

The Society for Clinical Child and Adolescent Psychology (SCCAP): Initiative for Dissemination of Evidence-based Treatments for Childhood and Adolescent Mental Health Problems

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Workshop

Behavior Therapy for Tourette Syndrome in Children and Comprehensive Behavioral Intervention for Tics (CBIT)

Douglas Woods, Ph.D.

Professor of Psychology

Associate Dean of Social Sciences, Education and Business The Graduate School
University of Wisconsin-Milwaukee Milwaukee



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

Overall Outline

- Lecture on TS, behavioral model, description of treatment, and supporting evidence
- Review Protocol
- Practice Core Skills of HRT & Function Based Treatment
- Case Discussion/Demonstration

What is a Tic?

“... a sudden, rapid, recurrent, non-rhythmic, stereotyped motor movement or vocalization”

Gilles de la Tourette



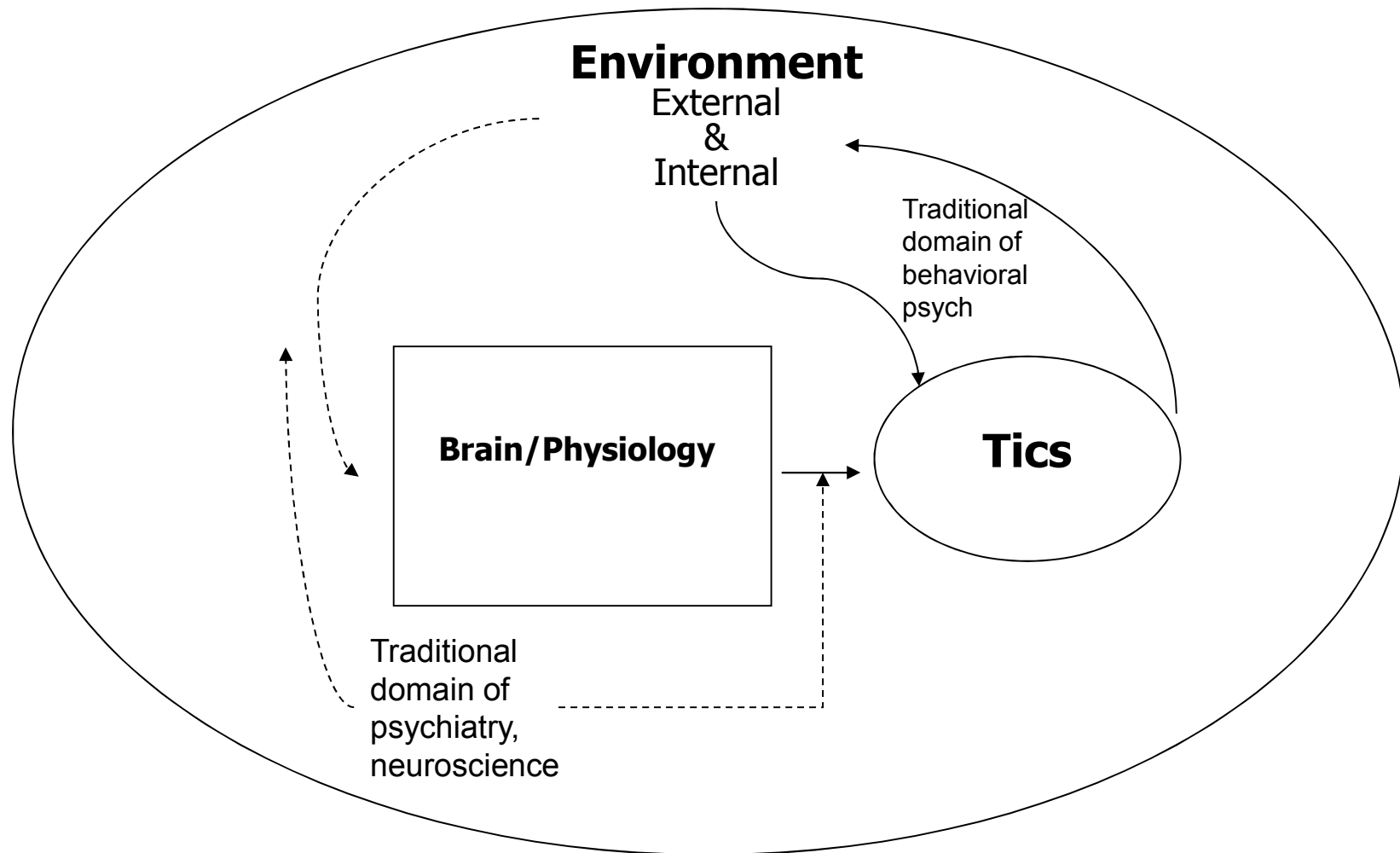
Tics Phenomenology

- Tics involuntary, though may be suppressed
- Premonitory urges generally precede tics
- From simple to complex tics (examples)
 - Simple motor: eye blinking, shoulder shrugging
 - Simple vocal: throat clearing, grunting
 - Complex motor: touching, squatting, jumping
 - Complex vocal: words and phrases

Course of Tourette Syndrome

- Starts in young children
- More common in males
- Starts with motor tics, then vocal
- Starts in the head and face, then in the body
- Starts with simple tics, then more complex tics
- Peak severity is in early to mid teens
- Symptoms wax and wane throughout disorder
- Development of comorbid conditions is usually later except for ADHD
- Typically treated with medication
- Symptoms are heavily and predictably influenced by surroundings

Behavioral Model of Tics



Why Look for Environment-Tic Relationships?

- By understanding how environmental (internal and external) antecedents and consequences impacts tics, the environment can be modified in a targeted way to promote tic reduction

Environment-Tic Relationships that Maintain Tics

Antecedents

Places/Situations

Other People

Activities

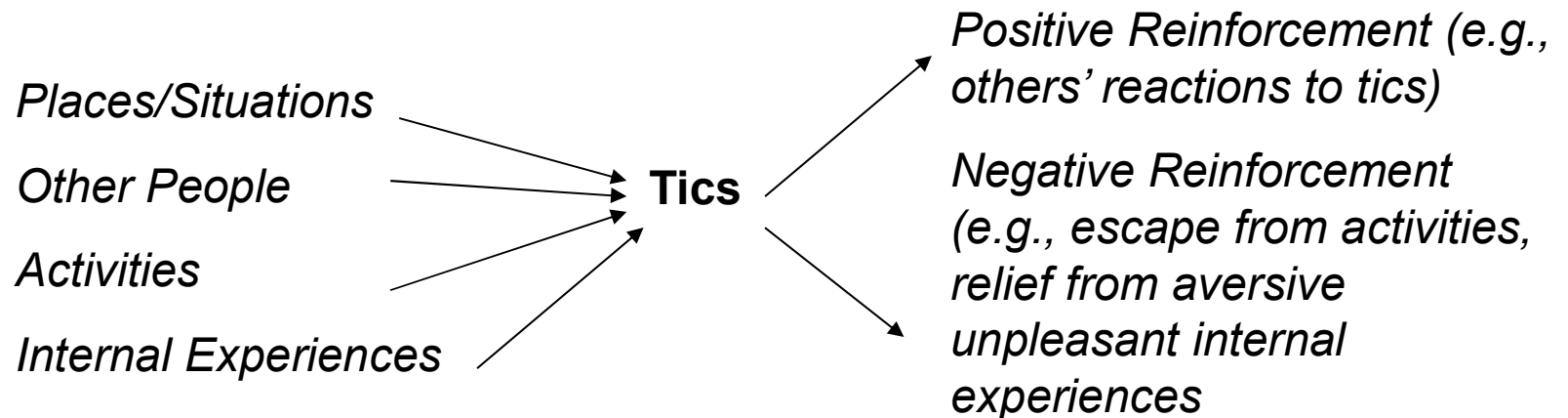
Internal Experiences

Tics

Consequences

Positive Reinforcement (e.g., others' reactions to tics)

Negative Reinforcement (e.g., escape from activities, relief from aversive unpleasant internal experiences)



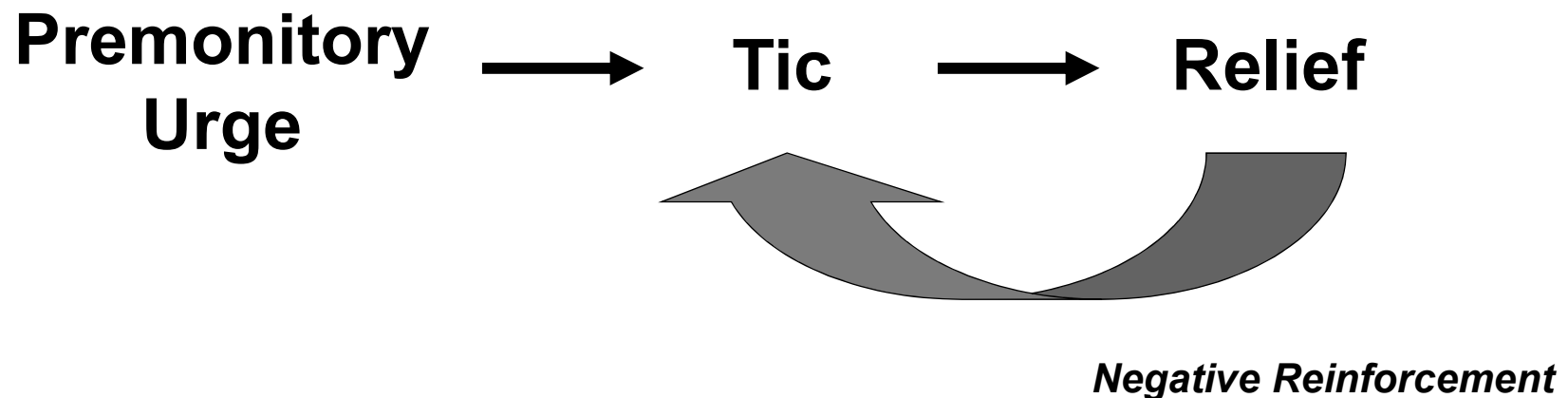
Antecedent Events that Impact Tics

- Being upset or anxious (Silva et al., 1995)
- Watching TV (Silva et al., 1995)
- Being Alone (Silva et al., 1995)
- Social Gatherings (Silva et al., 1995)
- Stressful Life Events (Surwillo et al., 1978)
- Hearing Others Cough (Commander et al., 1991)
- Talking about tics (Woods et al., 2001)

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

Negative Reinforcement Hypothesis of Tic Maintenance



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

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

Managing External Environment

Managed by functional assessment/intervention

Example: *Billy comes home from school stressed out and anxious. He goes to the den where his sister is watching TV and begins ticcing loudly. Billy's Sister gets upset and teases Billy. Billy's mom enters the room, sends his sister out of the room, comforts Billy, and lets him watch TV while he "gets himself together." Now Billy tics a lot right after school, especially when his sister is watching television.*

In doing a functional analysis, we look for antecedents (things that come before the tic) and consequences (things that may be reinforcing the tic).

