# PRISM (Pictorial Representation of Illness and Self Measure): a new method for the assessment of suffering after trauma

Wittmann, L ; Schnyder, U ; Büchi, S

Abstract: This pilot study tested the validity of a 1-item visual assessment method originally developed to evaluate suffering in chronic illness that has been adapted for use with patients who have been exposed to traumatic events. The Pictorial Representation of Illness and Self Measure (PRISM) was administered 5 times during the course of a posttraumatic stress disorder (PTSD) treatment outcome study (N = 29). The PRISM scores declined significantly under trauma-focused psychotherapy and differentiated between participants with and without PTSD diagnoses. Test-retest reliability over a 6-month period was high (r = .85). PRISM showed significant correlations with measures of PTSD, depression, and psychopathology symptom load (r = -.38 to r = -.81; convergent validity). At the same time, PRISM was not significantly related to trauma history (discriminant validity). Illustrations of symptom time courses indicated that PRISM was more closely related to trauma-specific psychopathology than to nontrauma-specific psychopathology (discriminant validity) and sensitive to change. In summary, PRISM appears to be a valid tool for the assessment of trauma-related suffering and adds to multimethod approaches in trauma research.

DOI: https://doi.org/10.1002/jts.20710

# PRISM (Pictorial Representation of Illness and Self Measure) – a new method for the assessment of suffering after trauma

Lutz Wittmann[1], Ulrich Schnyder[1], and Stefan Büchi[2]

[1] Department of Psychiatry and Psychotherapy, University Hospital Zurich, Switzerland

[2] Clinic for Psychotherapy and Psychosomatics "Hohenegg", Meilen, Switzerland

Address for correspondence:

Lutz Wittmann, Ph.D.
Department of Psychiatry and Psychotherapy
University Hospital Zurich
Culmannstrasse 8
8091 Zurich
Switzerland
Email: lutz.wittmann@usz.ch
Phone: 0041 (0)44 255 34 09
Fax: 0041 (0)44 255 44 08

Running head: ASSESSMENT OF SUFFERING AFTER TRAUMA

Acknowledgements: This study was supported by the Swiss National Science Foundation (3200B0-102204.03), Olga Mayenfisch Foundation, Hermann Klaus Foundation, and the Zurich University „Jubiläumsspende".

Abstract

This pilot study tested the validity of a one-item visual assessment method originally developed to evaluate suffering in chronic illness that has been adapted for use with patients who had been exposed to traumatic events. The Pictorial Representation of Illness and Self Measure (PRISM) was administered five times during the course of a posttraumatic stress disorder (PTSD) treatment outcome study ($N = 29$). PRISM scores declined significantly under trauma-focused psychotherapy and differentiated between participants with and without PTSD diagnoses. Test-retest reliability over a six month period was high ($r = .85$). PRISM showed significant correlations with measures of PTSD, depression, and psychopathology symptom load ($r = -.38$ to $r = -.81$; convergent validity). At the same time, PRISM was not significantly related to trauma history (discriminant validity). Illustrations of symptom time courses indicated that PRISM was more closely related to trauma-specific psychopathology than to non trauma-specific psychopathology (discriminant validity) and sensitive to change. In summary, PRISM appears to be a valid tool for the assessment of trauma-related suffering and may be considered an important expansion of multi-method approaches in trauma research.

Trauma-related assessment tools typically reflect individual diagnostic entities such as posttraumatic stress disorder (PTSD; American Psychiatric Association, 1994) or other constructs such as posttraumatic cognitions (Foa, Tolin, Ehlers, Clark, & Orsillo, 1999). To our knowledge, no single measure assesses the perceived impact (rather than mere occurrence) of the consequences of a given traumatic experience in a comprehensive way allowing for consideration of all individually relevant dimensions (e.g., psychopathology, physical health, work situation, social circumstances). We assume that the construct of trauma-related suffering is best suited to reflect the entirety of this subjective experience (impact). Trauma-related suffering results from a complex interaction between psychological, physical, and social sequelae of a traumatic event, including relevant aspects of the individual concerned (e.g., personality traits, value systems, social resources).

