The Brunel Mood Scale: A South African norm study

Charles H van Wijk, MA (Clin Psych), PhD
PO Box 494, Simon's Town, W Cape

Objective. The Brunel Mood Scale (BRUMS) has proved useful to assess mood states in a range of clinical settings. Its local utility is restricted by the lack of normative data from South Africa. This paper presents preliminary normative data for use of the BRUMS in the South African health care setting.

Method. Participants (*N*=2 200) ranging from 18 to 59 years in age, employed in the public sector and recruited during routine occupational health surveillance, completed the 24-item self-report BRUMS. They came from all South African race and language groups, and from all nine provinces.

Results. Significant differences were found between the scores of women and men, and their results are reported separately. Owing to the language-dependent nature of the BRUMS, results are also reported separately for respondents with English as their first language and those who had other South African languages as mother tongue. Norm tables with T-scores are presented for the full sample, and for the separate gender and language groups.

Conclusion. This study presents normative data for a sample of educated and employed South Africans from various backgrounds. Its brevity, and provisionally language-friendly nature, make it a useful measure for screening for psychological distress in the South African clinical health care context.

In the South African (SA) health care context there is a need for simple and easy-to-use tools to screen mood states (e.g. in public health settings). This paper presents preliminary normative data for the use of the Brunel Mood Scale (BRUMS) in the SA context.

The precursor to the BRUMS was the Profile of Mood States (POMS),[1] a widely used measure to assess transient affective mood states.[2] It has proved an excellent measure of current mood states and fluctuations in psychiatric outpatients, medical patients, normal adults, college students and other groups.[2]

The scale measures 6 identifiable affective states through a self-report inventory, with respondents rating a list of adjectives. Patients usually respond to a 5-point Likert scale on the basis of how they had been feeling the previous week. Developed on the basis of a series of factor-analytic studies, 6 factor-based subscales were derived: tension, depression, anger, vigour, fatigue, and confusion.[1]

Internal consistency was reported as 0.90 or above, and test-retest reliability ranged from 0.65 (vigour) to 0.74 (depression).[1] Excellent discriminant validity has also been reported.[3]

Within a research context, the POMS has been used to examine the effects of psychotropic medication, brief psychotherapies, sleep deprivation, and other brief interventions on mood states.[3,4] Because it taps a number of mood states, it is also widely used in the clinical medical setting, including patients with cancer,[5] head injury,[6] hormonal treatment,[7] epilepsy,[8] arthritis[9] and HIV infection.[10,11]

On the international scene, the POMS has been translated into a number of other languages, including Spanish,[12] German,[13] Arabic,[14] Japanese[15] and Korean.[16] The translation studies all reported alpha reliabilities and criterion and content validity comparable to their English control samples.

The POMS has also been studied in various English-speaking cultures. New Zealand students' scores did not differ from normative US data, but there were some differences between students from European, Maori and Asian descent.[17]

Over time, a number of concerns regarding the POMS have been expressed, particularly relating to length and language.[18,20] Numerous efforts were made to shorten it while maintaining its validity and usefulness.[18,19,21] In 1999 Terry and Lane developed a shortened version that consisted of 24 items. This shortened scale was later named the Brunel Mood Scale (P C Terry and A M Lane; unpublished User Guide for the Brunel Mood Scale (BRUMS), 2003, available from Professor P Terry, University of Southern Queensland), which is widely used across a variety of settings.[20]

The BRUMS was developed in four stages.[22] Stage 1 established content validity, whereby a panel of experts assessed an initial item pool for comprehensibility by adolescents and a sample of adolescents identified those items that best described each mood dimension. In stage 2, a 24-item, 6-factor structure was tested using confirmatory factor analysis on adolescents in a classroom setting and adolescent athletes before competition. The

hypothesised model was supported in both groups independently and simultaneously. In stage 3, relationships between BRUMS scores and previously validated measures, which were consistent with theoretical predictions, supported criterion validity. In stage 4, the measurement model was re-confirmed among adult students and athletes.[20,23]

The factors of the BRUMS are described as follows:[20] 'Anger is typified by feelings that vary in intensity from mild annoyance or aggravation to fury and rage, and is associated with arousal of the autonomic nervous system.[24] Confusion is proposed to be a feeling state characterised by bewilderment and uncertainty, associated with a general failure to control attention and emotions. Depression is associated with a negative self-schema characterised by themes such as hopelessness, personal deficiency, worthlessness, and self-blame.[25] Fatigue is typified by feelings of mental and physical tiredness. Tension is typified by feelings such as nervousness, apprehension, worry, and anxiety. Vigour is typified by feelings of excitement, alertness, and physical energy' (reference numbers altered).

