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COPING WITH MEDICAL THREAT: AN EVALUATION OF THE THREATENING MEDICAL SITUATIONS INVENTORY (TMSI)

Florence J. van Zuuren,[1]* Karina I. de Groot,[2] Niels L. Mulder[3] and Peter Muris[4]

[1]Department of Clinical Psychology, University of Amsterdam, Roetersstrat 15, 1018 WB, Amsterdam, [2]Erasmus University, Rotterdam, [3]The Helen Dowling Institute for Biopsychosocial Medicine, Rotterdam and [4]University of Limburg, Limburg, The Netherlands

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Summary—The Dutch Threatening Medical Situations Inventory (TMSI) has been developed to measure cognitive confrontation ('monitoring') and cognitive avoidance ('blunting') within the domain of medical threat. It consists of four scenarios of threatening medical situations, followed by monitoring and blunting alternatives. Its psychometric properties are investigated in students ($N = 123$), dental ($N = 80$), HIV− ($N = 42$) and surgery patients ($N = 123$). For both scales, internal consistencies proved to be satisfactory. Slight sex and age effects are found. Furthermore, there is a strong situation effect: the scenario highest in controllability shows relatively high monitoring and low blunting scores. Factor structure is stable across samples and shows a good fit with the predicted factor solution. Both scales are found to converge and diverge in a theoretically meaningful manner with a variety of coping style and anxiety measures. In two samples, a sample specific stress scenario was added, but the psychometric qualities of such an extension should not be taken for granted. In an additional sample of working people ($N = 48$) test–retest reliability proved to be good. It is concluded that the TMSI is a useful instrument for assessing cognitive confrontation and avoidance in medical patients. An English as well as a German translation are available. Copyright © 1996 Elsevier Science Ltd.

INTRODUCTION

One basic behavioral dimension in dealing with a stressor has been called approach/confrontation vs avoidance (Holahan & Moos, 1987; Roth & Cohen, 1986). The cognitive equivalents of these styles have been termed vigilance/sensitization/cognitive confrontation vs repression/cognitive avoidance. In order to measure these cognitive styles, Byrne (1961) developed the Repression–Sensitization Scale. However, this instrument has been criticized because of its positive correlation with trait anxiety (Abbott, 1972; Miller, 1987).

To make a fresh and more situationally oriented start, Miller (1980; 1987) devised the Miller Behavioral Style Scale (MBSS) measuring the tendency to seek information (monitoring) and to seek distraction (blunting) under stress. The MBSS provides descriptions of four hypothetical, uncontrollable threatening situations, either physical or ego-threatening in nature (e.g. a hostage; impending dismissal), each followed by four monitoring and four blunting options, presented in random order and to be answered on dichotomous scales. Arguments for this situational approach center around validity aspects: (1) while endorsing items, all subjects have, more or less, the same situation in mind, and (2) the items formulated are applicable to the situation at stake. The MBSS has been used widely, although its psychometric properties have not been evaluated extensively (see: Miller, 1987).

The MBSS has been translated into Dutch and culturally adapted (see van Zuuren & Wolfs, 1991). Because of insufficient internal consistency, the original dichotomous answer scales were changed into five-point scales. With this version, good psychometric results were obtained, for both the Monitoring and the Blunting scales. Besides, both scales turned out to be unrelated to each other (van Zuuren & Wolfs, 1991), which is in agreement with Miller's more recent formulations (Miller, 1987). However, in the laboratory hardly any support for predictive validity was found

* To whom all correspondence should be addressed.

(Muris, van Zuuren, Stoffels, Merckelbach & Kindt, 1994a; Muris, van Zuuren & de Vries, 1994b; van Zuuren & Muris, 1993).

Krohne (1989) devised a similar, but somewhat longer inventory measuring the same constructs, the Mainz Coping Inventory (MCI), and made a thorough psychometric evaluation of this instrument. In addition he advised the addition of one specific stress scenario attuned to the sample to be studied. Kohlmann (1993) and Muris *et al.* (1994b), however, found poor predictive validity with the MCI in a laboratory setting.

