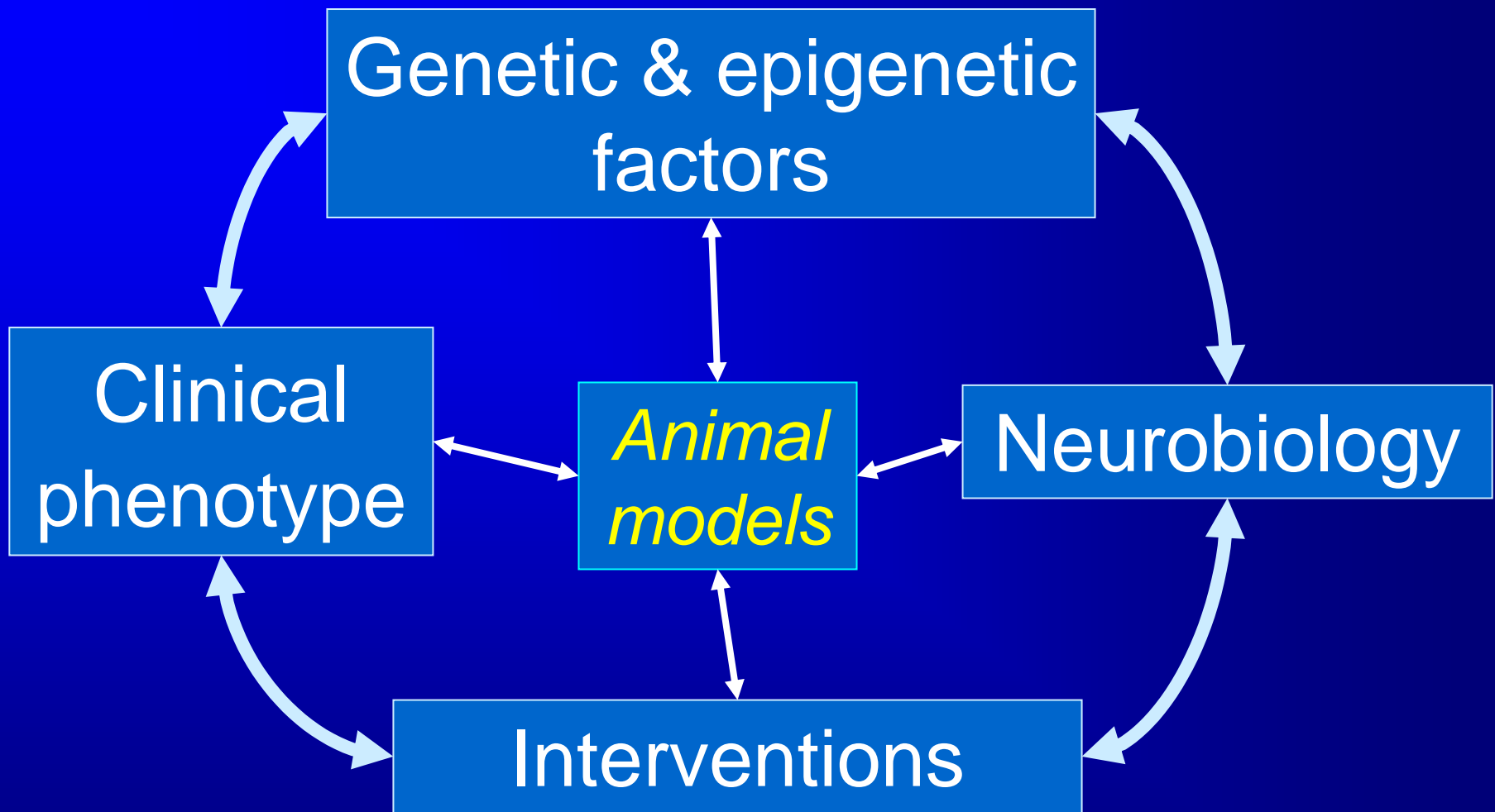


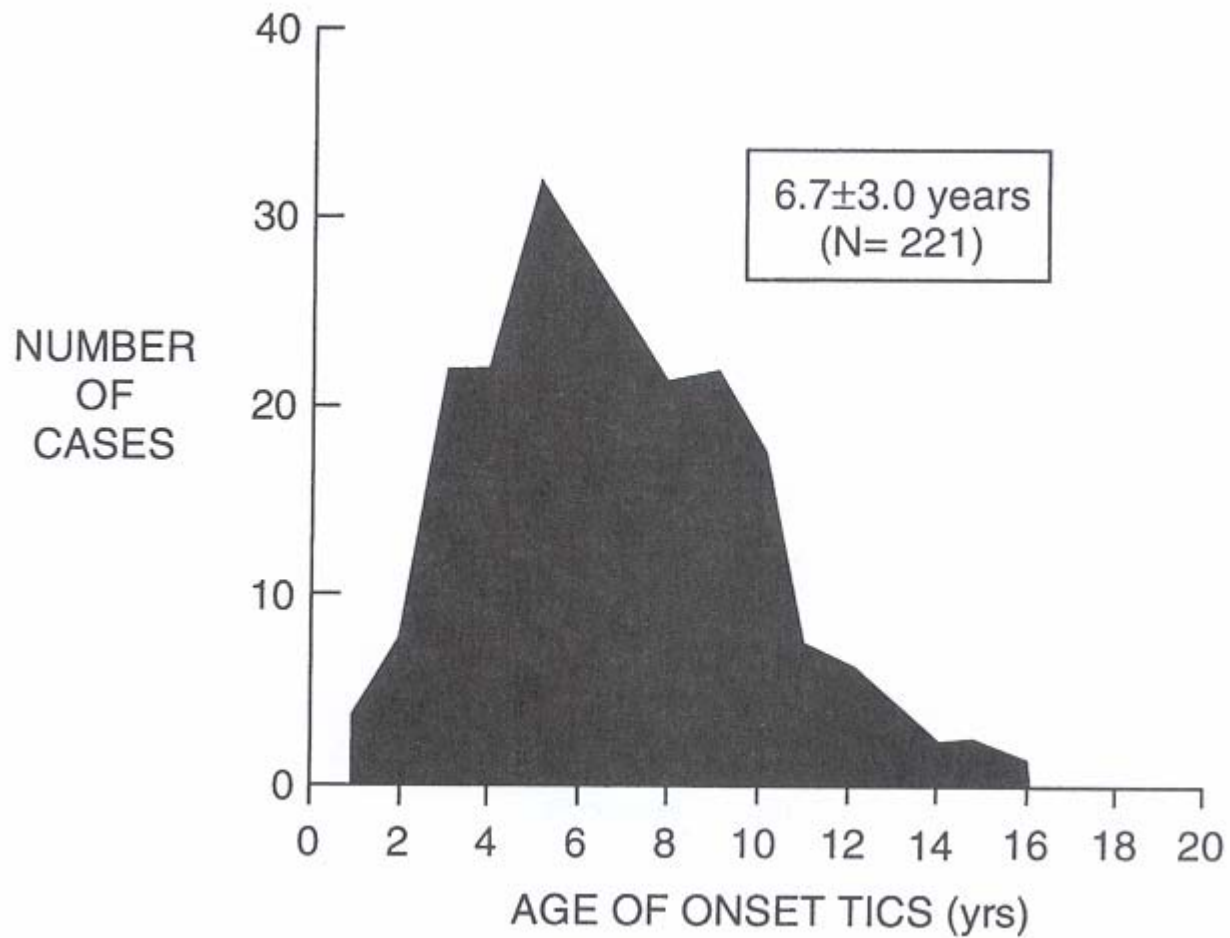
Phenomenology and Natural History of Tourette's Syndrome

*The self under
siege*



Tics

Motor tics typically begin between the ages of 3 and 8 with transient periods of intense eye blinking or some other facial tic.



Tics

Vocal tics such as repetitive bouts of sniffing or throat clearing may begin as early as 3 years of age, but typically they follow the onset of motor tics by several years.

05-30-2011 11:35:55



Tics

Conceptually, tics may be best seen as those *pre-wired bits of behavior* that are available to be assembled into habits or other voluntary actions.

Tics

