

*PRACTICE*

## Oh What A Tangled (Neural) Web We Weave: A First-Person Account of Tourette Syndrome

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*ABSTRACT*

Hearing insights from individuals with Tourette Syndrome (TS) can provide direction for future study. Someone able to offer an amalgam of both subject and specialist, however, is uncommon. The author, a 35-year old psychologist with TS himself, chronicles almost 30 years of experience with the disorder. Observations are drawn from personal writings, previous research, and clinical experience with the target population. An experiential recount of both premonitory urge sensations and tics provides clues as to possible learned aspects of this disorder which sculpt underlying neurological dysregulation into the phenomenology we know as TS. This understanding of TS (termed the *Incidental Associations Theory of Tic Formation*) anticipates the great utility of behavioural treatments. The author describes what a behavioural treatment feels like, factors enhancing his own success with it, and finishes with a more 'gestalt' glimpse into the strain of living with TS and associated conditions. The role learning theory is proposed to play in this neurodevelopmental disorder aids in demystifying known course, appearance, and treatment. Future studies should more fully explore this relationship. Misperceptions of diagnosed individuals are decreased with a fuller understanding of the day-to-day impact of living with TS and associated conditions. Clinical care is enhanced with the use of Habit Reversal Training (HRT). Mindfulness techniques may also be useful in treatment.

**KEYWORDS:** Behavioural treatment, experiential, learning theory, premonitory urges, tics, Tourette syndrome

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Previous articles demonstrate the value of soliciting 'insider' opinions of insightful and articulate individuals who also happen to have Tourette Syndrome [1,2]. While anecdotal, such perspectives

can be mined for research directions unlikely to be considered without the advantage of inner experience. Moreover, perceived face validity of new hypotheses from these individuals may serve as

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important litmus tests, ultimately saving research time and dollars. Even chasms between subjective experience and objective data are advantageous to discover, as these too would likely enrich our knowledge.

An educated patient, possessing specialized training in his or her own disorder, provides a unique opportunity to complement the objective stance of good research methodology and evidence-based clinical practice with the first-hand viewpoint of a diagnosed individual. One such person offers his insights within this article. Myself.

### **BACKGROUND**

I am a 35 year old Caucasian male diagnosed with Tourette Syndrome (TS), Obsessive-Compulsive Disorder (OCD), and Attention-Deficit/Hyperactivity Disorder (ADHD). I first displayed tics around age seven and was diagnosed at age 19. As a youth my symptoms were severe, misperceived, and coped with predominantly through camouflage and suppression. My symptoms persisted into adulthood without attenuation. My current Yale Global Tic Severity Scale score is 44. My tics are treated behaviourally, utilizing techniques that I first attempted at age 20.

I first catalogued my experiences with TS -- relating my observations to the content of my studies -- in my undergraduate years. These notes evolved into presentations, newsletter columns, magazine articles, and online blogging. During my graduate work I began attending international research symposia and I was active in various support and advocacy organizations. I completed my applied Masters and Doctoral dissertations in the area of TS and associated disorders. My Masters was a social psychological study and focused on the impact of attitude as a function of coping success [3]. My dissertation united the existing body of neuroanatomical knowledge with behavioural learning principles to develop a comprehensive model of tic formation [4]. I am also the creator of the popular website, *Life's A Twitch!* and I have authored the book, *Nix Your Tics! Eliminate Unwanted Tic Symptoms: A How-To Guide For Young People*.

Currently, I am a registered psychologist in Ontario, Canada, providing highly-specialized tertiary care to children and adolescents with complex TS since 2004 via the "Brake Shop", a clinic model of my conception.

This article is a culmination of each role that I carry. My account blends 15 years of professional education and experience with almost 30 years of being personally touched by symptoms of TS, OCD, and ADHD. This first-hand report highlights how learning likely influences the appearance and treatment of TS and it concludes with a glimpse into living with multiple difficulties in self-regulation.

