



## Acceptance of premonitory urges and tics



Ella Gev<sup>a,b,\*</sup>, Tammy Pilowsky-Peleg<sup>d,e</sup>, Sylvana Fennig<sup>b,c</sup>, Noa Benaroya-Milshtein<sup>a,c</sup>, Douglas W. Woods<sup>f</sup>, John Piacentini<sup>g</sup>, Alan Apter<sup>a,b,c</sup>, Tammar Steinberg<sup>a,h</sup>

<sup>a</sup> Matta and Harry Freund Neuropsychiatry Tourette Syndrome and Tic Disorders Clinic, Schneider Children's Medical Center of Israel, Petach Tikva 49202, Israel

<sup>b</sup> Sackler School of Medicine, Tel Aviv University, Tel Aviv 69978, Israel

<sup>c</sup> Department of Child and Adolescent Psychiatry, Schneider Children's Medical Center of Israel, Petach Tikva 49202, Israel

<sup>d</sup> The Neuropsychological Unit, Schneider Children's Medical Center of Israel, Petach Tikva 49202, Israel

<sup>e</sup> Hebrew University Jerusalem, Israel

<sup>f</sup> Department of Psychology, Texas A&M University, San Antonio, TX, USA

<sup>g</sup> University of California-Los Angeles, Los Angeles, CA, USA

<sup>h</sup> Child Development and Rehabilitation Institute, Schneider Children's Medical Center of Israel, Petach Tikva 49202, Israel

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### ABSTRACT

Premonitory urges (PU) often precede motor and vocal tic expression, are relieved by completion of the tic and may be more bothersome than tics. Most treatments focus more on tics than on PU. The present study examines the effect of an acceptance-based approach on PU. Forty five participants, aged 8–17, with Tourette syndrome (TS) were assessed. The procedure included three conditions, of 2 min' duration: free-to-tic (baseline), tic suppression and urge acceptance. For each condition, participant's monitored PU frequency and intensity, and discomfort level and tic frequency were measured. There was a significant decrease in frequency and intensity of urges during acceptance based approach. The same significant decrease was seen for discomfort level and tic frequency. These results may lead to new insights regarding therapy.

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### 1. Introduction

A core characteristic of tic disorders is the premonitory urge (PU). PUs are experienced as uncomfortable physical sensations preceding tics (Bliss, 1980) and are reported in 95% of individuals with tic disorders (Leckman, Walker, & Cohen, 1993). Moreover they may cause more discomfort than the tics (Himle, Woods, Conelea, Bauer, & Rice, 2007).

The PU-tic sequence resembles the obsession-compulsion sequence in obsessive-compulsive disorder (OCD), and may stem from the same mechanism (Mansueto & Keuler, 2005). Similar to OCD, tics are negatively reinforced, by removal of the PU. Thus tic suppression temporarily increases urge salience (Capriotti, Brandt, Turkel, Lee, & Woods, 2014). However, other studies (failed to find changes in urge during tic suppression, suggesting that the PU may not be a

conditioned stimulus for tics (Specht et al., 2013). Moreover, several studies showed no correlation between urge severity and tic severity (Guliano, Cali, Palermo, Robertson, & Rizzo, 2015).

A commonly used behavioral treatment for TS is Exposure and Response Prevention (ERP; Verdellen et al., 2011), during which patients are exposed to PU sensation without allowing the relieving response of the tic. ERP was shown to successfully cause tic reduction (Frank & Cavana, 2013). Hoogduin, Verdellen, and Cath (1997) reported that a 10-session ERP treatment might reduce tics without reducing PU. The reasons for this are unclear. One possibility is that the bodily sensations previously experienced as aversive no longer retained their aversive function and thus did not provoke a relieving response (tics). Such a conceptualization is consistent with "Acceptance and Commitment Therapy" (ACT; Hayes & Wilson, 1994), asserting that private experiences (thoughts, feelings, bodily sensations) regarded as aversive often lead to attempts to modify or eliminate them (i.e. control them). Such attempts can be ineffective and, paradoxically, amplify the very experience the individual was trying to avoid. Accepting these experiences however reduces their aversive impact (Hayes, Strosahl, & Wilson, 1999). Thus Marcks and Woods (2005) showed that after an acceptance based procedure, intrusive thoughts remained at the same frequency but with less discomfort.

\* Correspondence to: Ella Gev, Department of Psychological Medicine, Schneider's Children's Medical Center of Israel, 14 Kaplan St., Petach Tikva, Israel.

E-mail addresses: [ellagev@gmail.com](mailto:ellagev@gmail.com) (E. Gev), [Tamarpel@mta.ac.il](mailto:Tamarpel@mta.ac.il) (T. Pilowsky-Peleg), [silvanafen@gmail.com](mailto:silvanafen@gmail.com) (S. Fennig), [nbenaroya@gmail.com](mailto:nbenaroya@gmail.com) (N. Benaroya-Milshtein), [dowoods@tamu.edu](mailto:dowoods@tamu.edu) (D.W. Woods), [JPiacentini@mednet.ucla.edu](mailto:JPiacentini@mednet.ucla.edu) (J. Piacentini), [asapter@gmail.com](mailto:asapter@gmail.com) (A. Apter), [tamarst@clalit.org.il](mailto:tamarst@clalit.org.il) (T. Steinberg).

