DAVIDSON TRAUMA SCALE

DAVIDSON TRAUMA SCALE

TECHNICAL MANUAL

JONATHAN DAVIDSON, M.D.

MHS PSYCHOMETRICS

Correspondence regarding this manual should be addressed to the Product and Research team, JVR Psychometrics (Pty) Ltd.

Email: info@jvrafrica.co.za

This product has been developed by Jonathan Davidson, M.D. and is solely distributed by JVR Psychometrics (Pty) Ltd. JVR Psychometrics forms part of the JVR Africa Group.

JOHANNESBURG HEAD OFFICE

15 Hunter Street, Ferndale, Randburg, 2194

P.O. Box 2560, Pinegowrie, 2123, Johannesburg, South Africa

(Tel) +27 11 781 3705/6/7

(Email) info@jvrafrica.co.za

(Website) https://jvrafricagroup.co.za/psychometrics

(Blog) https://jvrafricagroup.co.za/blog/

Publisher's Preface

The Davidson Trauma Scale (DTS) addresses the need for a precise and multi-dimensional device for screening individuals suspected of being affected by traumatic life events. The electronic format makes it inexpensive and easy to administer the DTS in less than 10 minutes.

We are pleased that Dr Jonathan Davidson has chosen to work with JVR Psychometrics (Pty) Ltd. He is internationally known for his research on posttraumatic stress disorder (PTSD) and anxiety disorders in general. Dr Davidson has served as co-chair of the DSM-IV task force and has published numerous journal articles. He has done an outstanding job in developing a helpful and reliable screener that can be administered by professionals in psychology, psychiatry, and healthcare, whether specifically trained in PTSD or not.

Please forward any research reports, publications, and case studies where you've found value in using the DTS to JVR. We take your comments on our products seriously and strive to address your suggestions in product updates. We also value and support further research studies you would like to conduct using the DTS, and you can email your research proposals to info@jvrafrica.co.za for review.

JVR Psychometrics
Publisher

About the Author

Jonathan R.T. Davidson, M.D., is a Professor in the Department of Psychiatry and Behavioral Sciences at Duke University Medical Center and the Director of the Anxiety and Traumatic Stress Program. He qualified in medicine from University College Hospital, London, England in 1967, completed his post-registration requirements, and then entered residency training at the Royal Edinburgh Hospital, Edinburgh, Scotland. Dr Davidson achieved his psychiatry board certification as Member of the Royal College of Psychiatrists (United Kingdom) in 1972. He subsequently served on the faculty at the University of North Carolina in Chapel Hill until 1978. He has been with the Department of Psychiatry and Behavioral Sciences at Duke University Medical Center since that time.

Dr Davidson has been a productive investigator in the field of clinical psychopharmacology, psychiatric nosology, and risk factors. He has also specialized in depression, anxiety disorders, and posttraumatic stress disorder, and has co-authored the book "*Posttraumatic Stress Disorder: DSM-IV and Beyond*". He has co-chaired the PTSD work group of the American Psychiatric Association for DSM-IV and has received many grants both from the Federal Government and industry. He takes an active role as an advocate of anxiety disorders research and treatment, serving on the board of directors for the Anxiety Disorders Association of America. He has given over 300 talks and presentations to the media and continues his research in treatment outcome and risk factors, with an emphasis on PTSD.

Author's Preface

Posttraumatic stress disorder is a common and costly disorder in contemporary society and shows no signs of diminishing. Diagnosing and measuring PTSD symptoms are vitally important to help PTSD sufferers obtain the treatment they need.

Only a limited number of PTSD scales are currently available. These scales have generally been tested within a restricted range of trauma victims and have rarely been evaluated from the standpoint of treatment effectiveness. The Davidson Trauma Scale (DTS) is offered as a well-tested instrument for measuring severity of PTSD symptoms, as well as for its ability to detect treatment effects across time and to distinguish between treatments of greater effect and lesser effect.

In the development of a new rating scale, credit goes to the numerous individuals who have made important contributions. The author acknowledges valuable help and input from Jeanne Beckham, Ph.D.; Jeffrey Colket, B.A.; Michael Herzberg, M.D.; Richard Katz, Ph.D.; Thomas Mellman, M.D.; Susan Roth, Ph.D.; Rebecca Smith, R.N.; Suzanne Sutherland, M.D.; Larry Tupler, Ph.D.; and Caron Zlotnick, Ph.D. The author also gratefully acknowledges the individual subjects who participated in the development of this scale.

Jonathan Davidson, M.D.

Table of Contents

List of Tables and Figures

Chapter 1: Introduction

1.1 Purpose and Rationale

Being exposed to a traumatic event at some point in one's lifetime is almost inevitable. For example, using the World Health Organization's World Mental Health (WMH) surveys across 24 countries, Kessler et al. (2017) found "that 70.4% of respondents were exposed to one or more traumas at some time in their life" (p. 10). Furthermore, Kessler et al. (2017) noticed that most of their sample had experienced more than one traumatic event. Although experiencing traumatic incidents or witnessing them does not automatically lead to post-traumatic stress disorder (PTSD) (Koenen et al. 2017), it is still important to detect potential signs of PTSD as early as possible, as this can lead to better treatment outcomes. Screening tools can thus play a crucial role in this regard.