Like habits, tics often arise from a *heightened and selective sensitivity* to cues from within the body or from the outside world.

Premonitory Urges

"A need to tic is an intense feeling that unless I tic or twitch I feel as if I am going to burst. Unless I can physically tic, all of my mental thoughts center on ticking until I am able to let it out. It's a terrible urge that needs to be satisfied."

Premonitory Urges

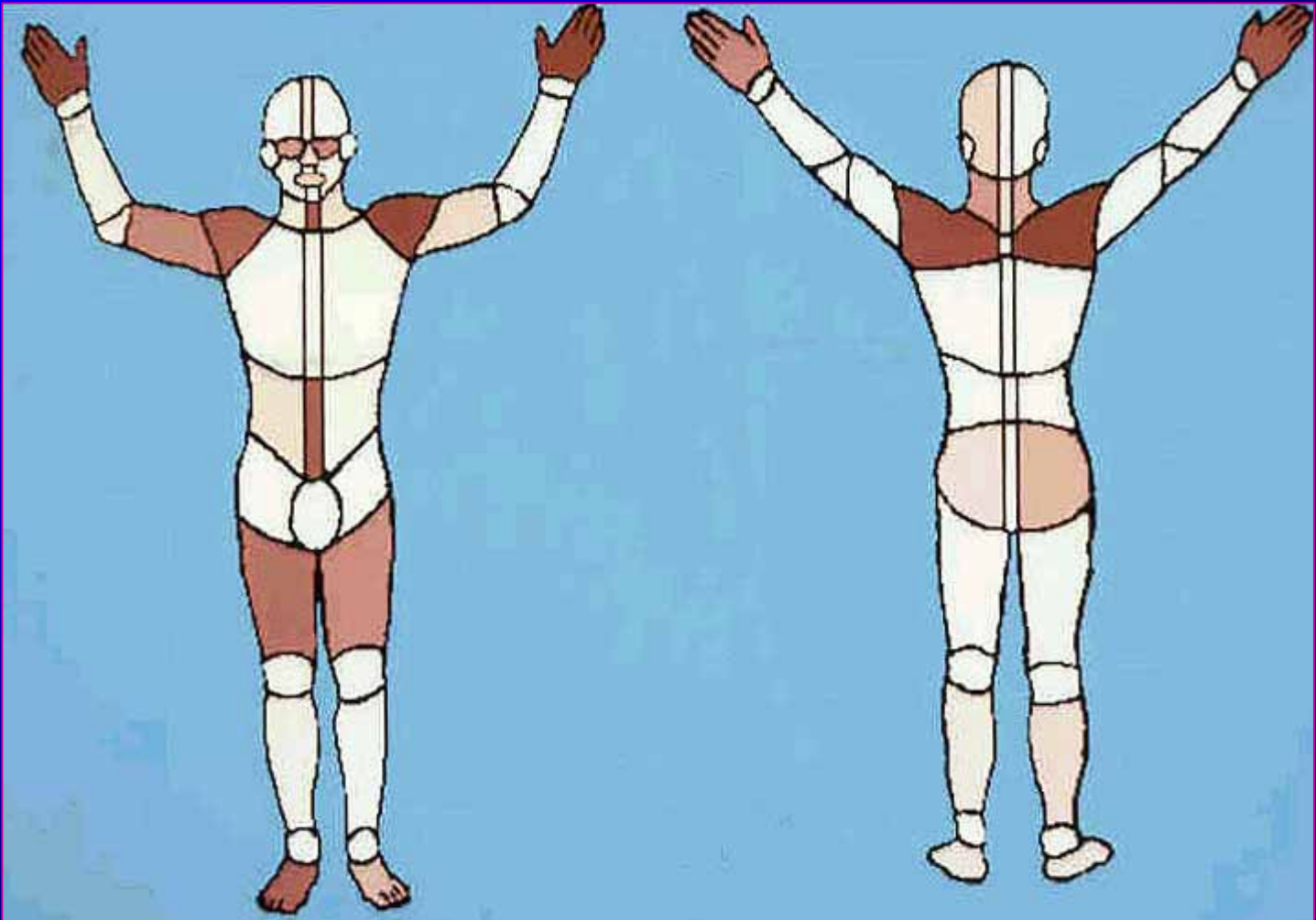
"A feeling of pressure – a need that's very hard to describe, like something itches deep inside you—but no place you can describe; and the only way you can relieve this need is by tics. It's like your brain itches, or your insides are being tickled..."