On the basis of the findings of validation studies, it was hypothesised that depression would show moderate positive relationships with anger, confusion, fatigue and tension, and a weak inverse relationship with vigour; while vigour would show a moderate inverse relationship with fatigue but be unrelated to anger, confusion and tension.[20,23] This pattern of intercorrelations among mood dimensions has also been found when using the original POMS with both athletes[26,27] and students.[1]

It should be noted that the 6 affective mood states' subscales are not diagnostic indicators, but refer to sub-clinical psychological states ('mood states'). Using a formula, a total mood distress (TMD) score can be calculated from the 6 subscales.

The BRUMS has been used in studies investigating mood in sport and exercise[28-30] and predicting dichotomous (win/lose) outcome in some sports competitions.[31] It has further been used in studies examining the effects of weight loss,[32] the risk of eating disorders[33] and athletic sport injuries,[34,35] the effect of hormones on mood[36] and mood changes during pregnancy,[37] emotional intelligence,[38] sleep profiles[39] and academic performance.[40,41]

Its popularity stems from its good psychometric properties and ease of administration, scoring and interpretation, as well as the spread of mood domains tapped. It is inexpensive, and ideally suitable for large-scale screening of psychological mood states.

In spite of impressive psychometric support, the BRUMS has a drawback with regard to the limited standardisation samples available. For example, the BRUMS User Guide only reports 4 sets of normative data – adult students (>18 years), adult athletes (<18 years), schoolchildren (12 - 17 years), and young athletes (12 - 17 years).

The only known BRUMS study in SA used a dual-language version (Afrikaans and English), and confirmatory factor analysis provided support for a 24-item, 6-factor measurement model using both independent and multi-sample analyses. The measurement model was maintained across language groups, with only gender differences in mood responses found.[22] This study with SA students used an elite group in a context-specific setting, with a specific instruction set, in line with studies in the sports domain.[22] Unfortunately these figures cannot be used for large-scale screening of any other group. Specific SA norms are required for the general population, medical patients and psychiatric patients.

Within the resource-limited SA context, there is a need for a brief and language-friendly measure of psychological distress. The language issue is particularly relevant, given the SA multilingual environment. Previous success of the BRUMS makes it potentially useful for the SA clinical health care context. However, the lack of local standardisation is a disadvantage.

This study aimed to develop preliminary normative data for the use of the BRUMS in the South African context. Normative tables for SA working adults (N=2 200) are presented. Previous use of the BRUMS in SA indicated gender differences in mood responses,[22] and normative data are presented separately for women and men. Completion of this scale requires verbal comprehension in English, and items may be interpreted differently by speakers who do not have English as their first language. Normative data are therefore presented separately for respondents who spoke English as first language, and those who did not.

The study further briefly considered the effect of biographical variables (age, gender, population group and level of education). Psychometric data, namely internal validity, and inter-correlations between subscales, are also reported.

Methodology
Participants
The study used a convenience sample consisting of individuals employed in the public sector. They came from different organisational backgrounds, and were recruited during routine employer-mandated occupational health surveillance. The study took place over 4 urban sites in the Western Cape and Free State.

Participants were screened for psychiatric disorders, and those with positive findings were not included in the final dataset. General medical histories were not used for inclusion or exclusion. This was in line with the purpose of developing normative data for the general population – in this case the employed population.

There has been suggestions that mood states may be expressed differently among older adults (≥60),[3] so only respondents aged between 18 and 59 were included in the normative sample.

During their participation, the subjects' age, gender, race, home language, province of origin and level of education, as well as their occupation-specific utilisation, were recorded. They came from all SA race and language groups, and from all nine provinces.

The race variable was defined by Apartheid classification. Blacks were those who originate from the African continent; whites were those with European ancestry; the coloured group (a uniquely defined South African group) was of mixed heritage; and Indian/Asian defines those whose ancestors were from East Asia, primarily the Indian subcontinent.

Education levels were grouped into 4 categories: (*i*) completed 9 - 11 years of schooling; (*ii*) completed matric; (*iii*) completed N3, N4 or equivalent vocational training; and (*iv*) completed a national diploma or degree.

