Psychiatry Research 273 (2019) 121–126

Contents lists available at ScienceDirect

Psychiatry Research

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

Subjective traumatic outlook as a screening tool for psychological trauma: Cut-off values and diagnostic criteria

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ARTICLE INFO

Keywords:
STO
PTSD
CPTSD
DSM
ICD

ABSTRACT

The Subjective Traumatic Outlook (STO) deals with changes in individuals' perception, following a traumatic event and the difficulties of integrating pre-trauma past memories, inner traumatic memories, and current daily life. Although this short scale has excellent psychometric properties its cut-off scores for potential clinical use have yet to be established. In addition, due to the discrepancy between the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD) in the meaurement of post-traumatic stress disorder (PTSD), the present study aimed at revalidating the STO and establishing cut-off scores for potential clinical use, based on both approaches to measure PTSD and complex post-traumatic stress disorder (CPTSD). Three hundred forty-three adults who were recruited through social media apps filled in self-report online questionnaires dealing with subjective perception of psychological trauma, PTSD and CPTSD. Results revalidate the STO as a screening tool for PTSD and CPTSD. We recommend a STO cut-off score of 13 and above when using the ICD-11 PTSD proposed algorithm along the PCL-5 cutoff score and a STO cut-off score of 15 when using the ICD-11 CPTSD proposed algorithm. In light of the present findings, the integration of DSM and ICD approaches is discussed.

1. Introduction

Since the formal inclusion of posttraumatic stress disorder (PTSD) in the Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition, DSM-III (APA, 1980) criticism has arisen centering on Criterion A1 (Weathers and Keane, 2007; Bisson et al., 2009). Moreover, after the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5) broadened the eligibility for the diagnosis of post-traumatic stress disorder (PTSD) to include people whose exposure was indirect (e.g., hearing about a stressful event happening to others), critics of the DSM-IV pointed out that such diagnostic expansion both diluted the value of the original construct and medicalized normal stress reactions (Stein et al., 2007; McNally, 2003). Furthermore, although the vast majority of community residents have experienced traumatic events (Breslau et al., 1999), in the general population only a small minority of victims (<10%) developed post-traumatic stress disorder (PTSD) (Breslau et al., 1998, 2004). The fact that only a minority of people, who experienced a traumatic event, were diagnosed with PTSD may suggest that victims of a traumatic event vary in risk factors for the disorder (Breslau et al., 1999; Yehuda and McFarlane, 1995; Bowman and Yehuda, 2004). Moreover, it was suggested that an inner-psychological layer of the trauma that reflects the subjective perception of the traumatic event is part of the mechanism underlying the gap between exposure and the development of PTSD (Palgi et al., 2018). Therefore, there is a need to take into account clinical subjective evaluations.

In light of the above, criticism was raised regarding the limitations of the phenomenological approach, which focuses on observations of people's behavior and dysfunctions. Moreover, subjective clinical evaluations that heighten the inner subjective changes that affect the person's life trajectory and his/her subjective outlook are needed (Janoff-Bulman, 1992; Foa et al., 1999; Berntsen and Rubin, 2006; Buck et al., 2008). Furthermore, recent research emphasizes the importance of subjective experience that accounts for differences in the prevalence and severity of PTSD developed by persons experiencing the same event (Boals, 2018). In line with the criticism, Palgi et al. (2017) developed the Subjective Traumatic Outlook (STO), which refers to people's

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https://doi.org/10.1016/j.psychres.2019.01.014
Received 11 October 2018; Received in revised form 18 December 2018; Accepted 3 January 2019
Available online 03 January 2019
0165-1781/

evaluation of themselves as traumatized when comparing their pre- and post-event conditions (see Appendix A). More specifically, the STO deals with changes in perception due to the trauma and difficulties of integrating pre-trauma past memories, inner traumatic memories, and current daily life (Palgi et al., 2017). The fact that subjective experiences play a role in the development of PTSD (Boals, 2018) may suggest that the reflection of the subjective change that a person undergoes, as a result of exposure to potentially traumatic event, might be useful for detecting those who are prone to develop traumatic symptomatology. Such inner subjective experiences might serve as a more sensitive indicator of the impact of the exposure to the event on a person's development of PTSD.

