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Sex differences in the experience of depressed mood state over fifteen years

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Abstract A study was conducted to examine sex differences in frequency, duration and severity of experience of depressed mood state in a non-clinical group and to consider how such findings contribute to the understanding of sex differences in depressive experience. A cohort of 156 subjects, assessed initially in 1978 in their last year of teacher training, was reassessed at 5-yearly intervals over 15 years. On each occasion, the subjects completed self-report ratings of experience of "normal depression" and measures of neuroticism, trait depression, self-esteem and sex role. The study found no sex differences in the number or duration of episodes. Women reported more symptoms per episode and some specific symptoms (including tearfulness, appetite and weight gain) more often. The number of symptoms was correlated with neuroticism, self-esteem and trait depression scores, and with gender but not sex role. The number of episodes was related to trait depression and self-esteem but not neuroticism. The results showed that there are links between female gender, neuroticism and number of symptoms experienced during depressed mood state episodes. These links are related more to female gender than to feminine sex role or premenstrual problems, and are reflected in the severity of affective change (and some specific symptoms) but not in the number of episodes.

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Introduction

Women have been reported to have an increased prevalence of unipolar, non-melancholic depression, both in community and clinical samples (Weissman and Klerman 1977; Weissman et al. 1984a; Nolen-Hoeksema 1987; Weissman et al. 1993), with the greatest female preponderance being for adults in the child-bearing years (Jorm 1987) and the least in groups that are homogeneous in terms of education, culture, parity and related factors (Jenkins 1985; Holmström et al. 1987; Wilhelm and Parker 1989, 1993; Loewenthal et al. 1995).

This paper focuses on the experience of non-clinical depressed mood states (those generally perceived as part of everyday experience) considered both cross-sectionally and longitudinally, with particular emphasis on sex differences.

Materials and method

In September 1978, 170 teacher trainees agreed to participate in a longitudinal study and formed the cohort who provided the baseline data (Wilhelm and Parker 1989). Data from the 156 subjects (104 women and 52 men) who completed each wave in 1978, 1983, 1988 and 1993 are reported here (with fuller background data in Wilhelm and Parker 1989 and Wilhelm et al. 1997).

At baseline (in 1978), subjects were given a definition used in a previous study (Parker 1979) whereby "normal depression" was described as "a significant lowering of mood with or without feelings of guilt, hopelessness or helplessness, or a drop in one's self-esteem". At subsequent waves, they were simply asked to record the number of episodes of "normal" depression (without the definition) "generally" experienced over the previous 12 months, their duration and associated symptoms.

A number of self-report measures considered to rate vulnerability to depression were used at all four waves, including trait depression (Costello and Comrey 1967), neuroticism (Eysenck and Eysenck 1964) and self-esteem (Rosenberg 1965). Current depressive state was assessed (at the first three waves) using the Wilson Lovibond scale (Wilson 1979). From 1983 on, the Bem Sex Role Inventory (1974) was used to rate masculinity and femininity, so that sex role as well as gender effects could be considered.

By 1993, 156 subjects with a mean age of 39 years (SD = 4.13, range 36–69 years) had been interviewed at all four waves. At that review, there were no sex differences in marital state, rates or age of becoming a parent. Regarding employment status, 53% of women and 90% of men were engaged in full-time work; 33% of women and 6% of men were engaged in part-time work; 11% of women but no men were engaged in full-time home duties and the remainder were involved in full-time study or were unemployed. Comparison of those working full time, those working part time and the unemployed (χ^2 [df = 2] = 21.60, P < 0.001) demonstrated the greater probability of full-time work for men.

Results

Most subjects affirmed some experience of depression episodes: only six in 1978, one in 1983, five in 1988 and three in 1993 reported no experience of episodes over the previous 12 months. For data reporting the frequency of these episodes (Table 1), the α level was set at 0.01 in order to balance the type I and type II errors. Despite a peak in rates for both sexes in 1983, there were no sex differences at any wave, with t-values [and 95% confidence intervals for differences in means], as follows: for 1978, t = 0.26, P = 0.79 [−3.42, 4.48]; for 1983, t = 0.13, P = 0.90 [−16.32, 18.55]; for 1988, t = −0.04, P = 0.97, [−3.21, 3.07]; and for 1993, t = 0.76, P = 0.44 [−5.23, 11.75]. When data from 1978 were compared with data from 1988 and 1993, no significant mean differences emerged. The 1983 peak was reflected in a significant difference in the reported number of episodes from 1978 to 1983, but the lack of sex differences was evident for all waves.