For statistical analysis, participants were divided into two language groups, one for respondents who had English as first language, and one for those who did not have English as first language.

Instruments
Brunel Mood Scale
The BRUMS is a 24-item mood scale that measures 6 identifiable affective states through a self-report inventory, with respondents rating a list of adjectives on a 5-point Likert scale ranging from 0 (not at all) to 4 (extremely), based on subjective feelings. The instruction set used was how participants 'have been feeling in the past week, including today'. The inventory takes about 3 minutes to complete.

As noted previously, good validity has been reported. The previous study that used the BRUMS in SA reported good internal consistency among English speakers (T=0.83, D=0.89, A=0.76, V=0.85, F=0.87, C=0.85).22

Apart from completing the standard BRUMS, participants were requested to indicate any of the 24 words that they found confusing or did not know the meaning of, or if they were unclear of the exact intention of the item.

The BRUMS was presented in a booklet form. The front page explained the purpose of the study and its voluntary nature, and included a reference that completion of the scale constitutes informed consent. There were no specific incentives for respondents to complete the scale. The second page of the booklet allowed space for the indicated biographical information. The instructions and answer sheet were printed on the third page.

Procedure
Respondents were recruited during routine occupational health surveillance appointments. They were invited to complete the BRUMS immediately after completing the standard psychological screening questionnaire. Participation was voluntary, and the respondents signed a form printed in the BRUMS booklet indicating informed consent after being briefed on the purpose. Completion took place in groups, under the supervision of psychologists or registered counsellors.

Individual members who were interested in receiving feedback on their results were invited to indicate their name and contact number on the inventory, and received their feedback within 3 days of completion of the inventory.

Data analysis
Statistical analysis was by the Statistica 7 software program. The sample was analysed using descriptive statistics. Internal consistency was determined using the Cronbach alpha coefficient, and inter-correlations between subscales were calculated with correlational statistics. The relationships between BRUMS scores and biographical variables were explored using *t*-tests (gender, language), correlation coefficients (age) and analysis of variance (ANOVA) (population groups, language, level of education, occupational applications).

Normative data are presented following the same format as in the BRUMS User Guide, namely T-scores, which was also the format used in the previous SA study.[22]

Results
Description of sample
A total of 2 200 adults ranging in age from 18 to 59 years completed the study. The mean age was 30.6 years (standard deviation (SD) 9.6 years). The breakdown into age categories is set out in Table I. The subjects came from all South African race and language groups, and from all nine provinces (Table I). The sample consisted of 460 women (20.9%) and 1 740 men (79.1%). This falls slightly short of the general composition of the SA public sector, where women reached 30% representivity by 2007.[42]

About 24% of subjects indicated that English was their first language (*N*=530), while the rest (about 76%) had other SA languages as their mother tongue (*N*=1 670). All the participants had passed at least Grade 9 level in English language, and rated themselves proficient in English. Participants indicated that they spoke more English at their workplaces than any other language (for official duties).

As all participants were employed at the time of the study, they were given the opportunity to indicate in which field they worked. Those who did so were classified into specific categories, and the rest were assigned to an 'other' category. Work types with small numbers were collapsed onto the 'other' category. The distribution is set out in Table I.

Table I. Distribution of sample in age categories, race, language, province of origin, work type and education

	Women	Men
Age (yrs)		
19 - 29	359	908
30 - 39	83	424
40 - 49	16	286
50 - 59	2	122
Race		
Black	277	893
Coloured	102	455
Indian	11	65
White	70	327
Language		
English	83	447
SeTswana	65	154
SeSotho	43	125
SiPedi	43	115
isiXhosa	34	215
TsiVenda	18	28
Tsonga	15	35
Zulu	45	180
Afikaans	98	403
Ndebele	4	11
SiSwati	4	8
Unknown	8	19
Province of origin		
Western Cape	134	609
Northern Cape	15	36
Eastern Cape	28	224
Free State	37	124
KwaZulu-Natal	44	228
North West	28	70
Gauteng	101	215
Mpumalanga	16	55
Limpopo	32	95
Unknown	25	84
Work type		
Technical maintenance		399
Security		156
Catering/hospitality		183
Administrative/clerical		318
Firemen		55
Infantry		166
Other		923
Education		
Completed 9 - 11 years of schooling		176
Completed matric		1 526
Post school vocational training cert.		295
National diploma		121
Degree		83

There was a significant difference between the scores of women and men ($p<0.0001$ for all subscales and TMD), with women scoring towards more negative mood states.