In their study, Palgi et al. (2017) presented the STO as a short scale with excellent psychometric properties, which may be a valid and short screening tool for practitioners when evaluating inner-perceptions of the traumatic experience before using the conventional PTSD questionnaires. Nevertheless, their study lacks the establishment of cut-off scores for potential clinical use. It is of interest to examine how accurately this screening tool, that does not examine PTSD symptoms, may serve for predicting a clinical level of PTSD symptoms from the two competing diagnosis manuals – the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD).

The two diagnostic systems that are considered in the literature for evaluating PTSD are the DSM and the ICD. The latter also suggest criteria for Complex PTSD, namely six core PTSD symptom clusters plus three additional symptom clusters (affective dysregulation, negative self-concept and disturbances in relationships) that collectively represent 'Disturbances in Organization' (DSO) (Cloitre et al., 2018). There are several essential differences between the two systems regarding the number of symptom clusters as well as the time needed for the diagnosis (Stein et al., 2014). Whereas the DSM-5 adopted a more clinical approach by expanding the symptom criteria to capture a more comprehensive profile of post-traumatic stress (PTS) responses, the ICD-11 takes a more conservative, narrow and restricted approach that focus on symptoms unique to the PTSD construct (O'donnell et al., 2014) and complex PTSD (CPTSD) (Ben-Ezra et al., 2018). Due to this discrepancy in the literature, it is important to examine to what extent the STO serves as a screening tool for both approaches. Thus, the present study aims at examining the STO construct validity by comparing its diagnostic ability based on the different manuals, the STO convergent validity by examining its relations with PTSD and Complex PTSD, and at establishing cut-off scores for potential clinical use, based both on the DSM-5 definition of PTSD, and on the ICD-11 definitions of PTSD and CPTSD.

2. Methods

2.1. Sample and procedure

A convenience sample of 343 participants responded to an online internet survey. The methods of dissemination were by social media (mainly Facebook) and WhatsApp. The mean age of the sample was 34.17 (12.49). The sample included 261 (76.1%) women, 246 (71.7%) participants that were in a committed relationship and 222 (64.7%) participants who graduated from college/university. One hundred thirty three participants (39.0%) reported having no exposure to traumatic events, 181 participants (53.1%) reported having exposure to a traumatic event and 27 participants (7.9%) reported being exposed to a traumatic event suitable to complex PTSD.

2.2. Measurements

Subjective perception of psychological trauma was measured by the Subjective Traumatic Outlook scale (STO; Palgi et al., 2017). This 5-item scale measures the subjective experience of psychological trauma on a five-point Likert scale ranging from `1` not at all to `5` very much (see Appendix A). The sum of scores is an indication of the subjective severity of the psychological trauma. The scores range from 5–25. The STO has good psychometric properties (Palgi et al., 2017). Cronbach's alpha for the current study was 0.96. *PTSD based on the DSM-5* (American Psychiatric Association, 2013), was measured by the PCL-5 (Weathers et al., 2013). This 20-item scale assess PTSD based on the DSM-5 criteria. Each symptom is rated on a five-point Likert scale ranging from `0` not at all to `4` extremely. The PCL-5 severity score is based on item summation and range from 0–80. There are two ways to use the PCL-5 in order to assess PTSD. First, provisional PTSD diagnosis can be made by treating each item rated as 2 = "Moderately" or higher as a symptom endorsed, then following the *DSM-5* diagnostic rule which requires at least: 1 B item (questions 1–5), 1 C item (questions 6–7), 2 D items (questions 8–14), 2 E items (questions 15–20) (Weathers et al., 2014). Second, using a cut-off score of 33 and above (https://www.ptsd.va.gov/professional/assessment/adult-sr/ptsd-checklist.asp). Cronbach's alpha for the current study was 0.97.