Pictorial Representation of Illness and Self Measure (PRISM) has been developed as a visualization tool to measure the burden of suffering and has successfully been validated in various conditions such as chronic illness (i.e., Buchi, et al., 2002) and pain (i.e., Streffer, Büchi, Mörgeli, Galli, & Ettlin, 2009). As part of a randomized controlled trial (RCT) of Brief Eclectic Psychotherapy (BEP) for PTSD (Schnyder, Müller, Maercker, & Wittmann, 2011), we performed a pilot study on the validity of PRISM as a measure of trauma-related suffering.

## Method

The study protocol was approved by the Ethics Committee of the Canton of Zurich. Written informed consent was obtained from all participants.

### Participants

The main inclusion criterion was a total score of at least 50 points on the Clinician Administered PTSD Scale (CAPS; Blake, et al., 1998), resulting in a current diagnosis of full or subsyndromal (Blanchard, Hickling, Taylor, & Loos, 1995) PTSD in relation to traumatic

exposure at least six months prior to entering the RCT. Fluency in German and age between 18 and 70 were additional inclusion criteria. Exclusion criteria were psychotic, bipolar, substance-related, or severe personality disorders; current severe depression; severe cognitive impairment or a history of organic mental disorder; ongoing traumatization; prominent current suicidal or homicidal ideation, unstable psychotropic medication, and asylum-seeking status.

Measures

Pictorial Representation of Illness and Self Measure (PRISM; Buchi et al., 2002) consists of a white metal board measuring 210 × 297 mm (A4 format) with a fixed yellow disk (7 cm diameter) at the bottom right-hand corner, representing the patient's "Self" (Fig. 1). Patients are given a red 5 cm diameter magnetic disk and instructed to imagine that the disk represents their illness (in this study: trauma). They are asked to place this red disk on the metal board after receiving the following instruction: "Where would you put the illness (trauma) disk to illustrate its place in your life right now?" The main quantitative measure derived from PRISM is the "Self-Illness-Separation", or in this study "Self-Trauma-Separation" (STS), i.e. the distance between the centers of the "trauma" and the "self" disks ranging from 0 to 270 mm with higher STS distances reflecting lesser suffering. PRISM's convergent and discriminant validity have been demonstrated by the presence and absence of correlations between specific physical and psychological variables, different profiles of these correlations in different illnesses, and changes in PRISM scores accompanying changes in physical state (Buchi et al., 2002). Qualitative analyses of the individual meaning of the distance between Self and Illness detected three main aspects: 1. loss of control and personal autonomy, 2. loss of social or personal roles, and 3. increase in symptoms (Buchi et al., 2002).

PTSD symptoms during the last month were assessed with the CAPS (Blake et al., 1998; range = 0 - 136) and Part B of the Posttraumatic Diagnostic Scale (PDS; Foa, Cashman,

Jaycox, & Perry, 1997; range = 0 - 51)). Current axis I and II psychopathology was measured using the Structured Clinical Interview for DSM-IV (First, Gibbon, Spitzer, & Williams, 1996; First, Spitzer, Gibbon, & Williams, 1996). Depression during the previous few days was assessed applying the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983; range = 0 - 21). For the assessment of psychopathological symptom load during last seven days, we used the validated German nine-item short version SCL-K-9 (Klaghofer & Brähler, 2001) of the Symptom Checklist-90-R, the total score of which (global severity index, GSI, range = 0 - 36) proved to correlate almost perfectly (r = .93) with the GSI of the SCL-90-R in a representative sample of the German general population (Klaghofer & Brähler, 2001). Trauma history was assessed using Part A of the PDS and the Childhood Trauma Questionnaire (CTQ; Bernstein, et al., 2003).

Procedure

Thirty patients fulfilled the inclusion criteria and were randomly assigned to either 16 sessions of BEP ($n$ = 16) or a minimal attention control condition ($n$ = 14). As the control group was offered identical treatment after 16 weeks in the control condition, data from both groups were pooled together for the current analyses based on pre-treatment, post-treatment, and six month follow-up assessments. Additionally, patients completed PRISM, PDS, and SCL prior to therapy sessions seven and thirteen. One patient who refused treatment after the control condition was excluded from the present analyses, resulting in a total sample size of 29.