A self-rated symptom scale for PTSD can be a useful tool in assessing the severity and clinical significance of symptoms. As the respondent moves through treatment, this scale can be used to document the level and pattern of improvement. By separately assessing frequency and severity, the scale can also highlight whether there has been a global improvement in both dimensions or a more selective improvement in subjective distress, even in the continued face of symptoms. Improvement in some areas and continued distress in others are likely to exist in PTSD, where symptoms are frequently chronic. The reduction in distress from such symptoms is sometimes a realistic treatment goal.

The self-rated Davidson Trauma Scale (DTS) has been developed to assess PTSD symptoms and aid in treatment. The 20 items in the scale reflect the symptoms diagnostic of PTSD as defined in the 5th Edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013). The 20-item DTS is an adaptation of the 17-item DTS, which followed DSM-IV (American Psychiatric Association, 1994) PTSD criteria. More information regarding the rationale and adaptation process is provided in Chapter 3.

1.2 User Qualifications

As a rule, professional users of scales such as the DTS should understand the basic principles and limitations of psychological testing and test interpretation. While the DTS can be easily administered and scored by many individuals, the ultimate responsibility for its interpretation must be assumed by someone who realises the limitations of this type of screening and testing procedure.

Potential instrument users should be familiar with the educational and psychological testing standards. Qualified users should be members of a professional association that endorses a set of standards for the ethical use of psychological tests or licensed professionals in the areas of psychiatry, psychology, nursing, social work, or an allied field. Individuals whose only exposure to testing is gained from this manual generally will not be qualified to use the DTS. The test administrator should ensure that they appropriately manage any significant trauma discovered during testing (i.e. schedule referral if needed/treatment if it falls within the professional's scope of practice).

1.3 Uses

The DTS is intended for use with any individual (see **Target Audience**) who has been exposed to serious trauma, as outlined in Criterion A of the DSM-5 (American Psychiatric Association, 2013). This involves exposure to actual or threatened death, serious injury, or sexual violence in one or more of the following ways (American Psychiatric Association, 2013):

- Directly experiencing the traumatic event(s).
- Witnessing, in person, the event(s) as it occurred to others.
- Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
- Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse).[1]

These events are outside of everyday experience and are markedly distressing to the great majority.

The scale can be administered to an individual regardless of whether they have been previously diagnosed with PTSD. It can be useful for trauma victims with no psychiatric disorder, as well as those with depression, anxiety, or other psychopathology. The scale is intended to cover *all* types of traumata. Some examples include:

- Violent and life-threatening events (e.g. physical assault, mugging, domestic violence, sexual assault or rape, combat exposure, terrorist attacks, mass shootings, kidnapping or hostage situations, torture, attempted murder, armed robberies, being hijacked, etc.).
- Severe accidents or injuries (e.g. motor vehicle accidents, industrial or workplace incidents, sports-related injuries leading to severe trauma or paralysis, near-drowning or suffocation, severe burns, etc.).
- Natural or man-made disasters (e.g., fires, earthquakes, tornadoes, hurricanes, building collapses or explosions, floods, chemical spills, nuclear incidents, etc.).
- Sudden or violent death of a loved one (e.g. accidental death like a car crash or drowning, suicide of a close person, homicide/robbery gone wrong of a close family member or friend, etc.).
- Medical or health-related trauma (e.g. diagnosis of a terminal illness, childbirth complications that threaten the life of the mother, child, or both, emergency surgeries or invasive procedures, life-threatening illness or injury, etc.).
- Abuse and exploitation (e.g. intimate partner violence, human trafficking, child abuse, elder abuse, sexual exploitation, neglect, etc.).
- Occupational trauma (e.g. first responders witnessing traumatic scenes, law enforcement officers being involved in shoot-outs, healthcare workers exposed to graphic injuries or suffering, etc.).

[1] Note: Criterion A4 does not apply to exposure through electronic media, television, movies, or pictures, unless this exposure is work-related.

In treatment, the DTS can be used as a feedback tool on the progress and pattern of treatment response. It is also a useful screening tool and can point to psychopathology in victims of trauma. Despite some overlap, the DTS is not designed to evaluate PTSD criteria aligned with the 11th Edition of the International Classification of Diseases (ICD-11; World Health Organization, 2019) or assess Complex PTSD (CPTSD), as it specifically follows DSM-5 guidelines.

1.4 Principles of Use

The DTS is viewed as an adjunct to good clinical practice, supplying information on symptom type, frequency, and severity in individuals who are known to have experienced major trauma. The scale alone is not viewed as a replacement to clinical assessment, but as a supplement. However, it can be used alone as a screening device to be integrated into appropriate clinical or research activities. The DTS is not considered a diagnostic substitute, although it can serve as a diagnostic aid. Clinicians should be alert to any factors influencing the respondent to report their symptoms inaccurately.

