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British outpatient norms for the Brief Symptom Inventory

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Background. The Brief Symptom Inventory (BSI) is a popular measure of psychopathology frequently used as an outcome measure, but clinicians and researchers have had to rely on normative data based on US samples which may not be appropriate for the British population.

Objectives. The aim was to develop culturally relevant outpatient norms for the BSI that would reflect hypothesized differences between US and UK population in responding to items on the BSI.

Method. BSI and demographic data were collected for 378 patients referred to clinical psychology services in the Midlands, England, during routine practice.

Results. Significantly higher rates of psychopathology were reported by the UK sample than for the normative group reported in the US.

Conclusion. Outpatient normative data for British participants are presented. The study examines the impact of occupational status, age and gender differences on the level of reported distress.

The Brief Symptom Inventory (BSI; Derogatis, 1993) is a 53-item self-report symptom inventory designed for use with psychiatric and medical patients. It has been used in a wide variety of medical settings (Baider & De-Nour, 1997; Cohen, de Moor, Devine, Baum, & Amato, 2001) and within psychiatric, clinical psychology and psychotherapy services within the UK, particularly as an outcome measure in psychotherapy research (King & Lloyd, 1997; Mayou, Ehlers, & Hobbs, 2000; Nicholl, Lincoln, Francis, & Stephan, 2001; Swanson et al., 2000; Ward et al., 2000). Apart from one study, the available normative data have been universally based on US samples (Derogatis, 1993). Francis, Rajan, and Turner (1990) showed that community (non-patient) norms in the UK are significantly higher than the US. This study presents normative data for British outpatients and compares these with published US norms. It was expected that the UK sample would report significantly higher levels of distress than reported by US outpatients.

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Method

Measures

The BSI (Derogatis, 1993) is a 53-item self-report symptom inventory. It is a short form of the Symptom Checklist-90 (SCL-90; Derogatis, 1977). There are three global indices of distress: the Global Severity Index (GSI), which is the mean score of all 53 items; the Positive Symptoms Distress Index (PSDI), which is the mean of non-zero-rated items; and the Positive Symptom Total (PST), which is a count of non-zero items. There are a further nine subscales representing various forms of psychological symptoms such as depression, somatization and anxiety.

Procedure

Data were collected as part of routine practice at three clinical psychology services that used the BSI as an initial assessment tool. The BSI was sent with the first appointment letter to patients referred to the clinical psychology services, to be returned at the first appointment. No exclusion criteria were used as all patients would be assessed before deciding whether the service was appropriate or not. The response rate was established from the rate of return for the BSI for a 6-month period and was found to be very high at 97% ($N = 77$).

Participants

The sample included patients referred by general practitioners and psychiatrists to primary and secondary care clinical psychology services. Participants were between 16 and 70 years of age, with a mean age of 36.71 ($SD = 11.71$). Although formal diagnostic information was not available, broad categories of presenting psychological difficulty were estimated though examination of case notes. This revealed that the proportion of patients referred primarily with depression was roughly 45%. Anxiety disorders including panic, OCD, GAD, PTSD and specific phobias made up the next largest group at 37%. Smaller groups were referred for eating disorders (8%), psychosis (5%), bipolar affective disorder (2%), personality disorder (2%) and self-harm (1%). Many patients had more than one psychological difficulty; however, the presenting symptom included here represents only the primary reason for referral.

Results

The sample came from three different services. They were compared on demographic variables such as age and gender and all of the BSI scores to evaluate whether the data could be pooled. There were no significant differences on any of the variables; therefore, all the respondents were pooled to form one sample.