PTSD and CPTSD based on the ICD-11 proposed criteria were measured by the International Trauma Questionnaire (ITQ; Cloitre et al., 2018; Hyland et al., 2017a,b,c). This is a 12-item self-report measure of ICD-11 PTSD and CPTSD (Cloitre et al., 2018) and is currently under development. Each symptom is rated on a five-point Likert scale ranging from `0` not at all to `4` extremely. In addition to six items that address PTSD and six items address complex PTSD, there are another six items. Three address the issue of functional impairment in PTSD and three address functional impairment in Complex PTSD.

PTSD: There are a total of 11 PTSD symptoms included in the ITQ. Six items reflect the PTSD symptoms two items reflect the re-experiencing cluster (*Re*) of the trauma, (Re1 Upsetting dreams, Re2 Reliving the event here and now), two items reflect the avoidance cluster (*Av*) (Av1 Internal reminders, Av2 External reminders), and two items reflect the sense of threat cluster (Th) (Th1 Hypervigilance, Th2 Exaggerated startle response). There are also three items that screen for functional impairment associated with these symptoms (ratings of the degree of impairment in (1) relationships and social life, (2) work or ability to work, and (3) other important aspects of life such as parenting, school/college work, or other important activities). Cronbach's alpha for the current study was 0.94.

CPTSD: The ICD-11 model of CPTSD is composed of six symptom clusters: three correspond with PTSD and three that are collectively referred to as "disturbances in self-organization" (DSO): affective dysregulation (AD), negative self-concept (NSC), and disturbed relationships (DR). To assess the DSO symptoms, participants are asked to respond to a set of 18 items reflecting how they typically feel, think about themselves, and relate to others. Nine items capture the AD cluster, five of which measure hyperactivation (AD1–AD5) (e.g., When I am upset, it takes me a long time to calm down) and four measure hypoactivation (AD6–AD9) (e.g., I feel numb or emotionally shut down). Four questions capture the NSC cluster (NSC1–NSC4) (e.g., I often feel ashamed of myself whether it makes sense or not), and three questions capture the DR cluster (DR1–DR3) (e.g., I feel distant or cut off from people). As with the PTSD symptoms, there are three items that screen for functional impairment associated with these symptoms. Current ITQ thresholds specify a score of ≥ 2 (moderately) for at least one of the two symptoms from each of the *Re, Av*, and Th clusters. The thresholds for the DSO clusters specify the following: A score of ≥ 10 for items AD1–AD5 or a score of ≥ 8 for items AD6–AD9; a score ≥ 8 for NSC1–NSC4; and a score ≥ 6 for DR1–DR3. Diagnosis of CPTSD also requires endorsement of functional impairment. Based on the ICD-11 taxonomic structure, a person may only receive a diagnosis of PTSD or CPTSD, but not both (Ben-Ezra et al., 2018; Cloitre et al., 2018; Hyland et al., 2017c). Cronbach's alpha for the six cluster CPTSD items in the current study was 0.96. However, in this study we have used the optimized solution for the ITQ (Cloitre et al., 2018), based on the optimized version of the ITQ. Under this algorithm, diagnosis of PTSD

requires the endorsement of one of two symptoms from each PTSD cluster, plus endorsement of functional impairment associated with these symptoms. Diagnosis of CPTSD requires the endorsement of one of two symptoms from each of the six PTSD and DSO clusters, plus endorsement of functional impairment associated with these symptoms. For more information, see (Cloitre et al., 2018).

2.3. Data analysis

In order to establish cut-off points with clinical usefulness, simple *t*-test examinations were conducted, differentiating those who endorse PTSD based on the DSM-5 using the PCL-5 and then those who endorse PTSD and CPTSD based on the proposed ICD-11 criteria as measured by the optimized solution for the ITQ with the STO scores as the test variable. Following that, ROC analysis was conducted in which the state variable was the binary option for each endorsement (0 = not meeting criteria vs. 1 = meeting criteria). The test variable was the sum of scores of the STO scale. Next, Youden's index was obtained in order to learn what the maximal Youden value is for a proposed STO cut-off score. Finally, STO's sensitivity, specificity, positive predictive value, negative predictive value and accuracy were measured.