Age showed small (-0.10 - -0.16) but significant inverse correlations with all 5 negative mood scales and TMD ($p<0.01$ for all). Examining the scores across age categories revealed a consistent pattern of decreased scores over the 20s, 30s and 40s, with the scores of the 50 - 59-year age group reflecting those of the 18 - 29-year age group.

No significant race differences were observed on any of the subscales or TMD, and no consistent language differences were discerned. However, when comparing the scores of English first-language speakers with the rest, the English-speaking group reported significantly higher confusion scores ($p<0.001$), and tended to score lower on depression and vigour, and higher on fatigue ($p<0.1$ for all).

No consistent differences were observed between provinces. The only interpretable difference noted was that the participants from Gauteng reported higher depression scores than participants from the Western, Northern and Eastern Cape ($p<0.05$).

Although no consistent pattern could be discerned among the different occupational groups, a few general trends (i.e. noticeable, but not consistently significant) were identified: administrative personnel had higher scores on depression and fatigue than the other groups, while infantry soldiers had lower scores on tension and fatigue, and higher scores for vigour, than the others. Infantry soldiers had significantly lower TMD scores than the rest of the sample ($F6,2193=17.73$; $p<0.01$)

Comparisons across education levels only yielded one meaningful difference: graduates reported more fatigue than the other groups ($F4,2194=3.47$; $p<0.01$).

In conclusion, scores were generally evenly distributed across race, language, province of origin, occupational groups and levels of education. The differences between women and men were significant, so norms are reported separately for these two groups. The norms for English first-language speakers are also presented separately from those who did not have English as first language.

Psychometric properties

Alpha coefficients were generally similar for the 4 subgroups (gender by language). The alpha coefficients of the full-sample subscales are presented in Table II. Five subscales met the 0.7 threshold of acceptability, while the depression subscale yielded a lower coefficient at 0.66.

The relationships between subscales are presented in Table III. As expected, depression showed a moderately positive correlation

Table II. Alpha coefficients of the BRUMS subscales

N	Tension	Depression	Anger	Vigour	Fatigue	Confusion
2 200	0.72	0.66	0.77	0.89	0.78	0.73

Table III. Inter-correlations between BRUMS subscales

Scale	Depression	Anger	Vigour	Fatigue	Confusion
Tension	0.68*	0.66*	-0.17	0.55*	0.73*
Depression		0.76*	-0.25*	0.58*	0.76*
Anger			-0.20	0.59*	0.73*
Vigour				-0.26*	-0.19
Fatigue					0.58*

*$p<0 01$.

Table IV. Descriptive statistics of scores on the BRUMS grouped by gender and language

Scale	Total (N=2 200)		English first language (N=530)				Non-English first language (N=1 630)			
			Women (N=83)		Men (N=447)		Women (N=377)		Men (N=1 293)	
	M	SD	M	SD	M	SD	M	SD	M	SD
Tension	1.73	2.45	2.11	3.07	1.53	2.25	2.44	2.73	1.57	2.35
Depression	1.16	2.40	1.80	3.74	0.85	1.99	1.89	3.11	1.02	2.12
Anger	1.34	2.37	2.20	3.45	1.25	2.20	1.87	2.74	1.16	2.18
Vigour	11.05	3.71	9.98	2.90	10.86	3.37	10.24	3.89	11.43	3.76
Fatigue	2.36	3.13	3.89	4.18	2.44	3.21	3.22	3.46	1.97	2.83
Confusion	1.25	2.24	1.82	3.24	0.81	1.78	1.81	2.61	1.21	2.15
TMD	-3.19	12.14	1.77	16.41	-3.98	10.82	1.07	13.75	-4.48	11.38

M = mean SD = standard deviation TMD = total mood distress.

with tension, anger, fatigue and confusion, and a weak inverse relationship with vigour. Vigour showed a weak inverse relationship with fatigue, and was unrelated to tension, anger and confusion.