Demographics

The sample in this study differs from the US outpatient sample (Derogatis & Melisaratos, 1983) both in terms of age and in sex distribution. The proportions of each sex have differed considerably in all the published norms on the BSI ranging from 34% to 63% female. There was a larger proportion of women to men in this study with 66.6% being female; however, this exactly matches the referral rates for each gender. In previous studies, the mean age of samples has also been quite varied with lower mean ages for

patient samples (31 years for outpatients, 33 years for inpatients) and significantly higher means (46 years in the US (Derogatis & Melisarotos, 1983) and 44 years in the UK (Francis *et al.*, 1990)) for non-patient samples. The sample in this study is between these two, with a mean age of 37 years.

Demographic data on ethnicity and occupational status were available for a subset ($N = 160$ and $N = 162$, respectively) of the sample. Five per cent of the participants were from an ethnic minority, which is similar to the Census 2001 data for the East Midlands (National Statistics Online, 2004), which identified 6% of the local population as belonging to an ethnic minority (Table 1).

Table 1. Demographic characteristics of the British sample

Variable	
Age ($N = 378$) *M* (SD)	36.71 (11.72)
Sex ($N = 378$) %	
Male	33
Female	67
Ethnic origin ($N = 163$) %	
White – British	95
Ethnic minority	5
Occupation ($N = 162$) %	
Employed	47.5
Sick leave or not working due to ill health	24.7
Student	10.5
Unemployed	7.4
Houseworker	6.8
Retired	2.5

UK norms vs. US norms

The results in Table 2 show that the UK clinical norms are significantly higher on all subscales and global indices than the US norms (Derogatis & Melisarotos, 1983). The scores in the table demonstrate that these differences are of a considerable size, with z scores ranging from 3.27 to 12.14, all of which were significant to at least the $p < .0005$ level. Some scales, such as phobic anxiety, differ by as much as 64%. The UK scores were on average 26% higher than the US scores.

Table 2 illustrates the degree of difference between British outpatient scores and the British community norms published by Francis *et al.* (1990), with z scores ranging from 24.30 to 49.95, all of which are highly statistically significant. This suggests that the BSI is a sensitive measure with clinical samples scoring much higher than people in the general population.

Gender

There were many more women than men in the sample, but the overall pattern of gender differences is similar between the US and the UK. In the UK, women scored higher on six of the nine subscales and two of the three global indices. To ascertain whether these differences between the sexes were significant, all BSI scores were compared. Although the scores were normally distributed, there was not an equality of variance; therefore non-parametric statistics were employed to test the difference

Table 2. Mean scores on the BSI for British outpatients, US outpatients and British community sample

	British outpatient sample (present study) N = 378 M (SD)	US outpatient sample (Derogatis & Melisarotos, 1983) N = 1002 M (SD)	Comparison of British outpatients with US outpatients z score	British community sample (Francis, Rajan, and Turner 1990) N = 376 M (SD)	Comparison of British outpatients British community sample z score
Somatization	1.14 (0.93)	0.83 (0.79)	7.61*	0.43 (0.57)	24.30*
Obsessive-compulsive	2.03 (1.02)	1.57 (1.00)	8.93*	0.59 (0.63)	44.37*
Interpersonal sensitivity	2.08 (1.22)	1.58 (1.05)	9.25*	0.58 (0.72)	40.42*
Depression	1.99 (1.10)	1.80 (1.08)	3.59*	0.42 (0.65)	47.33*
Anxiety	1.87 (1.03)	1.70 (1.00)	3.27*	0.45 (0.60)	45.98*
Hostility	1.39 (1.02)	1.16 (0.93)	4.76*	0.44 (0.60)	30.81*
Phobic anxiety	1.41 (1.20)	0.86 (0.88)	12.14*	0.24 (0.50)	45.57*
Paranoid ideation	1.54 (1.08)	1.14 (0.95)	8.27*	0.54 (0.65)	30.07*
Psychoticism	1.45 (0.97)	1.19 (0.87)	5.72*	0.27 (0.48)	47.71*
GSI	1.65 (0.81)	1.32 (0.72)	8.81*	0.44 (0.47)	49.95*
PSDI	2.31 (0.62)	2.14 (0.61)	5.51*	1.38 (0.56)	32.38*
PST	35.43 (11.15)	30.80 (11.63)	7.73*	14.46 (10.43)	39.09*

z tests: *$p < .0005$.

between sexes on each of these measures. Mann–Whitney comparisons showed that none of the differences in scores between men and women reached statistical significance. The norms by sex are presented in Table 3.