### **PHENOMENOLOGY**

*The itches come...*

The best analogy for describing the premonitory urge sensations preceding most tics is that of an itch. Saying it is like a sneeze implies that tics are some unstoppable force set in motion by a tickle. Yet tics ARE at times stoppable. On the other hand, itches are slippery things -- resistible, yes, but crafty. Akin to balancing a tray full of water, the slightest waver in vigilance slops a little over the side -- made worse by reactive attempts to compensate.

*Again, the itches come...*

To call premonitory urges 'sensory' sensations isn't quite accurate either: it is not simply a matter of the tactile volume being turned too high. The impression is of a deeper more subcutaneous itch, the satiation of which is maddening in its elusiveness. It is a nagging sense of incompleteness, a sort of magnified *Zeigarnik* effect [5] multiplied across countless 'unfinished' tasks.

*Yet again, and always again, the itches come...*

Like a bored and aggravating younger sibling my premonitory urges follow me, eagerly watching over my shoulder and messing with my stuff. Their omnipresence is grating; permanent, incessant and insistent. Never satisfied for long, and rubbing my nerves raw without reprieve.

At times they pulse: a localized flower of adrenaline bursting within my chest. At other times they are a vibration coursing through my body: a generalized unrest eliciting jolting paroxysms. At still other times they are a smouldering flame: biding their time, awaiting the opportunity to worm through my defences.

Tics themselves are the *scratch* these urges demand. As a child I was taught my itches meant I was strange so I concealed my scratching as best I could. Recurring ‘*scream-dreams*’, in which I was immobilized within a straight-jacket and locked away in a padded room, plagued me. In night all who I had ever loved learned my bizarre secret and angrily renounced me; in day I did everything possible to prevent the same.

The scratch is a voluntary behaviour in the same sense that my signing a document with a gun held to my head would be a voluntary behaviour. It is chosen and purposeful and provides gratification, yes, but the deck is most certainly stacked. I am compelled. Yell at me, mortify, ridicule, or punish me for ticcing and I’ll likely stop - at least for awhile. But that’s only because you’ve temporarily produced a bigger gun.

Tics can certainly *feel* involuntary though: I couldn’t pray away the urge, my attempts to *just stop* failed regardless of how much I punched myself, and I felt powerless to change the misperceptions of those around me. This led to alternating feelings of anxiety, anger, and suicidal depression. Over time my automatic capitulation had created the illusion of uncontrollability, thus helplessness. I could hold off, but why? The distress seemed everlasting save one solution. To delay its execution served no purpose other than to prolong my misery. Such is the nature of negative reinforcement [6].

Symptoms feel opportunistic too. Whenever I’m ill-equipped to bear the load -- I’m late, tired, or hurt, there they are, right on cue. Tics are also not above taking advantage of a situation – knowing I mustn’t do a particular tic at a particular time virtually guarantees its expression. Growing up this was interpreted as ‘obvious’ game-playing on my part. To me it was blatant persecution – first from a malevolent inside, and then from an uninformed outside. No wonder I was anxious and paranoid. A

malicious demon resided within, reading my thoughts (particularly ones concerning what *not* to do) and using them against me. And no wonder I reacted so viscerally when confronted with my behaviour – it was a suggestive buffet for this demon, a sadistic ‘set-up’ I would surely also be held responsible for later.