Premonitory Urges

"I guess it's sort of an aching feeling, in a limb or a body area, or else in my throat if it precedes a vocalization. If I don't relieve it, it either drives me crazy or begins to hurt (or both) -- in that way it's both mental and physical."

Premonitory Urges

There is really no adequate description of the sensations that signal the onset of tics. The first one seems irresistible, calling for an almost inevitable response The end of the tic is the "feel" that is frequently accompanied by a fleeting and incomplete sense of relief.

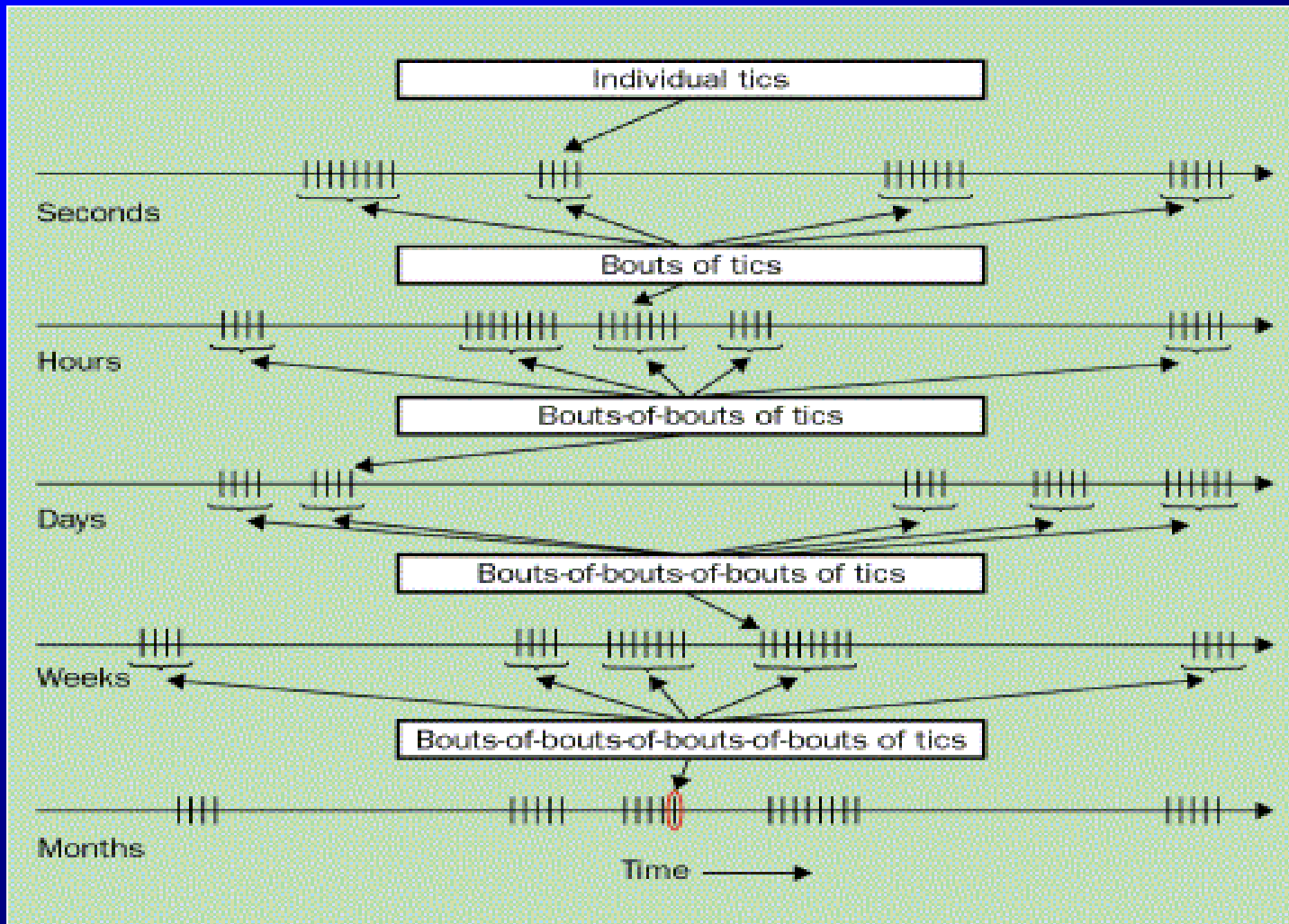


Take Home Message

- For many TS patients tics are a response to unwanted sensory urges that besiege the individual's conscious awareness

