Habit Reversal for Children with Tic Disorders

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Disclosures-Woods

**Research Support**
- NIMH
- Tourette’s Syndrome Association

**Speaking honoraria**
- From various academic institutions
- Tourette Syndrome Association

**Royalties**
- Guilford Publications
- Context Press
- Oxford University Press
- Springer Press
Tourette Syndrome

- Motor and vocal tics
  - Simple vs. complex
- Peaks in mid teens
- Peak severity is in early to mid teens
- Up to 1.4% prevalence rate
- More common in boys
- Premonitory urges
The Basal Ganglia

- Putamen
- Thalamus
- Head of caudate
- Globus pallidus
- Tail of caudate
- Amygdala
Behavioral Treatments are Based on the Following General Principles

- The person’s internal and external environment can impact TS symptoms
- The effects of these factors are unique to the individual
- To develop a useful treatment both the external and internal contingencies must be addressed
Functional Assessment/Intervention

- Functional Assessment
  - Look for antecedents (things that come before the tic)
  - Look for consequences (things that may be reinforcing the tic).

- Develop functional interventions for family
  - Designed to decrease effect of or contact with antecedents
  - Designed to eliminate or minimize effect of consequences
Negative Reinforcement Hypothesis of Tic Maintenance

Premonitory Urge → Tic → Relief

*Negative Reinforcement*
Managing Internal Environment

Premonitory Urge → Tic → Relief

*Creates habituation to Premonitory Urge*

*Negative Reinforcement*
Changing Internal Environment

- Habit Reversal Training (HRT)
  - Multi-component treatment (Azrin & Nunn, 1973)
  - 3 main components
    - Awareness Training
    - Competing Response Training
    - Social Support
Habit Reversal: Awareness Training

- **Purpose**
  - Help client discriminate episodes of behavior

- **Three techniques**
  - Response Description
  - Response Detection
  - Early Warning
Habit Reversal: Competing Response Training

• **Purpose**
  - Give patient a behavior to do that is physically incompatible with the tic

• **Three techniques**
  - Choosing the Competing Response
  - Therapist simulation of competing response
  - Patient practice the competing response
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
Comprehensive Behavioral Intervention for Tics (CBIT)

- Habit Reversal Therapy
- Function-Based Intervention
- Reward System
- Psychoeducation
- Relaxation Training
- 8-sessions
Behavior Therapy for Children With Tourette Disorder: A Randomized Controlled Trial

John Piacentini; Douglas W. Woods; Lawrence Scanhill; et al.


http://jama.ama-assn.org/cgi/content/full/303/19/1929

Supported by NIMH R01 MH070802 (Piacentini)
## Sample Characteristics - Child

<table>
<thead>
<tr>
<th></th>
<th>CBIT N=61</th>
<th>PST N=65</th>
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</thead>
<tbody>
<tr>
<td>Mean Age (SD)</td>
<td>11.6 (2.3)</td>
<td>11.7 (2.3)</td>
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<tr>
<td>Gender (% Male)</td>
<td>75.4%</td>
<td>81.5%</td>
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<tr>
<td>WASI IQ (M, SD)</td>
<td>111.7 (13.5)</td>
<td>108.6 (14.0)</td>
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<tr>
<td>Stable Tic Meds at Entry (%)</td>
<td>36.7%</td>
<td>40.3%</td>
</tr>
<tr>
<td>Two Parent Family (%)</td>
<td>82.0%</td>
<td>87.7%</td>
</tr>
<tr>
<td>Father’s Occupation (%)</td>
<td>60.7%</td>
<td>61.5%</td>
</tr>
<tr>
<td>(% Professional)</td>
<td></td>
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# Diagnostic Status

<table>
<thead>
<tr>
<th>Tic Disorder (%)</th>
<th>CBIT</th>
<th>PST</th>
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</thead>
<tbody>
<tr>
<td>Tourette Disorder</td>
<td>91.8</td>
<td>95.4</td>
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<tr>
<td>Chronic Motor Tic</td>
<td>6.6</td>
<td>4.6</td>
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<tr>
<td>Chronic Vocal Tic</td>
<td>1.6</td>
<td>0.0</td>
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<table>
<thead>
<tr>
<th>Other Diagnoses (%)</th>
<th>CBIT</th>
<th>PST</th>
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<tbody>
<tr>
<td>ADHD</td>
<td>32.8</td>
<td>20.0</td>
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<tr>
<td>OCD</td>
<td>13.1</td>
<td>24.6</td>
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<tr>
<td>Generalized Anxiety</td>
<td>16.4</td>
<td>23.1</td>
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<tr>
<td>Separation Anxiety</td>
<td>9.8</td>
<td>7.7</td>
</tr>
<tr>
<td>Social Anxiety</td>
<td>21.3</td>
<td>21.5</td>
</tr>
<tr>
<td>Other</td>
<td>14.8</td>
<td>12.3</td>
</tr>
</tbody>
</table>
CGI-Improvement