The vast majority of my tics are comprised of routine and simple things – blinking, head movements, throat-clearing. Things which occur in a stereotyped fashion countless times per day in everybody – often it is only the lack of context for the thing that I do, and not the thing itself, which defines its abnormality. I can distinguish between ‘older’ and ‘younger’ tics in my repertoire. The former appear embedded in all that I do and are more difficult to suppress, whereas the latter seem more constrained to specific situations (e.g. standing in the garden whilst holding a water hose) and are easier to ‘nip in the bud’ than their less selective elders. Each emergence of a particular tic emboldens it and increases the sense of inexorability; left unchecked in a day it builds to a frenzied fever, urge and tic melding into one. Yet each morning I awake peaceful, as if a “reset” button has been pushed. It makes me not want to rise. Each urge-tic dyad lies in wait for some unknown flag to drop; the first pair out the starting gate ‘wins’ dominance for the day. Doing so increases their odds each time for the next day, in a cumulative fashion. One day a different dyad somehow jostles position, establishing their temporary front-runner status and increasing the chances they will reign supreme in the days to follow. In this way symptoms change over time.

Tic-free periods occur too. It’s not distraction that produces them: I can be wholly aware of the absence of my tics (even explicitly present on that very topic), yet their absence persists. I’ve noted these moments occur during highly complex tasks requiring considerable investiture from me – presenting, assessing, juggling or drumming. It’s almost as if my tics serve as pressure valves: with all energy channelled to constructive pursuits, their function is momentarily unnecessary. However; even a fleeting pause (e.g. to listen to an audience member’s question) creates enough discrepancy between energy and activity for tics to fill the void.

### *A Learned Component to Tourette Syndrome? Some Observations*

These ‘insider’ observations, passed through the more current lens of my discipline and training, hint to me that aspects of this disorder are likely learned. I do not suggest an alternative understanding of the etiology or pathology of TS, nor are my observations in contradiction to exemplary work many giants in this field have contributed to uncovering the underlying physiology of this complex neurodevelopmental disorder [e.g. 7,8,9]. Rather, what I suggest serves as an expansion of the same.

Neurological explanations are necessary for understanding TS but, to date, findings have not been sufficient to account for much of the phenomenology of the disorder. The dysregulatory stage may be set, but the play performing upon it remains a mystery warranting scrutiny as well. Individual and context-ridden learning experiences likely mould the shape of any neurodevelopmental skill deficits, just as home computers are influenced by each owner’s tastes. Once indistinguishable from all others, customized machines are created based upon programs and content loaded, internet sites visited, and choices each owner makes within constrained options... regardless of the uniformity of each machine’s various innards.

Of course learning components have neurological substrates as well, and perhaps one day neuroimaging technology will be such that these can be readily identified. Until that time (and perhaps even to expedite its arrival), the use of existing learning theory can serve to provide direction in broader strokes – akin to surveying a beach to determine which particular grains of sand then bear further analysis.

Each day, beneath our awareness and beneath our cortex, our brains are busy memorizing patterns of movement. Routine and simple things – like my eye-blink – would be ripe to be incidentally associated with countless other goal-directed behaviours, actions and sounds preceding them (e.g. walking through a doorway and blinking, picking up a pen and blinking, seeing a good friend and blinking). Over the course of years these incidental associations no doubt occur here and there; in the

absence of a ‘normal’ ability to prune and/or inhibit such associations they might strengthen as per Hebbian principles [10]. What if eventually these associations became so strong that various goal-directed behaviours, actions or sounds actually served to elicit any stereotyped movements or noises ‘accidentally’ associated with them? This would indeed ‘hijack’ something like an eye-blink from context, and this ‘hijacking’ would occur both frequently and at seemingly random intervals given the countless daily goal-directed behaviours, actions and sounds that eye-blinking would be networked with. *Not* blinking might very well create a nagging, free-floating *Zeigarnik*-like sense of incompleteness which remains until the pairing is complete. What we call a premonitory urge.

This model is not so far-fetched: it weds well with the concept of neuronal plasticity [11]. Nor is it so far-flung from good neuroscience. We know a function of the basal ganglia is to learn motor patterns and that frontal lobes play a role in inhibition of said patterns; two areas implicated in the pathophysiology of TS [12]. And in my 2001 doctoral dissertation I demonstrated that while associations *do* form between various motor movements serendipitously occurring together, only those individuals with demonstrated difficulties in motoric inhibition *and* exposure to the incidental learning trial subsequently demonstrated the expected behaviour; a weak, context-dependent ‘tic’. Youth with TS unexposed to learning trials, and all controls, did not acquire the behaviour [4]. This ‘tic’ exhibited the same signature burst-like pattern typically seen in TS [13]; moreover, those exposed to the incidental learning trial reported significantly higher urges to engage in the ‘tic’ than did unexposed groups [4].