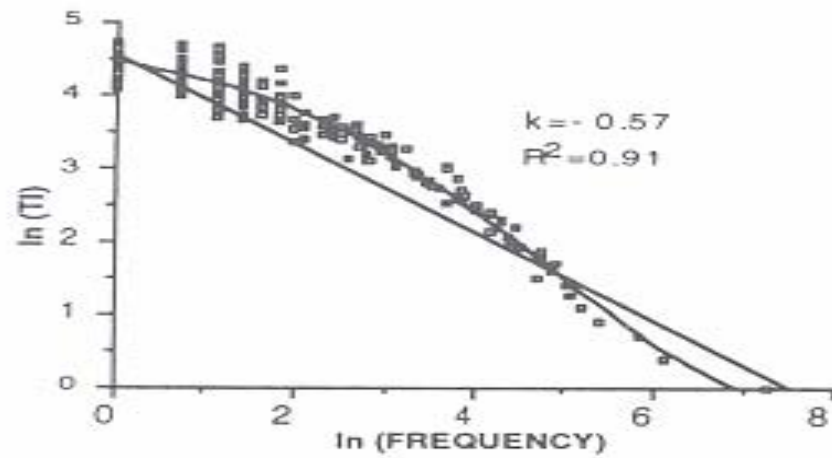
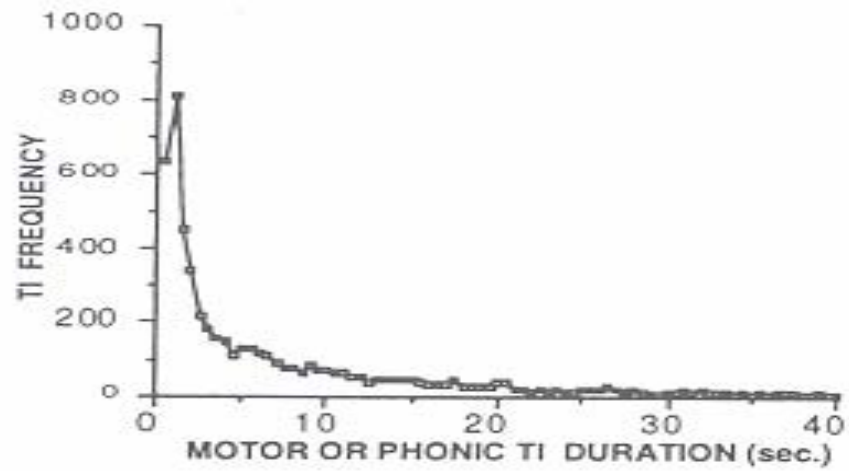
Fractal Character

Motor and phonic tics occur in bouts over the course of a day and wax and wane in severity over the course of weeks to months. Less well known is the "self-similarity" of these temporal patterns across different time scales



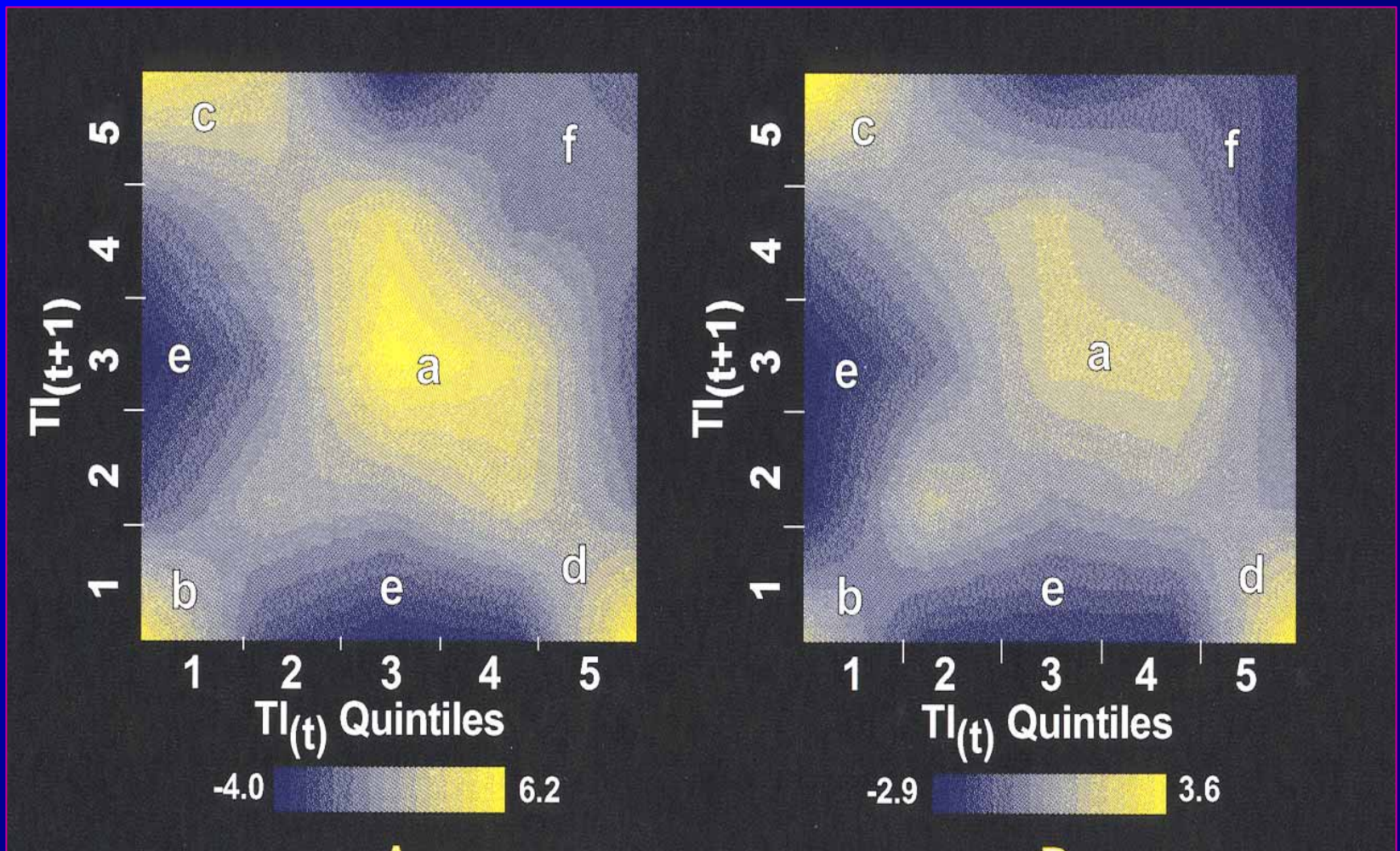
Fractal Character

The frequency distribution of inter-tic interval durations follow an inverse power law of temporal scaling.