Antecedents

- 1) Billy's tics get worse when anxious
- 2) Billy tics more in the den

Consequences

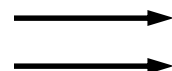
- 1) Teasing sister is sent to room
 - 2) Billy gets mom's love and attention
 - 3) Billy gets TV to himself
- } Billy's tics are reinforced

Function-Based Interventions

After specific environmental variables are identified in the functional assessment, interventions are developed to decrease the effect of or contact with that variable

Antecedents

- 1) Anxiety
- 2) In the den after school

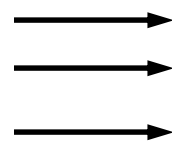


Functional Intervention

- Teach relaxation strategies
- Change setting

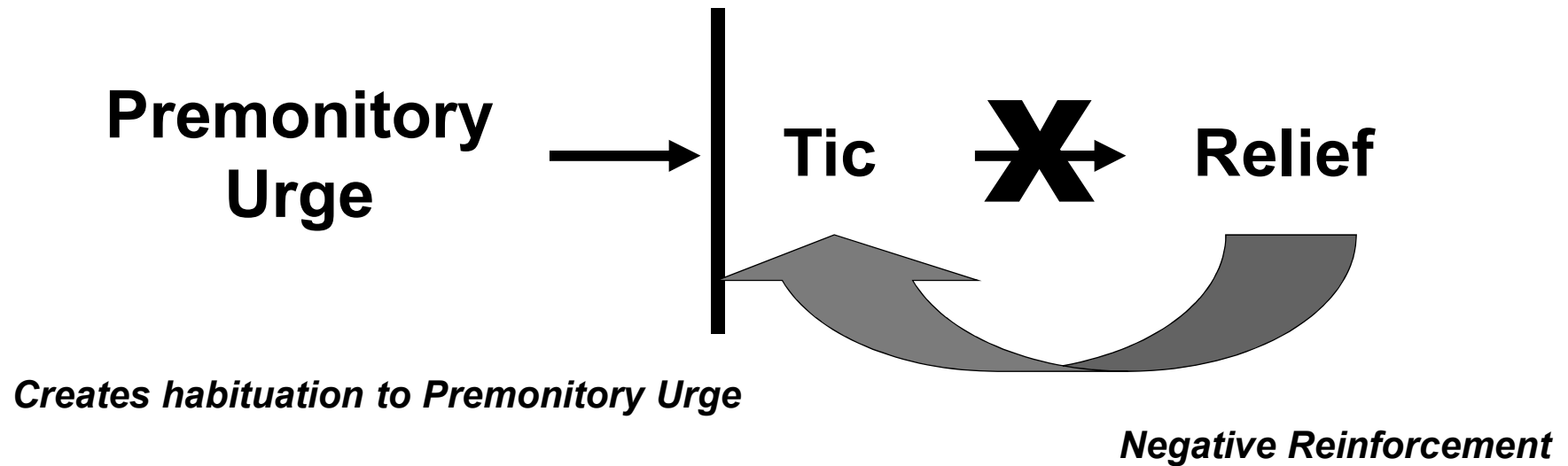
Consequences

- 1) Teasing sister sent to room
- 2) Mom comforts Billy
- 3) Billy gets TV to himself



- Sister stays in room and is asked to apologize
- Mom no longer comforts Billy
- Mom turns TV off to provide Billy an opportunity practice his tic management strategies (e.g., a quiet place to tic, or habit reversal procedures)

Managing Internal Environment



Changing Internal Environment

- Habit reversal training
 - Forces habituation to the premonitory urge
 - Designed to disrupt a habitual motor pattern after it has started

Habit Reversal-What Is It?

- Multi-component treatment (Azrin & Nunn, 1973)
- Used to treat tics
- 3 main components
 - Awareness Training
 - Competing Response Training
 - Social Support

Does HRT Work?

- HRT has been studied for over 30 years using small-n and group experimental designs
- Considered an effective treatment for tics according to APA Division 12 Criteria (Cook & Blacher, 2007)
- To date, 6 Randomized Controlled Trials (RCTs) have been conducted
- N's have ranged from 10-42
- Adults and children have been studied
- Controls have either been wait list, supportive therapy, or another behavioral treatment
- Results have all shown separation from waitlist or supportive therapy

Comprehensive Behavioral Intervention for Tics Study (CBITS)

Two parallel studies comparing behavior therapy to ST

Child Study: 126 children (ages 9-17) with TS/CTD

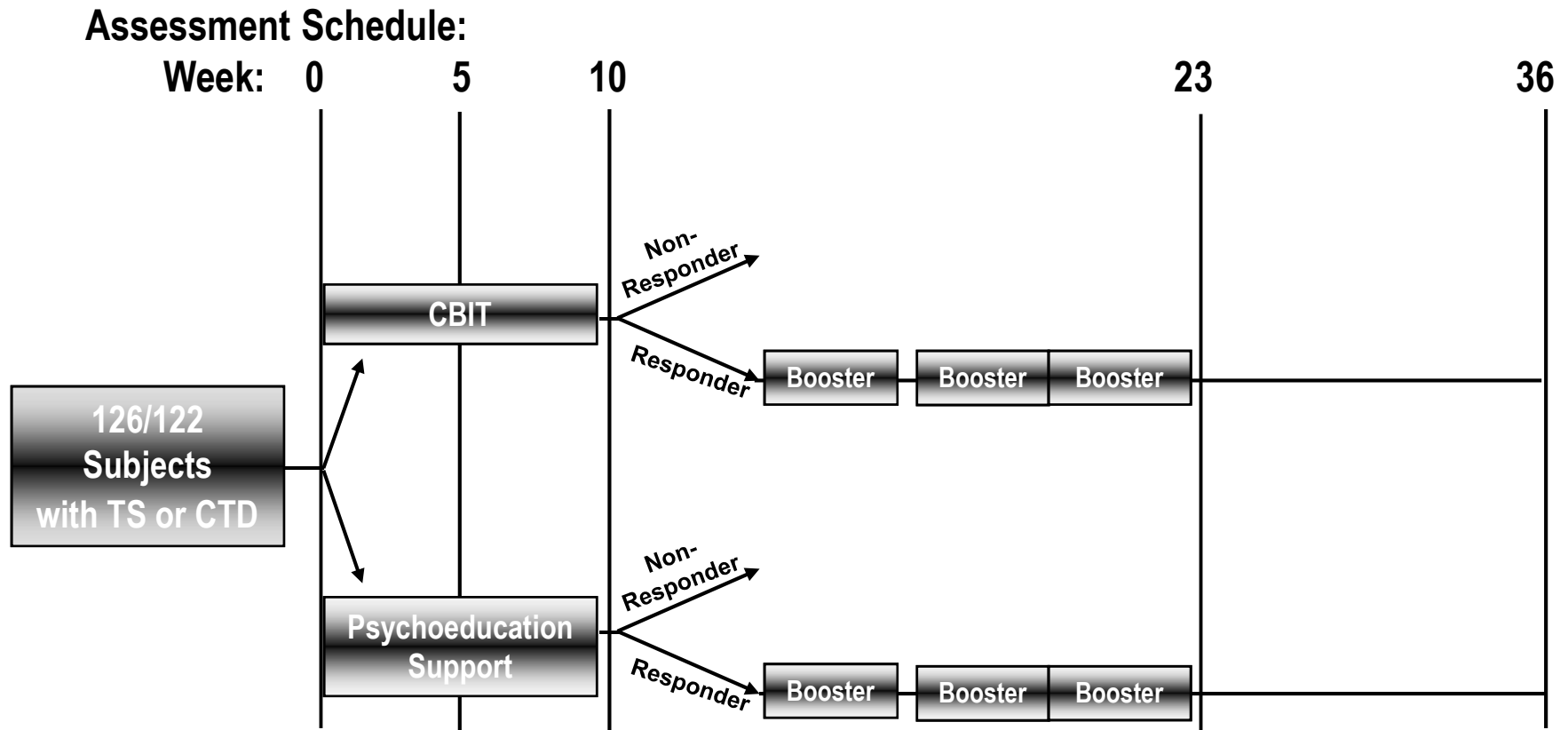
Adult Study: 121 children and adults (ages 16+) with TS/CTD