In the meantime it has become clear that the concepts of monitoring and blunting are applied mostly in medical settings, being of great relevance there because of their possible impact on symptom reporting, patient delay and preventive behavior, and on the effects of information provision (e.g. Gard, Edwards, Harris & McCormack, 1988; Ludwick-Rosenthal & Neufeld, 1993; Miller, Brody & Summerton, 1988; Miller, Leinbach & Brody, 1989; Miller & Mangan, 1983; Schwartz, Lerman, Miller, Daly & Masny, 1995; Steptoe & O'Sullivan, 1986; Watkins, Weaver & Odegaard, 1986). Nevertheless, it is our experience that medical patients, finding themselves in great despair, often get irritated over the irrelevant, hypothetical character of the MBSS- and MCI-stress scenarios (see also Steptoe, 1989). Moreover, some theorists have argued that coping styles are very situation dependent and therefore cannot be assessed validly across divergent situations (e.g. Ben-Porath, Waller & Butcher, 1991; Cohen & Lazarus, 1973; Stone, Greenberg, Kennedy-Moore & Newman, 1991). At the same time, it seems very inefficient to develop a new coping instrument for every stressful situation of interest.

In light of these considerations, it was decided to devise a new, short and easy to fill in questionnaire, the *Threatening Medical Situations Inventory (TMSI)*, measuring the coping styles of cognitive confrontation (monitoring, M) and avoidance (blunting, B), neither in general, nor in one specific stress situation, but for the domain of medical threat. Its development has been described in van Zuuren (1992) and van Zuuren and Hanewald (1993). Like the MBSS, the final version of the TMSI consists of four descriptions of threatening situations, but this time relevant to the domain of medical threat only. In order to ensure that the whole range of medical stressors was covered, the situations diverged with respect to two important stress parameters: predictability and controllability. This was achieved as follows: 37 subjects (psychology students) judged all scenarios that met our initial criteria (being sufficiently threatening and sufficiently imaginable: $\geqslant 2.5$ on a scale ranging from 1–4) on their controllability and predictability (scale again: 1–4) and we chose the four most extreme situations to be included in the TMSI (van Zuuren & Hanewald, 1993). Table 1 shows the four situational labels and their positions on both dimensions.

Each TMSI-scenario is followed by three monitoring and three blunting alternatives, in random order, to be answered on five-point scales (1 = 'Not at all applicable to me' to 5 = 'Strongly applicable to me'; see Appendix). Total monitoring and blunting scores are obtained by summing up the relevant items (range for both the TMSI-M and TMSI-B scales: 12–60).

With regard to the predictive validity of the TMSI, some positive results have already been published: in students anticipating a threatening video film fragment, the TMSI-B scale turned out to be positively related to total time during which distraction is sought and the length of the period before starting to seek information (Muris *et al.*, 1994b). Furthermore, both scales are independent of trait anxiety (van Zuuren & Hanewald, 1993).

The purpose of the present study was to evaluate the usefulness of the TMSI for research with medical patients in terms of reliability and validity aspects.

Table 1. Short typification of predictability and controllability in the four TMSI-situations

Situation label	Predictability	Controllability
1. 'Vague, suspicious headache complaints'	−	−
2. 'Being diagnosed as hypertensive'	+	+ +
3. 'Choosing for uncertain heart surgery'	−	+
4. 'Sudden appendicitis operation'	+	− −

Table 2. Sex and age of the samples used

	Total	Men	Women	Mean age (yr)	Age range (yr)
Students	123	32	91	20.4	18–36
Dental patients	80	38	42	35.9	18–60
HIV-patients	42	42	0	39.0	21–61
Surgery patients	123	66	57	44.4	20–77

METHOD

Subjects

Subjects were introductory psychology students in the Netherlands, and three medical samples: dental patients, HIV-patients and patients for elective surgery. Table 2 summarizes their demographic data. In addition, a sample of working people with divergent educational levels (19 men and 29 women; mean age 30.6 yr, age range 18–55 yr) was used to assess test–retest reliability.

Material and Procedure

All samples filled in the TMSI. In addition, data were gathered pertaining to construct validity: convergent as well as discriminant validity.