Subjects reported whether they "generally" experienced any of an extensive set of symptoms during episodes. Table 2 reports data from the 1983 and 1993 waves (1988 rates showed similar trends and these data were not collected in 1978), showing that women were much more likely to report tearfulness. No symptoms were more commonly noted by men.

For the same two waves, women reported a mean number of symptoms of 10.5 (SD 4.9) and 10.7 (SD 5.2), and men, 7.6 (SD 4.4) and 7.7 (SD 4.5), with significant sex differences (t-values of 3.66 and 3.57, respectively, both significant at P < 0.0005). The analyses were repeated with "tearful" excluded, because of the consistent differential reporting for this symptom. The mean rates for women were then 9.9 (SD 4.9) and 10.1 (SD 4.8) for 1983 and 1993, and significant sex differences were still

Table 2 Rates of self-reported symptoms "generally" occurring during periods of depressed mood state at two waves of the study, 1983 and 1993. Symptoms are reported, in decreasing order of frequency, for cohort members (104 women and 52 men) examining for sex differences

Symptoms	1983			1993		
	Women	Men		Women	Men	
	(%)	(%)	χ^2	(%)	(%)	χ^2
Feel down	68	81	2.96	81	75	0.07
Irritability	71	46	10.34**	66	50	3.88
Self-criticism	64	58	1.30	59	42	3.72
Tired	61	54	1.26	70	58	2.41
Feel flat	57	46	2.22	53	54	0.01
Sad	57	40	4.46	72	50	7.42*
Lacking motivation	51	52	0.50	50	48	0.05
Lack of drive	49	52	0.58	50	37	2.53
Feel low	50	37	3.21	56	40	3.28
Tearful	54	8	32.33**	61	10	36.61**
Self-pity	49	23	10.54*	39	31	1.11
Think less of self	38	27	2.34	41	14	12.37*
Decreased sleep	35	35	0.05	33	23	1.54
Empty	32	23	2.45	32	31	0.01
Brood over past	42	33	1.96	36	25	1.78
Argumentative	35	23	2.78	38	15	8.05*
Pessimistic re future	35	15	7.03	25	29	0.26
Feel no pleasure	29	29	0.05	29	23	0.58
Appetite gain	24	12	4.01	23	12	2.97
Hopeless	25	8	7.34	18	10	1.99
Despairing	17	6	4.55	20	23	0.17
Appetite loss	22	19	0.70	18	12	1.16
Increased weight	16	4	5.66	29	6	11.06**
Give up on oneself	11	2	4.22	9	6	0.40
Helpless	19	8	4.14	14	14	0.02
Increased sleep	12	6	1.87	30	25	0.39
Decreased weight	7	8	0.54	9	8	0.04
Feel suicidal	6	4	0.07	8	8	0.04

*P < 0.01; **P < 0.001

Table 1 Comparison of the mean number of episodes of depressed mood state reported by the 156 subjects in the cohort who provided data for all waves of the study (from 1978 to 1993), presented for the whole group and by sex. Numbers in square brackets are 95% confidence intervals for differences in means

	1978 Mean (SD)	1983 Mean (SD)	1988 Mean (SD)	1993 Mean (SD)	Comparative test (1978 vs 1983)	Comparative test (1978 vs 1988)	Comparative test (1978 vs 1993)
Total sample	8.6	21.1	8.3	10.1	t = −3.01**	t = 0.32	t = −0.65
(n = 156)	(11.7)	(51.8)	(9.4)	(25.3)	[−20.7, 2.41]	[−1.74, 2.41]	[−5.79, 2.92]
Women	8.8	21.5	8.3	11.1	t = −2.62*	t = 0.47	t = −0.75
(n = 104)	(11.4)	(57.7)	(8.2)	(29.7)	[−22.3, −3.06]	[−1.68, 2.74]	[8.53, 3.84]
Men	8.3	20.4	8.3	7.9	t = −1.54	t = −0.03	t = 0.17
(n = 52)	(12.5)	(54.4)	(11.5)	(12.2)	[−27.9, 3.70]	[4.57, 4.45]	[−4.07, 4.94]

*P < 0.01; **P < 0.001

evident (t-values of 3.17 and 3.07 for 1983 and 1993 respectively, both significant at $P < 0.002$). The mean number of symptoms per episode showed consistent sex differences despite the peak frequency of episodes at 1983.