Fractal Character

First return maps demonstrate "burst-like" behavior and short-term periodicity, proving that successive intervals are not random events.



Peterson & Leckman, 1998

Take Home Message

- Understanding the dynamical patterns of tics may be useful to families, clinicians & teachers
- If confirmed, may also provide deeper insights into the neurobiology of tics

Prospective longitudinal studies of tic fluctuation – monthly ratings

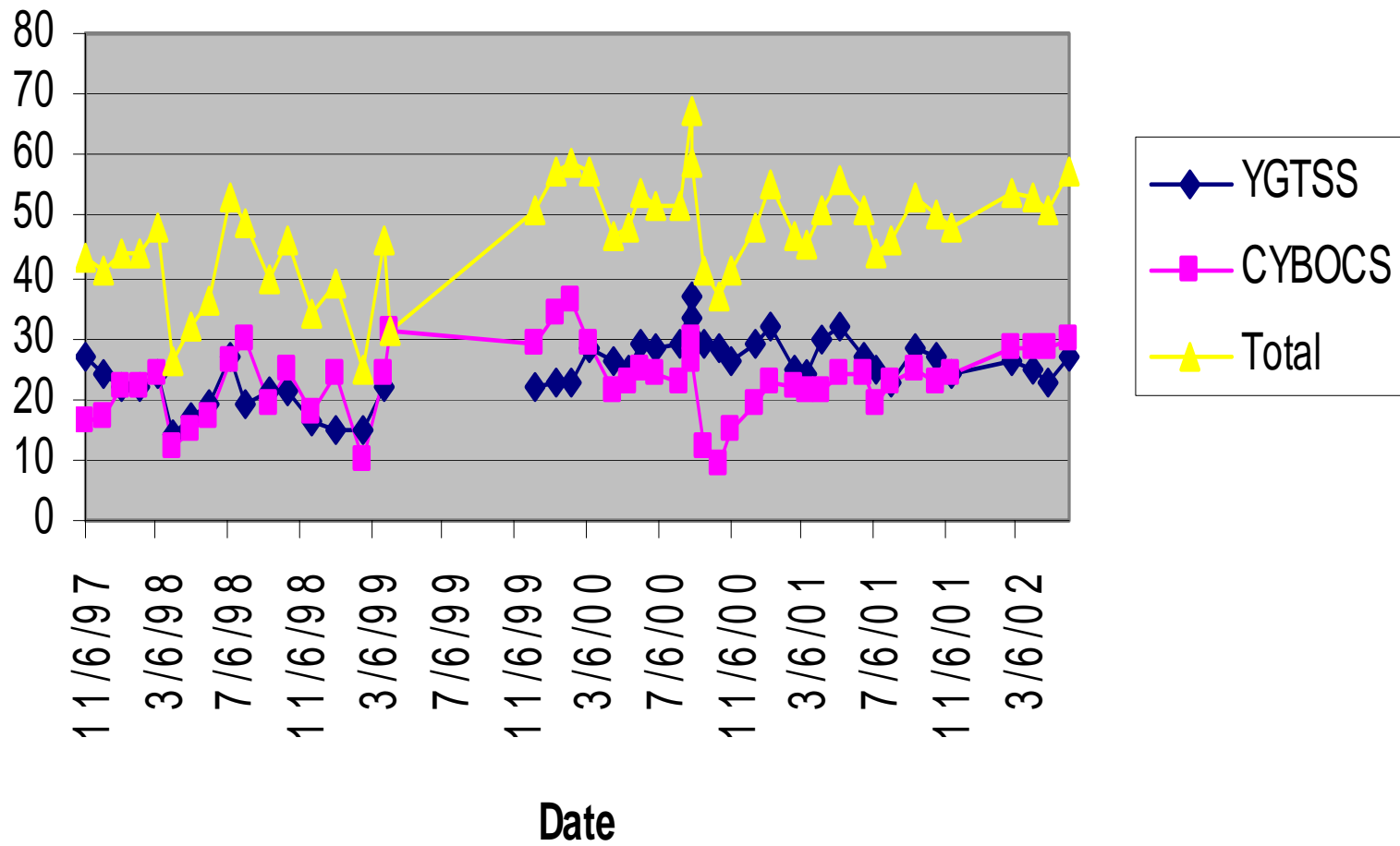
Goal: Describe tic fluctuation and establish a quantitative method method for identifying tic exacerbations; examine the co-variation of tics and OC symptoms (Lin et al., 2002).

Sample

- 57 children with TS, aged 7-16 years followed with monthly tic (YGTSS) and OC (CY-BOCS) symptom severity scores for 3 to 39 months .

Methods

Exacerbation thresholds were estimated using bootstrap methods. These were then compared to the independent ratings of two expert clinicians.



Natural History - Tics

Most true tic symptom exacerbations will be identified when the *delta* $YGTSS_{TIC}$ score is greater than “9” and the current $YGTSS_{TIC}$ score exceeds “19.”

