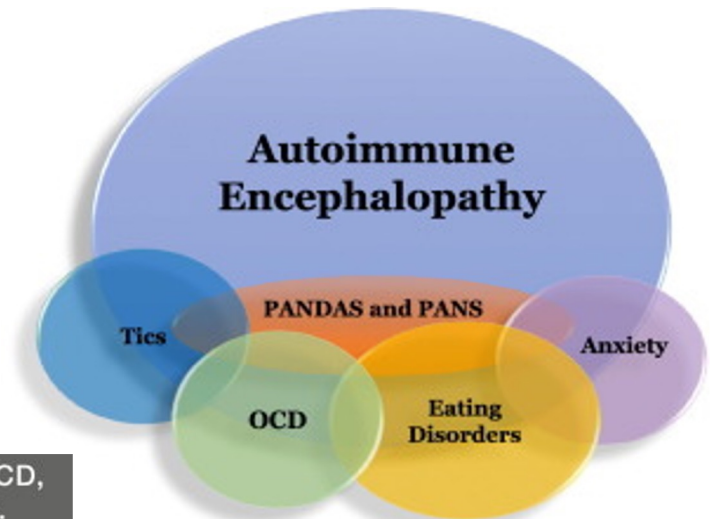
> In predisposed individuals, immune response cross reacts with the brain

> particular association with receptors in the basal ganglia



# INFECTIOUS OR INFLAMMATORY PROCESSES

- Pediatric Autoimmune Disease Associated with Streptococcus (PANDAS)
- Autoimmune encephalitis, triggered by strep infection (Group A strep), which can result in neuropsychiatric symptoms
- *Acute* onset tic or OCD symptoms among other symptoms
- Some controversy in the literature - a valid entity though may be over-prescribed/ascribed



Mantracare.org



# PERINATAL COMPLICATIONS

- Geller et al., 2008
  - induction, use of forceps, prolonged labor, conversion to C-section
    - earlier age of onset
    - symptom severity
    - increased incidence of co-morbid tics and OCD (TOCD?)
  
- Tourette International Collaborative Genetics Study, 2016
  - 586 patients with chronic tic disorders, 527 healthy controls

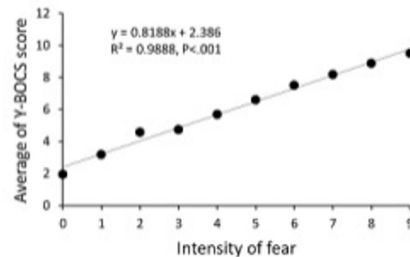
→ Pre and perinatal complications increase incidence of CTD and OCD

  - premature birth
  - severe hyperemesis gravidarum
  - problems during delivery
    - prenatal complications - CTD
    - inter-natal and post-natal - OCD

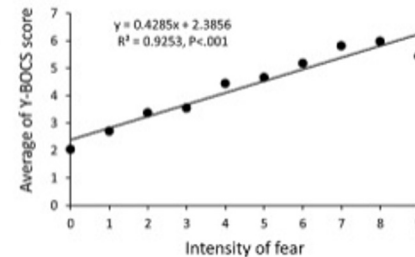
# PSYCHOSOCIAL STRESS

- Linked to CTD and OCD incidence and symptom severity, suggesting link to TOCD as well
- Exemplified during COVID-19 pandemic