Students. This sample filled in the TMSI in a no threat situation, before embarking on an experiment. At a later point in time they filled in Dutch versions of the MBSS: Miller Behavioral Style Scale (Miller, 1987); MCI: Mainz Coping Inventory (Krohne, 1989); PILL: Pennebaker Inventory of Limbic Languidness (Pennebaker, 1982), a 52-item questionnaire measuring the perception of bodily symptoms; in a student sample Cronbach's $\alpha = 0.90$ (Van Vliet, 1992); and FQ-BI: the Blood-Injury subscale (five items) of the Dutch version of the Fear Questionnaire measuring fear of blood and of medical situations (Marks & Mathews, 1979); Arrindel, Emmelkamp and Van der Ende (1984) report Cronbach's $\alpha = 0.74$ for this subscale in a student sample; for validity aspects see also van Zuuren (1988).

Dental patients. These patients filled in the TMSI at home, after visiting the dentist for treatment (i.e. in a no threat situation), together with the MBSS and two trait measures of dental anxiety: the DAS, a Dutch translation of the Dental Anxiety Scale (Corah, 1969; Corah, Gale & Illig, 1978; in students, Cronbach's $\alpha = 0.86$, Stouthard, 1989) and the K-ATB, a Dutch dental anxiety measure (nine items) with shown good psychometric qualities (in dental patients, Cronbach's $\alpha = 0.93$; Stouthard, 1989).

HIV-patients. This sample filled in the TMSI at home, as part of a questionnaire booklet (i.e. in a situation of diffuse threat, because of their constant preoccupation with the virus), being asked to do so by a staff member of their medical clinic. This booklet also contained the:

- UCL: Utrechtse Coping List (Schreurs, Tellegen & van de Willige, 1984), a Dutch, 47-item, well-validated inventory, based on the Ways of Coping Checklist and comprising the following subscales: Active problem solving, Seeking social support, Reassuring thoughts, Palliative response, Avoidance, Depressive reaction pattern, and Emotional expression; in general, sufficient internal consistencies (Cronbach's $\alpha > 0.70$) of the subscales have been reported, except for Emotional expression (Sanderman & Ormel, 1992); in the present HIV-sample, however, internal consistency of the Avoidance scale fell below acceptable levels too (Cronbach's $\alpha = 0.45$);
- HCL: HIV-Coping List (Kroon, van den Boom, van Beuzekom, Sno & Storosum, 1992), a 34-item HIV-specific adaptation of the COPE (Carver, Scheier & Weintraub, 1989), comprising five subscales: Active problem solving, Seeking social support, Positive interpretation, Denial, and Depressive reaction pattern; for all subscales Cronbach's $\alpha > 0.70$ in an HIV-sample, except for Active problem solving ($\alpha = 0.64$; Mulder, Emmelkamp, Antoni, Mulder, Sandfort & De Vries, 1994);
- GHQ: the 30-item Dutch version of the General Health Questionnaire (Goldberg & Miller, 1978; Koeter & Ormel, 1991), a screening instrument for psychiatric symptomatology (in an HIV-sample Cronbach's $\alpha = 0.94$; Mulder *et al.*, 1994);
- POMS: the 32-item Dutch version of the Profile of Moods Scale (McNair, Lorr & Droppleman,

1971; Wald & Mellenbergh, 1990), its total score measuring mood disturbance during the 7 previous days (Cronbach's $\alpha = 0.89$; Mulder *et al.*, 1994); and

- SSQ: the Social Support Questionnaire, a 49-item, well validated Dutch questionnaire measuring both availability of and satisfaction with one's social network (van Sonderen, 1991); Cronbach's α's in an HIV-sample are 0.94 and 0.97 respectively (Mulder *et al.*, 1994).

Surgery patients. These patients were enrolled in a longer research project. They filled in the TMSI as part of a questionnaire booklet in the hospital, the afternoon before the operation, i.e. in an impending stress situation.

Working people. The final sample filled in the TMSI individually, in their working environment, with an interval of 2 weeks. In order to counter memory effects, at the first encounter care was taken to avoid the suggestion that after 2 weeks the same inventory was to be filled in again.