Agreement

	Bootstrap NO	Bootstrap YES
Expert NO	299	4
Expert YES	1	13

Natural History - Tics

In this series, tic exacerbations occurred at a rate of 0.64 per patient yr. and had an average duration of 9.1 (8.5) weeks.

Natural History - Tics

Among most subjects with both TS and OCD, tic and obsessive-compulsive symptoms showed a significant degree of co-variation

Take Home Message

- Tic and obsessive-compulsive symptoms wax and wane in severity. This fluctuation complicates clinical management as well as the interpretation of efficacy and effectiveness of treatment studies

Longitudinal studies of tic severity – annual ratings

Goal: Describe natural history of tics over the first two decades of life.

Sample

- A birth cohort of 42 TS patients seen at the Child Study center and reevaluated at 18 yrs of age.

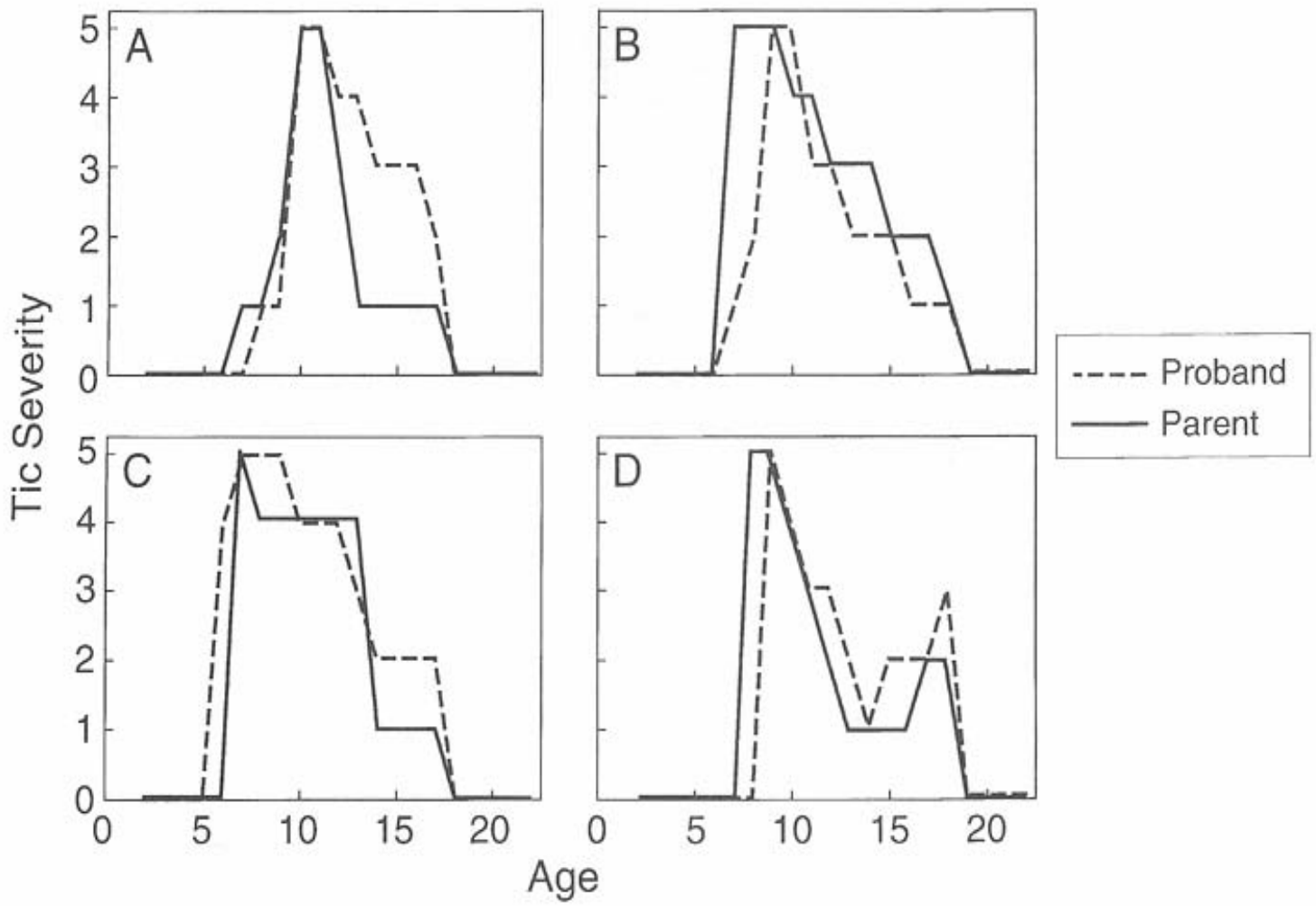
Methods

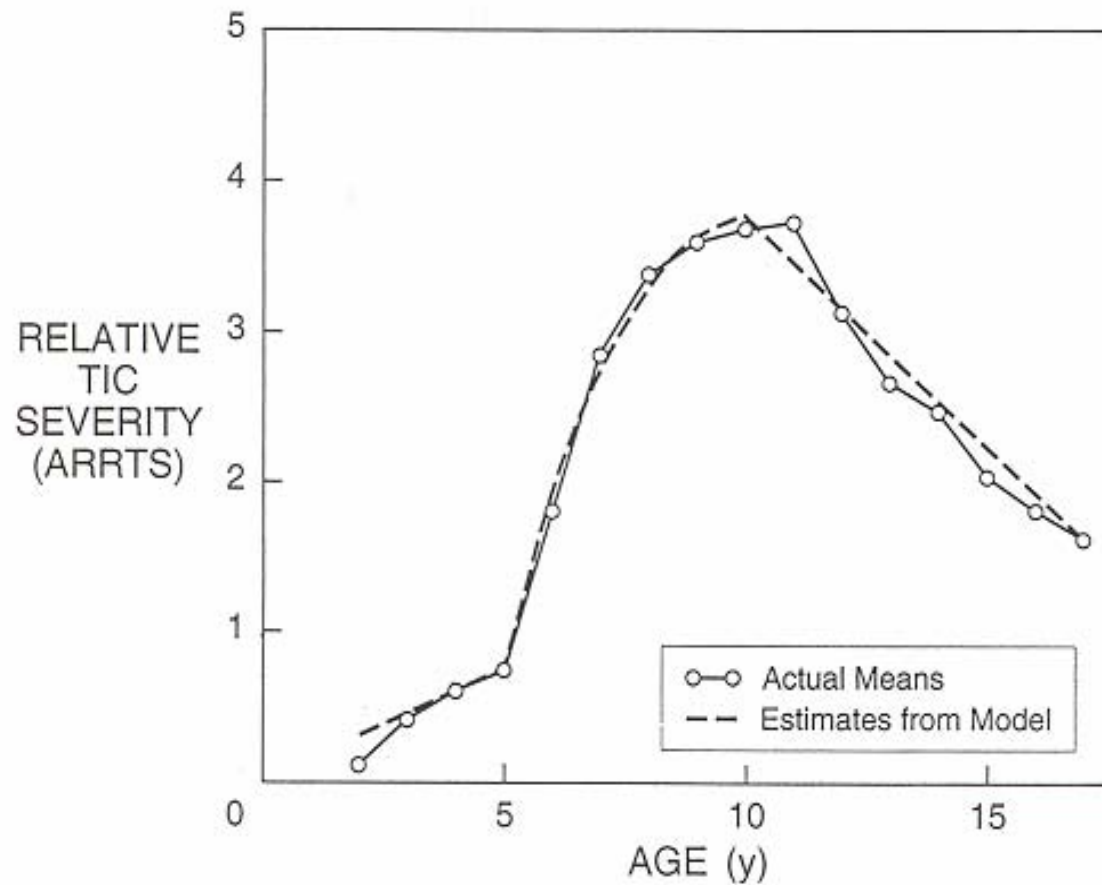
Parent and child reports of annual rating of relative tic severity.

Development of a mathematical model of tic severity – a bootstrapping method was then used to assess variability.

Natural History - Tics

In most cases, motor and vocal tic severity peaks early in the second decade with many patients showing a marked reduction in tic severity by the age of 19 or 20.