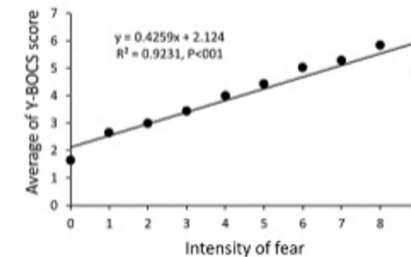
d. The first survey



e. The second survey



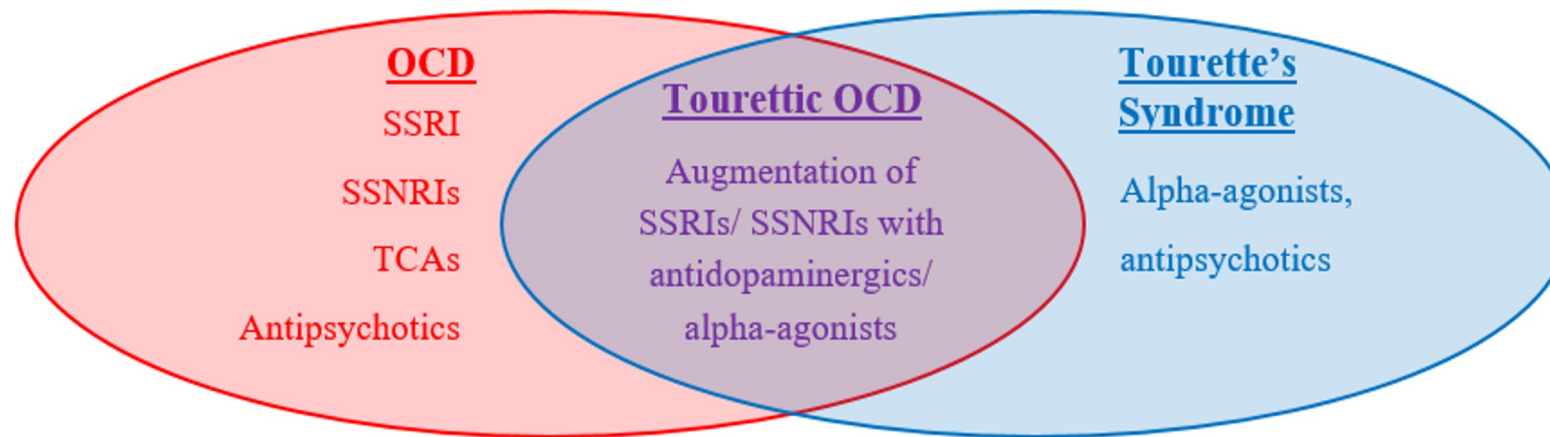
f. The third survey



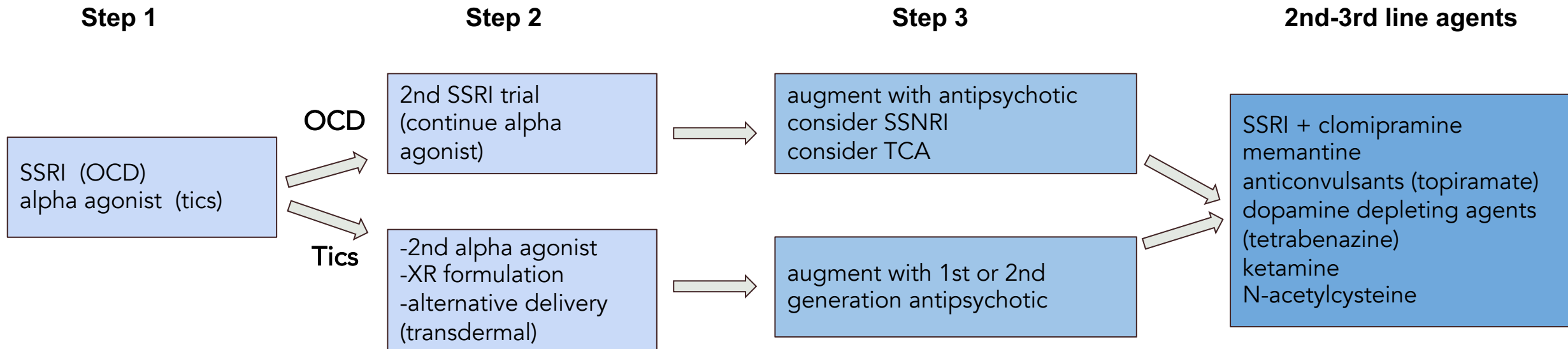
[J Med Internet Res. 2020 Sep; 22\(9\): e21915.](#)

# MEDICATIONS FOR OCD, TOCD AND TS

- Common first line medications
- More treatment refractory than OCD or TS alone



# PHARMACOLOGICAL TREATMENT OF TOCD



- If working, continue current regimen for 12-18 months
- Lab monitoring: HbA1c, lipid panel, prolactin, CBC

# BEHAVIORAL THERAPY FOR TOCD

- **OCD therapies:** Cognitive Behavioral Therapy (CBT) and Exposure Response Prevention Therapy (ERP)
- **Tic therapies:** Comprehensive Behavioral Intervention for Tics (CBIT)

Focus on decreasing anxious-somatic distress through CBT or ERP in addition to targeting tics with behavioral interventions using CBIT techniques



"You won't get me to sit on the couch and discuss my obsession until I straighten things up, Dr. Hunter."



# BEHAVIORAL TREATMENT ADJUSTMENTS



With CBT and ERP target unhelpful thinking causing anxiety that triggers tics



Implement CBIT techniques with a competing behavior in response to the urge to tic, which over time will lessen the premonitory urge

# SPECIAL CONSIDERATIONS FOR PARENTS

- Children with TOCD can feel intense physical discomfort if unable perform their compulsions
- They be irritable and easily frustrated - negative impact on family dynamics
- In order to perform “just right” behaviors they often involve other family members, especially mothers to participate in the sequence of behaviors and rituals



# SPECIAL CONSIDERATIONS FOR PARENTS

## PARENT INVOLVEMENT

- Parents may unintentionally accommodate TOCD behaviors
- Parents might knowingly capitulate to TOCD behaviors in order to avoid frustrations or tantrums
- Parental anxiety is often projected on children with TOCD
- Avoid positive-reinforcement!