The usual duration of episodes was grouped as (1) minutes to hours (i.e. brief episodes lasting less than 1 day), (2) more than 1 day (at least overnight, but less than 1 week) and (3) weeks (i.e. prolonged). Most episodes lasted minutes to days, with no sex differences. In 1983, when there was a peak frequency of episodes (Table 1), there were more reported episodes of brief duration. Table 3 reports data from three waves, showing no significant sex differences for the duration of episodes but a trend over time towards longer episodes. The data from 1988 showed durations lying between the 1983 and 1993 data, again with no sex differences.

We examined whether episodes in women were influenced by perimenstrual problems. Of the 104 women, 47 (45%) in 1978, 26 (25%) in 1983, 15 (14%) in 1988, and 46 (44%) in 1993 reported such problems. The lower rates of reported problems in 1983 and 1988 presumably reflect the high number of women who were pregnant or lactating at those waves. We therefore report comparisons between women with and without perimenstrual problems at the 1978 and 1993 waves only. For those with and without problems, the mean number of episodes was 11.2 (SD 14.9) vs 6.09 (SD 8.3) for 1978 ($t = -1.90$), and 9.5 (SD 8.6) vs 12.4 (SD 9.2) for 1993 ($t = 0.50$). Again, comparing those with and without problems for duration of episodes (grouped as "brief", "days" and "weeks"), there were no significant differences in durations in 1978 (brief, 60% vs 60%; days, 36% vs 33%; and weeks, 4% vs 7% [$\chi^2 = 0.40$]) or in 1993 (brief, 41% vs 43%; days, 54% vs 47%; and weeks, 4% vs 10% [$\chi^2 = 1.53$]). There was also no significant difference in the mean number of symptoms per episode in 1993 for those with and without problems (mean 10.6, SD 5.1 vs mean 9.6, SD 4.9; $t = -0.86$). These data were not collected at 1978.

We examined for associations between the number of symptoms and gender as well as possible gender-related factors (masculinity, femininity, neuroticism). Table 4 reports correlations for numbers of episodes and symptoms with scores of masculine and feminine sex role, neuroticism, self-esteem and gender (rated as 1 for women and 2 for men). The number of symptoms was consistently correlated with neuroticism scores and female gender and, less consistently, with trait depression and self-esteem scores, with no demonstrated correlation with sex role items. The number of episodes was consistently correlated with neuroticism scores and female gender and, less consistently, with trait depression and self-esteem scores, with no demonstrated correlation with sex role items. The number of episodes was significantly correlated only with self-esteem at 1993, but not with neuroticism.

After noting that women consistently reported more symptoms per episode, we conducted a series of hierarchical regression analyses controlling the relationship between gender and number of symptoms, to determine the possible confounding effect of neuroticism (at 1978 and 1983), trait depression (at 1978) and self-esteem (at 1983), reflecting the significant correlations in Table 4. In the first analysis, the combined variables of neuroticism and trait depression (at 1978) significantly explained 12% of the variance in the number of symptoms at 1993, while the gender variable significantly explained a further 6% ($F = 11.3$, $P < 0.0001$). A second analysis controlled the relationship between gender and number of symptoms reported at 1993 for the possible effect of baseline neuroticism and self-esteem (both at 1978). The combination of neuroticism and self-esteem significantly explained 13% of the variance in the number of symptoms, with gender significantly explaining a further 5% of the variance ($F = 10.6$, $P < 0.0001$).

Table 3 Comparison of reported duration of depressed mood state, by sex

Duration	Women (%) ($n = 104$)	Men (%) ($n = 52$)	Comparative test
1978			
Minutes/hours	60	50	
Days	35	44	$\chi^2 = 1.41$
Weeks	5	6	
1983			
Minutes/hours	66	67	
Days	26	25	$\chi^2 = 0.01$
Weeks	8	8	
1993			
Minutes/hours	42	48	
Days	50	37	$\chi^2 = 3.61$
Weeks	8	15	

Table 4 Correlations between a series of psychosocial factors and mean number of symptoms and episodes at 1978, 1983 and 1993 for total sample

	Year	Number of symptoms[c]		Number of episodes	
		1983	1993	1978	1993
Gender[a]		−0.28**	−0.27**	−0.02	−0.06
Femininity	1983	0.10	0.12	0.05	0.00
Masculinity	1983	0.00	0.01	0.02	0.07
Neuroticism	1978	0.33**	0.32**	0.14	0.11
Trait depression	1978	0.24*	0.13	0.16	0.06
Self-esteem[b]	1978	0.12	0.25**	0.07	0.25**