1.5 Target Audience

The DTS is a self-rating scale, so respondents must be literate in English and capable of understanding the questions and their relationship to trauma. Individuals with a seventh grade reading level should be able to understand the wording of this scale. Nevertheless, the assessment administrator should assist those who express difficulty reading the DTS items. The scale is likely too complex for young children. The DTS is suitable for both individual and group administrations.

1.6 Contents of this Manual

Chapter 2 describes the theoretical foundations of the DTS, Chapter 3 focuses on adaptation, Chapter 4 discusses administration and scoring, Chapter 5 looks at interpretation, Chapter 6 delves into psychometric properties, and conclusions are presented in Chapter 7.

Chapter 2: Theoretical Foundations

2.1 Guiding Framework

The DTS follows DSM-5 (American Psychiatric Association, 2013) PTSD criteria as illustrated in Table 1. Consequently, based on the preceding framework, an item was written or adapted for each of the 20 symptoms.

Table 1. *DSM-5 PTSD Criteria*

B. Presence of one or more of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).
2. Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event(s).
3. Dissociative reactions (e.g. flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring (such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings).
4. Intense or prolonged psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event(s).
5. Marked psychological reactions to internal or external cues that symbolise or resemble an aspect of the traumatic event(s).
C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred as evidenced by one or both of the following:
1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two or more of the following:
1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs).
2. Markedly diminished interest or participation in significant activities.
3. Feelings of detachment or estrangement from others.
4. Persistent inability to experience positive emotions (e.g. inability to experience happiness, satisfaction, or loving feelings).
5. Persistent negative emotion state (e.g. fear, horror, anger, guilt, or shame).
6. Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (e.g. “I am bad”; “No one can be trusted”; “The world is completely dangerous”; “My whole nervous system is permanently ruined”).
7. Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others.
E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
1. Sleep disturbance (e.g. difficulty falling or staying asleep or restless sleep).
2. Irritable behaviour and angry outbursts (with little or no provocation), typically expressed as verbal or physical aggression toward people or objects.
3. Problems with concentration.
4. Hyper-vigilance.
5. Exaggerated startle response.
6. Reckless or self-destructive behaviour.

The DSM-5 (American Psychiatric Association, 2013) further notes that:

- The duration of the disturbance (Criteria B, C, D, and E – as illustrated above) is more than a month.
- The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
- The disturbance is not attributable to the physiological effects of a substance (e.g. medication, alcohol) or another medical condition.

2.2 Assessment Scales

The DTS consists of 20 questions with four symptom clusters:

- The Intrusion cluster (Criterion B) comprises five questions.
- The Avoidance cluster (Criterion C) comprises two questions.
- The negative alterations in Cognitions and Mood cluster (Criterion D) comprises seven questions.
- The marked alterations in Arousal and Reactivity cluster (Criterion E) comprises six questions.

Items 1-5 correspond to Intrusion, Cluster B in DSM-5; items 6–7 correspond to Avoidance, Cluster C in DSM-5; items 8–14 correspond to negative alterations in Cognitions and Mood, Cluster D in DSM-5; and items 15-20 correspond to marked alterations in Arousal and Reactivity, Cluster E in DSM-5.

Respondents are asked to rate the **Frequency** and **Severity** of each question/symptom on a five-point (0-4) scale as indicated in **Table 2**.

Table 2. *Frequency and Severity Scales*

Rating	Frequency	Severity
0	Not at all	Not at all distressing
1	Once only	Minimally distressing
2	2–3 Times	Moderately distressing
3	4–6 Times	Markedly distressing
4	Every day	Extremely distressing

Chapter 3: Adaptation

3.1 Reason for Adaptation

The 17-item DTS was developed in line with DSM-IV (American Psychiatric Association, 1994) PTSD criteria. DSM-5 (American Psychiatric Association, 2013) PTSD criteria have, however, been around for over a decade. Therefore, we saw it fit to create new items or adapt existing ones in line with the DSM-5 (American Psychiatric Association, 2013) to ensure that the latest guidelines for assessing trauma are followed, or at least those prescribed by the American Psychiatric Association[2]. Apart from changes necessitated by moving from the DSM-IV to the DSM-5, we also evaluated the Flesch–Kincaid (Flesch,

[2] The American Psychiatric Association follows DSM guidelines, whereas the World Health Organization follows ICD guidelines.

1948; Kincaid et al. 1975) readability scores of items and found that certain items appeared too hard to understand for our target audience. Hence, we deemed it necessary to simplify these items as much as possible without detracting from their original meaning.