Normative data

The descriptive statistics of scores on the BRUMS grouped by gender and language are presented in Table IV. The scores tend towards the positive direction when compared with the previous SA sample.[22]

The four separate tables of normative data are presented in Figs 1 - 4, and the full sample in Fig. 5. Individual standardised scores can be obtained using the appropriate norm table for language and gender, and finding the T-score corresponding to the raw score for each subscale. T-scores are standardised scores with a mean of 50 and an SD of 10. Scores below 40 and above 60 would therefore be of interest.

Language issues

A total of 78 participants (3.6%) indicated that they had difficulty understanding the term 'Muddled' (item 17); 21 (1%) had difficulty with 'Worn out' (item 4), 9 with 'Exhausted' (item 8), and 2 each with 'Alert' (item 23) and 'Miserable' (item 16). None of these participants had English as their first language. There was no association between difficulty with words and level of education.

Discussion

The normative data presented are grouped by gender and English as first language. Other demographic variables recorded did not significantly influence the scores, and were not included when creating the norm tables. This sample represents employed South Africans, with a minimum school achievement of at least Grade 9/Standard 7. These norms should be used with caution in respondents who are not directly comparable.

T-score	Tension	Depression	Anger	Vigour	Fatigue	Confusion	T-score
English as first language – women							
80		13					80
79	11				16		79
78			12			11	78
77		12					77
76	10		11		15		76
75		11				10	75
74					14		74
73			10				73
72	9	10			13	9	72
71				16			71
70			9				70
69	8	9			12	8	69
68							68
67		8	8	15	11		67
66	7					7	66
65							65
64		7	7	14	10		64
63	6					6	63
62					9		62
61		6	6				61
60				13	8	5	60
59	5	5					59
58			5				58
57				12	7	4	57
56	4	4					56
55			4		6		55
54				11		3	54
53	3	3					53
52			3		5		52
51		2				2	51
50	2			10	4		50
49			2				49
48		1			3		48
47			1	9		1	47
46	1						46
45					2		45
44							44
43				8	1		43
42							42
41							41
40				7			40
39							39
38							38
37							37
36				6			36
35							35
34							34
33				5			33
32							32
31							31
30							30
29				4			29
28							28
27							27
26				3			26
25							25
24							24
23							23
22				2			22
21							21
20							20

Fig. 1. BRUMS T-scores for women with English as first language.

Different instruction sets are available in the BRUMS User Guide. The format used in this study – how respondents were feeling over the past week – is generally utilised for large-scale screening purposes. For specific research or clinical applications, the 'how do you feel right now/today' instruction set may be more appropriate.

The alpha coefficients were generally lower than those reported previously with the BRUMS among SA English speakers. This may be because of greater heterogeneity of the present sample in terms of language and occupational and educational backgrounds. The predicted relationships between the subscales were found, supporting construct validity of the measure.[20,23]

T-score	Tension	Depression	Anger	Vigour	Fatigue	Confusion	T-score
English as first language – men							
80					12		80
79	8					6	79
78							78
77					11		77
76		6	7				76
75							75
74	7				10	5	74
73							73
72			6				72
71		5					71
70	6				9		70
69							69
68						4	68
67			5		8		67
66		4					66
65	5			16			65
64					7		64
63			4				63
62				15		3	62
61	4	3			6		61
60							60
59				14			59
58			3		5		58
57	3					2	57
56		2		13			56
55					4		55
54							54
53			2	12			53
52	2				3		52
51		1				1	51
50				11			50
49			1		2		49
48	1						48
47				10			47
46					1		46
45							45
44				9			44
43							43
42				8			42
41							41
40							40
39				7			39
38							38
37							37
36				6			36
35							35
34							34
33				5			33
32							32
31							31
30				4			30
29							29
28							28
27				3			27
26							26
25							25
24				2			24
23							23
22							22
21				1			21
20							20

Fig. 2. BRUMS T-scores for men with English as first language.

The scores from this sample tend to be in the direction of lesser mood distress (i.e. feel more positive) when compared with the previous SA student sample[22] and the samples referenced in the User Guide. The reasons for this are unclear. Language may play a role, as respondents may indicate a zero score when they do not fully understand an item, thus scoring lower than how they really feel. Further research is necessary to ascertain whether mood states are expressed similarly across different national (and associated cultural) samples.