When I apply this model (which I’ve termed the *Incidental Associations Model of Tic Formation*) to my personal experiences the logic of it is persuasive. To begin with, I have a wide repertoire of tics... but with parameters. Not everything and anything is disinhibited; only those things in me that tend to occur often enough, and similarly enough each time, to be vulnerable to a great many incidental associations are affected. And the more universal a human experience this thing is that I do, the more it

seems to be shared among the TS population as a tic. Even my more complex symptoms have their lineage traced back to these simple behaviours – multiple simple tics which over time chained together (a kind of higher-order conditioning) and/or over time gelled into something new and not immediately recognizable from its component parts. Perhaps this is why complex tics tend to appear some time after simple tics [13].

My tics first appeared somewhere around the age of seven; this ‘sudden’ appearance of symptoms might only have been an illusion, analogous to a submarine cresting the water’s surface. The rising strength of my own incidental associations would be masked only until the urges for completion were of sufficient strength to elicit those simple movements and noises lashed to my goal-directed behaviours. The tics themselves may have ‘broken the surface’ abruptly; however, their origins (and the increasing salience of the premonitory urge sensations) were perhaps more insidious.

Tic suggestibility may not have been the work of malevolent inner demons after all: a spreading activation of associations (from “I see my mother” to “things I know about my mother” to “my mother hates it when I make certain noises” to “don’t make those noises” to the noises themselves) would naturally prime the exact wrong thing at the exact wrong time. This rebound to what we *don’t* want to think is called an ironic process and is a universal human experience [14]; the only difference with me is that my ironic process is on display - I wear it on my sleeve as a result of my poor self-regulation. Drawing my attention to a particular body part, object, or behaviour would also trigger the arousal of any associations to it, including incidental motoric ones. Premonitory urges are then induced, seemingly ‘following’ my attention wherever it may roam. Like a bored and aggravating younger sibling.

The calmness of my tics each morning – each ‘reset’ in anticipation of my first movement – would occur because each of my tics are joined to voluntary behaviours. Until I arise, engage in one, and unwittingly activate the chain no impetus (or ‘priming’) for their expression yet exists.

Purposeful components of goal-directed behaviour occur together much more reliably and in

a much more consistent order than would any accompanying incidental behaviours. Hence, any incidental associations would likely not be as strong as the purposeful ones. It’s conceivable then that in the case of highly complex tasks with a variety of simultaneous demands (like presenting, assessing, juggling and drumming) all cognitive resources are devoted to the orchestration of the required purposeful movements. In this scenario, with no reserves to ‘bleed off’, there is no room for incidental associations (and therefore any urges or tics) to establish. Even more convincingly, I’ve noted that only when a complex task becomes more routine (i.e. I am utilizing fewer resources to execute it) do tics gradually begin to encroach upon it.

‘Older’ tics would be ones more deeply ‘entrenched’ in their associations; they’ve had opportunity to attach themselves to many more goal-directed behaviours in an ever-growing web of complexity and have generalized and accommodated in their learning. Premonitory urge sensations operate as ‘markers’ for tic age and strength in this model, likely why I found premonitory urges more salient and identifiable over time.