Table 3. Means and standard deviations on the BSI compared by sex

	British outpatient sample Males N = 126 M (SD)	British outpatient sample Females N = 252 M (SD)	Mann–Whitney W	Statistical Significance
Somatization	1.07 (0.88)	1.17 (0.96)	23117.0	ns
Obsessive-compulsive	2.04 (0.95)	2.02 (1.06)	23964.5	ns
Interpersonal sensitivity	1.91 (1.17)	2.17 (1.23)	21927.0	ns
Depression	2.02 (1.04)	1.99 (1.12)	24182.5	ns
Anxiety	1.84 (0.99)	1.88 (1.05)	23501.5	ns
Hostility	1.48 (1.00)	1.34 (1.03)	25317.0	ns
Phobic anxiety	1.36 (1.19)	1.43 (1.21)	23329.0	ns
Paranoid ideation	1.43 (1.01)	1.60 (1.11)	22554.0	ns
Psychoticism	1.43 (0.93)	1.45 (0.99)	23823.0	ns
GSI	1.61 (0.76)	1.66 (0.83)	23314.5	ns
PSDI	2.27 (0.60)	2.34 (0.63)	22732.5	ns
PST	35.95 (10.46)	35.16 (11.49)	24351.5	ns

Age

Francis *et al.* (1990) state that in the US study by Hale, Cochran, and Hedgepeth (1984) they found that elderly participants scored more highly on all dimensions of distress. This finding was not replicated by Francis *et al.*, as in their study the elderly participants did not score more highly on any measure of distress, but did score lower on hostility and paranoid ideation. The current study did not include any participants over 70 as they access a separate psychological service in the catchment area. However, despite this restriction on the upper age range of the sample, a correlation was found with age. As there were ties in the ranks of the data, Pearson's product moment correlation on the ranks was used to calculate Spearman's rho and as the sample size was greater than 100, rho was converted to *t*-values to analyse statistical significance (Clark-Carter, 1997). Increased age correlated with lower levels of hostility, interpersonal sensitivity and psychoticism ($t(376) = -3.01$; $p < .01$; $t(376) = -2.77$; $p < .01$; $t(376) = -2.11$; $p < .01$) and higher levels of somatization ($t(376) = 2.09$; $p < .05$).

Ethnic origin

Examination of the demographic profile of the participants in the four normative samples presented by Derogatis (1993) reveals that only the adult nonpatient sample is representative of the population in racial diversity. Within the sample, 11.4% was Black, compared with 12% in the general population (US Census Bureau, 1990). As stated under Demographics, data on the ethnic origin of participants was available for a subset ($N = 160$) of the total sample in this study indicating that 5% were from an ethnic minority which is highly representative of the local population in terms of ethnicity. However, the sample of people from an ethnic minority is too small to do comparative analysis on the measures of the BSI.

Occupational status

Data were available for 162 participants on occupational status. The five largest groups were chosen for comparison as follows: employed ($N = 77$), sick leave or unable to work due to ill health ($N = 40$), houseworkers ($N = 11$), students ($N = 17$) and unemployed ($N = 12$). A summary of the results showing mean (SD) scores for each occupational group is shown in Table 4 for the three global indices and the nine symptom scores.