Some of the notable changes from the DSM-IV[3] to the DSM-5 were the following:

- In terms of disorder class, the DSM-IV listed PTSD under Anxiety Disorders, whereas the DSM-5 lists it under Trauma- and Stressor-Related Disorders.
- The DSM-IV included three clusters (Intrusion, Avoidance/Numbing, and Hyperarousal). In contrast, the DSM-5 consists of four clusters (Intrusion, Avoidance, negative alterations in Cognitions and Mood, and marked alterations in Arousal and Reactivity).
- Some of the symptoms (e.g. 'Inability to recall important aspects of the trauma', 'Markedly diminished interest or participation in significant activities', and 'Feelings of detachment or estrangement from others') in the Avoidance/Numbing cluster in the DSM-IV were moved to the negative alterations in Cognitions and Mood cluster in the DSM-5.
- Some of the affect-related symptoms in the DSM-IV's Avoidance/Numbing cluster differed from those in DSM-5's negative alterations in Cognitions and Mood cluster.
- Symptoms such as 'Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others' as captured in the DSM-5's negative alterations in Cognitions and Mood cluster and 'Reckless or self-destructive behaviour' as captured in the DSM-5's marked alterations in Arousal and Reactivity cluster did not feature in the DSM-IV.

Appendix A presents a side-by-side illustration of DSM-IV and DSM-5 criteria for comparative purposes.

3.2 Process

As alluded to in the previous section, certain DTS items needed to be added/changed because of DSM criteria, whereas others needed to be changed due to high Flesch–Kincaid (Flesch, 1948; Kincaid et al., 1975) readability scores (i.e. this indicated that certain items required the reading level of college graduates as opposed to our target audience). Therefore, the items were altered in congruence with DSM-5 criteria or simplified appropriately for our target audience. Three subject matter experts with different backgrounds (counselling psychology/research psychology/psychometry) were asked to comment on the appropriateness of the adapted/newly developed items in terms of DSM-5 PTSD content covered and item readability (i.e. do they think the items are written in a way that would be understandable to the target audience). DTS items were revised in accordance with the subject matter experts' comments and recommendations. To evaluate item readability, the revised items were assessed in *R* version 4.3.2 (R Core Team, 2023) using the *textstat_readability* function from the *quanteda.textstats* (Benoit et al., 2018) package. This produced the following mean scores across items: Flesch Reading Ease = 62.29 and Flesch-Kincaid Grade Level = 7.14. The Flesch (1948) Reading Ease Score of 62.29 indicates

[3] The APA (American Psychiatric Association) switched to Arabic numerals starting with the 5th edition to make future updates easier (e.g., DSM-5.1, DSM-5-TR). Earlier editions stuck with Roman numerals.

that the text is fairly easy to read. The Flesch-Kincaid (Kincaid et al., 1975) Grade Level of 7.14 suggests the text is written at a 7th-grade reading level (i.e. it should be appropriate for readers aged 12 to 13).

Chapter 4: Administration and Scoring

This chapter describes the administration and scoring of the DTS.

4.1 Online Administration

The DTS is available on the OneJVR platform and accessibility to this assessment is managed through JVR's Client Services. OneJVR is an online administration platform that was developed to host local and self-published assessments as well as several international assessments. Individual users can set up their workspaces by completing the following form (https://tinyurl.com/56ceayfs). For more information about OneJVR or workspace-related queries, please contact Client Services (clientservices@jvrafrica.co.za).

The following assessment conditions and/or instructions may assist respondents to complete the DTS as efficiently as possible:

- Respondents should complete the DTS in a quiet environment.
- Respondents should be told that symptoms refer to a particular traumatic event, or series of events, to be designated by them as being particularly distressing.
- Ensure that respondents are clear about what traumatic event(s) have been the most distressing.
- If respondents have experienced multiple traumatic episodes, more than one questionnaire should be completed.
- Respondents should base their ratings on symptoms that occurred within the past week.
- It should be explained to the respondents that they should complete each item's Frequency and Severity scale.
- The assessment administrator should assist those expressing difficulty reading the DTS items.
- Respondents should be encouraged to answer all the questions. If you feel it will help, reassure the respondent that all answers are confidential and that there are no time limits.

Although there are no time limits, the DTS is typically completed within 10 minutes.

4.2 DTS Scoring

Although the DTS is automatically scored via OneJVR, this section comprehensively explains the underlying scoring process. This includes how raw responses are translated into total and subscale scores.

A total score, reflecting both Frequency and Severity ratings for all 20 items and separate ratings for the total Frequency and total Severity of all 20 items, can be used to interpret results. The Intrusion, Avoidance, negative alterations in Cognitions and Mood, and marked alterations in Arousal and Reactivity clusters can be scored separately as well.

The Total DTS Score can range from 0 to 160. Subscores can be computed for four symptom clusters: Intrusion, Avoidance, negative alterations in Cognitions and Mood, and marked alterations in Arousal and Reactivity.