In order to examine convergent validity, the correlations between STO and endorsement of PTSD based on DSM-5, ICD-11, and CPTSD were examined.

3. Results

In the current sample, 13.9% of the participants met PTSD symptoms criteria based on the PCL-5 cut-off score of 33 and above. 14.6% met PTSD symptoms criteria using the DSM-5 diagnostic algorithm. 20.7% met the ICD-11 proposed PTSD diagnostic algorithm and 10.8% met the CPTSD using the diagnostic algorithm. The score of the STO was significantly higher among those who met PTSD/CPTSD diagnosis criteria vs. those who did not meet the criteria ($t = -5.861$ or better; $p < 0.001$ or better). For more information see Table 1.

In order to examine the STO's construct and convergent validity correlations were calculated between STO scores, endorsement of PTSD based on the DSM-5, ICD-11 and CPTSD (see Table 2). The high and significant correlations found between the STO scores and PTSD diagnostics of both manuals indicate the measure's construct validity whereas its high and significant correlations with ICD-11 PTSD and CPTSD indicate its convergent validity.

ROC analyses were conducted to test the STO sum score against the four theoretical algorithms (PTSD based on the PCL-5 score of 33 and above (Fig. 1), PCL-5 based on the DSM-5 diagnostic algorithm (Fig. 2), ICD-11 proposed PTSD (Fig. 3) and CPTSD algorithms (Fig. 4)).

The area under the curve (AUC) ranged was 0.853 for Fig. 1, 0.838 for Fig. 2, 0.751 for Fig. 3 and 0.839 for Fig. 4. Therefore, the results of Figs. 1–4 can be classified as moderately accurate (Greiner et al., 2000).

The Youden's index reached its maximum at a cut-off value of 13.5 [Fig. 1], indicating that the diagnosis of PTSD is very likely in persons scoring 14 or higher on the STO scale. For Fig. 2, Youden's index reached its maximum at a cut-off value of 12.5, indicating that the diagnosis of PTSD is very likely in persons scoring 13 or higher on the STO scale. With regard to Fig. 3, Youden's index reached its maximum at a cut-off value of 9.5, indicating that the diagnosis of PTSD is very likely in persons scoring 10 or higher on the STO scale. Lastly, for Fig. 4, Youden's index reached its maximum at a cut-off value of 14.5, indicating that the diagnosis of CPTSD is very likely in persons scoring 15 or higher on the STO scale.

Finally, measures of the STO's sensitivity, specificity, positive predictive value, negative predictive value and accuracy were examined. The sensitivity ranged from 88.00% to 95.24%, specificity ranged from 69.52% to 73.85%, positive predictive value ranged from 21.36% to 37.04% and negative predictive value ranged from 97.91% to 98.94%. Accuracy ranged from 72.26% to 76.32%. See Table 3 for more information and 95% C.I.

Therefore, the recommended STO cut-off score of 13 and above is best when using the PCL-5 cutoff of 33. A STO cut-off score of 14 and above is recommended with using the PCL-5 with the DSM-5 PTSD algorithm. A STO cut-off score of 13 and above is recommended when using the ICD-11 PTSD proposed algorithm and STO cut-off score of 15 and above is recommended when using the ICD-11 CPTSD proposed algorithm.

4. Discussion

The present study examined the accuracy and cut-off value of the STO as a short screening tool for predicting PTSD. We assumed those who suffer from a high level of subjective psychological trauma according to the STO, will also show a high level of PTSD and CPTSD symptoms according to the DSM as well as the ICD definitions. Results revealed that the score of the STO was significantly higher among those who met PTSD/CPTSD diagnosis criteria vs. those who did not meet the criteria. These findings support the STO's construct validity. The results also indicated correlations between STO scores and PTSD/CPTSD, indicting the measure's convergent validity. Therefore, the STO can also serve as a brief screening tool for predicting risk for PTSD or CPTSD symptoms according to the DSM-5 definition as well as according to the ICD-11 definition (Casey et al., 2001; Maercker et al., 2013; Maercker et al., 2007).

