

## The Tourette Syndrome Puzzle: How the Pieces Fit Together

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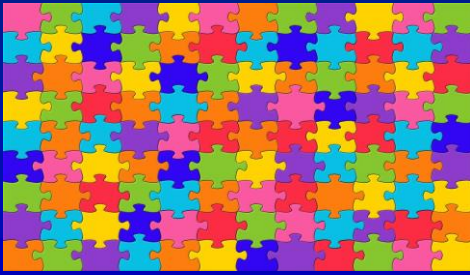
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## A Puzzling Condition on Several Fronts...



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## Phenomenology: What Is It?



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## Tourette's Syndrome: What Is It?

- Tourette's Syndrome (TS) involves motor and vocal tics
- More common in males
- Majority age out, but few reliable predictors of who will and who won't
- Comorbid Conditions
  - Anxiety Disorders (> 40%)
    - Obsessive-Compulsive Disorder (> 30%)
    - Panic Disorder (> 10%)
    - Simple Phobia (> 20%)
  - Major Depression (> 40%)
  - ADHD (> 50-90%)
  - Learning Disability (> 50%)

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## Tourette's Syndrome & Chronic Tics:

- Neurobiological origins (basal ganglia)
- Genetic contribution
- Environmental influences
- If it's biological in nature, is it immutable?
- If it's biological in nature, are biological treatments necessary?
- The analogy of diabetes...

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## Common Features of Tics

- Simple or complex
- Wax & wane
- Occur in bouts of bouts of bouts
- Topography changes
- Motor tics typically develop from head down
- Often follow a developmental pattern
- Usually preceded by premonitory urge

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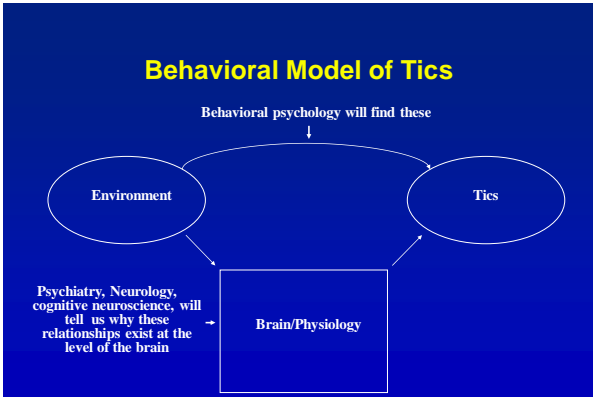
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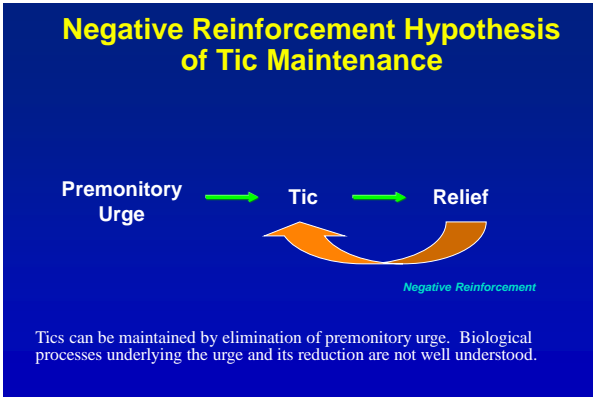
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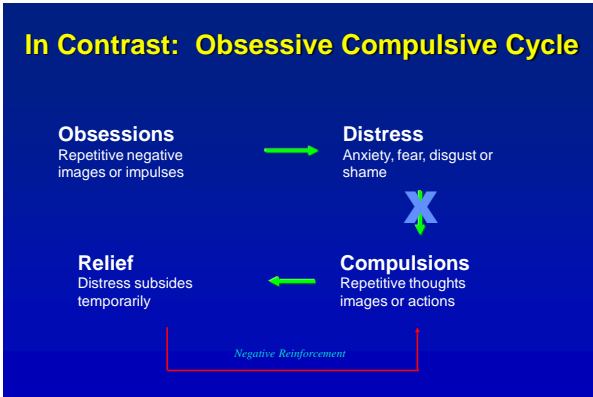
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## Cross Cutting Underlying Factors

- Repetitive behaviors
- Affective states
- Response inhibition deficits
- Behavioral addiction model (short-term rewards that engender persistent behavior despite knowledge of adverse consequences)
- Implications for framing grants in accordance with NIMH's RDOC framework

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## What Environment-Tic Relationships do Behavior Therapists Look For?

