Personality and Individual Differences 86 (2015) 25–32

Contents lists available at ScienceDirect

Personality and Individual Differences

journal homepage: www.elsevier.com/locate/paid

# The style of planning action (STOP) questionnaire in OCD spectrum disorders

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ARTICLE INFO

*Article history:*
Received 19 December 2014
Received in revised form 9 April 2015
Accepted 12 May 2015
Available online 5 June 2015

*Keywords:*
Factor analysis
Overcomplication
Overpreparation
Overactivity
Validation

ABSTRACT

This article describes the exploratory and confirmatory validation of an everyday style of planning (STOP) questionnaire in a tic disorder (n = 88), Tourette syndrome (n = 76), body-focused repetitive behaviour group (n = 121), obsessive compulsive disorder (n = 251) and a non-clinical control group (n = 127). Exploratory factor analysis was performed on half of the sample and confirmatory analysis on the other half. A three factor solution accounted for 38% of the variance. The factors were labelled respectively: overcomplication, overpreparation, and overactivity. The internal consistency for the overcomplication score and total score was high and for the other two scales, satisfactory. Test–retest was satisfactory and the subscales discriminated amongst clinical groups, and clinical groups from controls. All subscales became significantly less pathological following cognitive behavioural treatment. Convergent validity showed strong correlations with depression, anxiety and perfectionism but not impulsivity. The study confirms style of action as an important characteristic of obsessive compulsive spectrum disorders. Further analysis of the structure of each factor is warranted.
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## 1. Introduction

Obsessional compulsive spectrum disorders (OCSD) is a term covering a range of problems including both compulsive and impulsive acts. It traditionally includes tic and Habit Disorders (HD) or body-focused repetitive disorders (BFRD) at one end, and obsessional compulsive disorders (OCD) at the other end of the continuum (Hollander, Kim, Khanna, & Pallati, 2007). Tic disorders include Gilles de la Tourette syndrome (TS) and chronic tic disorders (TD) which require the persistent presence of involuntary motor, sensory or phonic tics since the age of 18 years. Body focused repetitive disorders includes actions such as hair pulling (trichotillomania), nail biting, skin picking or scratching. Along with skin picking, hair pulling is now found in the Diagnostic and Statistical Manual (DSM-V), all BFRD show similarities in form and onset. OCD, as defined in DSM-V, involves obsessional preoccupations inducing aversive anxiogenic states subsequently neutralized by compulsive rituals. Clinically, all these OCSD problems are grouped under the section "OCD and related disorders" and share a common element involving uncontrolled and repetitive motor activity, whether it be simple or complex and automated or voluntary.

### 1.1. Executive functioning in OCSD

Neurocognitive findings in OCSD have shown some inconsistent evidence of executive function (planning, inhibition, set shifting, flexible thinking) deficit across the spectrum. Whilst some aspects (set shifting and attentional control) may be intact, there is evidence that regulation and control of motor function may be problematic across OCSD, in particular controlling and inhibiting responses as well as overall initiation and execution of both complex and automated motor responses (O'Connor, Borgeat, Stip, & Lavoie, 2008; Rasmussen, Soleimani, Carroll, & Hodlevskyy, 2009).

People with tic disorders and BFRD tend to overprepare for action and this overpreparation interferes with optimal planning of action (O'Connor, Lavoie, Robert, Stip, & Borgeat, 2005). Often this overpreparation is clearly visible and involves recruitment of redundant muscles (e.g., blinking with cheeks as well as eyelids), and can also involve an overinvestment in planning control (e.g., rehearsing every word of a conversation). High levels of muscle tension in TS are consistently reported in the literature (O'Connor, Gareau, & Borgeat, 1995). Reduced late cognitive related evoked potential findings have been linked to problems with response inhibition of thoughts and action and a tendency to overprepare under uncertainty (Thibault et al., 2008).

The tic/habit is most likely to appear when the person is overpreparing for an action involving a group of tic-affected muscles directly or indirectly associated with the goal-directed action (O'Connor, Brisebois, Brault, Robillard, & Loiselle, 2003) and such situations and

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http://dx.doi.org/10.1016/j.paid.2015.05.018
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activities associated with tic onset tend to be evaluated as dissatisfying and tension producing (Lavoie, Leclerc, & O'Connor, 2013) and also involve a degree of overactivity (trying to do too much at once; Roberts, O'Connor, Aardema, & Bélanger, 2015).