### ***Behavioural Treatment for Tourette Syndrome: What It Feels Like***

This model predicts a behavioural treatment like Habit Reversal Training (HRT) would be highly effective in managing tics - as indeed it has been found to be [15]. By ‘blocking’ a tic’s expression via a competing response whenever the urge arises I am weakening the incidental association between whatever behaviour, action or sound just occurred and the tic itself. Over multiple trials this should extinguish the tic as well as the ‘marker’ for the now-defunct association (the premonitory urge). This is indeed what I and others have found [16]. Finally, since number of trials to completely eliminate a tic would be a function of how much “unlearning” there is to do, it’s of little surprise to me that ‘younger’ tics tend to respond more quickly and fully to HRT than do ‘older’ tics. It is to my experience with behavioural treatment that I turn next.

My decision to treat certain tics did not stem from social pressure or poor self-image. Anytime

I've mistakenly equated 'treatment of tics' with 'being acceptable or likeable' I've been disappointed. All life's woes do not stem from TS, and its absence would not be a panacea. Even an abrupt magical cessation of tics would not fix issues that are indirect products of 30 years living with them. Such an approach actually reinforces a negative self-image (i.e. I'm only 'ok' if I'm 'better'), and hangs too much expectation on tic elimination. Instead, the decisions I've made have been pragmatic ones: addressing rapidly senescing joints (jaw movements), rapidly thinning tooth enamel (teeth clacking), rapidly growing astigmatism (eye-gouging), and injury (clenching objects with my right hand).

The initial effort required to engage in a competing response (in general, isometric muscle contractions each time premonitory urges arise) cannot be understated. Subjectively, the face validity is naught: in the beginning HRT is an extremely consuming, irritating, and exhausting ordeal with no apparent purpose or progress whatsoever. In fact on the surface things may even seem worse. Had I not learned of 'extinction bursts' as part of my behavioural training I would not have continued. Instead I envisioned the neuronal web which entangled me - isolated filaments I was now pruning away one by one. And, like a steadily weakening web supporting a thrashing weight, when the sudden release came it was as startling as it was fulfilling.

I came to learn that the subtleties of this web work bidirectionally -- acquisition of learning occurs as incrementally as does extinction and can surprise you with its (re)emergence. Seduced into idleness by my initial success, I was swiftly again entwined. I had allowed the web, broken but still easily mended, to reweave its filaments around me. Vigilance is the key in the early stages of behavioural treatment. Multiple instances of 'spontaneous recovery', successively diminishing in length and strength, occurred. The more I practiced the greater the results, the longer they lasted, and the more of a buffer I appeared to accumulate for 'slip-ups'. Targeted symptoms eventually vanished completely; the first tic I exposed to HRT (a snort) has been extricated from my repertoire for 15 years now -- despite continual references (and even demonstrations) within my clinical work and

presentations. Each successive use of HRT appears to come easier too, as if some generalization of the learned discipline is occurring.

Focussing on one symptom at a time may be necessary. The effort required has costs [17] and the mental exertion required has limits. Attempts to simultaneously initiate HRT with all (or even multiple) tics are reminiscent of vain struggles to 'hold in' one's tics; however, traditional suppression is devoid of tools, support, a plan, or the right mind frame [18]. One mustn't be greedy, and must also learn the art of patience.

I find symptoms more difficult to combat when stakes are high (e.g. *"my livelihood as a presenter and singer rides on the eradication of this throat-clearing tic!"*) or when physical damage (perhaps as sequelae to the tic itself) significantly heightens one's preoccupation with this area of the body (therefore compounding urges to tic in that area as well).

Despite its initial vex, behavioural treatment holds high personal appeal for me and many of my patients. I can selectively target symptoms to suit my needs. This ability to tailor (and deliver) the treatment myself is also very empowering, and has allowed me to expand my limits beyond where I had grudgingly (and erroneously) accepted them to be.