The respondent's ratings from 0–4 should appear in Column F (Frequency) and Column S (Severity) in the boxes labelled F1 to F20 and S1 to S20. To calculate the Total DTS Score as well as Total Frequency and Severity scores:

1. Sum all the responses of items in Column F. This sum is the Total Frequency score.
2. Sum all the responses of items in Column S. This sum is the Total Severity score.
3. The Total DTS Score is the sum of the Total Frequency and Total Severity scores. Write this score in the Total DTS Score box at the bottom of the page. Total scores can range between 0 and 160.

Similarly, the Intrusion, Avoidance, negative alterations in Cognitions and Mood, and marked alterations in Arousal and Reactivity subcomponents of the DTS can also be computed.

To calculate Intrusion scores:

1. Sum the responses of items F1 to F5 to obtain total Frequency scores (Range from 0 to 20).
2. Sum the responses of items S1 to S5 to obtain total Severity scores (Range from 0 to 20).
3. The Total Intrusion score is the sum of the preceding Frequency and Severity scores. Consequently, Intrusion total scores can range from 0 to 40.

To calculate Avoidance scores:

1. Sum the responses of items F6 to F7 to obtain total Frequency scores (Range from 0 to 8).
2. Sum the responses of items S6 to S7 to obtain total Severity scores (Range from 0 to 8).
3. The Total Avoidance score is the sum of the preceding Frequency and Severity scores. Consequently, Avoidance total scores can range from 0 to 16.

To calculate negative alterations in Cognitions and Mood scores:

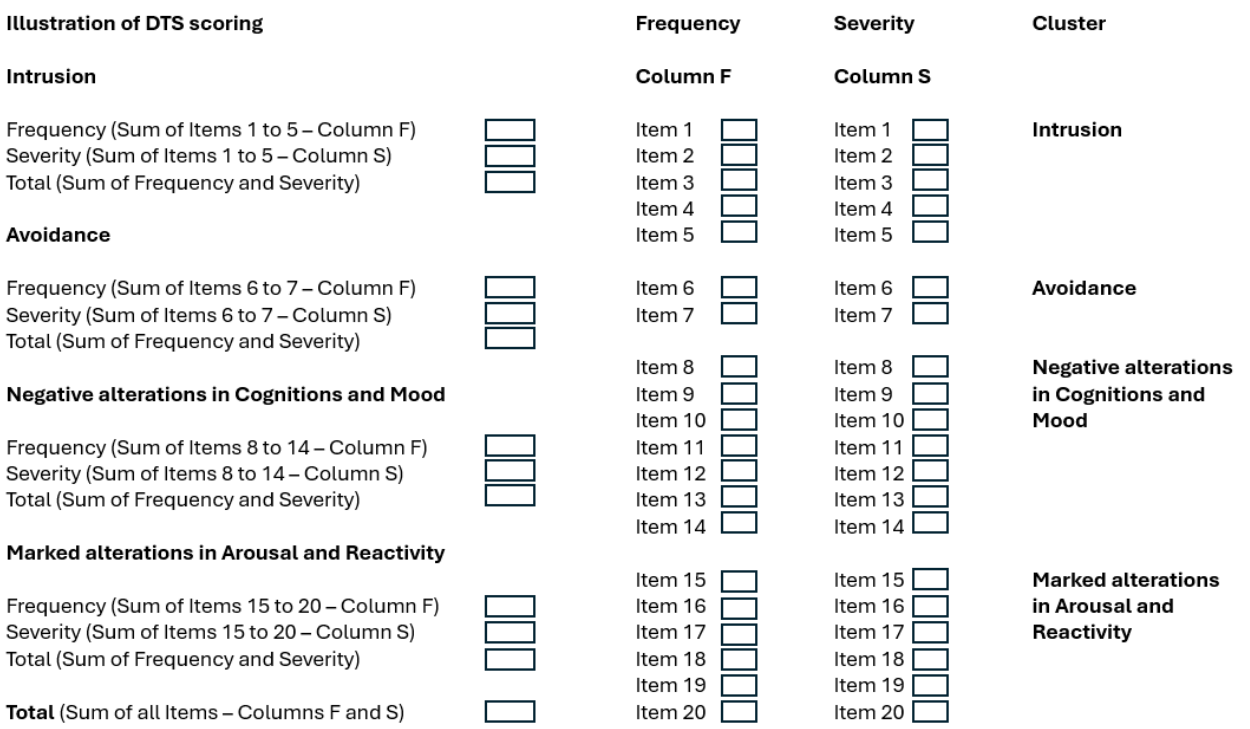
1. Sum the responses of items F8 to F14 to obtain total Frequency scores (Range from 0 to 28).
2. Sum the responses of items S8 to S14 to obtain total Severity scores (Range from 0 to 28).
3. The Total alterations in Cognitions and Mood score are the sum of the preceding Frequency and Severity scores. Consequently, negative alterations in Cognitions and Mood Total Scores can range from 0 to 56.