# PSYCHOEDUCATION

## GENERAL POINTS FOR PATIENTS AND PARENTS

- healthy diet
- sleep-wake cycle
- do not overschedule
- limit screen time
- encourage physical activity, e.g. soccer, long-distance running, swimming can help decrease anxiety and indirectly OCD and tics



# PSYCHOEDUCATION

## TREATMENT OF TOCD

- Engagement in behavioral therapy involves time, patience, and resources (CBT or ERP + CBIT)
  - CBT and ERP focus on distress tolerance rather than fear or anxiety
  - Relaxation techniques and substitution training such as habit reversal therapy (HRT) are helpful
  - Multiple medication trials, and side effects are possible
- ***Parents are essential to treatment***



# PSYCHOEDUCATION

## SCHOOL IMPLICATIONS

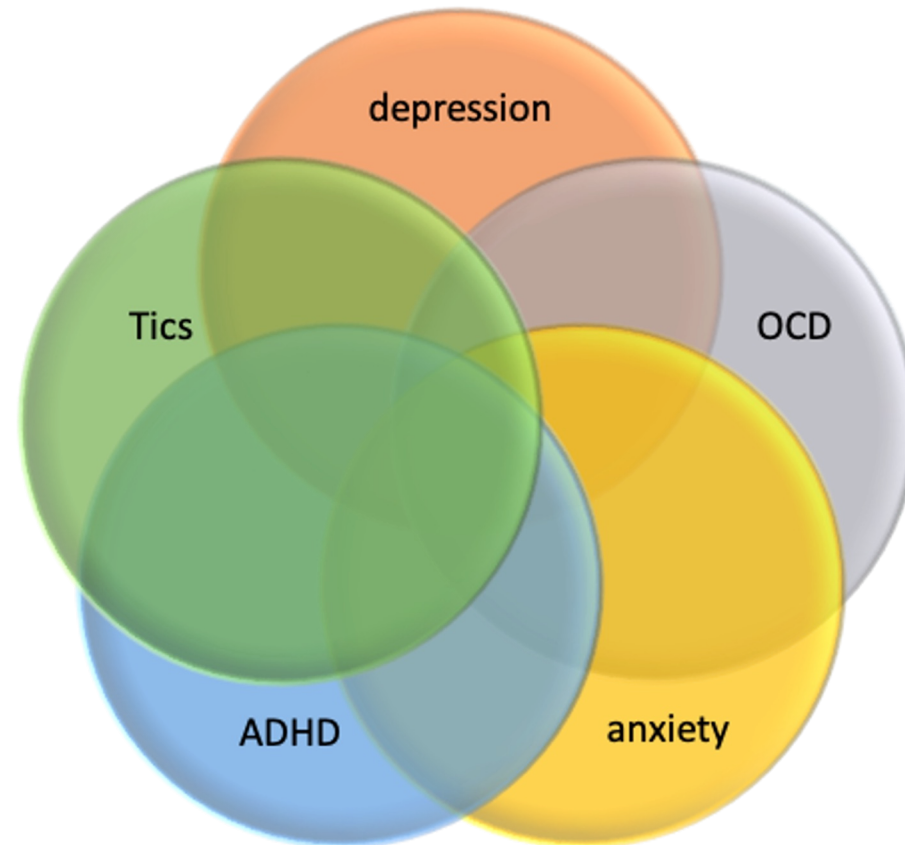
- Interference with academic functioning and disciplinary action
- Academic accommodations such as 504 plan or Individualized Educational Plan (IEP)
- Communication with teachers and school psychologists should focus on emotional support, mitigation of social anxiety, and bullying prevention