*$P < 0.01$; **$P < 0.001$
[a] Women were coded as 1 and men as 2
[b] High self-esteem scores denote low self-esteem
[c] These data were not collected at 1978

Discussion

Gender differences in experience of depressive mood states

The subjects in the study cohort seemed to have an understanding of the construct of non-clinical depressed mood state and experience of such a mood state was reported by the vast majority of subjects at all waves. Earlier papers have reported satisfactory consistency of reporting the self-report measures (Wilhelm and Parker 1990) and depression diagnoses (Wilhelm and Parker 1994), so there is every reason to believe that the group is able to report reliably. These papers have also reported a consistent lack of sex differences in state and trait depression mean scores, indicating a similar view of depressive experience for both sexes. Here, both sexes reported a very similar experience in rates of depressive mood states, including a greater number of episodes (of shorter duration) in the 12 months prior to 1983, when most subjects were involved in their early years of teaching. It may be related to distress reported in the early years of work and embarking on committed relationships. Finlay-Jones (1986) previously reported high levels of work-related stress in teachers, particularly in their early years. This change in pattern occurred at the time of peak onset of depressive episodes in young adults in general (Weissman et al. 1984b; Jorm 1987; Weissman et al. 1993) and in this cohort (Wilhelm and Parker 1989).

In the Zurich study of young adults, Angst and Mikola (1984) asked the following question concerning depressive mood: "Have you ever felt, during the past 12 months, that you could find no pleasure in anything, that you had no energy, or that you had the blues?" When the age of the cohort was 20–21 years, this question was affirmed by 68.4% of females and 55.0% of males, and when it was 23–24 years, by 47.2% of females and 30.5% of males – much lower than our rate. Our question asked about "normal depression" and concentrated on cognitions rather than symptoms, while the Zurich question enquired about physical symptoms (no energy, anhedonia), which may have implied something other than a normal mood state.

Over the past 15 years we have repeatedly failed to find any sex differences in trait depression scores, but have reported higher scores for women for neuroticism (Wilhelm and Parker 1989, 1993, 1994). The correlation of neuroticism with total number of symptoms per episode (rather than the number or duration of such episodes) is in keeping with the construct being viewed as a measure of negative affectivity rather than depression.

Gender, sex role and biological differences

Our key findings are that while there is no relationship demonstrated between gender and number of episodes, there is a relationship between gender and number of symptoms, which is independent of neuroticism, trait depression and self-esteem. This also reinforces the need to consider various aspects of depressive experience (such as duration, frequency and symptom levels) when examining for sex differences, as they are not all uniformly affected by gender-related variables.

Goodwin and Blehar (1993) noted that "gender is but a proxy term for a complex of psychosocial and biological variables". We considered that sex differences in depressive experience are related to a direct effect of gender or an indirect effect through such gender-related variables as sex-role, neuroticism or perimenstrual factors. Byrne (1981) and Landrine (1988) have previously considered whether minor levels of depression are simply a reflection of female sex role, but here higher femininity scores (as measured by the Bem inventory) were not contributory.

We found no symptoms that are more frequently reported by men and, like Murphy (1995), we have previously questioned why there is no experience of depression more commonly seen in men (Wilhelm and Parker 1993). It may well be that, while women report more symptoms, men tend to suppress their emotional experience or show less affect when depressed (Huselid and Cooper 1994), or report sex-role appropriate symptoms, such as work-related problems, somatic concerns or social withdrawal, that are not picked up by depression inventories.

In considering the number and type of symptoms reported during episodes, both sexes commonly endorsed some symptoms (including feeling flat, down, self-critical, lowered drive and motivation) and rarely endorsed others (such as feeling hopeless, despairing and suicidal). However, women were more likely to report several symptoms, with tearfulness being the most striking, followed by increased food intake (measured by increased appetite or food intake). The latter has been previously reported by others (Funabiki et al. 1980; Young et al. 1990) and is important, as appetite disturbance is a key diagnostic feature for major depression in DSM and ICD diagnostic systems. If appetite or weight change (i.e. allowing increase or decrease) is the criterion, it is possible for both sexes to equally endorse change in appetite and weight during depressive episodes, disguising any differential effect whereby women (only) may more frequently endorse weight or appetite gain. Thus, there are some differences in symptoms related to depressive mood states that may be influenced by gender and sex role, and which are of interest in themselves as well having a potential bearing on diagnosis of clinical mood disorders.