*CBIT > PST, p < .0001
Medication status did not moderate outcome
*CBIT < PST, p < 0.01 - 10 week Effect Size d = 0.68
Medication status did not moderate outcome
YGTSS-Impairment (Adjusted Means) 
Acute Phase Comparisons

*CBIT<PST, p<.01 - 10 Week Effect Size d=.57
Medication status did not moderate outcome
Maintenance of Responder Status (CGI-I): Completer

- % of Week 10 responders who were responders at 3 months: 85.7
- % of Week 10 responders who were responders at 6 months: 86.9

CBIT
Status of CBIT in TS Treatment Community

• CBIT is now a first line treatment
  – European TS Treatment Guidelines (2011)
  – Canadian Guidelines (2012)
  – AACAP Practice Parameter (2013)
  – AAN Guidelines are coming out soon

• Is it being used?
Possible Side Effects

• Behavioral problems
  – Stopping tics makes you more anxious, disruptive or fatigued

• Rebound effects
  • Trying to stop tics makes you tic more

• Symptom substitution
  • Stopping one tic makes others worse, or are replaced by new ones
Treatment: Children

10 Most Utilized Treatments for Tics (N = 496)

1. Medication: 82.6%
2. Diet alterations: 30.2%
3. Fatty acid (Omega-3) supplements: 23.9%
4. Behavioral/Cognitive-Behavioral Therapy: 23.9%
5. Psychotherapy (Not BT): 22.1%
6. Supplemental vitamins: 18.5%
7. Support group: 18.1%
8. Supplemental minerals: 12.9%
9. Massage therapy: 11.4%
10. Meditation: 11.2%

Conelea et al. (2011) *Child Psychiatry and Human Dev*
Reasons for Not Seeking Behavior Therapy

• Is there a specific reason that your child has not had BT for tics?

  – I’m worried that asking my child to suppress will cause other tics to start: 17.7%
    – Symptom substitution concerns
    – Rebound effect concerns
  
  – I don’t know where to go to receive this type of treatment: 40.5%
  
  – There is no one close to me that provides this service: 18.1%
Symptom Substitution: Fact or Fiction?

• Symptom substitution
  – Stopping one tic makes others worse, or are replaced by new ones
Symptom Substitution in CBIT?

• Throughout CBIT Trial, tics were scored weekly on Hopkins M/V Tic Scale.
• New tics were identified each week
• Regardless of condition (CBIT or Supportive Therapy), patients exhibited 1.25 new tics over 10 weeks
• No differences emerged between conditions on number of new tics
• In CBIT condition, reduction of targeted tics did not predict emergence of new tics
• Gender, age, OCD status, ADHD status, baseline severity, baseline impairment, nor baseline medication status predicted emergence of new tics

Peterson et al., (2016). *Behavior Therapy*
Rebound Effects: Fact or Fiction?

- Rebound effects
  - Trying to stop tics makes you tic more after you stop trying to suppress them
Is there a Rebound Effect?

13 children with TS or CTD
Mean YGTSS = 28.2
Woods et al. (2008).  *Journal of Abnormal Child Psychology*
Funded by TSA
Training New Providers

• Translation of manual

• TSA/CDC Project

• Tourette Syndrome Association - Behavior Therapy Institute

• CBIT-Trainer
New Delivery Platforms

- Videoconferencing
- Skype
- Online Self-Help

This study was funded by the National Institute of Mental Health (Award Number F31MH096375). The content is the responsibility of the authors and is not necessarily representative of the views of the National Institutes of Health.
• Compared 8-week, online, self-help program (TicHelper.com) to an internet-based resources control
• 55 children with tic disorders
• TicHelper families rated the program more acceptable and help as being of higher quality than IBR condition

This study was funded by the National Institute of Mental Health (Award Number R44MH096344). The content is the responsibility of the authors and is not necessarily representative of the views of the National Institutes of Health.
Summary/Future Directions

- Long term follow-up
- Predictors of response to treatment
- Mechanism of change
- Prescriptive Order through Sequential Multi-Assignment Randomized Trial (SMART)
- Enhancing CBIT outcomes