Additional scenario. For HIV- and surgery patients the TMSI was extended with a specific stress scenario (an HIV- and a Surgery Situation, respectively) followed by six items (three monitoring and three blunting items, in random order) in order to study the usefulness of this situation specific kind of assessment.

Predictions

Apart from self-evident demands upon internal consistency, test–retest correlations and factor structure, several specific predictions with regard to construct validity are formulated. A significant level of 0.05 is used for all statistical tests. As to convergent validity we predict significant positive and substantial correlations ($r \geqslant 0.40$) of both TMSI-scales with the corresponding MBSS- and MCI-scales. Furthermore, we predict TMSI-Monitoring to be positively related to the perception of bodily symptoms (PILL) and to Active coping and Seeking social support (i.e. for obtaining information), and TMSI-Blunting to Reassuring thoughts, Palliative response, Avoidance, Positive interpretation and, possibly, Denial.

As to discriminant validity, no relations are predicted between TMSI-scales among themselves and between TMSI-scales on the one hand and FQ-BI, both measures of dental anxiety (DAS; K-ATB), psychiatric symptomatology (GHQ), mood disturbance (POMS) and the availability of and satisfaction with social support (SSQ-scales) on the other hand. With regard to coping measures, TMSI-Monitoring is expected to be uncorrelated with blunting relevant scales, and TMSI-Blunting is predicted to be unrelated with Active problem solving. We do not predict the absence of a relation between TMSI-Blunting and Seeking social support, because support might have been sought for emotional reasons only. Finally, for the situation specific measurement of monitoring and blunting (TMSI-HIV-M scale and TMSI-HIV-B scale) we predict correlation patterns analogous to the patterns of TMSI-Monitoring and TMSI-Blunting, respectively. For Depressive reaction pattern and Emotional expression no predictions were formulated.

Finally, on the basis of the results of Compas, Malcarne and Fondacaro (1988) with young adolescents and those of Kohlmann (1993) and van Zuuren and Wolfs (1991), we predict a significant effect of type of situation on TMSI-M- and TMSI-B totals (ANOVA's-Repeated measures). More specifically, we predict elevated monitoring and lowered blunting mean totals for situations with high predictability/controllability (Situation 2), particularly when compared with a situation low in predictability/controllability (Situation 1; Scheffé *F*-tests; Winer, 1971).

RESULTS

Overall statistics

For each sample, internal consistency is satisfactory for both the M- and B-scales (Cronbach's $\alpha > 0.70$), and for each sample both scales are unrelated to each other (see Table 3). Mean scale totals differ somewhat across samples (ANOVAs: M-scale: $F(3,364) = 9.27$; $P < 0.01$; B-scale: $F(3,364) = 6.09$, $P < 0.02$). On *post hoc* *t*-tests (least significant difference approach, Winer, 1971), surgery patients (the sample with a rather high mean age and in an impending stress situation) show somewhat lower monitoring scores (significantly different from dental patients and from students, $t(364) = 3.31$, $P < 0.01$ and $t(364) = 5.14$, $P < 0.01$, respectively) and higher blunting scores (again

Table 3. Means, SDs, Cronbach α's and intercorrelations of TMSI-scales for four different samples

	Monitoring-scale mean	SD	α	α	Blunting-scale mean	SD	α	α	r M × B
Students	38.3_x	7.13	0.79		36.7_x	6.52	0.80		−0.16
Dental pat.	36.7_x	8.60	0.83		35.1_x	7.17	0.79		−0.06
HIV-pat.	35.3_x	8.79	0.77	0.78[a]	37.2_x	8.35	0.79	0.79[a]	−0.14
Surg. pat.	32.5_y	10.33	0.84	0.86[b]	39.5_y	8.27	0.74	0.78[b]	0.09

Note: Means in the same column that do not share subscripts differ at $P < 0.01$ on *post hoc* *t*-tests.
[a]Specific HIV-scenario included. [b]Specific surgery-scenario included.

significantly different from dental patients and from students, $t(364) = 4.10$, $P < 0.01$ and $t(364) = 2.92$, $P < 0.01$, respectively).