Participating Sites (40 at each of 3 sites)

- UCLA (Child: J. Piacentini, PI)
- Johns Hopkins University (Child: J. Walkup, PI)
- U. of Wisconsin–Milwaukee (Child; D. Woods, PI)
- Mass General Hospital/Harvard (Adult: S. Wilhelm, PI)
- Yale Child Study Center (Adult: L. Scahill, PI)
- U. of Texas Health Sciences Center (Adult: A. Peterson, PI)

Funded by NIMH through two different mechanisms (R01 to TSA; Child study, and Collaborative R01s to Yale, Harvard, and UTHSC)

CBITS Study Design



Study Treatments

CBIT Components

- **Psychoeducation**
- **Habit Reversal Therapy**
- **Functional Intervention**
- **Reward System**
- **Relaxation Training**

Psychoed/Support Components

- **Phenomenology of TS**
- **Prevalence of TS**
- **Natural History of TS**
- **Common Comorbidities**
- **Causes of TS**
- **Psychosocial Impairments**
- **Nonspecific Support**

CBITS Eligibility Criteria

Inclusion

- **Age 9 to 17 (child) or ≥ 16 (adult)**
- **Primary diagnosis of DSM-IV-TR TS or Chronic Tic Disorder**
- **CGI-Severity > 3**
- **YGTSS Total Score > 14**
- **Unmedicated or stable medication for at least 6 weeks with no planned changes**
- **Patient speaks fluent English**
- **Informed consent**

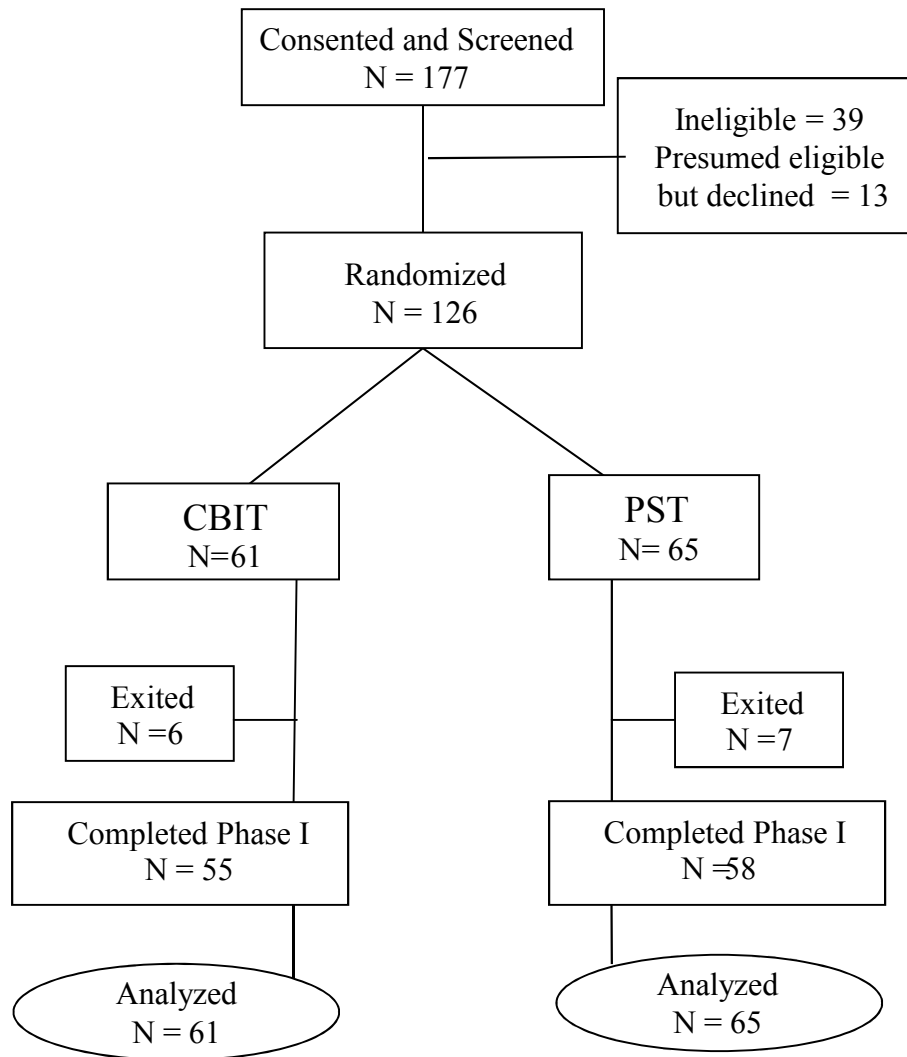
CBITS Eligibility Criteria

Exclusion

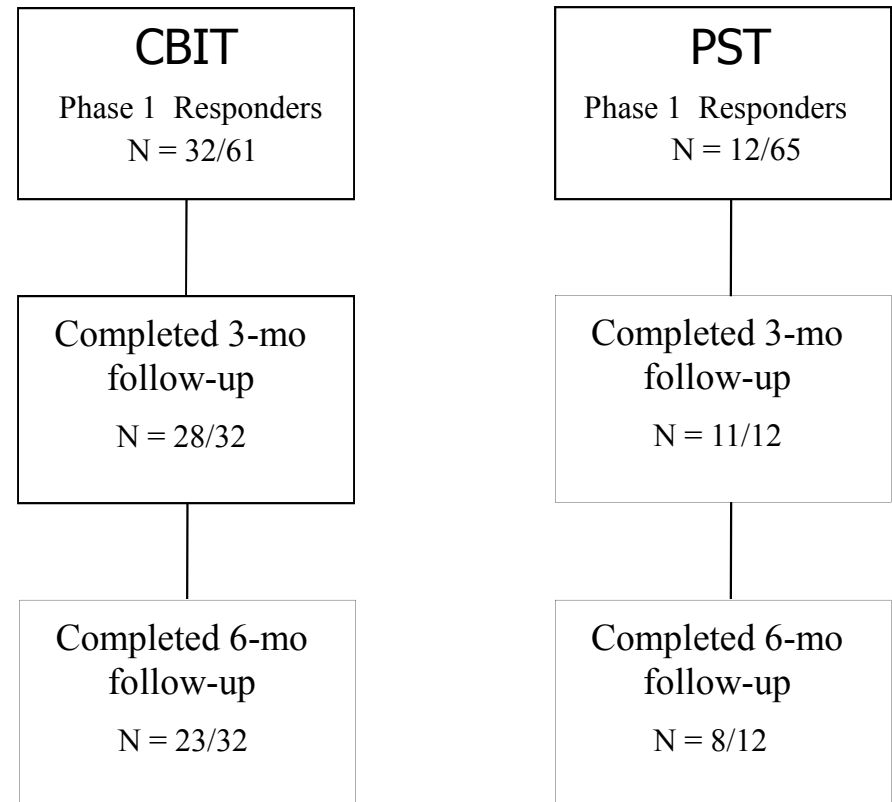
- **YGTSS Total Score > 30 (unless approved by caseness panel- 15 child cases of YGTSS >30 were approved: range = 31-42)**
- **IQ < 80 on Wechsler Abbreviated Scales of Intelligence (WASI)**
- **CGI-Severity < 3**
- **Excessive/problematic substance use or CD past 3 months**
- **Lifetime diagnosis of DSM-IV PDD, Mania, Psychotic Disorder**
- **Any serious medical or psychiatric illness requiring immediate treatment other than provided in CBITS protocol**
- **Previous treatment with 4 or more sessions of HRT**

CONSORT: Study Flow-Child

PHASE 1-ACUTE OUTCOMES



PHASE 2- LONG-TERM OUTCOMES



Sample Characteristics- Child

	CBIT N=61	PST N=65
Mean Age (SD)	11.6 (2.3)	11.7 (2.3)
Gender (% Male)	75.4%	81.5%
WASI IQ (M, SD)	111.7 (13.5)	108.6 (14.0)
Stable Tic Meds at Entry (%)	36.7%	40.3%
Two Parent Family (%)	82.0%	87.7%
Father's Occupation (% Professional)	60.7%	61.5%

