The Tourette Syndrome Puzzle: How the Pieces Fit Together

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A Puzzling Condition on Several Fronts...

Phenomenology: What Is It?
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%)

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...

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
Behavioral Model of Tics

Behavioral psychology will find these relationships exist at the level of the brain.

Tics can be maintained by elimination of premonitory urge. Biological processes underlying the urge and its reduction are not well understood.

In Contrast: Obsessive Compulsive Cycle

Obsessions
Repetitive negative images or impulses

Distress
Anxiety, fear, disgust or shame

Relief
Distress subsides temporarily

Compulsions
Repetitive thoughts, images or actions
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

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

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

“A camel is a horse designed by committee.”

Sir Alec Issigonis

Science is Influenced by the Subjective…

Treatment Efficacy: What Does the Literature Tell Us?
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 Txs
- Great heterogeneity w/ respect to Tx response
- No studies of relative vs. combined Tx for MEDS vs. CBIT

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)

Moderators/Predictors of Treatment Response

- X
- Y
- Z
Treatment Selection

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

CBIT Treatment Implementation

How many squares are in this picture?

Changing Internal Contingencies

Premonitory Urge → Tic → Relief

Creates habituation to Premonitory Urge

Negative Reinforcement
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

Steps of Awareness Training

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

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
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

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

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.
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
- Praise the praising of client
  - Praise use of exercises, not reduction of tic
- CREATION OF A “TIC NEUTRAL” ENVIRONMENT

Add-ons to HRT

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

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

Any Questions?