Not English as first language – women

T-score	Tension	Depression	Anger	Vigour	Fatigue	Confusion	T-score
80			10				80
79		11					79
78	10				13	9	78
77							77
76		10	9				76
75					12		75
74	9					8	74
73		9					73
72			8		11		72
71							71
70	8	8			10	7	70
69			7				69
68							68
67	7				9		67
66		7				6	66
65			6	16			65
64					8		64
63	6	6					63
62				15		5	62
61			5		7		61
60		5		14			60
59	5						59
58			4		6	4	58
57		4		13			57
56	4						56
55				12	5	3	55
54		3	3				54
53							53
52	3			11	4		52
51						2	51
50		2	2				50
49				10	3		49
48	2						48
47		1	1	9		1	47
46					2		46
45	1						45
44				8	1		44
43							43
42				7			42
41							41
40							40
39				6			39
38							38
37				5			37
36							36
35							35
34				4			34
33							33
32							32
31				3			31
30							30
29				2			29
28							28
27							27
26				1			26
25							25
24							24
23							23
22							22
21							21
20							20

Fig. 3. BRUMS T-scores for women who do not have English as first language.

The most difficult word reported was 'muddled', which fits into the Confusion subscale. It is possible that subjects who did not have English as their first language scored it as zero owing to a lack of understanding of its meaning, and that English first-language speakers scored the item more accurately, which might account for the difference between these two groups on the Confusion subscale.

T-score	Tension	Depression	Anger	Vigour	Fatigue	Confusion	T-score
			Not English as first language – men				
80							80
79							79
78		7			10		78
77	8		7			7	77
76							76
75					9		75
74							74
73	7	6					73
72			6			6	72
71					8		71
70							70
69	6	5					69
68			5		7	5	68
67							67
66							66
65	5						65
64		4			6		64
63			4			4	63
62				16			62
61					5		61
60	4						60
59		3		15			59
58			3			3	58
57				14	4		57
56	3						56
55		2					55
54			2	13	3	2	54
53							53
52	2			12			52
51							51
50		1			2		50
49			1	11		1	49
48	1						48
47					1		47
46				10			46
45							45
44				9			44
43							43
42							42
41				8			41
40							40
39							39
38			7				38
37							37
36			6				36
35							35
34							34
33			5				33
32							32
31							31
30			4				30
29							29
28			3				28
27							27
26							26
25			2				25
24							24
23							23
22			1				22
21							21
20							20

Fig. 4. BRUMS T-scores for men who do not have English as first language.

All the participants considered themselves proficient in English, and indicated that they work in environments where English is widely used. However, there were some problematic words in the scale, which might suggest that current exposure to English may not be enough to render word-based self-report scales without problems in the SA context.

Language issues are also associated with cultural concerns. Although no differences in the scores across race and language groups were found, Foxcroft notes that self-report questionnaires, particularly those requiring self-reflection, may be biased against people from non-Westernised societies.[43] Further research is

T-score	Tension	Depression	Anger	Vigour	Fatigue	Confusion	T-score
			Full sample				
80	9					8	80
79		8					79
78			8		11		78
77							77
76	8					7	76
75							75
74		7	7		10		74
73							73
72	7						72
71					9	6	71
70		6	6				70
69							69
68					8		68
67	6					5	67
66		5					66
65			5		7		65
64							64
63	5			16			63
62		4			6	4	62
61			4	15			61
60							60
59	4						59
58		3		14	5	3	58
57			3				57
56							56
55	3			13	4		55
54		2					54
53			2	12		2	53
52					3		52
51	2						51
50				11			50
49		1	1		2	1	49
48							48
47	1			10			47
46					1		46
45							45
44				9			44
43							43
42				8			42
41							41
40							40
39				7			39
38							38
37							37
36				6			36
35							35
34				5			34
33							33
32							32
31				4			31
30							30
29							29
28				3			28
27							27
26				2			26
25							25
24							24
23				1			23
22							22
21							21
20							20

Fig. 5. BRUMS T-scores, full sample.

therefore required to determine the psychometric equivalence of the BRUMS across cultures.

The main limitation of these norms lies in the composition of the sample, consisting of employed and educated individuals. This may render the use of these norms invalid for people of other

backgrounds. In particular, using the BRUMS with individuals with lesser proficiency in English or lower scholastic attainment would not be appropriate until further research has developed applicable norms. Future research also needs to develop norms for other cohorts, in particular medical patients and psychiatric groupings. As a note of caution, it should be remembered that the BRUMS is not a diagnostic measure of mood disorders, but an indicator of transient mood states.