Statistical analyses

Statistical tests were performed using SPSS version 19. Effects of the factors time and PTSD diagnostic status on PRISM STS were tested by one-factorial general linear models (GLM) or t-tests. Due to the limited sample size, differences between the three diagnostic groups were quantified by effect sizes (Cohen's d) rather than calculating post-hoc

comparisons. Correlations assessed PRISM's test-retest reliability from post-therapy to follow-up assessment and its association with measures of psychopathology (convergent validity) and trauma history (discriminant validity). If PRSIM STS reflects trauma-related suffering – which we assume to result from the interaction of trauma sequelae with characteristics of the individual concerned – it should not be associated with the mere occurrence of traumatic events. To further examine PRISM's discriminant validity and sensitivity to change, changes over time in PRISM STS and trauma-specific and non trauma-specific markers were shown at the available assessment time points. The values of these four measures were transformed into T scores with a mean of 50 and a standard deviation of 10.

## Results

*Descriptives (pre-treatment assessment)*: Thirteen participants (45%) were females; mean age of the sample was 43.0 (*SD* = 14.0) years. Eighteen participants (62%) were of Swiss nationality, eleven (38%) were on stable psychotropic medication. "Index" traumatic events included serious accidents (*n* = 13), violent sexual or non-sexual assaults (*n* = 8), and other traumatic events (*n* = 8). The median of time lapsed since the "index" trauma was 1.8 years (range = 0.5 – 50.5). Nineteen patients (66%) were diagnosed with full PTSD, the remaining ten (35%) with subsyndromal PTSD. Mean pre-treatment CAPS score was 71.6 (*SD* = 17.7). Nineteen patients (66%) received a comorbid axis I diagnosis, with anxiety (41%) and mood (38%) disorders being the most prominent. Seven of them received an additional comorbid axis II diagnosis.

*PRISM STS time course*: PRISM STS mean scores were 35.2 (*SD* = 43.0, *N* = 29) at pre-treatment, 83.9 (*SD* = 82.8, *n* = 27) at post-treatment, and 95.4 (*SD* = 84.8, *n* = 24) at follow up assessment. A GLM detected a significant effect of time ($F(1.69, 24) = 14.37$, $p < .001$, *partial eta*$^2$ = .39). Subsequent paired t-tests indicated a significant decline from pre- to post-treatment assessment ($t(26) = -3.78$, $p < .001$, $d = 0.7$) which was maintained during the

follow-up interval ($t(23) = -0.42$, $p = .679$, $d = 0.1$). Test-retest reliability from post-therapy to follow-up assessment was $r = .85$ ($p < .001$, $n = 24$).

*Association of PRISM STS and diagnostic status*: A t-test indicated significant STS differences ($t(27) = 2.27$, $p = .031$, $d = -0.8$) between patients with full ($M = 22.9$, $SD = 34.3$, $n = 19$) and subsyndromal ($M = 58.5$, $SD = 50.0$, $n = 10$) PTSD at pre-treatment assessment. All participants had at least a sub-syndromal PTSD diagnosis at pre-treatment assessment. At post-treatment, a significant main effect for diagnostic status ($F(2, 27) = 15.44$, $p < .001$, *partial eta*$^2 = .56$) with respect to PRISM STS was detected (full PTSD: $M = 36.1$, $SD = 37.8$, $n = 14$; subsyndromal PTSD: $M = 71.0$, $SD = 56.4$, $n = 5$; no PTSD diagnosis: $M = 175.6$, $SD = 81.6$, $n = 8$). Effect sizes indicated substantial differences for STS between subjects with no vs. subsyndromal PTSD ($d = 1.5$), subsyndromal vs. full PTSD ($d = -0.7$), and no vs. full PTSD ($d = 2.2$). Similarly, a significant main effect for diagnostic status ($F(2, 24) = 7.75$, $p = .003$, *partial eta*$^2 = .43$) with respect to PRISM STS was detected at follow-up assessment (full PTSD: $M = 37.2$, $SD = 30.1$, $n = 9$; subsyndromal PTSD: $M = 95.0$, $SD = 80.7$, $n = 8$; no PTSD diagnosis: $M = 170.7$, $SD = 83.9$, $n = 7$). Effect sizes reflecting differences in STS between diagnostic groups were $d = 0.9$ for no vs. subsyndromal PTSD, $d = 1.0$ for subsyndromal vs. full PTSD, and $d = 2.1$ for no vs. full PTSD.