If so, then heightened background motor activation and subsequent dysfunctional action planning and regulation may be the primary pathology in OCSD (such as TS, TD and BFRD), with the tic or habit occurring as a consequence of this overactivation, and at the same time alleviating it in the short term.

If these motor activation–inhibition elements and their interference in optimal planning are a characteristic of the tic spectrum, one would expect the elements to be present in everyday actions. There currently exists no instrument which specifically targets everyday style of planning action in OCSD: existing questionnaires tend to focus broadly on executive function (e.g., Roth, Lavoie, Mason, & O'Connor, 2013). The aims of this study are: (1) to validate a new questionnaire measuring a style of planning (STOP) characteristic of OCSD; (2) to examine if the STOP discriminates within OCSD and discriminates the clinical population from non-clinical controls and (3) to establish the clinical relevance of the STOP in terms of its associations with other measures and change following treatment.

## 2. Methods

### 2.1. Participants

The data was obtained from clinical studies underway at the Centre de Recherche Fernand-Seguin. The samples consisted of Tourette syndrome participants (TS; n = 76), chronic tic participants (CT; n = 88), body focused repetitive disorder participants (hereafter referred to as Habit Disorder (HD); n = 121), obsessive–compulsive disorder participants (OCD; n = 251), and non-clinical control participants (NCC; n = 127). The size of the total sample was 681 participants. The group for the validation study was selected to be without covariation with each other and with no other major comorbidity on Axis I or Axis II of the DSM-IV-TR. Clinical and questionnaire data for each group are given in Table 1. The clinical samples were consecutive referrals to the research clinic. The NCC group was recruited by announcement and was screened by questionnaires and interviews to verify non-clinical status. The TS and CT groups had the following minor comorbidities on Axis 1: OCD 9.7%, ADHD 1.14% and Anxiety Disorder 30.29%.

### 2.2. Measures

#### 2.2.1. Style of planning

The style of planning (STOP) questionnaire was developed to assess everyday style of planning actions. The aim of the STOP was to capture the behavioural and cognitive aspects involved in adequate planning of action in a variety of everyday situations involving routing, complex tasks and both anticipation and enactment. The items were initially chosen through client self-report on styles of action likely to be associated with TS and items were included if there was consensus amongst clinical experts (three behavioural psychologists and one psychiatrist) that they represented a style of action observed in OCSD. Thirty items were included in the initial scale and some items were reversed to control for set and symptom specificity.

In order to better communicate the characteristics of the style and to reduce ambivalence and increase response clarity about meaning of the response, the STOP adopts a response format which expressly compares a functional style with a dysfunctional style, in the form of items listing a choice between the two and a rating of degree of choice between the two styles. The participants are asked to indicate how they would anticipate dealing with the situations listed in the STOP on a scale of 10 points with a range of 0 to 4.99 for dysfunctional and 5.01 to 10 for the functional style at the other end of the continuum. A choice of 5 indicates that the respondent would choose either alternative equally.