- Events in the world that push and pull tics
- Antecedents
- Consequences
- Antecedents & Consequences can be internal (events in your body) or external (events outside your body)
- By understanding how the environment impacts tics, the environment can be modified in a targeted way to promote tic reduction

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## Consequence Events That May Impact Tics

- Tics can be made more frequent by...
  - Social reactions (e.g., Watson & Sterling, 1998)
    - Parental attention or comfort
    - Peer attention
  - Escape from an aversive situation
  - Reduction of premonitory urge as a result of a tic
- Tics can be made less frequent by...
  - Reinforcing suppression of tics
    - Potential reinforcers for suppression could include
      - Avoidance of teasing
      - Being able to participate in a social activity or sport
      - Avoidance of embarrassment

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**Sounds Familiar...  
So Why Wasn't TS Moved in DSM V?**



"A camel is a horse designed by committee."

Sir Alec Issigonis

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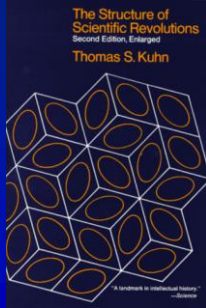
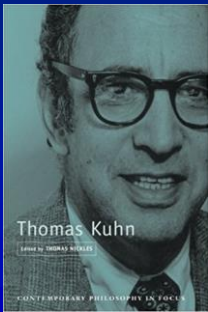
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**Science is Influenced by the Subjective...**



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**Treatment Efficacy:  
What Does the Literature Tell Us?**



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### Treatment Efficacy (Whittington et al., J Clin Psychol & Psychiatry, 2016)

- Oral alpha agonists (guanfacine, clonidine)
- Atypical neuroleptics
- Behavioral treatments including habit reversal training
- No scientific evidence support physical or dietary Tx
- Great heterogeneity w/ respect to Tx response
- No studies of relative vs. combined Tx for MEDS vs. CBIT

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### Empirical Support for Habit Reversal with Tic Disorders

- Transient/chronic tics
  - Effective in reducing or eliminating motor tics in adults and children (Azrin & Nunn, 1973)
- Tourette's Syndrome
  - More effective than relaxation training or self-monitoring (Peterson & Azrin, 1992)
  - More effective than wait-list control (Azrin & Peterson, 1990)
  - More effective than supportive psychotherapy in adults (Wilhelm et al., 2003)
  - More effective than supportive psychotherapy in kids (Piacentini et al., 2010)

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### Moderators/Predictors of Treatment Response

- X
- Y
- Z

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## Treatment Selection

- Availability of expertise
- Developmental level
- Case complexity
- Patient and family preference

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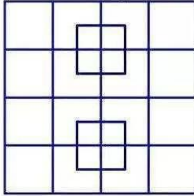
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## CBIT Treatment Implementation

How many squares are in this picture?



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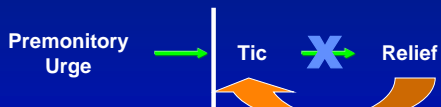
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## Changing Internal Contingencies



*Creates habituation to Premonitory Urge*

*Negative Reinforcement*

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## Habit Reversal: Awareness Training

- Purpose
  - Help client discriminate episodes of behavior
- Three techniques
  - Response Description
  - Early Warning
  - Response Detection
- Necessary level of awareness is unclear

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## Steps of Awareness Training

- Rationale
- Describe Tic and Warning Signs
- Acknowledge therapist simulated tics
- Acknowledge self-tics

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## Habit Reversal: Competing Response

- Purpose
  - Replace target with incompatible behavior
- Engage in CR for 1 minute when....
  - Target behavior occurs
  - "Warning sign" occurs
- Necessary level of compliance/competence is unclear

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## Steps of CR Training

- Introduce CR
- Choose CR
  - Incompatible w/ tic
  - Mutual decision b/w patient and therapist
- Therapist simulates correct implementation of CR
- Client is taught to do CR and practices in session

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## CR Caveats

- CR need not be physically incompatible to be effective, but it makes more intuitive sense to start with an incompatible response
- CR must be done contingent on tic or warning sign to be effective
- CR is held for 1 minute or until the premonitory urge goes away (whichever is longer)
- CR tends to fade as the tic fades

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## Habit Reversal: Social Support

- Purpose
  - Reinforce and prompt use of competing response
- Significant others prompt use of CR
- Significant others praise correct use of CR
- Necessity of social support is unclear, but believed to be necessary with children.

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## Steps of Social Support

- Identify support person
  - Parent, teacher, housemate, older sibling
- Training the reminding of client
  - To be done in an encouraging tone, not a punitive tone
- Praising the praising of client
  - Praise use of exercises, not reduction of tic
- **CREATION OF A 'TIC NEUTRAL' ENVIRONMENT**

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## Add-ons to HRT

- Relaxation training
- Function-based interventions
- Token Economy
- School Assistance
- Self-monitoring is usually added as a way to assess progress

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## The Role of Development



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## Influence of Development on CBIT

- Awareness of tic phenomenology
- Awareness of responses to tics in environment
- Readiness for behavior change
- Family response to tics

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## Any Questions?



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