In conclusion, this study presents normative data for a sample of educated and employed South Africans from various backgrounds. Its brevity and provisionally language-friendly nature make it a useful measure for screening psychological distress in the SA clinical health care context.

References

1. McNair DM, Lorr M, Droppleman LF. Revised Manual for the Profile of Mood States. San Diego, CA: Educational and Industrial Testing Services, 1992.
2. McNair DM, Heuchert JWP, Shilony E. Profile of Mood States Manual: Bibliography 1964 - 2002. New York: Multi-Health Systems Inc., 2003.
3. Nyenhuis DL, Yamamoto C, Luchetta T, Terrien A, Parmentier A. Adult and geriatric normative data and validation of the profile of mood states. J Clin Psychol 1999;5(1):79-86.
4. Scott JPR, McNaughton LR, Polman RCJ. Effects of sleep deprivation and exercise on cognitive, motor performance and mood. Physiol Behav 2006;87:396-408.
5. Andersen BL. Biobehavioral outcomes following psychological interventions for cancer patients. J Consult Clin Psychol 2002;70(3):590-610.
6. Schiffer F, Teicher MH, Anderson C, et al. Determination of hemispheric emotional valence in individual subjects: A new approach with research and therapeutic implications. Behavioral and Brain Functions 2007;3:13-33.
7. Dumas J, Hancur-Bucci C, Naylor M, Sites C, Newhouse P. Estradiol interacts with the cholinergic system to affect verbal memory in postmenopausal women: Evidence for the critical period hypothesis. Horm Behav 2008;53(1):159-169.
8. Salinsky MC, Oken BS, Binder LM. Assessment of drowsiness in epilepsy patients receiving chronic antiepileptic drug therapy. Epilepsia 1996;37:181-187.
9. Kopec JA, Sayre EC, Davis AM, et al. Assessment of health-related quality of life in arthritis: conceptualization and development of five item banks using item response theory. Health Qual Life Outcomes 2006;4:33-50.
10. Robertson K, Liner J, Heaton R. Neuropsychological assessment of HIV-infected populations in international settings. Neuropsychol Rev 2009;19:232-249.
11. Scott-Sheldon LAJ, Kalichman SC, Carey MP, Fielder RL. Stress management interventions for HIV+ adults: A meta-analysis of randomized controlled trials, 1989 to 2006. Health Psychol 2008;27(2):129-139.
12. Perczek R, Carver CS, Price AA, Pozo-Kaderman C. Coping, mood, and aspects of personality in Spanish translation and evidence of convergence with English versions. J Pers Assess 2000;74(1):63-87.
13. Bullinger M. Heinisch M, Ludwig M, Geier S. Scales for the assessment of emotional well-being: Psychometric analysis of the Profile of Mood States. Zeitschrift fur Differentielle und Diagnosticsche Psychologie 1990;11:53-61.
14. Ahmad A. Development and validation of an Arabic measure of mood. Unpublished doctoral dissertation, Brunel University, 2002.
15. Yokoyama K, Araki S, Kawakami N, Tkakeshita T. [Production of the Japanese edition of profile of mood states: assessment of reliability and validity] [Article in Japanese]. Nippon Koshu Eisei Zasshi 1990;37(11):913-918.
16. Yeun EJ, Shin-Park KB. Verification of the profile of mood states-brief: Cross-cultural analysis. J Clin Psychol 2006;62:1173-1180.
17. Barker-Collo SL. Culture and validity of the Symptom Checklist-90-Revised and Profile of Mood States in a New Zealand student sample. Cultural Diversity and Ethnic Minority Psychology 2003;9(2):185-196.
18. Curran SL, Andrykowski A, Studts JL. Short Form of the Profile of Mood States (POMS-SF): psychometric information. Psychol Assess 1995;7(1):80-83.
19. Shacham S. A shortened version of the Profile of Mood States. J Pers Assess 1983;47(3):305-306.
20. Terry PC, Lane AM, Lane HJ, Keohane L. Development and validation of a mood measure for adolescents. J Sports Sci 1999;17:861-872.
21. Baker F, Denniston M, Zabora J, Polland A, Dudley MN. A POMS Short Form for cancer patients: psychometric and structural evaluation. Psycho-Oncology 2002;11:273-281.
22. Terry PC, Potgieter JR, Fogarty GJ. The Stellenbosch Mood Scale: a dual-language measure of mood. International Journal of Sport and Exercise Psychology 2003;1(3):231-245.