### ***Enhancing Behavioural Treatment: My Experiences***

Deep breathing techniques are mobile, inconspicuous, and decrease my ticcing through stress reduction. A slow, mindful, and deep intake of air can smother (or at least partially mute) a swelling premonitory urge. I imagine the breath enveloping and drawing that urge from my body as I exhale. By the completion of the out-breath, vestiges of the urge have re-kindled and I find myself back on the precipice. Brief refractory period or not, the exercise still bought me time enough to again smother the flames with my next in-breath. In this way, simple breathing techniques also serve as exposure and response prevention (ERP) exercises, further severing the incidental associations bonding me to my tics.

Exposure exercises can be taken further into the realm of mindfulness training. I spend 45 minutes motionless, aware and present of each passing

moment, meditating on body sensations. I note a premonitory urge, and watch it with detached interest. Squirming and twisting within, it tempts me to complete the pattern. To lull me into automaticity. I leave all thinking behind to just *be*, no longer tied to what my brain tells me must occur next. My attention wanders, and before long I return to note the urge has vanished. A half-smile spreads across my face.

Anything to shore up my flagging frontal lobes is likely a good plan in the battle to contain tics, as Bradley Peterson's work so eloquently suggested [19]. For a few years now I have taken large daily doses of Omega-3 and wonder if this has helped. Certainly it has not had any direct impact on tic levels, but I suspect it may have moderated my ability to successfully utilize behavioural treatments.

Of more obvious benefit has been an optimized dosage of controlled-release methylphenidate. Within 20 minutes of my first treatment I became aware of an altered state of being. Initially I felt almost outside myself – an alien, persistent, altered state of consciousness difficult to categorize and best described as an artificial distancing of what I was doing from what I was thinking. I was tempted to call this novel disconnect “extraordinary” until I realized that this phenomenon was likely not ‘extra’ at all. It is, in fact, *completely* ordinary to insert a beat between action and thought, and this is precisely what decreased impulsivity requires. This vague sense of light-headedness (which I had habituated to by the second day) wasn't a side-effect at all – it was merely the more normal brain functioning I was as yet unaccustomed to. In the past I had been closer to the action in a cognitive sense: observing, cataloguing, and paying for all my spontaneity only after it had ensued. My success at remediation or at demonstrating changed behaviour the next time was limited because I was already immersed in the next moment. An ability to ‘put on the brakes’ more effectively has improved many things in my life – not the least of which is my success with HRT. Good intentions, good demystification, and good efforts simply weren't enough to compensate for a lack of deliberativeness; the methylphenidate helped with that.

Lastly, and most recently, I learned a myopic

preoccupation with my own ‘leaky brakes’ had blinded me to the still very-much wounded individual behind the wheel. Failing brakes certainly require attention, but so does an impaired driver taxing those brakes by continually steering into hazards. I still possessed a shame-based identity, largely created from having undiagnosed and untreated symptoms for many years. A great deal of judgement, developmental trauma, and discrimination had led to a denial of healthy instincts, a devaluing and martyring of myself, a lack of self-trust and compassion, an ambivalent attachment style, and a profoundly co-dependent nature. Much exploitation and boundary violation resulted, breeding entitlement, conflict and abandonment. Addressing those issues impacted symptoms in unexpected ways. Resolving internal conflicts and making better choices provided less unhealthy fodder for my dysregulation to perseverate upon, or to impulsively react negatively towards. Behavioural treatments succeeded in turning down my neurologically-based amplification of self. But it took plain old good therapy to change the actual tune being played.

### *The Beaker Overfloweth*

The wretched private depths I inhabited for many years as a patient with TS, OCD, and ADHD go far beyond any diagnostic criteria.

Symptoms are a moving target: having gotten used to one tic another more bothersome one takes its place - likely because the very act of becoming accustomed means one's attention is no longer priming that tic as readily. Symptoms sometimes wane long enough to see what a ‘normal’ life would have been like, and how the world would interact with me differently. Then the mirage ends, also baffling, disappointing, or infuriating those who based their expectations of me on a ‘good’ day.

