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Women and depression: a 30 year learning curve

Kay Wilhelm, Gordon Parker, Liesbeth Geerligs, Lucinda Wedgwood

This paper reviews 30 years of longitudinal research, initially undertaken to examine gender differences in rates of major depression and psychosocial risk factors for depression. The research focus has broadened to include the impact of anxiety on depression onset, coping styles for stress and depression, genetic and environmental influences on depression onset, and more recently, a shift towards examining positive mental health. The original cohort consisted of a socially homogenous group of postgraduate teacher trainees and does not attempt to represent the normal variability in an adult population. However, the issues raised by this research provide many insights about real and artefactual factors that contribute to the rate and experience of depression. The study findings are supplemented by data from other studies undertaken by this research team that are pertinent to the topic and add weight to some of the observations from the Teachers’ Study.

Key words: anxiety, anxiety disorders, coping, depression, gender differences, major depression, men, risk factors, women.

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Thirty years ago a review of research into gender differences by Weissman and Klerman concluded that women had an increased prevalence of depression, both in community and clinical samples [1]. This was believed to reflect both real and artefactual risk factors. However, some studies have suggested that these differences are lessened or absent in groups that are psychosocially homogeneous. Data previously obtained from socially homogeneous groups includes British civil servants [2], the Amish community [3], college students [4] and a UK Jewish community [5].

To date there have been a number of community studies in the USA [6], Canada [7], New Zealand [8] and Australia [9], using the Composite International Diagnostic Interview (CIDI) as a case-finding instrument, to determine the prevalence of mental illness. These studies consistently reported higher rates of major depression and anxiety disorders in women, which commenced around puberty and extended throughout the child-bearing years [10,11]. No gender differences in rates of bipolar disorder were reported [12,13] and furthermore, there were no differences in the overall rates of mental illness when all disorders were grouped together [7,8].

A recent review by Goldberg considers three potential explanations for the female preponderance of depression: genetic, hormonal and social [14]. Both genetic and hormonal factors are known to interact with environmental influences, such as stressful life events [15] and early maternal attachment [16]. Another review by Piccinelli and Wilkinson has noted the importance of considering the way in which artefactual factors may contribute to the higher female rates of depression [17]. They point to thresholds of caseness, measurement procedures, differential levels of recall and course of illness as potential sources of distortion in depression rates. Some of these factors have been considered over the course of
the teacher’s study, and will be discussed here. Despite this, Piccinelli and Wilkinson ultimately conclude that although artefactual determinants may enhance a female preponderance to some extent, gender differences in depressive disorders are genuine. In particular they cite psychological vulnerabilities to life events and certain coping styles as key factors. Thus there are clearly a range of factors, both real and artificial, that contribute to the recognized gender differences in depression. The main influences are summarized in Table 1.

This paper seeks to summarize what we have learnt from the Teachers’ Study, with some further contributions from other research in the area of gender differences in depression carried out by our group over the past three decades.

When viewed in the context of the aforementioned research, a review of the teacher’s study (a longitudinal study spanning three decades) has a lot to offer. The study commenced in 1978, prompted by research regarding gender differences in depression. To explore this area, we sought to identify a group of men and women, homogeneous in terms of age and social opportunities, to determine whether gender differences arose as they approached the stress of starting work and taking on adult responsibilities. At commencement of the study in 1978 most cohort members were entering their mid-20s and were at an age where new onsets of major depression were likely. This paper seeks to summarize what we have learnt from the Teachers’ Study, and to examine other research in the area of gender differences in depression over the past three decades (see Table 2).

**Sydney Teachers’ Study**

The cohort of postgraduate teaching diploma students was recruited in 1978, to examine possible psychosocial risk factors contributing to the recognized female preponderance of depression in a well-educated, socially homogeneous group. We enrolled 170 participants who provided us with baseline data on a number of variables. In 1983 we assessed 165; in 1988, 161 and in 1993, 156, giving response rates of 97%, 95%, 92% and 85%, respectively (see Table 3).

By 1993 two women and two men had died from natural causes, a further one withdrew from the 1988 assessment because of ill health, three had refused further participation (one at 1988, two more at 1993) and six could not be located (five at 1983 and one further at 1993). By 2003 a further two women had died.

Multiple measures of depressive experience included (i) lifetime rates, duration and number of depressive episodes using two caseness definitions, DSM major depression and ‘all depression’ (including minor depression and dysthymia), (ii) self-report measures of state and trait depression, neuroticism, self-esteem, perception of childhood experience and social support. DSM anxiety disorder rates are also reported and comorbidity with major depression examined.

Each of the 5 year follow-up interviews (1983, 1988, 1993, 1998) has involved a semi-structured interview covering work, social network, patterns of illness and coping styles. Participants also completed a series of self-report questionnaires including trait depression, using the Costello–Comrey scale [18], neuroticism using the Eysenck Personality Inventory [19], and

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### Table 1. Reasons for gender differences in rates and experience of depression