The findings suggest that a cut-off score of 13 or above is recommended as a criterion for assessing high risk for PTSD according to the PCL cut-off and the ICD-PTSD algorithm. A cut-off score of 14 and 15 or above is recommended as a criterion for assessing high risk for PTSD according to the PCL and the CPTSD algorithms respectively.

Furthermore, our findings indicate that the psychometric characteristics for the STO support its validity and imply that the STO is a tool that may be used as a screening tool for assessing risk for PTSD or CPTSD in the general population. Moreover, the study showed that almost all the participants that met the criteria for STO also met the criteria for PTSD or CPTSD. These results demonstrate the diagnostic validity of the STO.

In line with the recent trend towards shorter instruments (Rammstedt and Rammsayer, 2002), the STO is a short tool that may also be useful when clinicians or researchers face limited assessment

Table 1
STO scores based on PTSD and CPTSD diagnostic algorithm.

	Not meeting criteria PCL-5 < 33	Meeting criteria PCL-5 = > 33	t	p
STO mean score (S.D)	10.46 (4.48) PCL-5 no PTSD	19.60 (4.26) PCL-5 PTSD	−8.827	< 0.001
STO mean score (S.D)	10.49 (6.58) ITQ - ICD-11 no PTSD	19.00 (4.30) ITQ - ICD-11 PTSD	−8.820	< 0.001
STO mean score (S.D)	10.70 (6.78) ITQ - ICD-11 no CPTSD	16.25 (5.71) ITQ - ICD-11 CPTSD	−5.861	< 0.001
STO mean score (S.D)	10.86 (6.62)	19.45 (4.22)	−7.275	< 0.001

Table 2
Pearson correlations between STO, PTSD and CPTSD.

	STO	DSM-5 PTSD	DSM-5 PTSD CUT 33	ICD-11 PTSD	ICD-11 CPTSD	*Re*	*Av*	Th	AD	NSC
DSM-5 PTSD	0.430*									
DSM-5 PTSD CUT 33	0.453*	0.868*								
ICD-11 PTSD	0.317*	0.593*	0.542*							
ICD-11 CPTSD	0.383*	0.612*	0.569*	0.681*						
Re	0.327*	0.442*	0.408*	0.531*	0.345*					
Av	0.322*	0.472*	0.459*	0.593*	0.404*	0.611*				
Th	0.214*	0.376*	0.344*	0.521*	0.355*	0.557*	0.596*			
AD	0.184*	0.212*	0.206*	0.233*	0.193*	0.277*	0.326*	0.339*		
NSC	0.386*	0.413*	0.376*	0.254*	0.436*	0.356*	0.375*	0.306*	0.331*	
DR	0.314*	0.370*	0.375*	0.262*	0.347*	0.306*	0.337*	0.335*	0.447*	0.602*

* $p < 0.001$

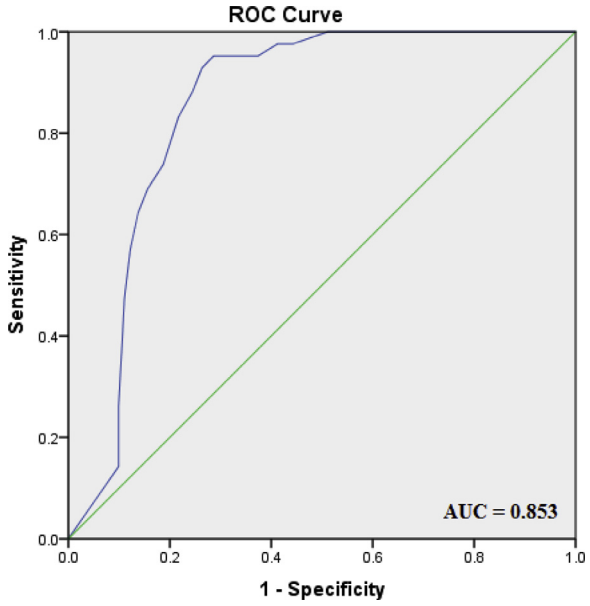

Fig. 1. Receiver operating characteristic (ROC) curve for different cut-off values of STO sum of scores against the PCL-5 cut off 33 and above.