Table 4. Means and standard deviations on the BSI by occupational status

	Employed $N = 77$ M (SD)	Sick leave or not working due to ill health $N = 40$ M (SD)	Houseworker $N = 11$ M (SD)	Student $N = 17$ M (SD)	Unemployed $N = 12$ M (SD)	F value
GSI	1.37 (0.69)	2.04 (0.70)	1.69 (0.59)	1.31 (0.95)	1.73 (0.74)	8.19***
PST	32.86 (10.96)	41.23 (8.15)	38.73 (10.46)	28.18 (13.73)	39.25 (7.62)	8.28***
PSDI	2.10 (0.57)	2.56 (0.54)	2.25 (0.48)	2.13 (0.66)	2.24 (0.65)	6.14***
Somatization	0.83 (0.83)	1.57 (0.81)	1.50 (0.94)	0.92 (0.95)	0.91 (0.83)	5.58***
Obsessive-compulsive	1.73 (0.93)	2.48 (0.88)	1.85 (0.79)	1.97 (1.08)	2.09 (0.83)	4.42**
Interpersonal sensitivity	1.77 (1.14)	2.28 (1.23)	2.02 (0.98)	1.73 (1.25)	2.42 (0.95)	3.03*
Depression	1.71 (0.97)	2.50 (0.94)	1.69 (0.73)	1.53 (1.21)	1.99 (1.05)	6.31***
Anxiety	1.54 (0.87)	2.37 (0.88)	2.15 (0.86)	1.59 (1.36)	1.93 (1.08)	6.39***
Hostility	1.24 (1.02)	1.69 (1.05)	1.60 (0.93)	0.86 (0.69)	1.66 (1.05)	5.50***
Phobic anxiety	1.04 (0.97)	2.04 (1.15)	1.49 (1.01)	1.22 (1.39)	1.63 (1.10)	6.80***
Paranoid ideation	1.31 (0.94)	1.73 (1.04)	1.69 (1.00)	0.99 (1.06)	1.65 (1.02)	2.90*
Psychoticism	1.32 (0.86)	1.78 (1.04)	1.20 (0.68)	1.08 (1.04)	1.57 (0.95)	4.55**

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

A one-way between-subjects ANCOVA, controlling for age as a covariate, showed a significant effect of occupational status on the GSI ($F(4, 156) = 8.19, p < .001$), the PST ($F(4, 156) = 8.28, p < .001$), the PSDI ($F(4, 156) = 6.14, p < .001$). Significant effects were also found for all nine of the symptoms scores (for F values and significance levels, see Table 4). Analysis of the means for each of the occupational groups shows that a general pattern emerged across the groups such that those on sick leave tended to score highest, followed by the unemployed, houseworkers, employed and students. This pattern did not hold for every symptom scale but was the most commonly occurring pattern. Statistical significance of the differences between occupational groups was examined using post-hoc Bonferroni tests. These revealed that the sick group scored more highly that the employed group on the GSI, PST, PSDI, somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety and psychoticism scales ($t(115) = 5.35, p < .0001, t(115) = 4.60, p < .0005, t(115) = 4.76, p < .0001, t(115) = 4.35, p < .0005, t(115) = 4.14, p < .0001, t(115) = 3.03, p < .05, t(115) = 4.56, p < .0001, t(115) = 4.79, p < .0001, t(115) = 3.46, p < .01, t(115) = 5.10, p < .0001, t(115) = 3.44, p < .01$). Likewise, the student group scored significantly lower than the sick group on GSI, PST, PSDI, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism scales ($t(55) = -4.30$,

$p < .0005$, $t(55) = -2.90$, $p < .05$, $t(55) = -3.56$, $p < .005$, $t(55) = -3.96$, $p < .001$, $t(55) = -3.29$, $p < .05$, $t(55) = -4.34$, $p < .0005$, $t(55) = -3.13$, $p < .05$, $t(55) = -2.97$, $p < .05$, $t(55) = -3.75$, $p < .01$). The only two other statistically significant differences were that students scored significantly lower on the PST than houseworkers ($t(26) = -2.90$, $p < .05$) and the unemployed scored significantly higher that students on the PST ($t(27) = 2.90$, $p < .05$).