*Convergent validity*: Strong correlations between PRISM STS and measures of PTSD severity and depression were observed at all time points (Table 1). As for SCL GSI, correlations were in the moderate range at pre-treatment, and strong at later assessment time points.

*Discriminant validity and sensitivity to change*: Childhood traumatic experiences and number of trauma types (lifetime) were not significantly related to PRISM STS (Table 1). Figure 2 illustrates the time course of T scores of PRISM STS, PDS, SCL-9 GSI, as well as HADS-depression subscale over time. PRISM STS and PDS T scores appeared to be closely

associated from pre- to post-treatment, with only a minor difference at follow-up assessment. At the same time, their time course apparently differed from that of the HADS-depression and SCL-9 GSI, which appear to be closely associated with one another.

## Discussion

This study applied a validated instrument for the assessment of suffering in chronic illness, adapted for use in trauma research, in a sample of severely traumatized patients undergoing trauma-focused psychotherapy. As expected, trauma-related suffering significantly declined under psychotherapy for PTSD. Test-retest reliability during follow-up interval was high. PRISM discriminated well between subjects with full, subsyndromal, and no PTSD diagnosis and showed strong correlations with measures of trauma-specific and non-specific psychopathology (convergent validity). We assume that the somewhat less pronounced correlations at pre-treatment assessment can be explained by the restricted range of CAPS scores at baseline. The absence of a significant relationship between PRISM and trauma history and illustration of PRISM STS time course combined with measures of psychopathology indicate PRISM's discriminant validity as a measure of trauma-related suffering as well as sensitivity to change.

This study has a number of limitations that need to be considered. First, the small sample size raises questions regarding the representativity of our results. Furthermore, a replication study should include patients reporting type II traumatic events (Terr, 1991), collect qualitative data on how trauma survivors interpret the PRISM instructions, and compare PRISM STS to putatively related constructs such as centrality (Berntsen & Rubin, 2006). Notwithstanding these limitations, we believe that PRISM could make a valuable contribution to the field of traumatic stress. Given that the alleviation of suffering is one of the main goals of medicine (Cassell, 1982), the significance of its scope and value in assessing trauma survivors, in addition to existing trauma-related constructs, seems evident.

References

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Bernstein, D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., et al. (2003). Development and validation of a brief screening version of the Childhood Trauma Questionnaire. *Child Abuse & Neglect*, 27, 169-190. doi: S0145213402005410 [pii]

Berntsen, D., & Rubin, D. C. (2006). The centrality of event scale: a measure of integrating a trauma into one's identity and its relation to post-traumatic stress disorder symptoms. *Behavioral Research and Therapy*, 44, 219-231. doi: 10.1016/j.brat.2005.01.009

Blake, D. D., Weathers, F. W., Nagy, L. M., Kapoulek, D. G., Charney, D. S., & Keane, T. M. (1998). *Clinician-Administered PTSD Scale for DSM-IV*. Boston: National Center for Posttraumatic Stress Disorder.

Blanchard, E. B., Hickling, E. J., Taylor, A. E., & Loos, W. (1995). Psychiatric morbidity associated with motor vehicle accidents. *Journal of Nervous and Mental Disease*, 183, 495-504.

Buchi, S., Buddeberg, C., Klaghofer, R., Russi, E. W., Brandli, O., Schlosser, C., et al. (2002). Preliminary validation of PRISM (Pictorial Representation of Illness and Self Measure) - a brief method to assess suffering. *Psychotherapy and Psychosomatics*, 71, 333-341.

Cassell, E. J. (1982). The nature of suffering and the goals of medicine. *New England Journal of Medicine*, 306, 639-645. doi: 10.1056/NEJM198203183061104

First, M. B., Gibbon, M., Spitzer, R. L., & Williams, J. B. W. (1996). *User's Guide for the Structured Clinical Interview for DSM-IV Axis 1 Disorders – Research Version*. Washington, DC: American Psychiatriy Press.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *User's Guide for the Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II)*. Washington D.C.: American Psychiatric Press.