Effects of sex, age and situation

There is no relation between monitoring or blunting and age, except for the surgery patients (the sample with really high ages): older people seem to monitor less ($r(123) = -0.29$; $P < 0.01$, two-tailed) and there is a tendency ($r(123) = 0.15$; $P < 0.10$, two-tailed) that they blunt a bit more than younger ones. There is a slight sex effect: for dental patients, women score somewhat higher on monitoring than men ($t(78) = -1.96$, $P < 0.05$, two-tailed); men score higher on blunting than women in dental patients ($t(78) = 1.99$, $P < 0.05$, two-tailed) and in students ($t(121) = 2.29$, $P < 0.05$, two-tailed).

Table 4 shows that in all samples there is a rather strong situation effect on monitoring as well as on blunting, except for HIV-patients on blunting. *Post hoc* comparisons between separate situations show that the direction of the effect is in agreement with the prediction: in all samples Situation 2 shows the highest monitoring scores (as predicted, significantly higher than Situation 1). In addition, it has the lowest blunting scores (again, as predicted, significantly lower than Situation 1), except for HIV-patients where no significant situational contrasts for blunting were found.

Factor structure

In all four samples, the optimal result of Principal Component Analysis (varimax, orthogonal transformation) for the 24 TMSI-items is obtained by a two-factor solution, i.e. in all four samples there is a bend in explained variance after Factor II. Table 5 shows eigenvalues, explained variance and fit to the predicted solution (Tucker's ϕ's; ten Berge, 1977). The total variance explained is not very high, but about the same as for other coping inventories (Parker & Endler, 1992). Correspondence between the target factor solution and the found two-factor solution is good to very good, for the monitoring as well as the blunting items, in all four samples. Besides, factor structures are stable across samples (all ϕ's > 0.80, except $\phi = 0.75$ for HIV- vs dental patients, blunting items).

To give an impression of the factor loadings for the medical sample with the largest N (surgery

Table 4. Means (SDs) on monitoring and blunting in the four situations, for four samples, and situation effects (ANOVAs, Repeated measures)

TMSI-M	Students mean	SD	Dental mean	SD	HIV mean	SD	Surgery mean	SD
Sit 1	8.74_a	2.15	8.48_a	2.53	8.07_a	2.21	7.48_a	2.53
Sit 2	10.01_b	2.11	9.86_b	2.56	9.88_b	2.78	8.52_b	3.27
Sit 3	9.84_b	2.57	9.30_b	2.98	8.60_a	3.34	8.15_b	3.68
Sit 4	9.37_b	2.55	8.90_a	2.74	8.71_a	2.82	8.36_b	3.46
	$F(3,366) = 12.62$**		$F(3,237) = 7.87$**		$F(3,123) = 5.93$**		$F(3,366) = 8.36$**	
TMSI-B	Students mean	SD	Dental mean	SD	HIV mean	SD	Surgery mean	SD
Sit 1	9.24_a	2.15	8.91_a	2.68	9.10_a	2.45	10.31_a	3.07
Sit 2	8.36_b	2.18	7.91_b	2.40	9.12_a	2.92	9.06_b	3.30
Sit 3	9.38_a	1.97	8.96_a	1.92	9.17_a	2.90	10.17_a	2.75
Sit 4	9.68_a	2.56	9.33_a	2.94	9.81_a	2.82	9.96_a	2.81
	$F(3,366) = 12.94$**		$F(3,237) = 7.65$**		$F(3,123) = 1.07$		$F(3,366) = 5.08$**	

Note: Means in the same column that do not share subscripts differ at $P < 0.05$ on Scheffé *F*-tests.
**$P < 0.01$, two-tailed.

Table 5. Eigenvalues, explained variance and Tucker's ϕ for Principal Component Analysis (two-factor solution). Varimax orthogonal transformation, in four samples

	Factor I		Factor II			Tucker's ϕ	
	Eigenvalue	expl. var.	Eigenvalue	expl. var.	Total	M	B
Students	5.04	21.0%	3.25	13.5%	34.5%	0.92	0.88
Dental pat.[a]	5.01	20.9%	3.85	16.1%	37.0%	0.91	0.90
HIV-pat.[a]	4.64	19.3%	3.68	15.4%	34.7%	0.84	0.89
Surgery pat.	4.75	19.8%	3.36	14.0%	33.8%	0.93	0.94

[a]*N* is rather small here (80 and 42, respectively).

patients): the mean loading of the Monitoring items on Factor I = 0.59; the mean loading of the Blunting items on Factor II = 0.50.