For the marked alterations in Arousal and Reactivity cluster:

1. Sum the responses of items F15 to F20 to obtain total Frequency scores (Range from 0 to 24).
2. Sum the responses of items S15 to S20 to obtain total Severity scores (Range from 0 to 24).
3. The Total marked alterations in Arousal and Reactivity score are the sum of the preceding Frequency and Severity scores. Consequently, marked alterations in Arousal and Reactivity Total Scores can range from 0 to 48.

Figure 1 illustrates the scoring procedure.

Figure 1. *Illustration of DTS Scoring*



In Figure 1, the total scores (Intrusion, Avoidance, Negative alterations in Cognitions and Mood, Marked alterations in Arousal and Reactivity, and Total DTS) are indicated in the boxes on the left-hand side. Boxes underneath Columns F and S represent item-level responses. For example, if Candidate A responded with 4, 3, 3, 2, and 4 for both Columns F and S for the first five items, their Frequency score for Intrusion would be 16, their Severity score would be 16, and their Total score for Intrusion would be 32. The rest of the questionnaire should be scored in a similar vein.

Chapter 5: Interpretation

Figure 2 illustrates what a fully completed questionnaire might look like for interpretative purposes.

Figure 2. *Scored DTS for Interpretative Purposes*

Illustration of DTS scoring		**Frequency**	**Severity**	**Cluster**
Intrusion		**Column F**	**Column S**	
Frequency (Sum of Items 1 to 5 – Column F)	20	Item 1 4	Item 1 4	**Intrusion**
Severity (Sum of Items 1 to 5 – Column S)	20	Item 2 4	Item 2 4	
Total (Sum of Frequency and Severity)	40	Item 3 4	Item 3 4	
		Item 4 4	Item 4 4	
Avoidance		Item 5 4	Item 5 4	
Frequency (Sum of Items 6 to 7 – Column F)	8	Item 6 4	Item 6 4	**Avoidance**
Severity (Sum of Items 6 to 7 – Column S)	8	Item 7 4	Item 7 4	
Total (Sum of Frequency and Severity)	16			
		Item 8 4	Item 8 4	**Negative alterations**
Negative alterations in Cognitions and Mood		Item 9 4	Item 9 4	**in Cognitions and**
		Item 10 4	Item 10 4	**Mood**
Frequency (Sum of Items 8 to 14 – Column F)	28	Item 11 4	Item 11 4	
Severity (Sum of Items 8 to 14 – Column S)	28	Item 12 4	Item 12 4	
Total (Sum of Frequency and Severity)	56	Item 13 4	Item 13 4	
		Item 14 4	Item 14 4	
Marked alterations in Arousal and Reactivity				
		Item 15 4	Item 15 4	**Marked alterations**
Frequency (Sum of Items 15 to 20 – Column F)	24	Item 16 4	Item 16 4	**in Arousal and**
Severity (Sum of Items 15 to 20 – Column S)	24	Item 17 4	Item 17 4	**Reactivity**
Total (Sum of Frequency and Severity)	48	Item 18 4	Item 18 4	
		Item 19 4	Item 19 4	
Total (Sum of all Items – Columns F and S)	160	Item 20 4	Item 20 4	

As per Figure 2, the candidate obtained the maximum score on the DTS, scoring a 4 on each item based on Frequency and Severity. Hence, as outlined in the DTS Scoring section, the candidate scored 20 for Intrusion – Frequency (4+4+4+4+4), 20 for Intrusion – Severity (4+4+4+4+4), 40 for Intrusion – Total (20 + 20); 8 for Avoidance – Frequency (4+4), 8 for Avoidance – Severity (4+4), 16 for Avoidance – Total (8+8); 28 for negative alterations in Cognitions and Mood – Frequency (4+4+4+4+4+4+4), 28 for negative alterations in Cognitions and Mood – Severity (4+4+4+4+4+4+4), 56 for negative alterations in Cognitions and Mood – Total (28+28); 24 for marked alterations in Arousal and Reactivity – Frequency (4+4+4+4+4+4), 24 for marked alterations in Arousal and Reactivity – Severity (4+4+4+4+4+4), 48 for marked alterations in Arousal and Reactivity – Total (24+24); and 160 on the Total DTS (40+16+56+48).

When considering DSM-5 criteria (see Table 1) in light of the above, the DTS indicated that the candidate displayed at least one or more of the Intrusion symptoms, one or both of the Avoidance symptoms, two or more of the negative alterations in Cognitions and Mood symptoms, and two or more of the marked alterations in arousal and reactivity symptoms.

Although the former meets the criteria for PTSD as per the DSM-5, it should be noted that the DTS is not meant to be used alone in assessing PTSD. Interview information and other supporting information (e.g. interviews with family members, personal history, etc.) must be obtained before reaching any conclusions

or making treatment decisions. As mentioned earlier, as a screening tool, the DTS should be used as a diagnostic aid that complements clinical assessment. It is not supposed to replace the latter.