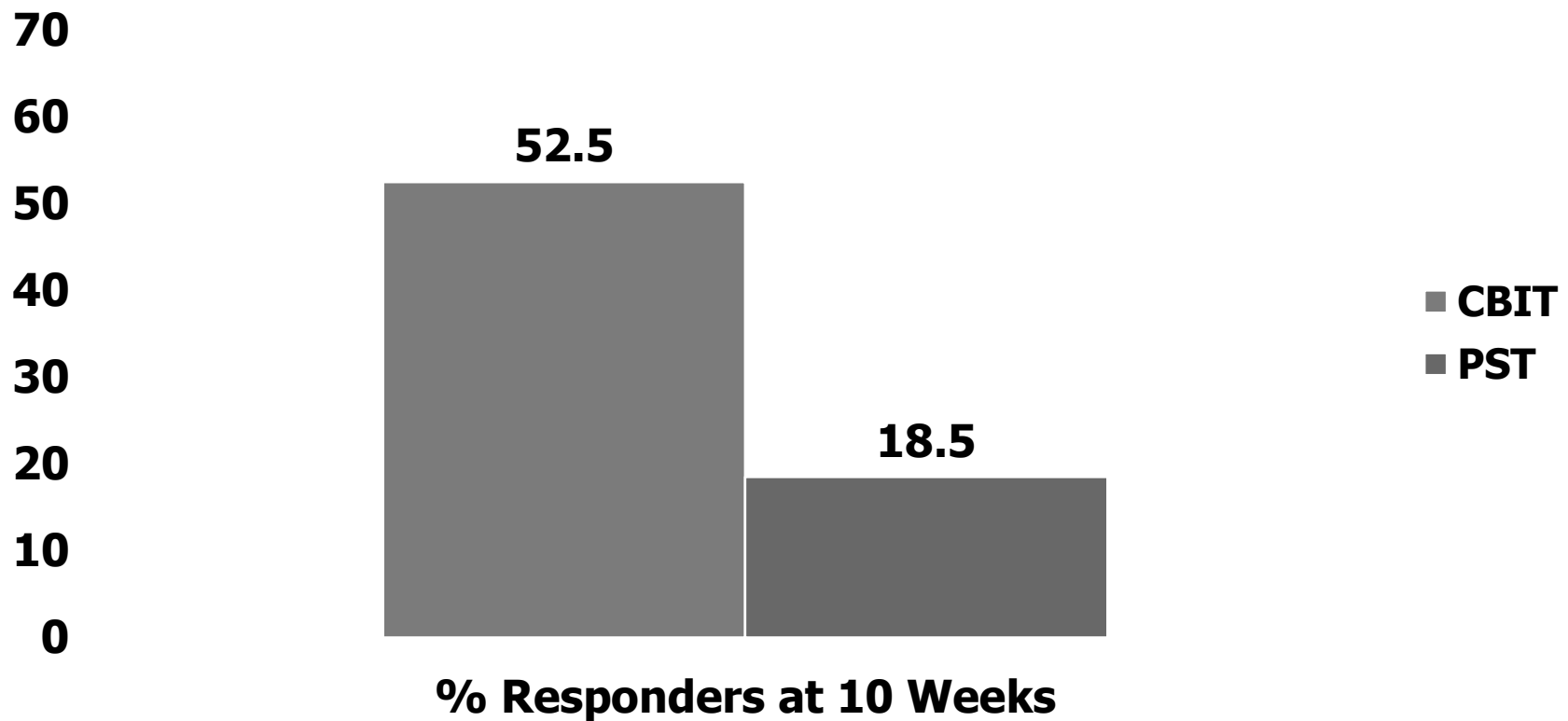
Diagnostic Status

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

Primary Outcome Measures

- **Clinical Global Impression (CGI) – Improvement Scale (1-7)**
- **YGTSS- Total Tic Score (0-50)**
- **YGTSS- Impairment (0-50)**

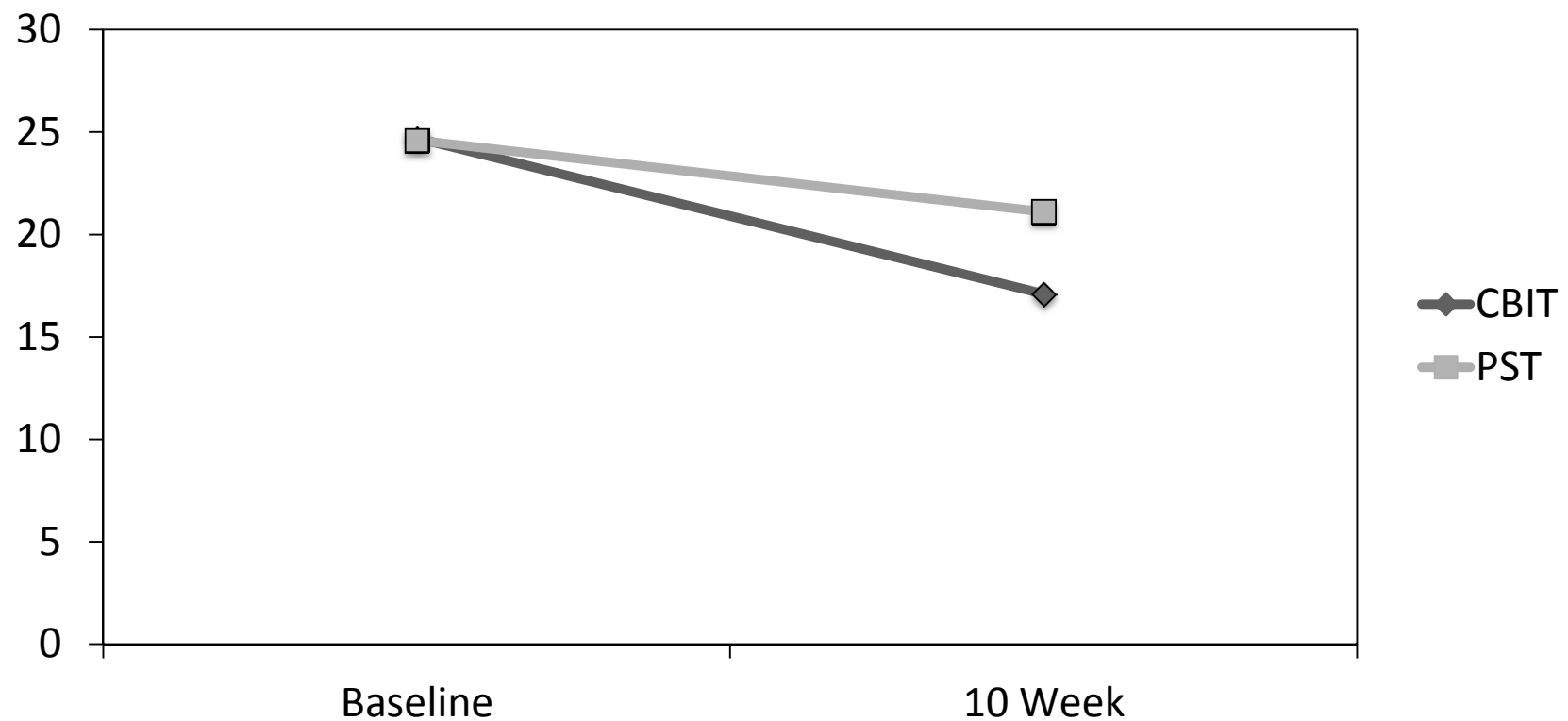
CGI-Improvement



*CBIT>PST, $p<.0001$

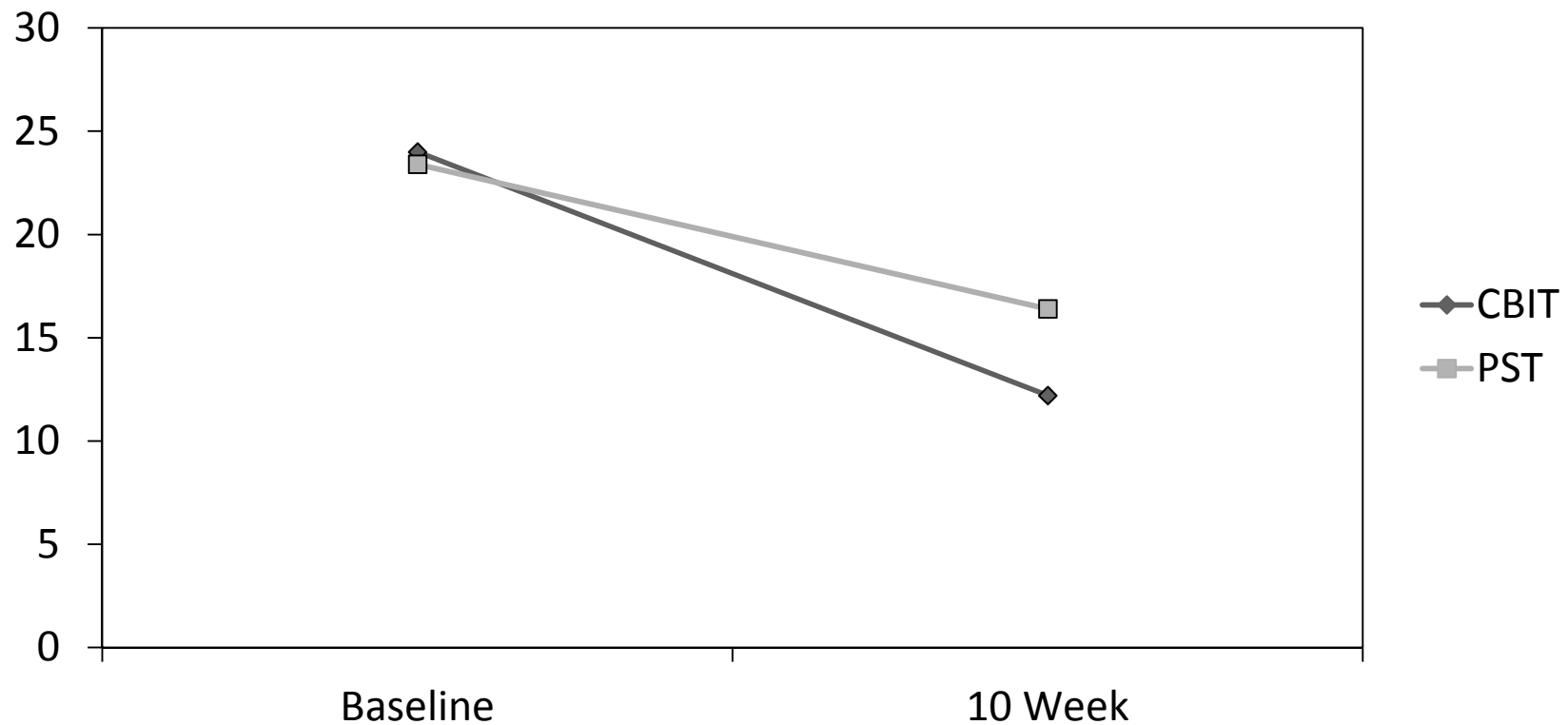
Medication status did not moderate outcome