Construct validity

Table 6 shows correlations of the TMSI-Monitoring and Blunting scales with several relevant measures, for students and for dental patients. As to convergent construct validity, there are, as predicted, significant positive and substantial correlations with the corresponding scales of the MBSS and the MCI, in both samples (one correlation falls just short of the 0.40 level). Moreover, TMSI-Monitoring is positively related to the perception of bodily symptoms. As to discriminant validity, relations with non-corresponding scales of the MBSS and MCI are absent, as predicted. Moreover, in dental patients there are no relations with both trait measures of dental anxiety. The significant positive relation between TMSI-Monitoring and the FQ Blood-Injury scale, however, was not predicted.

In HIV-patients (Table 7) there is, with regard to convergent construct validity, the predicted, significant positive correlation between TMSI-Monitoring on the one hand and Active problem solving and Seeking social support on the other hand, at least for the HCL. These correlations become even more pronounced with the TMSI-HIV-M scale. For TMSI-Blunting and TMSI-HIV-B there are, as predicted, significant positive correlations with Reassuring thoughts and Palliative response (UCL) and with Positive interpretation (HCL). However, the predicted positive correlation with Avoidance is absent, and the relationship with Denial only holds for TMSI-HIV-B (and is rather meagre). Unpredicted is the negative correlation between TMSI-B and Depressive reaction pattern (HCL), implying that high blunters are less depressive than low blunters.

With regard to discriminant validity there are, as predicted, no significant relations between TMSI-scales on the one hand and psychiatric symptomatology, mood disturbance and availability of and satisfaction with social support on the other hand. The one exception here is the positive correlation between TMSI-HIV-B and the availability of social support. As predicted, TMSI-M (and TMSI-HIV-M) does not correlate with blunting relevant coping measures, and TMSI-B does not correlate with Active problem solving. The significant positive correlation of TMSI-HIV-B with Active problem solving (HCL), however, is contrary to the prediction. Remarkable too is its positive correlation with Seeking social support (HCL). These latter two findings may be related to the factor structure of the items added (see below). Conclusion: There are many indications of good convergent and discriminant construct validity for both TMSI-scales, with only a few exceptions. One of these is possibly due to low internal consistency of the Avoidance scale, and some pertain to an added, sample specific scenario.

Table 6. Product-moment correlations between TMSI-M and B-scales and several other coping and anxiety measures, in students and in dental patients

	Students						Dental patients			
	MBSS		MCI			FQ-	MBSS			
	M	B	M	B	PILL	BI	M	B	DAS	K-ATB
M-scale	0.55**	0.14	0.54**	−0.17	0.21*	0.24†	0.43**	−0.00	−0.01	0.16
B-scale	−0.03	0.46**	0.21	0.68**	−0.12	−0.14	−0.11	0.38**	−0.19	−0.06

Note: MBSS = Miller Behavioral Style Scale; MCI = Mainz Coping Inventory; PILL = Pennebaker Inventory of Limbic Languidness; DAS = Dental Anxiety Scale; K-ATB = short dental anxiety questionnaire.
*$P < 0.05$, one-tailed; **$P < 0.01$, one-tailed; †$P < 0.05$, two-tailed.