Discussion

This study has confirmed that US norms are too low for British patients and has established new norms for use with outpatients in Britain. The participants reported significantly higher degrees of distress on all nine symptom scales and on each of the three global indices. These differences were even greater than those found in the community sample by Francis *et al.* (1990).

This study, like that of Francis *et al.* (1990), has not attempted to explain why these differences may exist. In particular, it has not been the author's intention to comment on whether these differences represent different ways of reporting distress in the UK from the US or whether they represent substantive differences in the degree of psychological distress experienced by the two populations. However, this remains a potentially important avenue for future investigation.

The sample size in this study ($N = 378$) was smaller than in the US Adult Psychiatric Outpatient norm ($N = 1,002$), although it was comparable in size to the published BSI norm for adult psychiatric inpatients ($N = 423$) in the US (Derogatis, 1993) and to the sample size of the British community norms ($N = 376$) published by Francis *et al.* (1990).

The age range of the sample was restricted to adult services (approximately 18–65 years old); therefore, only tentative conclusions might be drawn about the influence of age on the normative data. Higher somatization scores were found to be associated with increasing age and, like Francis *et al.* (1990), lower scores on hostility and paranoid ideation symptom scales were also observed. Higher somatization scores with increasing age have been found in previous studies using the BSI (Ritsner, Ponizovsky, Kurs, and Modai, 2000); however, higher somatization scores may be an artefact of the measure rather than reflecting increases in somatic anxiety with age. Derogatis and Melisaratos (1983) state that the somatization dimension reflects 'psychological distress arising from perception of bodily dysfunction' (Derogatis & Melisaratos, 1983, p. 596). The scale asks participants to rate the degree to which they were distressed by individual symptoms. The symptoms on the somatization scale include 'pains in heart or chest', 'trouble getting your breath' and 'feeling weak in parts of your body'. Reporting of the frequent perception of these symptoms in young healthy adults is inferred to be a sign of anxiety and this may well be correct. However, it seems equally likely that with older participants the self-reporting of these symptoms may reflect the real physical symptoms of ageing and not a neurotic response to normal bodily functioning. In developing a measure of depression for the elderly, the Geriatric Depression Scale, Yesavage *et al.* (1983) did not include somatic symptoms because many of these symptoms, such as sleep disturbance and weight loss, may be related to the normal process of ageing or to physical illness. Further studies would be required to examine whether the increased reporting of somatic symptoms is a real psychological phenomenon or just a reflection of common physical symptoms of ageing.

The numbers of participants in each occupational group were relatively small but the effect sizes were very large. Participants fell into two groups: those who were currently in work or students who scored in the lower ranges on all the dimensions of the BSI, whereas those on sick leave, houseworkers and people who were unemployed reported much higher levels of distress. This suggests that occupational status may be a greater influence on BSI scores than gender, age or nationality. Published norms may be influenced to varying degrees by the different proportions of people with differing occupational status. The impact of occupational status and variations in symptom profile would benefit from further investigation. Furthermore, this raises wider social and psychological issues about how and why some occupational situations may be associated with higher levels of psychological distress. It seems likely that participants with the highest levels of distress will be more likely to have been signed off sick by their doctor or to have given up work because of their psychological problems. Likewise, those people whose physical illness is preventing them from working may have higher associated psychological distress. A number of previous studies have shown the impact of unemployment can have on psychological ill health (Department of Health, 1999; Kokko & Pulkkinen, 1998; Murphy & Athanasou, 1999).

This study has provided culturally relevant norms for British outpatients. Further studies to assess the impact of culture, religion and ethnicity on the BSI would be highly desirable, as would a further exploration of the mediating factors between occupational status and degree of psychological distress.

Acknowledgements

References

Baider, L., & De-Nour, A. K. (1997). Psychological distress and intrusive thoughts in cancer patients. *Journal of Nervous and Mental Disease*, *185*, 346-348.