5.1 General Interpretation Guidelines

Several steps should be followed in the interpretation of the DTS:

1. **Assess the validity of the results.** To optimise the benefits from the scale, ensure the respondent has completed each item and understood all the questions. The relevant trauma must be identified and listed as well. It is also essential to determine if the individual has inaccurately reported their symptoms for personal gain or due to another bias.

2. **Examine the overall DTS results (Total DTS Score).** Higher DTS scores may be associated with more pervasive and/or severe symptoms, which should be followed up with further clinical workup or leading diagnostic questions. When sufficient data is collected on this adaptation, we hope to provide more specific scores or cut-off points regarding diagnostic probability and classification accuracy in line with the previous technical manual (Davidson, 2002).

3. **Examine subscale scores.** In developing the DTS, item selection was governed by the symptoms identified as being diagnostic of PTSD. The DTS can therefore be easily broken down into four subscales corresponding to DSM-5 criteria for PTSD (see **Table 1**). The Intrusion Subscale corresponds to Criterion B, the Avoidance Subscale corresponds to Criterion C, the negative alterations in Cognitions and Mood Subscale corresponds to Criterion D, and the marked alterations in Arousal and Reactivity Subscale corresponds to Criterion E. Use these four subscales to aid in determining treatment. Note that for a PTSD diagnosis, DSM-5 requires one or more symptoms from Criterion B, one or both symptoms from Criterion C, two or more symptoms from Criterion D, and two or more symptoms from Criterion E.

4. **Examine both the frequency and severity of symptoms.** Frequency and severity are measured separately in the DTS due to the researchers' belief that sometimes the severity of a symptom improves during psychotherapy, even if frequency may not change. This separation also has the theoretical value of being able to detect the rare but very severe manifestation of a symptom.

5. **Integrate the DTS findings with all other available information.** Use all sources of information to determine the next steps in treatment, which may involve selecting an appropriate intervention or remediation strategy.

Chapter 6: Psychometric Properties

Research (Davidson, 2002) has shown that the 17-item DTS (a) can distinguish between individuals with a current diagnosis of PTSD and those without such a diagnosis, (b) can differentiate between treatment responders and treatment non-responders, (c) demonstrates a lowering of scores across time with clinical improvement, and (d) possesses good test-retest and split-half reliability, good internal consistency, and good concurrent, construct, and predictive validity.

The abovementioned, however, do not automatically translate to the latest adaptation. The psychometric properties of the 20-item DTS will be elaborated on in this section of the manual as soon as sufficient data is gathered and analysed. Watch this space!

Chapter 7: Conclusion

The 20-item DTS is an adaptation of the 17-item DTS, which followed DSM-IV (American Psychiatric Association, 1994) PTSD criteria. DSM-5 (American Psychiatric Association, 2013) PTSD criteria have, however, been around for over a decade. Therefore, we saw it fit to create new items or adapt existing ones in line with the DSM-5 (American Psychiatric Association, 2013) to ensure that the latest guidelines for assessing trauma are followed. Apart from changes necessitated by moving from the DSM-IV to the DSM-5, we also evaluated the Flesch–Kincaid (Flesch, 1948; Kincaid et al., 1975) readability scores of items and found that certain items appeared too difficult to understand for our target audience. Hence, we deemed it necessary to simplify these items as much as possible without detracting from their original meaning. Considering one's likelihood of exposure to trauma, we hope this adaptation will act as a valuable screening tool.

References

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). American Psychiatric Publishing, Inc.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5™* (5th ed.). American Psychiatric Publishing, Inc. https://doi.org/10.1176/appi.books.9780890425596

Benoit, K., Watanabe, K., Wang, H., Nulty, P., Obeng, A., Müller, S., & Matsuo, A. (2018). quanteda: An R package for the quantitative analysis of textual data. *The Journal of Open Source Software*, *3*(30), 774. https://doi.org/10.21105/joss.00774

Davidson, J. (2002). *Davidson Trauma Scale Technical Manual*. Multi-Health Systems Inc.

Flesch, R. (1948). A new readability yardstick. *Journal of Applied Psychology, 32*(3), 221–233. https://doi.org/10.1037/h0057532

Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Benjet, C., Bromet, E. J., Cardoso, G., Degenhardt, L., de Girolamo, G., Dinolova, R. V., Ferry, F., Florescu, S., Gureje, O., Haro, J. M., Huang, Y., Karam, E. G., Kawakami, N., Lee, S., Lepine, J.-P., Levinson, D., Koenen, K. C. (2017). Trauma and PTSD in the WHO world mental health surveys. *European Journal of Psychotraumatology*, *8* (supp. 5). https://doi.org/10.1080/20008198.2017.1353383

Kincaid, J.P., Fishburne, R.P., Rogers, R.L., & Chissom, B.S. (1975). *Derivation of new readability formulas (automated readability index, fog count, and flesch reading ease formula) for Navy enlisted personnel*. Research Branch Report, 8–75. Chief of Naval Technical Training: Naval Air Station Memphis. https://apps.dtic.mil/sti/pdfs/ADA006655.pdf

Koenen, K. C., Ratanatharathorn, A., Ng, L., McLaughlin, K. A., Bromet, E. J., Stein, D. J., Karam, E. G., Meron Ruscio, A., Benjet, C., Scott, K., Atwoli, L., Petukhova, M., Lim, C. C. W., Aguilar-Gaxiola, S., Al-Hamzawi, A., Alonso, J., Bunting, B., Ciutan, M., de Girolamo, G., Kessler, R. C. (2017).