YGTSS-Total Tic Score (Adjusted Means)



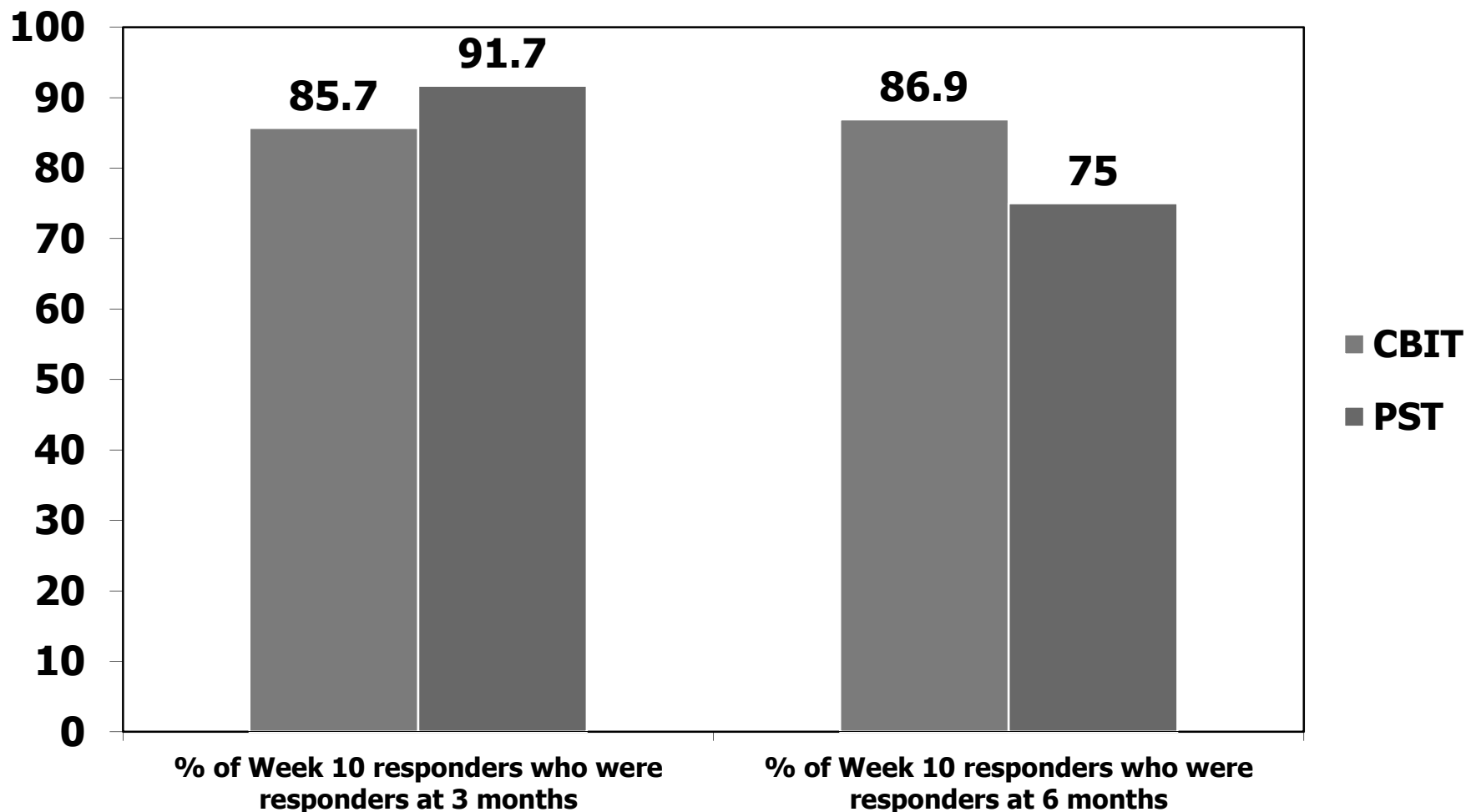
*CBIT < PST, $p < .01$ - 10 week Effect Size $d = .68$
Medication status did not moderate outcome

YGTSS-Impairment (Adjusted Means)

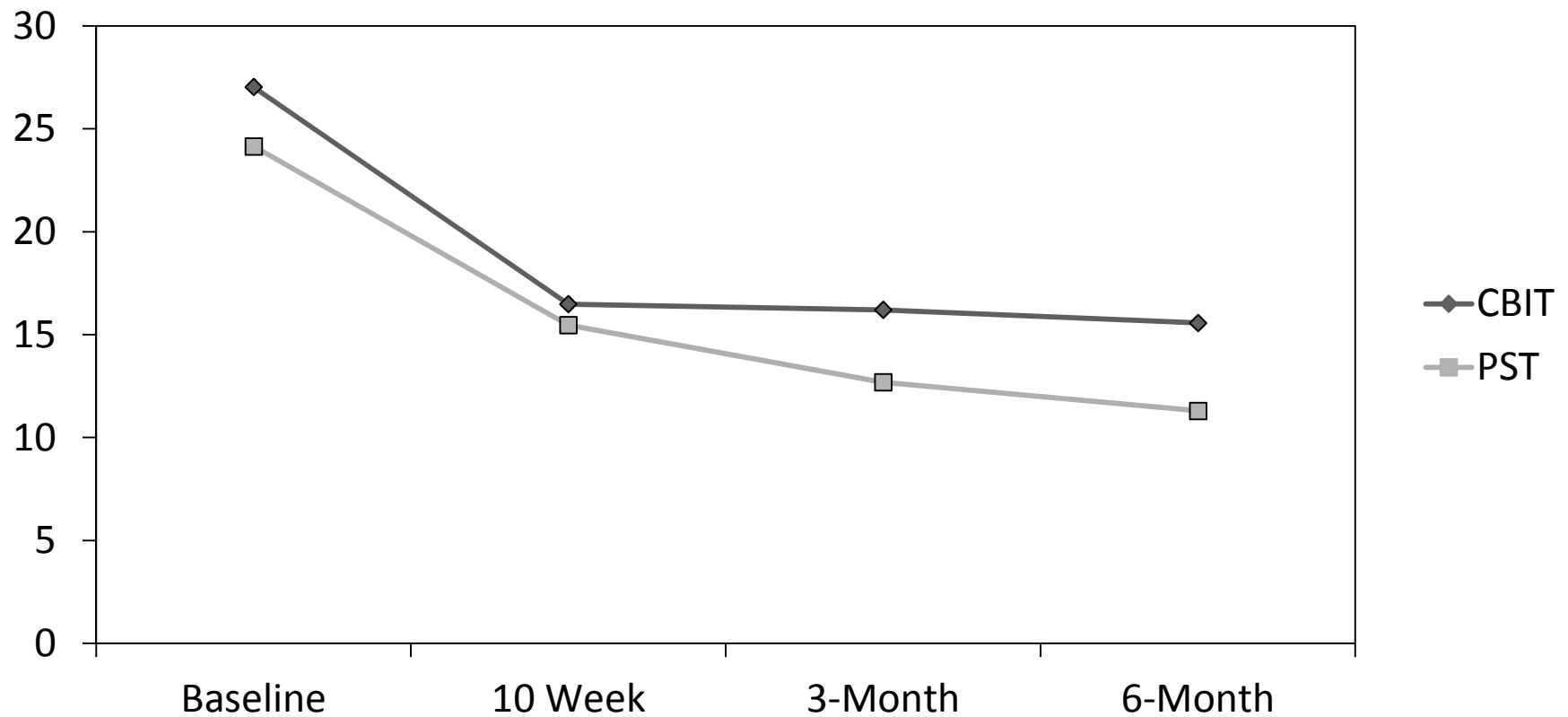


*CBIT < PST, $p < .01$ - 10 Week Effect Size $d = .57$
Medication status did not moderate outcome

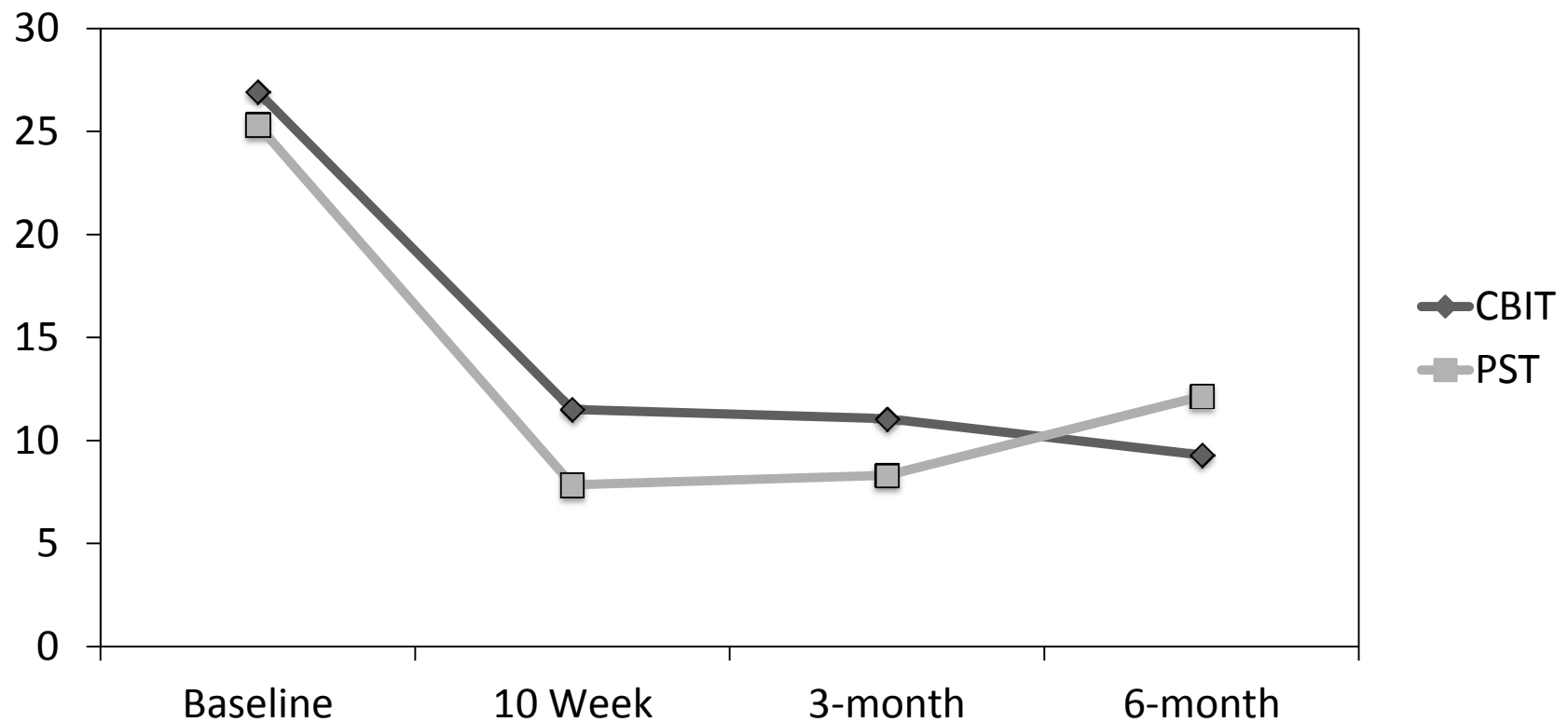
Maintenance of Responder Status (CGI-I): Completer