Clark-Carter, D. (1997). *Doing qualitative psychological research*. Hove: Psychology Press.

Cohen, L., de Moor, C., Devine, D., Baum, A., & Amato, R. J. (2001). Endocrine levels at the start of treatment are associated with subsequent psychological adjustment in cancer patients with metastatic disease. *Psychosomatic Medicine*, *63*, 951-958.

Department of Health (1999). *Health in Scotland*. London: HMSO.

Derogatis, L. R. (1977). *SCL-90-R: Administration, scoring, and procedures manual I*. Baltimore, MD: Clinical Psychometrics Research.

Derogatis, L. R., & Melisarotos, N. (1983). Brief symptom inventory: An introductory report. *Psychological Medicine*, *13*, 595-605.

Derogatis, L. R. (1993). *BSI. Administration, scoring and procedures manual for the brief symptom inventory* (4th ed.). Minneapolis, MN: National Computer Systems.

Francis, V. M., Rajan, P., & Turner, N. (1990). British community norms for the brief symptom inventory. *British Journal of Clinical Psychology, 29*, 115-116.

Hale, W. D., Cochran, C. D., & Hedgepeth, B. E. (1984). Norms for the elderly on the brief symptom inventory. *Journal of Consulting and Clinical Psychology, 52*, 321-322.

King, F. K., & Lloyd, M. (1997). Brief, non-directive psychotherapy and GP care both improved patients' emotional difficulties. *Lancet, 350*, 1662-1665.

Kokko, K., & Pulkkinen, L. (1998). Unemployment and psychological distress: Mediator effects. *Journal of Adult Development, 5*, 205-217.

Mayou, R. A., Ehlers, A., & Hobbs, M. (2000). Psychological debriefing for road traffic accident victims. Three-year follow-up of a randomised controlled trial. *British Journal of Psychiatry, 176*, 589–593.

Murphy, G. C., & Athanasou, J. A. (1999). The effect of unemployment on mental health. *Journal of Occupational and Organizational Psychology, 72*, 83–99.

National Statistics Online (2004). *Resident population by ethnic group*. Retrieved June 14, 2004, from http://www.statistics.gov.uk/statbase/expodate/spreadsheets/d5984.xls.

Nicholl, C. R., Lincoln, N. B., Francis, V. M., & Stephan, T. F. (2001). Assessment of emotional problems in people with multiple sclerosis. *Clinical Rehabilitation, 15*, 657–668.

Ritsner, M., Ponizovsky, A., Kurs, R., & Modai, I. (2000). Somatization in an immigrant population in Israel: A community survey of prevalence, risk factors and help-seeking behavior. *American Journal of Psychiatry, 157*, 385–392.

Swanson, J. W., Swartz, M. S., Borum, R., Hiday, V. A., Wagner, H. R., & Burns, B. J. (2000). Involuntary out-patient commitment and reduction of violent behaviour in persons with severe mental illness. *British Journal of Psychiatry, 176*, 324–331.

US Census Bureau. (1990). *General population and housing characteristics: 1990*. Retrieved May 24, 2005, from U.S. Census Bureau Web site: http://factfinder.census.gov/servlet/QTTable?_bm=n&_lang=en&qr_name=DEC_1990_STF1_DP1&ds_name=DEC_1990_STF1_&geo_id=01000US.

Ward, E., King, M., Lloyd, M., Bower, P., Sibbald, B., Farrelly, S., Gabbay, M., Tarrier, N., & Addington-Hall, J. (2000). Randomised controlled trial of non-directive counselling, cognitive-behaviour therapy, and usual general practitioner care for patients with depression. I: Clinical effectiveness. *British Medical Journal, 321*, 1383–1388.

Yesavage, J. A., Brink, T. L., Rose, T. L., Lum, O., Huang, V., Adey, M., & Leirer, O. (1983). Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research, 17*, 37–49.