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References

Angst J, Mikola DA (1984) The Zurich study. II. The continuum from normal to pathological depressive mood swings. Eur Arch Psychiatry Neuro Sci 234: 21–29

Bem SL (1974) The measurement of psychological androgyny. J Consult Clin Psychol 42: 155–162

Byrne DG (1981) Sex differences in the reporting of symptoms of depression in the general population. Br J Clin Psychol 20: 83–92

Costello CG, Comrey AL (1967) Scales for measuring depression and anxiety. J Psychol 66: 303–313

Eysenck HJ, Eysenck SB (1964) Manual of the Eysenck Personality Inventory. Hodder and Stoughton, London

Finlay-Jones R (1986) Factors in the teaching environment associated with severe psychological distress among school teachers. Aust NZ J Psychiatry 20: 304–313

Funabiki D, Bologna ND, Pepping M, Fitzgerald KC (1980) Revisiting sex differences in the expression of depression. J Abnorm Psychol 89: 194–202

Goodwin FK, Blehar MC (1993) Introduction to special edition: toward a new psychobiology of depression in women. J Affect Disord 29: 75–76

Holmström R, Jussila L, Vauhkonen K (1987) Assessment of mental health and illness considered in the light of a 13 year longitudinal study. Acta Psychiatr Scand 75 [Suppl] 33: 7–63

Huselid RF, Cooper ML (1994) Gender roles as mediators of sex differences in expressions of pathology. J Abnorm Psychol 103: 595–603

Jenkins R (1985) Sex differences in minor psychiatric morbidity. Psychol Med [Suppl] 7

Jorm AF (1987) Sex and age differences in depression: a quantitative synthesis of published research. Aust NZ J Psychiatry 21: 46–53

Landrine H (1988) Depression and stereotypes of women: preliminary empirical analyses of the gender-role hypothesis. Sex Roles 19: 527–541

Loewenthal K, Goldblatt T, Gorton G, Lubitsch B, Bocknell H, Fellowes D, Sowden A (1995) Gender and depression in Anglo-Jewry. Psychol Med 25: 1051–1063

Murphy JM (1995) What happens to depressed men? Epidemiol 3: 47–49

Nolen-Hoeksema S (1987) Sex differences in unipolar depression: evidence and theory. Psychol Bull 101: 259–282

Parker G (1979) Sex differences in non-clinical depression. Aust NZ J Psychiatry 13: 127–132

Rosenberg M (1965) The measurement of self-esteem. Society and the adolescent self-image. Princeton University Press, Princeton

Weissman MM, Klerman GL (1977) Sex differences and the epidemiology of depression. Arch Gen Psychiatry 34: 98–111

Weissman MM, Leaf PJ, Holzer CE, Myers JK, Tischler GL (1984a) The epidemiology of depression: an update on sex differences in rates. J Affect Disord 7: 179–188

Weissman MM, Wickamaratne P, Merikangas KR, Leckman JF, Prusoff BA, Caruso KA, Kidd KK, Gammon D (1984b) Onset of major depression in early adulthood. Arch Gen Psychiatry 41: 1136–1143

Weissman MM, Bland R, Joyce PJ, Newman S, Wells JE, Wittchen H-U (1993) Sex differences in depression: crossnational perspectives. J Affect Disord 29: 77–84

Wilhelm K, Parker G (1989) Is sex necessarily a risk factor to depression? Psychol Med 19: 401–413

Wilhelm K, Parker G (1990) Reliability of the PBI and IBM scales. Aust NZ J Psychiatry 24: 199–202

Wilhelm K, Parker G (1993) Sex differences in depressogenic risk factors and coping strategies in a socially homogenous group. Acta Psychiatr Scand 88: 205–211

Wilhelm K, Parker G (1994) Sex differences in depression: fact or artifact? Psychol Med 24: 97–111

Wilhelm K, Parker G, Hadzi-Pavlovic D (1997) Fifteen years on: evolving ideas in researching sex differences in depression. Psychol Med, (in press)

Wilson PH (1979) Behavioural and pharmacological treatment of depression. Thesis, University of New South Wales, Sydney

Young MA, William SA, Fawcett J, Klerman GL (1990) Gender differences in the clinical features of unipolar major depressive disorder. J Nerv Ment Dis 178: 200–203