Franklin, Best, Wilson, Loew, and Compton (2011) conducted a pilot study in which they compared a commonly used behavioral protocol for tics (i.e. Habit Reversal Therapy) to a protocol combining ACT, but failed to find differences between the groups in reducing tic severity. However, the sample was small and tic induced discomfort was not assessed. Reese et al. (2014) tested an intervention including mindful acceptance of the PU and found improvement in tic severity and tic related impairment. Both Franklin et al. (2011) and Reese et al. (2014) emphasized the need to replicate their findings in a larger controlled randomized trial. This study replicates elements from these studies on a larger sample, using controlled randomization and focusing specifically on the effects such interventions have on PU. We looked at the effects of relaxation and willingness to experience aversive sensations using nonjudgmental awareness of the moment, on PU and the Tic–PU combination. Moreover, we compared the discomfort level caused by tic suppression compared to accepting the urge.

We thus compared the effect of traditional tic-suppression strategy (encouraging urge resistance), with urge acceptance strategy encouraging willingness to experience the urge), on the frequency and intensity and induced discomfort of PU. The following hypotheses were tested: (A) the frequency and intensity of PU are higher during the tic-suppression than the free-to-tic condition, and higher during the free-to-tic condition than in the urge-acceptance condition.

(B) PU discomfort level is higher in the tic-suppression than the free-to-tic condition, and both discomfort level and tic suppression are higher in the free to-tic than the urge-acceptance condition (C) Tic frequency is lower in the urge-acceptance than in the free-to-tic condition.

## 2. Methods

### 2.1. Participants

The study group included 45 children and adolescent's aged 8–17 meeting DSM 5 criteria for TS 13 children also had OCD and 10 ADHD. None received anti-tic medications. Inclusion criteria were premonitory urge awareness and normal intelligence. All reported PU at a level of > 12 on the Hebrew version of the PUTS (PUTS; Steinberg et al., 2010).

### 2.2. Instruments

#### 2.2.1. PU frequency intensity and discomfort

2.2.1.1. *Premonitory Urge for Tics Scale (PUTS; Woods, Piacentini, Himle, & Chang, 2005)*. A 9 item self-report assessing the presence of PUs and their relief after tics. The total score range is from 9 to 36, with higher scores reflecting the presence and frequency of pre-tic urges.

#### 2.2.1.2. *Frequency & intensity counter*

2.2.1.3. *Numerical Rating Scale (NRS)*. The NRS is a single item subjective rating scale (range 0–10), with lower numbers indicating less discomfort. We choose a commonly used subjective pain rating scale, based on the fact that premonitory urges are an internal debilitating sensation (Leckman et al., 1993).

2.2.1.4. *Frequency & Intensity counter*. A hand held tablet counter was used to monitor the frequency and intensity of PU among participants during the different experimental conditions. As each urge occurred, participants were instructed to mark its intensity on a scale from 1 to 9, with 1 being the lowest and 9 being the highest intensity. Scores were recorded automatically and produced three output variables, the number of PUs, the point in time (in seconds) when they occurred, and their intensity.

### 2.2.2. Tic expression

2.2.2.1. *Yale Global Tic Severity Scale (YGTSS; Leckman et al., 1989)*. Semi-structured interview measuring tics. Scores are summed to yield a total severity score ranging from 0 to 50.

2.2.2.2. *Video tape for tics performance*. Tic expression was determined by videotaping the participants throughout each condition. Video recordings were saved in separate segments, containing one condition each (i.e. baseline, tic suppression, urge acceptance). The number of vocal and motor tics was coded from the tapes after all the data were collected. To ensure inter-rater reliability, the senior author (E.G.) and two undergraduate research assistants blindly evaluated ten subjects. Discrepancies were discussed until high reliability was attained ( $r = 0.9$ ).

Psychological co-morbidities were assessed by standard rating scales, see table 1.

### 2.3. Procedure

Each participant took part in an individual 90-minute session divided into two stages: psychoeducational and experimental. The experimental stage was further divided into 3 consecutive conditions.

#### 2.3.1. Psychoeducational stage

At the onset of the study session, patients and parents received a short explanation of the research procedures and signed an informed consent form. This was followed by verbal and graphical psychoeducational instruction aimed at increasing the patients' identification of PUs and introducing an alternative way of approaching them. The children were then shown the two-scale metaphor of Hayes et al. (1999) which demonstrates the benefits of accepting unwanted private events over attempts to control them. The patients were taught to shift from an effort to decrease or suppress PUs to a willingness to experience them. After the psychoeducational stage, the parents completed a set of questionnaires about the child clinical profile and demographic characteristics in the waiting room. Finally participants completed the PUTS, CDI/BDI, YGTSS and CY-BOCS with the experimenter.

#### 2.3.2. Experimental stage

The patients participated in 3 experimental conditions: *free-to-tic* (baseline condition) - monitoring urges without additional instructions. *Tic suppression* - monitoring urges while refraining from tics (i.e. struggle with the urge to tic). *Urge acceptance* - monitoring urges while practicing willingness to experience the urge and giving up any fight. Each condition was of 2 min' duration. This length of time was chosen after a pilot study indicated that children found it difficult to focus on internal sensations for longer periods. The free-to-tic condition was presented first (baseline), followed by the tic-suppression and urge-acceptance conditions (Marcks & Woods, 2005). In all conditions, the patients were asked to rate each PU they felt using the Frequency & Intensity counter (Before baseline condition the participants were given a short practice period with the counter). Following each condition of the experimental stage, the patients completed the NRS.

Before the urge-acceptance condition, we introduced a relaxation interval in which the researcher showed the patient how to relax using diaphragmatic breathing. Participants were instructed to place their hand on their stomach, inhale to the count of 2 ("Watch your stomach as it inflates") and then exhale to the count of 4 ("Watch your stomach as it flattens"). This was continued until the participant reported a more relaxed body sensation (Varvogli & Darviri, 2011).

The specific instructions each participant received under each condition are detailed below.

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