Table 7. Product-moment correlations between TMSI-Monitoring and Blunting scales (and TMSI HIV-Monitoring and Blunting scales) and several coping, well-being and social support measures in HIV-patients

	UCL (=Dutch WCC)							HIV-Coping List (HCL)							Social support	
	Act	Ss	Reas	Pall	Av	Dep	Em	Act	Ss	Pos	Den	Dep	GHQ	POMS	avail.	satisf.
M-scale	0.07	0.12	−0.11	−0.06	−0.08	0.13	0.13	0.26*	0.32*	0.03	−0.02	0.03	−0.03	0.08	−0.23	−0.18
HIV-M-scale	0.06	−0.06	0.18	0.07	0.05	−0.02	−0.02	0.54**	0.42**	0.14	0.08	−0.27	−0.11	0.17	0.07	−0.12
B-scale	0.30	−0.22	0.50**	0.28*	−0.24	−0.26	−0.04	0.16	0.07	0.38**	0.18	−0.52††	−0.24	−0.12	0.28	0.08
HIV-B-scale	0.16	−0.05	0.41**	0.43**	−0.01	−0.03	−0.03	0.45††	0.34†	0.35*	0.26*	−0.36†	−0.18	−0.03	0.37†	0.12

Note: Act = Active problem solving; Ss = Seeking social support; Reas = Reassuring thoughts; Pall = Palliative response; Av = Avoidance; Dep = Depressive reaction pattern; Em = Emotional expression; Pos = Positive interpretation; Den = Denial.

*$P < 0.05$, one-tailed; **$P < 0.01$, one-tailed; †$P < 0.05$, two-tailed; ††$P < 0.01$, two-tailed.

Test–retest Reliability

In the sample of working people, a two-week test–retest reliability proves to be good: for TMSI-Monitoring: $r(48) = 0.82$; for TMSI-Blunting: $r(48) = 0.83$.

Sample specific stress scenarios

What strikes one in the first place is that rather high monitoring and blunting means are obtained on sample specific scales (compare the situational means in Table 4): for TMSI-HIV-M mean = 10.19 (SD = 2.76), for TMSI-HIV-B mean = 9.79 (SD = 2.33); for TMSI-surgery-M mean = 9.55 (SD = 3.35), for TMSI-surgery-B mean = 10.96 (SD = 2.87). Furthermore, internal consistencies for total Monitoring and Blunting scales are slightly improved by adding a sample specific subscale (Table 3). For separate use, however, the reliability of these three-item specific scales is not sufficient: for TMSI-HIV-subscales Cronbach's $\alpha = 0.58$ and 0.40, respectively, and for TMSI-surgery-subscales $\alpha = 0.69$ and 0.60, respectively.

Surprisingly, the HIV-monitoring and HIV-blunting subscales are positively related to each other ($r(42) = 0.48$; $P < 0.01$, two-tailed). This finding is in accordance with the factor structure of the items. Principal Component Analysis on all $24+6 = 30$ items (two-factor solution) shows that one HIV-blunting item (hoping for a new medicine) clearly falls within the monitoring factor. Besides, two other HIV-items (one monitoring, one blunting) do not load on either factor. We already alluded to this state of affairs under 'Construct validity'. These findings are also reflected in the low correlations found between the TMSI-HIV-subscales and TMSI-total scales in HIV-patients: for monitoring $r(42) = 0.34$, for blunting ($r(42) = 0.32$.

The added Surgery scenario happens to fare better. Principal Component Analysis on all 30 items (two-factor solution) shows a good fit for the items added. Moreover, the Surgery subscales are unrelated to each other.

DISCUSSION

In the present study we investigated psychometric properties of the Threatening Medical Situations Inventory in students/working people as well as in three groups of medical patients. Results show that reliability of the scales in terms of homogeneity and stability is satisfactory. Factor structure is as predicted, and stable across samples. Slight sex and age effects were found, with women monitoring somewhat more and blunting somewhat less than men, and older people monitoring somewhat less than younger ones, at least in a sample with a large age range.

In agreement with the prediction an effect of type of situation was found: the situation highest in predictability and controllability (Situation 2) seems to elicit relatively high monitoring and low blunting behaviour. This result tallies with the findings of other studies (Compas *et al.*, 1988; Kohlmann, 1993; van Zuuren, 1994), and is in agreement with Miller's (1980) theoretical formulations. However, in HIV-patients situational effects were meagre; particularly the blunting dip on Situation 2 was lacking. In contrast to the other groups, these patients find themselves in a situation of chronic unpredictable, uncontrollable stress. This may have damped their sensitivity for situational variations in threat.