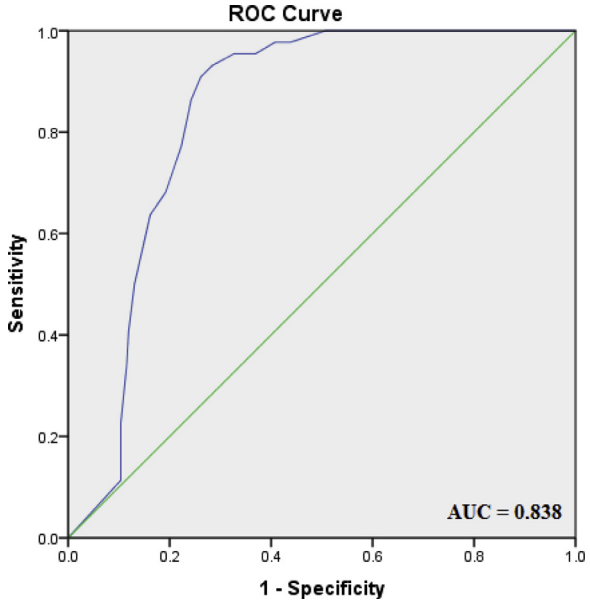

Fig. 2. Receiver operating characteristic (ROC) curve for different cut-off values of STO sum of scores against the PCL-5 PTSD algorithm based on the DSM-5.

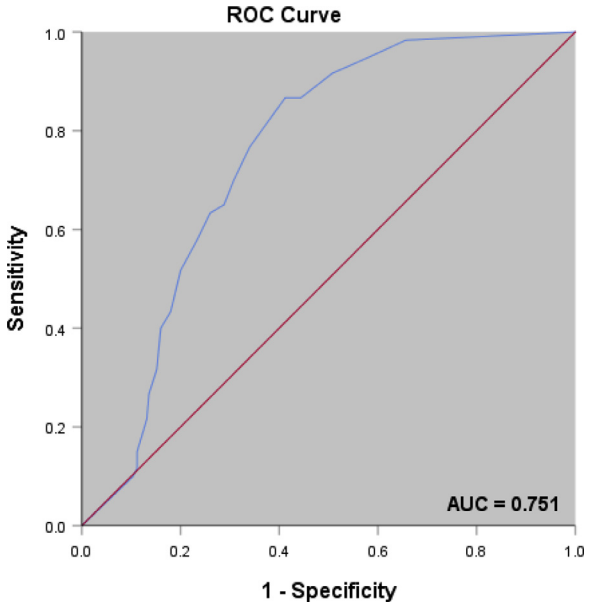

Fig. 3. Receiver operating characteristic (ROC) curve for different cut-off values of STO sum of scores against the ICD-11 PTSD algorithm.

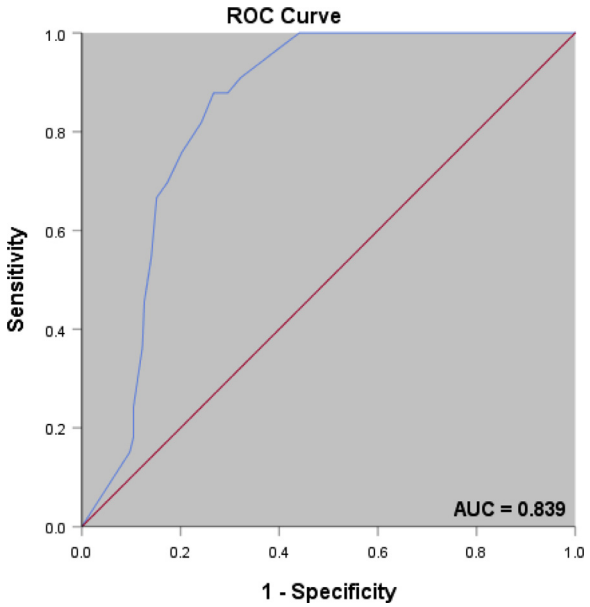

Fig. 4. Receiver operating characteristic (ROC) curve for different cut-off values of STO sum of scores against the ICD-11 CPTSD algorithm.