**Table 1**
Socio-demographic information and scores on measures other than STOP.

| | Tic | HD | OCD | NCC | *F* |
|---|---|---|---|---|---|
| Age | $35.95_{a,b}$ | $36.42_{a,b}$ | $38.24_{b}$ | $33.49_{a}$ | $2.917^{*}$ |
| | (13.58) | (11.62) | (12.87) | (11.50) | |
| *n* | 144 | 102 | 239 | 73 | |
| Gender (% female) | 39.60% | 74.60% | 57.00% | 50.70% | |
| *n* | 149 | 126 | 251 | 73 | |
| TSGS total | $19.00_{c}$ | $11.81_{b}$ | $4.89_{a}$ | – | $29.954^{***,w}$ |
| | (14.77) | (9.47) | (8.95) | | |
| Tic | $10.14_{c}$ | $4.91_{b}$ | $2.44_{a}$ | – | $29.536^{***,w}$ |
| | (8.98) | (3.86) | (4.78) | | |
| Behaviour | $8.87_{b}$ | $6.90_{b}$ | $2.45_{a}$ | – | $18.841^{***,w}$ |
| | (8.58) | (7.19) | (5.17) | | |
| *n* | 148 | 104 | 43 | | |
| SSEI total | 129.35 | 126.82 | 122.28 | – | $2.037^{**}$ |
| | (27.31) | (26.58) | (28.30) | | |
| *n* | 144 | 108 | 105 | | |
| Frost total | 77.32 | 83.86 | 81.29 | – | $2.998^{\dagger}$ |
| | (21.40) | (19.63) | (22.99) | | |
| *n* | 146 | 106 | 111 | | |
| BAI | $9.44_{b}$ | $9.55_{b}$ | $15.81_{c}$ | $4.65_{a}$ | $46.187^{***,w}$ |
| | (8.76) | (7.59) | (11.85) | (4.91) | |
| *n* | 118 | 83 | 247 | 71 | |
| BDI | $8.79_{b}$ | $11.78_{c}$ | $18.58_{d}$ | $4.40_{a}$ | $58.470^{***,w}$ |
| | (8.30) | (8.61) | (11.50) | (5.20) | |
| *n* | 159 | 120 | 248 | 72 | |
| PI total | $30.43_{b}$ | $31.58_{b}$ | $76.72_{c}$ | $20.51_{a}$ | $97.201^{***,w}$ |
| | (23.96) | (23.16) | (38.07) | (18.77) | |
| *n* | 96 | 62 | 219 | 72 | |
| Y-BOCS total | $2.00_{a}$ | $2.29_{a}$ | $25.38_{b}$ | – | $525.184^{***,w}$ |
| | (3.80) | (3.37) | (7.08) | | |
| Obsessions | $0.80_{a}$ | $0.79_{a}$ | $12.51_{b}$ | – | $455.147^{***,w}$ |
| | (1.61) | (1.67) | (4.13) | | |
| Compulsions | $2.28_{a}$ | $1.59_{a}$ | $12.95_{b}$ | – | $130.593^{***}$ |
| | (3.10) | (2.56) | (3.95) | | |
| *n* | 15 | 24 | 217 | | |
| BIS total | 64.34 | 66.83 | 63.79 | 64.92 | 2.019 |
| | (10.02) | (6.51) | (8.31) | (5.61) | |
| *n* | 66 | 47 | 82 | 38 | |
| CAARS total | $30.46_{b}$ | $34.03_{b}$ | $31.72_{b}$ | $20.21_{a}$ | $7.808^{***}$ |
| | (14.43) | (11.80) | (12.13) | (13.45) | |
| *n* | 39 | 30 | 46 | 33 | |

*Note. SD* in parentheses; within each row, groups who share the same subscript are of the same homogeneous statistical group according to Tukey's HSD α = .05; "–" means that the questionnaire was not completed. HD = Habit Disorder; OCD = Obsessive–Compulsive Disorder; NCC = Non-clinical Controls; TSGS = Tourette Syndrome Global Scale; SSEI = Social Self-esteem Inventory; BDI = Beck Depression Inventory; BAI = Beck Anxiety Inventory; PI = Padua Inventory; Y-BOCS = Yale–Brown Obsessive–Compulsive Disorder; BIS = Barratt's Impulsivity Scale and CAARS = Conners' Adult ADHD Rating Scales.
$^{\dagger}$ $p < .10$.
$^{*}$ $p < .05$.
$^{**}$ $p < .01$.
$^{***}$ $p < .001$.
$^{w}$ Welch's test.

The dichotomous format also aided interpretation of direction to any clinical changes post-treatment.

#### 2.2.2. Beck Anxiety Inventory

The Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988) was administrated and consists of a 21-item anxiety symptom checklist rating symptom intensity for the last week on a 0–3 scale (α = .91). The French version of the BAI shows good psychometric properties (Freeston, Ladouceur, Thibodeau, Gagnon, & Rhéaume, 1994).

#### 2.2.3. Beck Depression Inventory

The Beck Depression Inventory (BDI-II; Beck, Steer, Ball, & Ranieri, 1996), which consists of a 21-item relative to depression (α = .91), assesses cognitive, emotional and somatic depressive symptoms.

#### 2.2.4. Padua Inventory

The Padua Inventory (PI; Sanavio, 1988) assesses obsessive–compulsive behaviour. The psychometric properties of the French

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