YGTSS-Total Tic Score on Week 10 Responders Through Follow-up (Completer Analysis)



YGTSS-Impairment on Week 10 Responders Through Follow-up



Benchmarking CBIT Efficacy

Benchmarking CBIT Efficacy

Comparison RCT	N	Group	YGTSS Total Score (%↓)		Effect Size (<i>d</i>)
			<u>Active</u>	<u>Comp</u>	
CBIT (Piacentini et al., 2010)	126	PST	31%	14%	0.7
Risperidone (Scahill et al., 2003)	34	PBO	36%	9%	1.0
Ziprasidone (Sallee et al., 2000)	28	PBO	35%	7%	0.9

Adverse Events by Treatment Group

	CBIT		Control		P-value
	N	(%)	N	(%)	
Upper Respiratory Infection	21	34.4	27	41.5	NS
Irritability, explosive behavior	10	16.4	10	15.4	NS
Headache	10	16.4	14	21.5	NS
Muscle or joint pain	9	14.8	13	20.0	NS
Accidental injury	7	11.5	19	29.2	0.02
Anxiety and nervousness	4	6.6	3	4.6	NS
Disruptive behavior	4	6.6	4	6.2	NS
Sore Throat	4	6.6	7	10.8	NS
Nausea, vomiting	2	3.3	5	7.7	NS
Stomach Discomfort	2	3.3	9	13.8	0.06
Dermatological problems	1	1.6	5	7.7	NS
Tic worsening	1	1.6	4	6.2	NS
Tiredness, fatigue	1	1.6	4	6.2	NS

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If Behavior Therapy for Tics is So Promising....

- Dissemination
 - How do we teach therapists to do this?
- Referral problem
 - Neurologists/pediatricians usually get referral
- History of psychology's role in the treatment of those with TS
 - Need to overcome a lot of bias against psychological treatment due to early mistreatment
- Beliefs about negative effects of behavior therapy

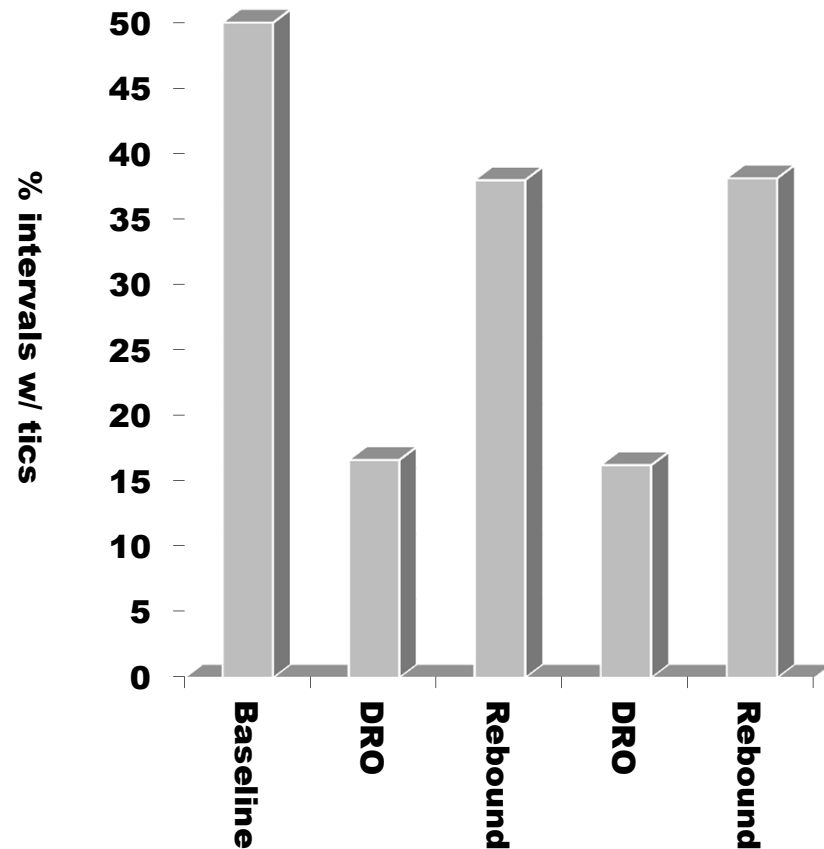
Beliefs Inhibiting Use of Behavior Therapy for Tics

- Rebound effects
 - Trying to stop tics makes you tic more
- Symptom substitution
 - Stopping one tic makes others worse, or are replaced by new ones

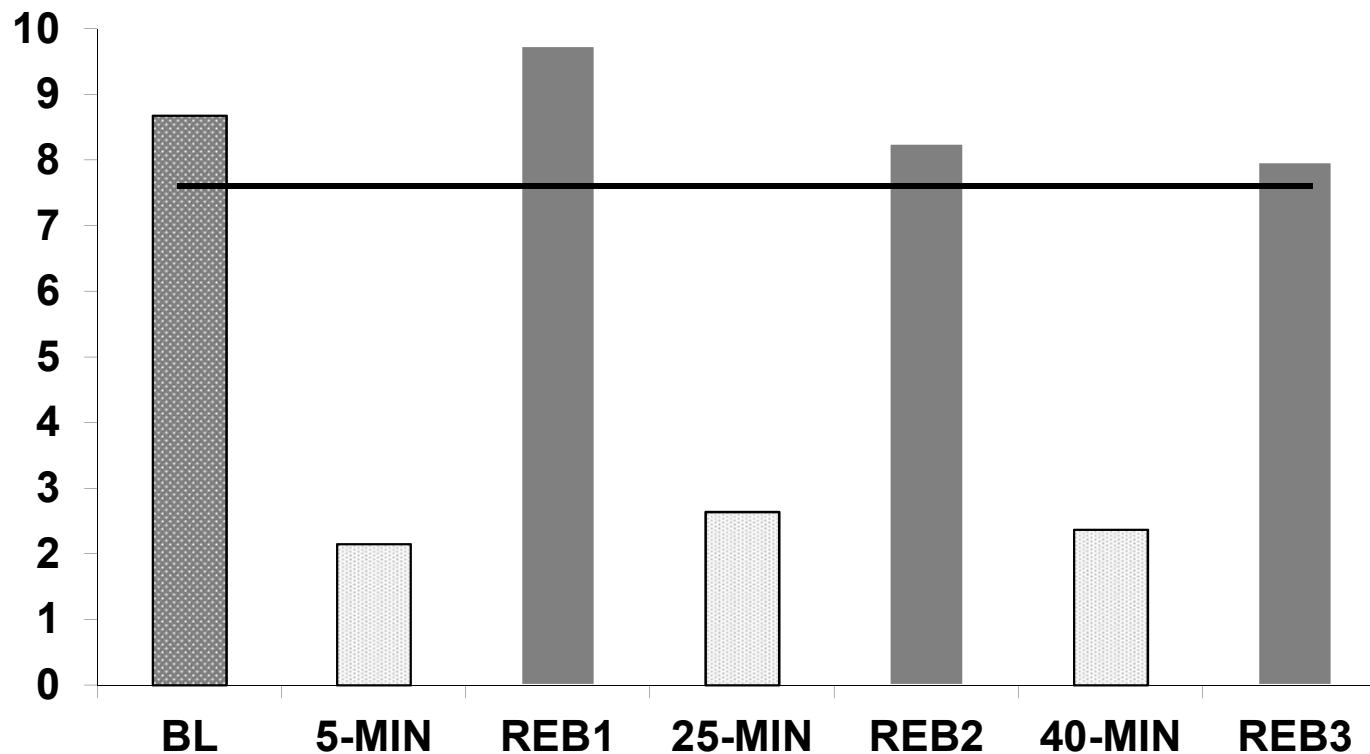
Is there a Rebound Effect? Study 1

- 7 children with TS
- Three conditions
 - Baseline
 - Reinforced suppression
 - Rebound evaluation
- All conditions were 5 min
- Tics were reduced in suppression condition
- Rebound did not occur