Posttraumatic stress disorder in the World Mental Health Surveys. *Psychological Medicine*, *47*(13), 2260–2274. https://doi.org/10.1017/s0033291717000708

R Core Team (2023). *R: A Language and Environment for Statistical Computing.* R Foundation for Statistical Computing. https://www.R-project.org/

World Health Organization. (2019). *International statistical classification of diseases and related health problems* (11th ed.). https://icd.who.int/

Appendix A: DSM-IV versus DSM-5 PTSD Criteria

Table 3. *DSM-IV versus DSM-5 PTSD criteria*

PTSD DSM-IV	PTSD DSM-5
Disorder Class: Anxiety Disorders	Disorder Class: Trauma- and Stressor-Related Disorders
A. The person has been exposed to a traumatic event in which both of the following were present:	**A.** Exposure to actual or threatened death, serious injury, or sexual violence in one or more of the following ways:
1. The person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others.	1. Directly experiencing the traumatic event(s).
2. The person's response involved intense fear, helplessness, or horror.	2. Witnessing, in person, the event(s) as it occurred to others. 3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental. 4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g. first responders collecting human remains; police officers repeatedly exposed to details of child abuse). ***Note***: Criterion A4 does not apply to exposure through electronic media, television, movies, or pictures unless this exposure is work-related.
B. The traumatic event is persistently re-experienced in one or more of the following ways:	**B.** Presence of one or more of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
1. Recurrent and intrusive distressing recollections of the event, including images thoughts, or perceptions.	1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).
2. Recurrent distressing dreams of the event.	2. Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event(s).
3. Acting or feeling as if the traumatic event were recurring (includes a sense of reliving the experience, illusions, hallucinations, and	3. Dissociative reactions (e.g. flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring (such

dissociative flashback episodes, including those that occur on awakening or when intoxicated). 4. Intense psychological distress at exposure to the internal or external cues that symbolise or resemble an aspect of the traumatic event. 5. Physiological reactivity on exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event.	reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings). 4. Intense or prolonged psychological distress at exposure to internal or external cues that symbolise or resemble an aspect of the traumatic event(s). 5. Marked psychological reactions to internal or external cues that symbolise or resemble an aspect of the traumatic event(s).
C. Persistent avoidance of stimuli associated with the trauma and the numbing of general responsiveness (not present before trauma), as indicated by three or more of the following:	C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:
1. Efforts to avoid thoughts, feelings, or conversations associated with the trauma. 2. Efforts to avoid the activities, places, or people that arouse recollections of the trauma. 3. Inability to recall important aspects of the trauma. 4. Markedly diminished interest or participation in significant activities. 5. Feelings of detachment or estrangement from others. 6. Restricted range of affect (e.g. unable to have loving feelings). 7. Sense of a foreshortened future (e.g. does not expect to have a career, marriage, children, or a normal life span).	1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s). 2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s). D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred as evidenced by two or more of the following: 1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs). 2. Markedly diminished interest or participation in significant activities. 3. Feelings of detachment or estrangement from others. 4. Persistent inability to experience positive emotions (e.g. inability to experience happiness, satisfaction, or loving feelings). 5. Persistent negative emotion state (e.g. fear, horror, anger, guilt, or shame). 6. Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (e.g. “I am bad”; “No

	one can be trusted"; "The world is completely dangerous"; "My whole nervous system is permanently ruined"). 7. Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others.
D. Persistent symptoms of increased arousal (not present before the trauma) as indicated by two or more of the following:	**E.** Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred as evidenced by two (or more) of the following:
1. Difficulty falling or staying asleep. 2. Irritability or outbursts of anger. 3. Difficulty concentrating. 4. Hyper-vigilance. 5. Exaggerated startle response.	1. Sleep disturbance (e.g. difficulty falling or staying asleep or restless sleep). 2. Irritable behaviour and angry outbursts (with little or no provocation), typically expressed as verbal or physical aggression toward people or objects. 3. Problems with concentration. 4. Hyper-vigilance. 5. Exaggerated startle response. 6. Reckless or self-destructive behaviour.
E. Duration of the disturbance (symptoms in criteria B, C, and D) is more than 1 month.	**F.** Duration of the disturbance (Criteria B, C, D, and E) is more than 1 month.
F. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.	**G.** The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.
	H. The disturbance is not attributable to the physiological effects of a substance (e.g., medication, alcohol) or another medical condition.

Note. Adapted from American Psychiatric Association (1994, 2013).