# PSYCHOEDUCATION

## SCHOOL AND LIFE IMPLICATIONS:

- Complexity of symptoms can impede social, emotional, and academic development

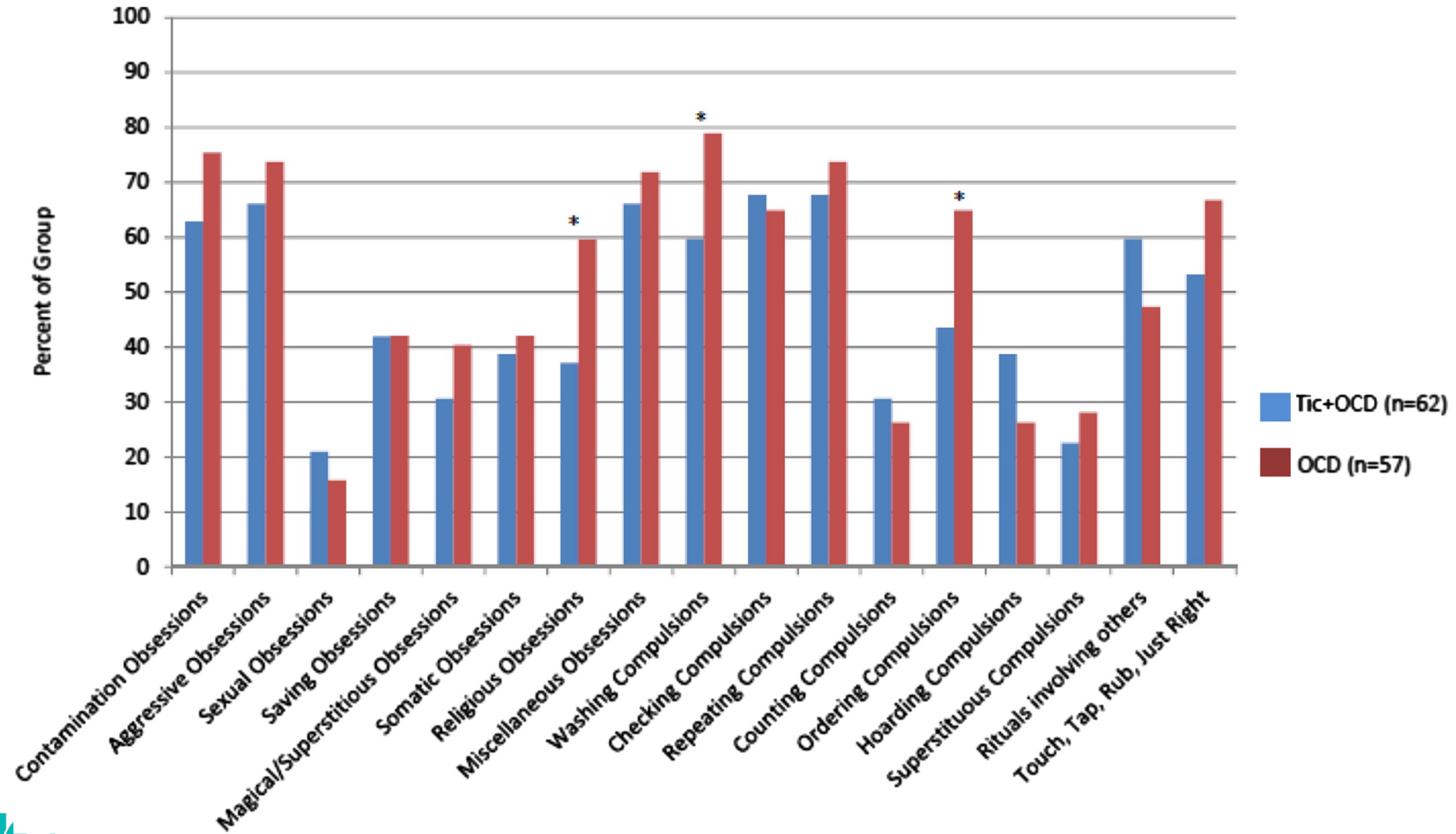


# UNIQUE ENDOPHENOTYPE

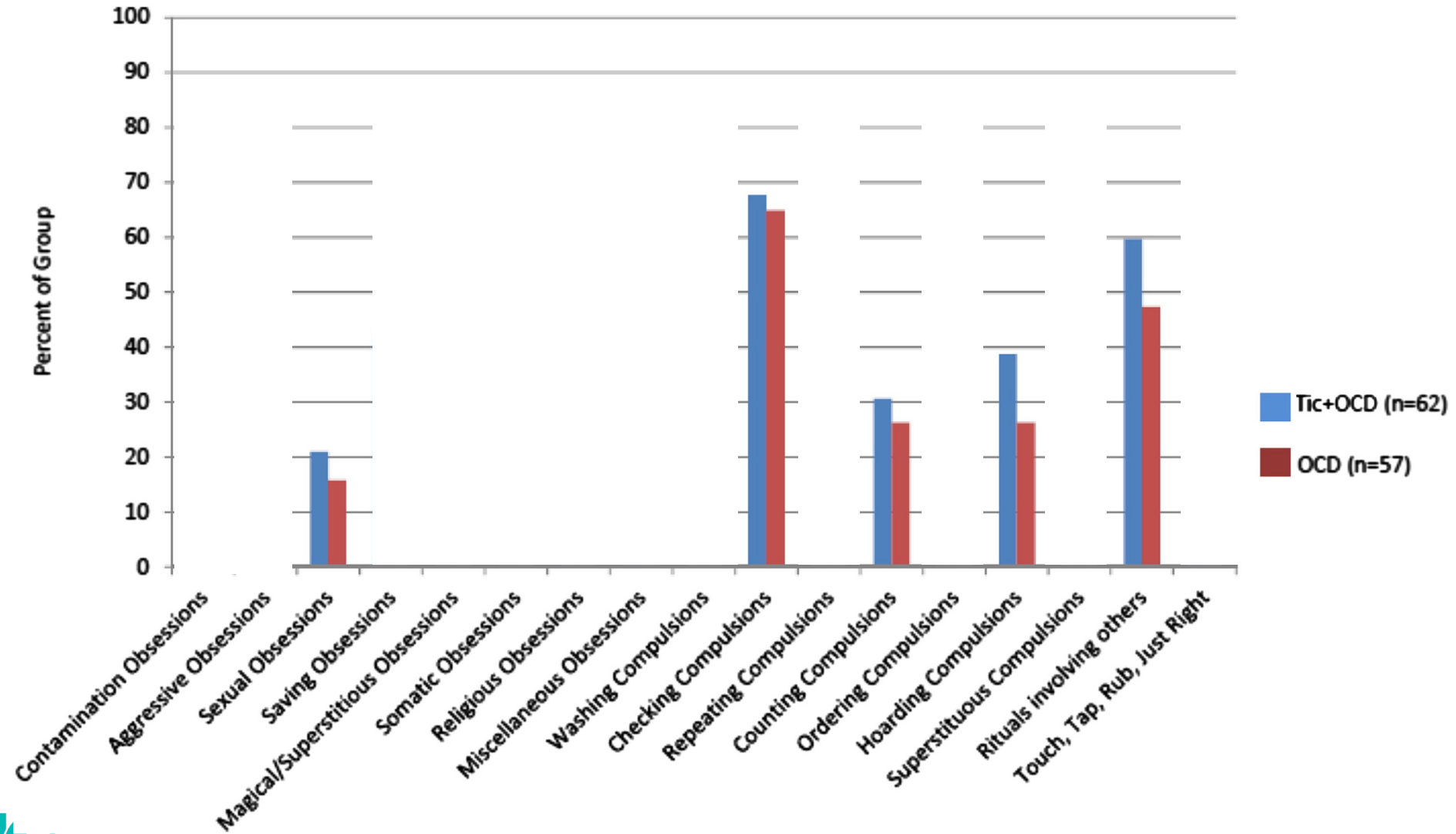


	Tourette	with mild OCD	TOCD	with mild tics	OCD
Anxious obsessions/ "just so phenomenon"			●	●	●
Somatically driven urges	●	●	●	●	
Externalizing (impulsions or compulsions)		●	●	●	●
Vocal and/or motor tics	●	●	●		
Tendency to be treatment refractory			●		

# UNIQUE ENDOPHENOTYPE



# UNIQUE ENDOPHENOTYPE





# UNIQUE ENDOPHENOTYPE

- Overlapping TS and OCD genetics and neurocircuitry
- Currently unknown why some patients develop tics vs OCD vs TOCD
- Epigenetic and Environmental factors clearly play a role
- May determine varying presentations
  - dietary habits
  - gut microbiome composition
  - physical exercise
  - allergens
  - environmental stressors
  - family conditioning
  - access and initiation of treatment

# UNIQUE ENDOPHENOTYPE

- TOCD is a unique endophenotype but often hard to diagnose
- The symptoms are a moving target which is a challenge
- TOCD diagnostic and developmental continuum
- TOCD is often treatment refractory thus may represent the end of the spectrum
- More research is needed to better understand this subgroup of patients

# QUESTIONS?

THANK YOU!



[Front Psychiatry](#). 2022; 13: 929526.

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PMCID: [PMC9363583](#)

PMID: [35966462](#)

Tourettic OCD: Current understanding and treatment challenges of a unique endophenotype

[Tamar C. Katz](#), <sup>1</sup> [Thanh Hoa Bui](#), <sup>2</sup> [Jennifer Worhach](#), <sup>2</sup> [Gabrielle Bogut](#), <sup>2</sup> and [Kinga K. Tomczak](#)<sup>2, \*</sup>

Please feel free to ask us questions