Foa, E. B., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: the Posttraumatic Diagnostic Scale. *Psychological Assessment*, 9, 445-451. doi: 10.1037/1040-3590.9.4.445

Foa, E. B., Tolin, D. F., Ehlers, A., Clark, D. M., & Orsillo, S. M. (1999). The Posttraumatic Cognitions Inventory (PTCI): development and validation. *Psychological Assessment*, 11, 303-314. doi: 10.1037/1040-3590.11.3.303

Klaghofer, R., & Brähler, E. (2001). Konstruktion und teststatistische Prüfung einer Kurzform der SCL-90-R [Consturction and psychometric evaluation of a short version of the SCL-90-R]. *Zeitschrift für klinische Psychologie, Psychiatrie und Psychotherapie*, 49, 115-124.

Schnyder, U., Müller, J., Maercker, A., & Wittmann, L. (2011). Brief Eclectic Psychotherapy for PTSD - a randomized controlled trial. *Journal of Clinical Psychiatry*, 72, 564-566. doi: 10.4088/JCP.10l06247blu

Streffer, M., Büchi, S., Mörgeli, H., Galli, U., & Ettlin, D. (2009). PRISM (Pictorial Representation of Illness and Self Measure) - a novel visual instrument to assess pain and suffering in orofacial patients. *Journal of Orofaccial Pain*, 23, 140-146.

Terr, L. C. (1991). Childhood traumas: an outline and overview. *American Journal of Psychiatry*, 148, 10-20.

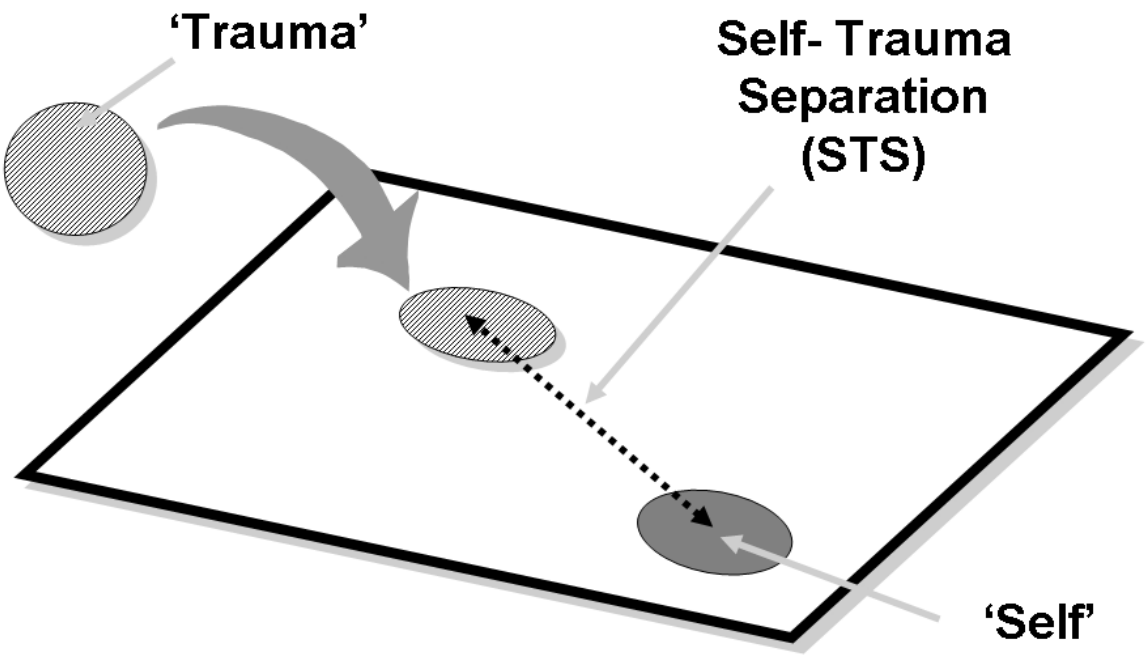
Zigmond, A. S., & Snaith, R. P. (1983). The Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*, 67, 361-370.