Himle & Woods (2006)
Behaviour Research and Therapy



Is there a Rebound Effect? Study 2



13 children with TS or CTD

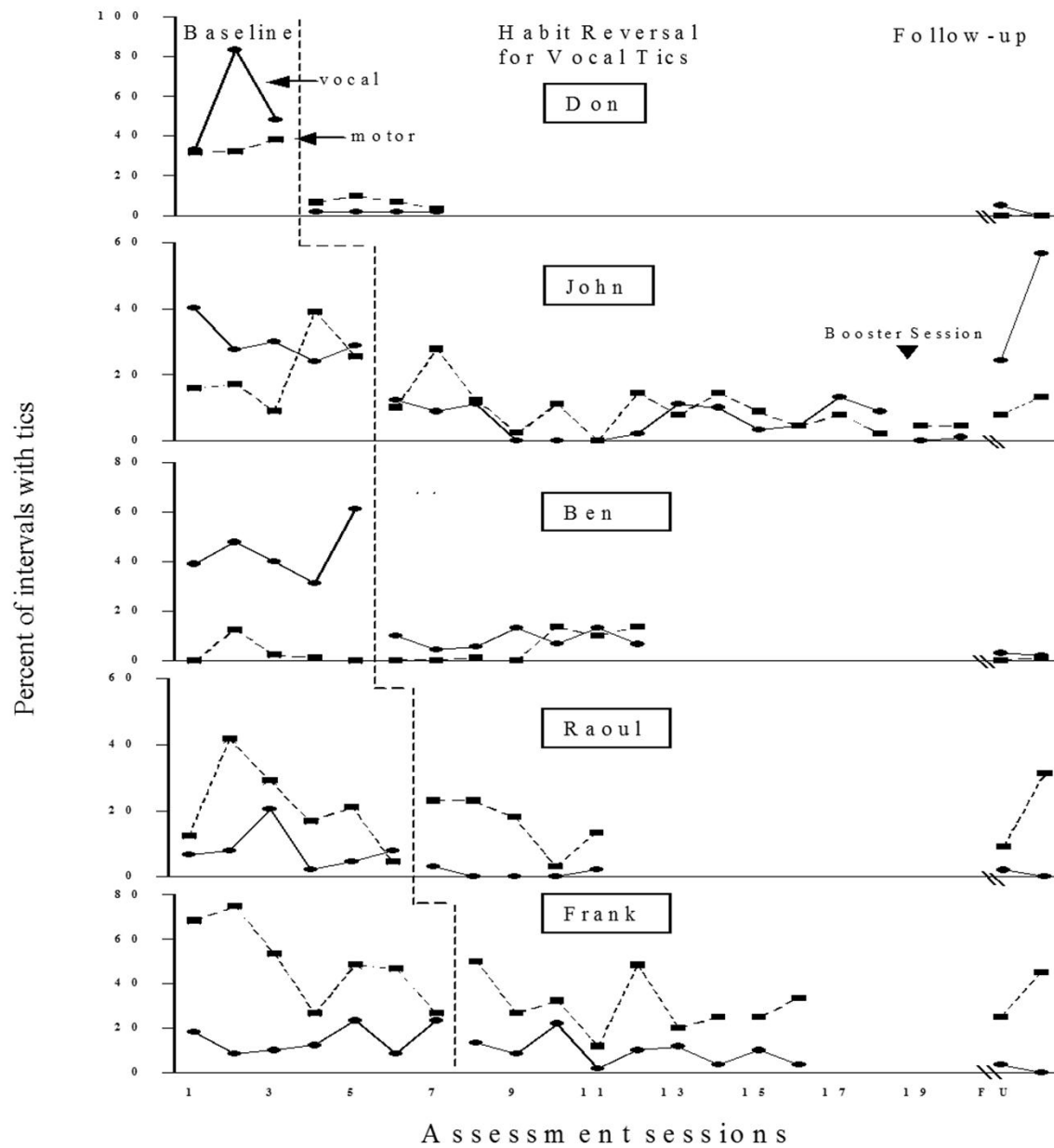
Mean YGTSS = 28.2

Woods et al. (2008). *Journal of Abnormal Child Psychology*

Funded by TSA

Does Symptom Substitution Occur?

- Multiple BL Across 5 Subjects with TS
- Initial assessment followed by in home recordings
- Habit Reversal (Woods, 2001)
 - 1, 1 hr session; 2, 1/2 hour booster sessions
 - 1 session per week for 3 consecutive weeks
 - Awareness training, competing response training, social support training



Woods et al. (2003). Journal of Applied Behavior Analysis

Does Symptom Substitution Occur?

- Vocal tics decreased, untreated motor tics did not change or decreased
 - 83% reduction in vocal tics
 - 26% reduction in motor tics
- Suggests that untreated symptoms at the very least do not change, but may improve following nonpharmacological intervention
- Other studies evaluating habit reversal have also not reported adverse symptom increases, nor have they reported excessively high dropout rates

Summary/Future Directions

- HRT/Behavior Therapy is a promising treatment for TS
- Still need...
 - Large scale studies with both children and adults
 - Predictors of response to treatment
 - Better long-term maintenance data
 - Both behavioral and neural mechanism of change data
 - Overcoming barriers to implementation
 - Usable manuals
 - Telehealth service delivery
 - Computerized therapist training packages
 - Educating appropriate care providers about availability of BT

Overall Outline

- Lecture on TS, behavioral model, description of treatment, and supporting evidence
- Review Protocol
- Practice Core Skills of HRT & Function Based Treatment
- Case Discussion/Demonstration

Outline of Protocol Review

- Review Key Skills
 - HRT
 - Function-Based Assessment/Intervention
- Review Session-by-Session Format

Components of Habit Reversal

- 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
- Necessary level of awareness is unclear

Rationale for Awareness Training

- “The next thing we’re going to do today is to teach you to know when you do your vocal tic. We are going to work on making you more aware of when your tic is happening. Because the rest of the treatment depends on you knowing exactly when your vocal tic is about to happen or is happening, this is a very important part of the treatment. If you want to learn to manage something, you first have to know when it is happening. We’ll do a number of exercises so that by the time you leave today, you will be very “aware” of your tic.”

Response Description

- Help patient define the tic in great detail, paying attention to muscular sensations and bodily placement
 - Fill in definition where necessary
- Describe sensations preceding tic
- Describe any bodily signals that suggest tic is imminent

Response Detection & Early Warning

- Therapist simulated practice (if necessary)
- Client practice
 - Client tics → client acknowledges → Praise client
 - Client tics → client does not acknowledge → prompt client
 - Continue until at least 80% correct
- Have client simulate tics if he or she is not ticcing during session
- Early warning involves replicating these procedures with the internal cues to tic or the external signals that tics are imminent

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

Choosing the Competing Response

- Three rules when choosing CR
 - Incompatible w/ tic
 - Less socially noticeable/interfering than the tic
 - Patient can do CR for the required duration across multiple situations
- Choosing a CR should be a mutual decision b/w patient and therapist

Sample competing responses

Tic

Arm Movements

Competing Response

Push hand down on thigh or abdomen and push elbow in towards hip

Eye Blinking

Systematic, voluntary, soft blinking consciously maintained at a rate of one blink per 3-5 seconds

Hand/wrist Movements

Push hands on arms of chairs, desk, leg, etc.

Head Jerks/Movements

With head in centered position, contract the neck flexors so that the head tilts slightly downward and the neck appears shortened. If this is inadequate, push chin into sternum

Sample competing responses

<u>Tic</u>	<u>Competing Response</u>
Leg Movements	Place feet flat on floor and push downward. If standing, lock knees
Mouth/facial Movements	Clench jaw while pressing lips together
Nose movements	Pull upper lips down slightly and press lips together
Copropraxia	Make fists and push elbows into side
Vocal Tics	Diaphragmatic breathing keeping in mind inhale/exhale pattern in context of tic

Therapist Simulation of Competing Response

- Demonstrate CR to patient
- Demonstrate proper implementation
 - Contingent on tic or warning sign
 - Held for 1 min or until urge goes away....whichever is longer

Patient Practices Competing Response

- Have patient demonstrate CR and provide corrective feedback if necessary
- Have patient practice implementing CR contingent on actual tic (or simulated tic if necessary)
- Have patient practice implementing CR contingent on warning signs (or simulated warning signs if necessary)
- Therapist should prompt and praise as appropriate

CR Caveats

- Research suggests that 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
- Praising the praising of client
 - Praise use of exercises, not reduction of tic

Motivational Strategies

- Token Economy or other Reward Systems
 - Done to enhance compliance, not reward tic reduction
- Inconvenience Review

Function-Based Interventions

- Purpose is to identify environmental events that be exacerbating or maintaining tics for a given child
- These events are then modified in the service of tic reduction
- The child's reactions to the events are modified in the service of tic reduction

Function-based interventions

- Step 1: Functional assessment
- Step 2: Developing interventions
- Step 3: Develop plan for implementation

Step 1: Functional Assessment

- Interview patient and parent asking about antecedents and consequences associated with notable exacerbations of different tics
- In the interview, ask about reactions to the situations, cognitions that may be impacting the situation, etc.