Table 3
Proposed STO cutoffs based on different diagnostic systems and PTSD/CPTSD.

Statistics for STO	PCL-5 Cut 33 and above (PTSD)	PCL-5 DSM-5 criteria PTSD	ICD-11 PTSD criteria	ICD-11 CPTSD criteria
Sensitivity	95.24% (95% C.I. 83.84% – 99.42%)	90.91% (95% C.I. 78.33% – 97.47%)	86.67% (95% C.I. 75.41% – 94.06%)	87.88% (95% C.I. 71.80% – 96.60%)
Specificity	71.37% (95% C.I. 65.49% – 76.77%)	73.85% (95% C.I. 68.06% – 79.08%)	58.80% (95% C.I. 52.42% – 64.96%)	73.29% (95% C.I. 67.66% – 78.40%)
Positive Predictive Value	34.78% (95% C.I. 30.33% – 39.51%)	37.04% (95% C.I. 31.97% – 42.41%)	33.55% (95% C.I. 29.70% – 37.63%)	28.16% (95% C.I. 23.70% – 33.09%)
Negative predictive Value	98.94% (95% C.I. 96.02% – 99.72%)	97.96% (95% C.I. 94.95% – 99.19%)	94.84% (95% C.I. 90.53% – 97.25%)	98.07% (95% C.I. 95.28% – 99.22%)
Accuracy	74.67% (95% C.I. 69.39% – 79.46%)	76.32% (95% C.I. 71.13% – 80.98%)	64.19% (95% C.I. 58.58% – 69.53%)	74.84% (95% C.I. 69.62% – 79.57%)
Proposed Cutoff Score	STO cutoff ≥ 13	STO cutoff ≥ 14	STO cutoff ≥ 10	STO cutoff ≥ 15

time as well as in research settings in which participant time is limited.

Although the present study's findings are of great value for researchers and practitioners, its limitations should not be overlooked. First, although the sample was almost representative, it does not represent individuals who do not have a computer at home. Moreover, the study described in the present manuscript is cross-sectional, which prevents us from drawing conclusions regarding the longitudinal prediction of the STO cut-off. Finally, our data did not include information regarding the type of traumatic events participants were exposed to neither to events considered as potential cause for the development of CPTSD.

It is suggested that future studies examine the efficacy of the STO cut-off with a target population, such as a sample diagnosed by clinicians with PTSD, or a sample suffering from adjustment disorder.

Despite these limitations, this study showed evidence for the diagnostic utility of the STO in the assessment of PTSD symptoms. It was recently suggested that the interplay between the phenomenological objective and the subjective clinical approaches need to be integrated in order to contribute to a deeper understanding of traumatic experiences (Milchman, 2016). Therefore, based on the present results, the STO can be recommended in research and clinical practice as part of the evaluation of a person's current state of PTSD. Moreover, it is also suggested to use unique information from the STO. Using this short instrument with a high negative predictive value will allow differentiating between persons who do not meet the DSM-5 or the ICD-11 PTSD diagnostic criteria, yet who should be still regarded “at risk” according to the subjective approach of PTSD.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.01.014.

Appendix A. The subjective traumatic outlook questionnaire

The following questions represent feelings and thoughts that individuals sometimes experience after being exposed to traumatic events. Please think back upon the most stressful or traumatic event in your life and answer the following questions in an honest and sincere way, by circling a number from 1 to 5.

	Not at all	A little bit	Moderately	Much	Very Much
1. Looking on your condition, do you feel that you suffer from psychological trauma?	1	2	3	4	5
2. Looking back, do you see a fracture line between your life before the event and after the event?	1	2	3	4	5
3. Do you feel that the event controls your life?	1	2	3	4	5
4. Parallel to your daily functioning, do you feel that there is a debilitated inner world that will never recuperate from the trauma?	1	2	3	4	5
5. Do you feel that since the traumatic event no one can understand what you are going through?	1	2	3	4	5

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