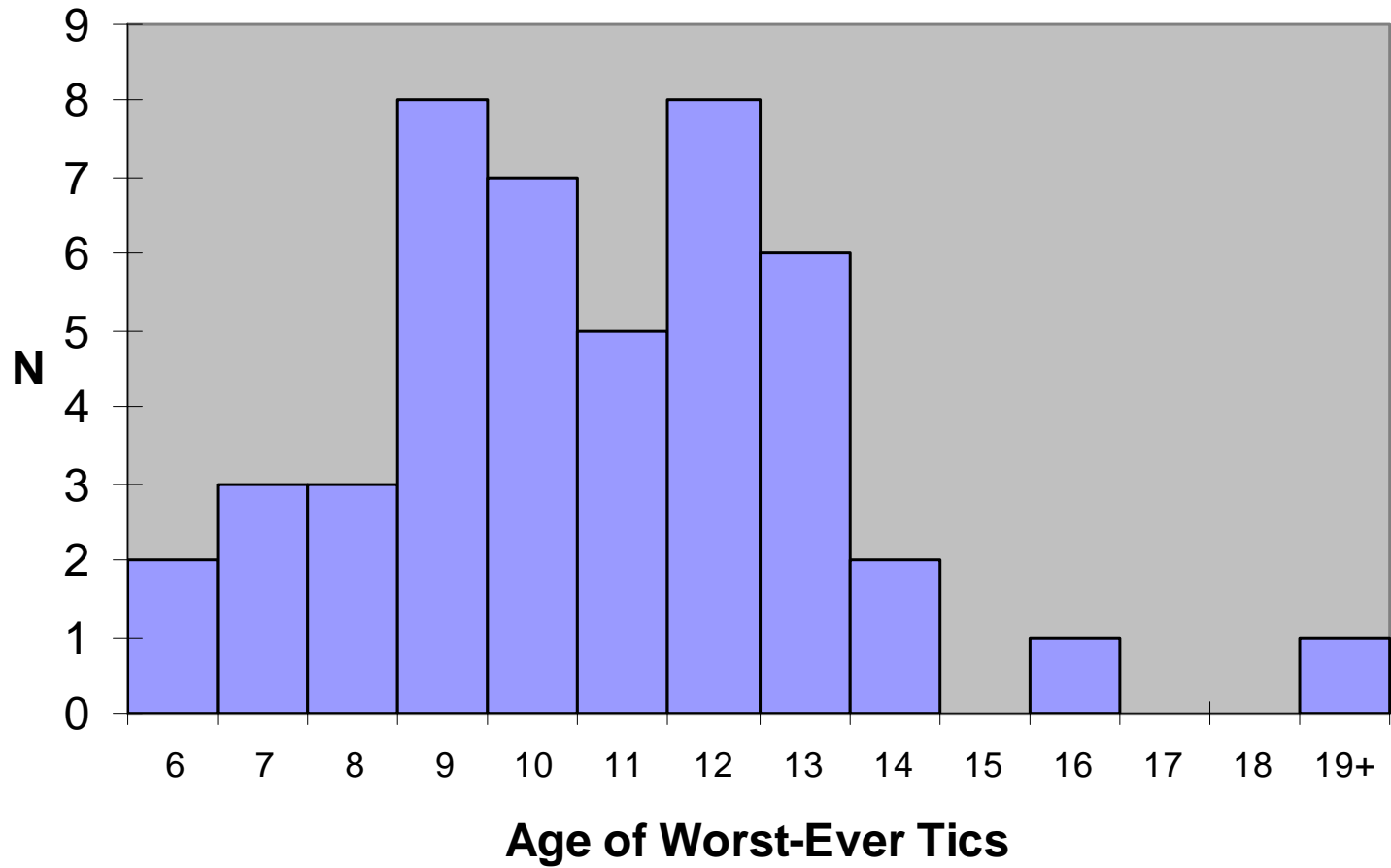




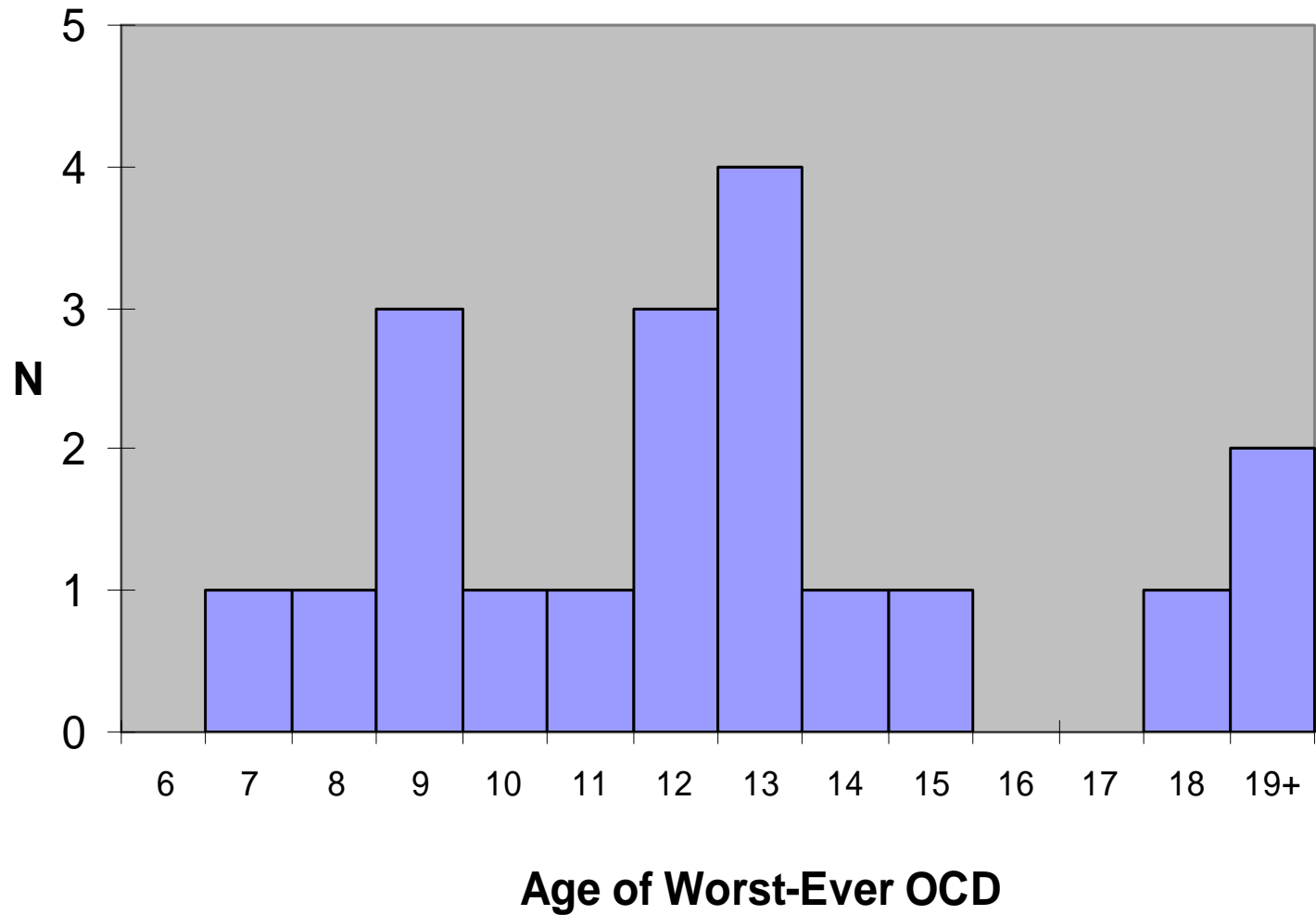
Leckman et al., 1998

New data

Regional brain volumes were measured in 46 children with OCD younger than 14 years of age. Clinical measures were assessed 7.5 years later.



Bloch *et al.*, in press



Bloch *et al.*, in press

Take Home Message

- For tics, the worst ever symptoms usually occur between 7 and 14 yrs
- In most instances the tics improve by the end of the second decade

Take Home Message

- Families often take comfort in the realization that tic severity will likely decline through adolescence
- This knowledge may influence clinical practice

Take Home Message

- The presence of chronic motor and vocal tics *alone* in the absence of other difficulties often heralds a positive outcome.

Take Home Message

- However, TS can also be associated with social, emotional, and academic difficulties in early adulthood.

Take Home Message

- Fewer friendships and more trouble dating
- More lifetime psychiatric diagnoses: ADHD, OCD, depression, GAD, and learning disabilities
- Lower achievement scores in writing, math, and reading.

Take Home Message

- Current treatment strategies focus on providing education and support for patients, families, educators and peers
- We seek to build on strengths
- If comorbid conditions are present, we often treat those first

Tourette's Syndrome

Tics, Obsessions, Compulsions

**Developmental
Psychopathology
and Clinical Care**

James F. Leckman

Donald J. Cohen

Conclusions

In search for a cure, we must not lose sight of the child and the long term goal of treatment is to optimize adaptation and keep development on track