A finding to be investigated further is the deviant position of the surgery sample on TMSI-means. Their position (decreased monitoring, increased blunting) may be ascribed to two factors: the relatively high mean age of the surgery patients and the fact that they were the only sample who filled in the TMSI in a situation of impending threat.

Data concerning construct validity show good convergent and discriminant validity. Theoretically very important is the absence of a relation between both TMSI-scales and trait anxiety, reported earlier (Van Zuuren & Hanewald, 1993). The observed positive relation between monitoring and the perception of bodily symptoms has been demonstrated for the MBSS as well (Muris & van Zuuren, 1992) and tallies with the study of Steptoe and Vögele (1992) wherein MBSS-monitoring was found to be positively related to the accuracy of perception of skin conductance and heart rate. The unpredicted relation between monitoring and blood-injury fears has also been established for the MBSS (Muris & van Zuuren, 1992) and may be the result of the tendency of high monitors to scan for bodily symptoms.

A few commentaries on the blunting concept are necessary. In HIV-patients an unpredicted negative relation between blunting and depression was found. This shows the correctness of controlling for depression in monitoring/blunting studies (as has been done, for example, in Miller *et al.*, 1988). Furthermore, although several predicted relations did emerge, the predicted relation between blunting and denial was absent (except for the blunting scale of the added HIV-scenario). It has been argued (Mathews, 1993; Miller, 1980) that the more unconscious variants of blunting cannot be grasped by inventory items and should be assessed in other ways. This can be done either by using a lie-scale (e.g. a combination of an anxiety inventory with Marlowe–Crowne's Social Desirability Scale; Steptoe, 1986) or by using an experimental task, e.g. a Stroop interference test (de Ruiter & Brosschot, 1994). The absence of a relation between blunting and avoidance may be ascribed to the low internal consistency of the Avoidance subscale (Cronbach's $\alpha = 0.45$).

Although adding an *ad hoc*, sample specific stress scenario to the TMSI may be valuable to motivate the subjects and although its scale-totals may have high predictive power (as was the case in Krohne, 1989), the results of the present study show that such a scenario must be used with care. Patients seem to score somewhat higher on it than on the more remote, standard scenarios. Apparently, they find coping alternatives pertaining to their actual threatening situation rather easily applicable. Furthermore, the sample specific scales showed enhanced convergent validity, but reduced discriminant validity. Their internal consistency was too low to allow for separate use and the factor structure of the newly developed items could not be taken for granted.

Our final remarks concern the further use of the TMSI. Firstly, it was shown that correlations of both TMSI-scales with corresponding scales of the MBSS and MCI are substantial, but far from high. This finding implies that the TMSI, confined as it is to the domain of medical threat, indeed fills in a gap. Second, although in this study reference group data have been provided, it is not our intention that in the near future each individual medical patient will be tested on his or her cognitive coping style with the use of an inventory. In fact, the TMSI has been developed, mainly to be used in research with medical patients in order to establish possibly modulating effects of coping style on variables such as symptom perception, patient delay and disease outcome and on the outcome of the provision of different types of information and of other types of psychological interventions. Once the nature of these relations has been established, the thus acquired knowledge may be implemented into daily medical practice, whereby the medical staff should try to develop a keen eye for the coping styles of their patients.

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APPENDIX

First TMSI answer page

Imagine you suffer from headaches and dizziness for some period of time already. You visit your doctor. He or she tells you things don't look too well and refers you to a specialist for a rather trying medical examination.

Please indicate for each statement below to what degree it is applicable to you, by encircling your answer:

1 = not at all applicable to me
2 = not very much applicable to me
3 = a tiny bit applicable to me
4 = rather applicable to me
5 = strongly applicable to me

a.	I plan to ask the specialist as many questions as possible.	1	2	3	4	5
b.	I think things will turn out to be alright.	1	2	3	4	5
c.	I determine to inform myself at other instances and doctors first.	1	2	3	4	5
d.	I plan to start reading about headaches and dizziness.	1	2	3	4	5
e.	For the time being I try not to think of unpleasant outcomes.	1	2	3	4	5
f.	I am not going to worry: such an examination is less worse than suffering from headaches all the time.	1	2	3	4	5