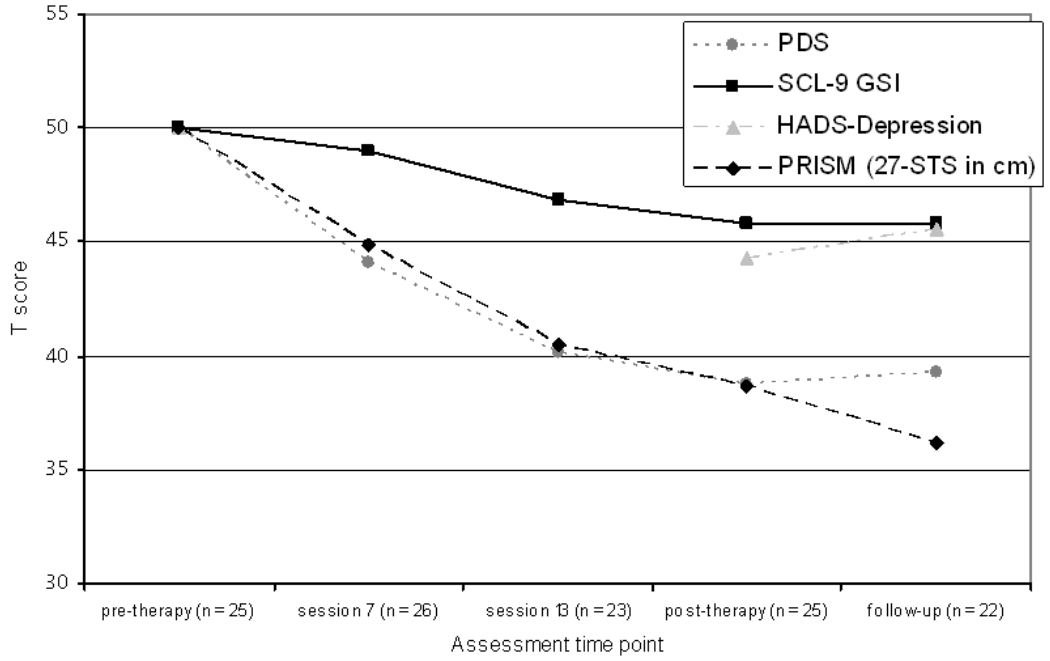
**Table 1**: Correlations between PRISM STS and Measures of Psychopathology and Traumatization

| Variable | | Pre-treatment | Post-treatment | Follow-up |
|---|---|---|---|---|
| CAPS total score | *r* | -.53** | -.74*** | -.76*** |
| | *n* | 29 | 27 | 24 |
| PDS total score | *r* | -.49* | -.77*** | -.81*** |
| | *n* | 25 | 25 | 22 |
| HADS-depression score | *r* | -.55** | -.69*** | -.81*** |
| | *n* | 25 | 25 | 22 |
| SCL-9 GSI | *r* | -.38 | -.68*** | -.60** |
| | *n* | 25 | 25 | 23 |
| CTQ total score | *r* | -.18 | - | - |
| | *n* | 27 | - | - |
| Number of trauma types | *r* | .20 | - | - |
| | *n* | 29 | - | - |

* $p < .05$, ** $p < .01$, *** $p < .001$

Abbreviations: PRISM, Pictorial Representation of Illness and Self Measure; STS, Self-Trauma-Separation; CAPS Clinician Administered PTSD Scale; HADS, Hospital Anxiety and Depression Scale; SCL-9 GSI, Global Severity Index of Symptom Check-List Short Version 9; CTQ, Childhood Trauma Questionnaire


'Trauma'
Self- Trauma
Separation
(STS)
'Self'


55
50
45
40
35
30
T score
PDS
SCL-9 GSI
HADS-Depression
PRISM (27-STS in cm)
pre-therapy (n = 25)
session 7 (n = 26)
session 13 (n = 23)
post-therapy (n = 25)
follow-up (n = 22)
Assessment time point