<i>Tic (From Hierarchy)</i>									
ANTECEDENTS									
Classroom									
At Home After School									
Public Place Other Than School									
Watching TV/Video Games									
Playing Sports									
During Meals									
Bedtime or Morning Routine (circle appropriate)									
Doing Homework									
In Car									
Anticipation or Waiting for Something To Happen									
Around a Specific Person									
Interrupted Behavior (specify)									
Other									
CONSEQUENCES									
Parent/Teacher/Sib/Peer Tells Child to Stop Tics									
Parent/Teacher/Sib Comforts Child									
Someone Laughs at or with the child									
Child is Asked to Leave the Area									
Child Doesn't Complete Meal, Homework, or School Task									
Child Gets to Stay up Later									
Child Doesn't Have to do Chores or Other Required Activity									
Other									
Other									
Other									

Step 2. Developing Function-Based Interventions

- Work with patient to develop different strategies to reduce tics given results of assessment
- Keep following points in mind....
 - Minimize or eliminate tic exacerbating situations when possible
 - Remove potentially reinforcing consequences to the tic in tic exacerbating situations
 - When entering tic-prone situations, the patient should be reminded to use HRT procedures
 - For tic-prone situations that are not easily modifiable, teach patient strategies to minimize the impact of that situation
 - Teaching relaxation strategies for high stress situations
 - Teaching cognitive restructuring
 - Teaching scheduled activity or breaks
 - Minimize the impact of the tics on the child.
 - Educate peers, teachers and relatives about the child's condition

Develop Plan for Implementation

- Do functional assessment and develop a function-based treatment plan for a new tic each week.
- Discuss with the parents how the intervention would be implemented for the patient's particular situations
- Conduct any training necessary to implement the intervention

Session by Session Review of CBIT

Structure of Therapy

- 8 Standard Sessions, plus Boosters
- Sessions are 60-90 minutes
- Parents and children both participate in therapy experience
- Therapy framed as a collaborative effort

Session 1

1. Welcome patient and family to treatment (rapport building)
 - Discuss strengths, brief family, developmental, and academic history
2. Review history of tic disorder and related problems
3. Rationale for HRT
4. Create Tic Hierarchy
5. Present the rationale for the behavioral reward program and illustrate how it works
6. Self-Monitoring Training and Weekly Homework

Supplementary Materials

1. Tic Symptom Hierarchy Tracker

- List all tics-Use YGTSS as guide
- Have child rate how bad or bothersome each tic is on a scale of 0 (not at all bothersome) to 10 (extremely bothersome)
- Revisit, redo list, and rerank tics at each session
- Generally start with most bothersome tic, and work down, but be flexible with parent/child wishes and consider suitability for initial practice of HRT

Tic Symptom Hierarchy Tracker

PT. INITIALS: ID: THERAPIST: TX START DATE:

CHILD
VERSION

Symptom Hierarchy Tracker

Instructions: Provide a SUDS rating for each symptom listed on the Initial Symptom Hierarchy at the beginning of each treatment session. These ratings are to be completed with the patient. New symptoms can be added to the bottom of the list. Do not drop any previously reported symptoms. Symptoms reported as no longer present or not currently distressing are to be rated as "0." **Please note the week that TX was begun for each symptom by circling the SUDS rating for that week.**

Symptom

SUDS Rating

Session #:		— —	— —	— —	— —
Date:					
1.					
2.					

Behavioral Reward System: Instruction & Guidelines

1. Introduction

- To motivate child to...
 - Attend sessions
 - Participate in session activities
 - Complete homework assignments
 - Increase general compliance

2. Rationale

- Describe purpose and emphasize that we are not reinforcing tic reduction.

Supplementary Material

1. Tic Self-Monitoring Form

- Schedule 30 min period to self-monitor 3-4 days per week b/w sessions
- Mark each occurrence of tics during session
- Parent should observe and monitor at same time
- Encourage monitoring during high-tic time

Tic Self-Monitoring Form

My Tic Sheet

Day / Time	
What's the Activity (e.g., doing homework, watching TV)	
What's the Tic	
Tic Count	

Session 2

1. Review events of past week and update tic hierarchy
 - Note significant life events
 - Obtain one positive event in child's life since last time
 - Review and update hierarchy
2. Review Homework and Behavioral Reward Program
3. Psychoeducation about tic disorders
4. Create Inconvenience Review
5. Implement AT, CR and SS Training (HRT) for First Tic
6. Conduct functional assessment and implement function-based intervention for first tic
7. Homework
 - Child will use CR during planned (during monitoring times) and unplanned periods
 - Monitoring will continue

Psychoeducation

1. Rationale
2. DSM-IV Criteria CTD and TS
3. List of Tics
4. Phenomenology
5. Natural History of Tics
6. Social Difficulties and Comorbidities
7. Genetics
8. Neurological Basis
5. Other Risk or Protective Factors
6. Prevalence

Supplementary Materials-cont.

1. Tic Hassles Form

- List all inconveniences tics cause
- Review list at each session and use as motivator to use strategies
- Cross off items that are no longer relevant

2. List of Competing Responses

- Used to track competing responses developed in session
- Should be brought to each session for review and addition of new Competing Responses

Tic Hassles Form

PT. INITIALS: ID: THERAPIST: TX START DATE:

CHILD
VERSION

My Tic Hassles Form

Instructions: Provide a SUDS rating for each item listed below by the end of each treatment session. New items can be added to the bottom of the list. Items reported as no longer present or not currently distressing can be crossed off. Listed below are three common hassles children encounter. Help the child develop their own list of reasons why his/her tics are inconvenient, embarrassing, distressing, and annoying.

<u>Tic Hassles</u>	<u>SUDS Rating (From</u>
<u>0 to 10)</u>	0 – No distress 10 – Maximum distress
Session #:	— — — — —
Date:	
“It’s embarrassing and people tease me.”	
“I hate explaining it to new people I meet.”	
“It gets in the way when I write, play sports, etc.”	
1.	
2.	
3.	

List of Competing Responses

CBIT List of Competing Responses

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Completed by Therapist: __ __ __ __
Session # __ __

Subject ID __ __ __ __ __ __
Date of Session __/__/__ __

#	Tic Description	Competing Response Description

Session 3

1. Review events of past week
2. Review Homework
3. Inconvenience Review
4. Psychoeducation about tic disorders
5. Practice CR and review functional interventions for Tic #1
6. Select another tic, conduct HRT, and functional intervention for Tic #2
7. Homework

Session 4

1. Review events of past week
2. Review Homework
3. Inconvenience Review
4. Practice CRs and review functional interventions for previous tics
5. Select another tic, conduct HRT and functional intervention for Tic #3
6. Homework

Session 5

1. Review events of past week
2. Review Homework
3. Inconvenience Review
4. Practice CRs and review functional interventions (in vivo or imaginal) for previous tics
5. Conduct HRT and functional intervention for Tic #4
6. Homework

Session 6

1. Review events of past week
2. Review Homework
3. Inconvenience Review
4. Practice CRs and review functional interventions for previous tics
5. Conduct HRT and functional intervention for Tic #5
6. Homework

Session 7 (Week 8)

1. Review events of past week
2. Review Homework
3. Inconvenience Review
4. Practice CRs and review functional interventions for previous tics
5. Conduct HRT and functional intervention for Tic #6
6. Homework

Session 8 (Week 10)

1. Review events of past week
2. Review Homework
3. Final Inconvenience Review
4. Review CRs and functional interventions for previous tics
5. Practice CRs and discuss functional interventions for all tics remaining on the hierarchy
6. Summarize treatment progress and work with family and child

Session 9-X - Booster Sessions

1. Review events of past month
2. Inconvenience Review
3. Review and Practice CRs and review functional interventions for all tics on the hierarchy (in vivo or imaginal)

Overall Outline

- Lecture on TS, behavioral model, description of treatment, and supporting evidence
- Review Protocol
- Practice Core Skills of HRT & Function Based Treatment
- Case Discussion/Demonstration

For more information, please go to the main website and browse for more videos on this topic or check out our additional resources.

Additional Resources

Online resources:

1. National Tourette Syndrome Association website: <http://www.tsa-usa.org/>
2. Society of Clinical Child and Adolescent Psychology website: <http://effectivechildtherapy.com>

Books:

1. Woods, D.W., Piacentini, J.C., Chang, S.W., Deckersbach, T. Ginsburg, G.S., Peterson, A.L. ...Wilhelm, S. (2008). *Managing Tourette Syndrome. A Behavioral Intervention for Children and Adults*. Oxford University Press.

Selected Peer-reviewed Journal Articles:

1. Cook, C. R. & Blacher, J. (2007). Evidence-based psychosocial treatments for tic disorders. *Clinical Psychology: Science and Practice*, 14, 252–267.
2. Piacentini, J., Woods, D.W., Scahill, L., Wilhelm, S., Peterson, A.L., Chang, S., & Walkup, J.T. (2010). Behavior therapy for children with Tourette disorder: A randomized controlled trial. *Journal of the American Medical Association*, 303(19), 1929-1937.
3. Silva, R.R., Munoz, D.M., Barickman, J. & Friedhoff, A.J. (1995). Environmental factors and related fluctuation of symptoms in children and adolescents with Tourette's disorder. *Journal of Child Psychology Psychiatry*, 36, 305–312.
4. Watson, T.S., & Sterling H.E. (1998). Brief functional analysis and treatment of a vocal tic. *Journal of applied behavior analysis*, 31(3), 471-474
5. Woods , D. W. Watson , T. S. Wolfe , E. Twohig , M. P. Friman , P. C. (2001). Analyzing the influence of tic-related talk on vocal and motor tics in children with Tourette's Syndrome. *Journal of Applied Behavior Analysis*, 34, 353-356
6. Woods, D.W., Twohig, M.P., Flessner, C.A., & Roloff, T.J. (2003). Treatment of vocal tics in children with Tourette syndrome: investigating the efficacy of habit reversal. *Journal of Applied Behavior Analysis*, 36(1), 109-112