There are many costs involved (time, effort, emotion, and money): not just in the treatment of tics but also the comorbid conditions. I have rituals to prevent, Concerta to buy, and structures to implement and adhere to. Associated medical costs accumulate (e.g. chiropractic care for tic-induced subluxations) as do the costs of replacing objects, people, or electronic data not able to withstand tics,

impulsive decisions or explosive reactions. Sleep deprivation and painful symptoms exacerbate an already trying situation, and social costs attached to all this inner warfare are high. Even social cues I'm not too consumed to catch can be misleading, as the interactions modelled are of the type reserved for those who are different.

Even Herculean investment goes only so far, and does not 'buy' me any right to retort to reactions. People *won't* always understand, I *will* often be judged or treated unfairly, and because most reactions are borne of being caught off guard rather than maliciousness I *do* have an obligation to be the bigger person and muster understanding and patience despite this particular salt in the wound. Ironically, it is at those times when I'm simply too drained of resources to engage in camouflage, symptom modifications, competing responses, or explanations that the most resources are needed – to field inquiries, disrespectful treatment, and misperceptions. I can never blend into a crowd, so real-world expectations, unintentionally paradoxical as they may be, still demand I be at my best at all times. Especially when I'm at my worst.

Vital bonding experiences at an early age are skewed or missed altogether: a source of isolation and mourning. Dating requires constant explanations and introduces to your partner heightened trepidations (e.g. first impressions, loss of public anonymity, genetics). Existential questions regarding personal accountability abound: is my inability to remember people's names due to a personal shortcoming or one of my disorders? I am not enlightened with any special knowledge I keep secret from others, yet I must somehow balance healthy acceptance with healthy growth. Or what about that time I wasn't chosen valedictorian: was that prejudice or was I simply not the best candidate? Who would ever admit the former?

Well-intentioned normalizing comments only leave me feeling minimized: if everybody truly does feel the same way, why am I having so many more difficulties? Ask a person on the street to define normality and they'll tell you it can't be done. Ask that same person to point at who *isn't* normal and their finger won't take long to find me.

Oh, and somewhere in there I lead a clinic,

interact with peers, nourish a relationship, manage unexpected changes and transitions, negotiate compromises, consider the needs of others, and a whole host of other expected tasks. Or at least I try to. Anyone's mental workbench is only so big, but mine has extra demands sprawled across a goodly portion of it. Something's gotta give. Usually it's friendships, intimate relationships, and my happiness as my intense efforts to do it all fall short and social awareness suffers. There is a daily strain but there is also a more macro drain, one that builds over a period of months and can lead to a crash requiring weeks to recover from.

So do I want a cure for my TS? No.

Besides some positives inherent to dysregulation (e.g. sometimes perseVERing and perSEVering differ only in inflection), there are the positives that come from the struggle itself. My angst has been a valuable commodity and is reflected in the passion I have for my work. It helps foster insights within my chosen field, and in many ways opens as many doors as it closes. By their very nature my demons are forced to the forefront; they will not be denied and so are acknowledged and dealt with; something that puts me ahead in the game of life and not behind.

Frankly, 'curing' me of TS at this point would be the definitive invalidation of my existence. I've become adept at running a lemonade stand. I never asked for nor wanted any stupid lemons, but I've made the best of what I was handed. For better or worse this lemonade stand is my life; I continue to expand the franchise. To suddenly cut off my supply of lemons would be cruel indeed.

### **RECOMMENDATIONS**

Future studies of TS may benefit from consideration of any learned elements of this condition as subjectively reported. Mindfulness may also play a potential role in the treatment of TS. Clinical work can be enhanced with the use of behavioural treatments and by more fully grasping the 'gestalt' experience of living with TS and associated conditions.

**AUTHOR NOTE**

The author has self-published a youth guide on behavioural treatments for tic disorders to sell in a private capacity. Neither this manual (entitled, *Nix Your Tics!*) nor *Life's A Twitch! Publishing* represent the Ministry of Children and Youth Services or the Government of Ontario.

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