23. Terry PC, Lane AM, Fogarty G J. Construct validity of the POMS-A for use with adults. Psychology of Sport and Exercise 2003;4:125-139.
24. Spielberger CD. Manual for the State-Trait Anger Expression Inventory Y. Odessa, FL: Psychological Assessment Resources, 1991.
25. Beck AT, Clark DA. Anxiety and depression: An information processing perspective. Anxiety Research 1988;1:23-56.
26. Grove JR, Prapavessis H. Preliminary evidence for the reliability and validity of an abbreviated Profile of Mood States. International Journal of Sport Psychology 1992;23:93-109.
27. Terry PC, Slade A. Discriminant capability of psychological state measures in predicting performance outcome in karate competition. Percept Mot Skills 1995;81:275-286.
28. Lane AM, Jackson A, Terry PC. Preferred modality influences on exercise induced mood changes. Journal of Sports Science and Medicine 2005;4:195-200.
29. Lane AM, Milton KE, Terry PC. Personality does not influence exercise-induced mood enhancement among female exercisers. Journal of Sports Science and Medicine 2005;4:223-228.
30. Lowther J, Lane A. Relationships between mood, cohesion and satisfaction with performance among soccer players. Online Journal of Sport Psychology 2002;4(3).
31. Terry PC, Munro A. Mood and anxiety scores predict winning and losing performances in tennis. Presented at the 43rd Australian Psychological Society Annual Conference, 23 - 27 September 2008, Hobart, Tasmania.
32. Caulfield MJ, Karageorghis CI. Psychological effects of rapid weight loss and attitudes towards eating among professional jockeys. J Sports Sci 2008;26(9):877-883.
33. Terry PC, Galambos S. Utility of mood profiles in identifying risk of eating disorders among adolescent rowers. In: Katsikitis M (ed) (2004). Proceedings of the 39th Australian Psychological Society Annual Conference: 269-273. Melbourne, Australia: Australian Psychological Society. ISBN 0-909881-25-1.
34. Galambos S, Terry P, Moyle G, Locke S, Lane A. Psychological predictors of injury among elite athletes. Br J Sports Med 2005;39(6):51-354.
35. Devonport TJ, Lane AM, Hanin YL. Emotional states of athletes prior to performance-induced injury. Journal of Sports Science and Medicine 2005;4:382-394.
36. Coutts RA, Rogerson S, Deakin GB, et al. Effect of short-term use of testosterone enanthate on personality and mood in healthy young males. Med Sci Sports Exerc 2006;38(5, suppl): 409.
37. Petersson K. Exercise, self-perceptions and mood during pregnancy. Unpublished master's thesis, University of Western Australia, 2008.
38. Lane AM, Thelwell R, Devonport TJ. Emotional intelligence and mood states associated with optimal performance. Electronic Journal of Applied Psychology: General Articles 2009;5(1):67-73.
39. Pedlar CR, Lane AM, Lloyd JC, et al. Sleep profiles and mood states during an expedition to the South Pole. Wilderness Environ Med 2006;18(2):127-132.
40. Lane AM, Whyte GP, Terry PC, Nevill AM. Mood and examination performance. Personality and Individual Differences 2005;39:143-153.
41. Thelwell RC, Lane AM, Weston NJV. Mood states, self-set goals, self-efficacy and performance in academic examinations. Personality and Individual Differences 2007;42(3):573-583.
42. Fraser-Moleketi G. Gender mainstreaming in public service. Presented at the Roundtable Discussion on Gender Mainstreaming in the Public Service, 27 August 2007, Burger's Park Hotel, Pretoria. Speech released by the Department of Public Service and Administration 27 August 2007. http://www.polity.org.za/article/sa-frasermoleketi-roundtable-discussion-on-gender-mainstreaming-in-public-service-27082007-2007-08-27 (accessed 9 May 2011).
43. Foxcroft CD. Ethical issues related to psychological testing in Africa: What I have learned (so far). Online Readings in Psychology and Culture (Unit 5, Chapter 4). International Association for Cross-Cultural Psychology, 2002. http://orpc.iaccp.org/index.php?option=com_content&view=article&id=45%3Afoxcroft&catid=23%3Achapter&Itemid=15 (accessed on 9 May 2011).