<table>
<thead>
<tr>
<th>Epidemiological</th>
<th>Biological</th>
<th>Social</th>
<th>Psychological</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sampling decisions can lead to bias</td>
<td>Brain anatomy and function</td>
<td>Differences in life roles(^1), sex roles(^1)</td>
<td>Perception of symptoms, impact on function(^1)</td>
</tr>
<tr>
<td>Item composition of instruments can lead to bias</td>
<td>Sex hormones, both direct and indirect effects, female reproductive hormones</td>
<td>Effects of work status(^1), employment status(^1)</td>
<td>Self-esteem(^1), concerns about body image</td>
</tr>
<tr>
<td>Caseness definitions leading to bias</td>
<td>Effects of genotypes related to stress and depression(^7)</td>
<td>Effects of marital state(^7), relationship bonds</td>
<td>Differences in attributions, coping styles(^1)</td>
</tr>
<tr>
<td>Differences in incidence(^7)</td>
<td>Relationship to anxiety disorders(^7)</td>
<td>Effects of social network(^7)</td>
<td>Differences in emotional reactivity, neuroticism(^7)</td>
</tr>
<tr>
<td>Differences in prevalence (relapse rates, duration)(^7)</td>
<td>Effects of ageing on symptom perception and metabolism</td>
<td>Impact of ethnic differences(^7), social class(^7)</td>
<td>Styles in answering questionnaires(^7)</td>
</tr>
</tbody>
</table>

\(^1\)Issues addressed in our studies; \(^7\)factors controlled for in our studies.
self-esteem using the Rosenberg scale [20], with all three being measured on all occasions. A state depression measure [21] and the Parental Bonding Instrument (PBI) [22] were administered at all but the 1993 review. A Sex Role Inventory [23] generating masculinity, femininity and social desirability scales were administered at all three reviews. Social support was assessed at the four follow-up waves by asking the subjects to rate the perceived amount of social support ‘generally’ and ‘in times of stress’ using a 4-point scale, with separate such ratings for partners, family and friends. These scores were summed to give an overall score for perceived social support.

We have also used the Diagnostic Interview Schedule (DIS) [24] and, subsequently, its newer form, the CIDI [25] at these four waves as a case-finding instrument. The depression and anxiety sections of the DIS and CIDI were used to generate DSM diagnoses for all anxiety disorders, as well as major depression. At each wave, data were gathered for each episode and these were identified on a time line allowing for the identification of age of onset and lifetime rates for each disorder. The participants were allocated to a major depression category depending on the number of episodes experienced (none, one, or two or more episodes), a strategy previously used by researchers [26–29]. Self-report measures and other relevant variables were included in the analyses to test for significant predictors of the course of depression. The interaction between the number of episodes of major depression and the presence of anxiety disorders was examined closely.

By 2000 each subject had been shown a life chart with their diagnoses, positive and negative life events and treatment history, which they affirmed. At this stage the emphasis had changed to incorporate a more qualitative approach with an emphasis on coping with life events, for stress as well as depression, and perceptions of how the genders differ.

### Table 2. Summary of findings from Teacher’s Study

<table>
<thead>
<tr>
<th></th>
<th>Women significantly higher than men</th>
<th>No gender differences</th>
<th>Men significantly higher than women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depressed mood state</td>
<td>More symptoms overall, more likely to cry</td>
<td>Similar symptoms for depressed mood state</td>
<td>Reasons for teaching</td>
</tr>
<tr>
<td>Work</td>
<td>Greater work satisfaction</td>
<td>Trait depression, self esteem: differences related to depression history for both sexes</td>
<td>Masculinity scores</td>
</tr>
<tr>
<td>Self report measures</td>
<td>Neuroticism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSM depressive disorders</td>
<td>Over time, trend for women to experience more frequent episodes, longer duration More accurate reporting over time with ‘field dependence’</td>
<td>Similar symptoms for clinical episodes</td>
<td></td>
</tr>
<tr>
<td>DSM anxiety disorders</td>
<td>Higher rates, earlier onset of simple phobia, social phobia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping with stress</td>
<td>Women used more coping styles, especially for emotional regulation when faced with adverse events</td>
<td>Both low rates of nicotine, substance use, in other clinical studies, men have higher rates of substance use</td>
<td>Effects of short variant of 5-HTT promoter polymorphism on coping style greatest for males</td>
</tr>
<tr>
<td>Coping with depression</td>
<td>Women more likely to talk to friends, spend money on themselves</td>
<td></td>
<td>Risk taking when depressed, especially when young</td>
</tr>
<tr>
<td>Life events</td>
<td>Higher scores for anticipation of positive events</td>
<td>Actual impact of positive and negative life events</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3. Follow-up assessments

<table>
<thead>
<tr>
<th>Year</th>
<th>Methods of assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1978</td>
<td>170 provided base-line data (114 women and 56 men)</td>
</tr>
<tr>
<td>1983</td>
<td>5 year follow up (109 women and 56 men)</td>
</tr>
<tr>
<td>1988</td>
<td>10 year follow up (108 women and 53 men)</td>
</tr>
<tr>
<td>1993</td>
<td>15 year follow up (104 women and 52 men)</td>
</tr>
<tr>
<td>1998</td>
<td>20 year follow up (97 women, 52 men)</td>
</tr>
<tr>
<td>2001-2</td>
<td>In-depth interview (97 women, 52 men)</td>
</tr>
<tr>
<td>2002</td>
<td>Blood samples obtained (85 women, 43 men)</td>
</tr>
<tr>
<td>2005</td>
<td>Genotype results given to those wishing results</td>
</tr>
</tbody>
</table>
The mean age of members is now approximately 52 years. Findings from the Teachers' Study are reported here.

Rates of major depressive disorder

The first in this series of papers examining the cohort found that 24.8% of women and 19.7% of men had experienced an episode of major depression (MD) by 1983 [30]. This had risen to 43.3% of women and 38.5% of men by 1998. We found that there were no significant differences in rates, which were accounted for by the relatively high rates in men. While these rates were thought to be high by 1978 standards, subsequent studies have produced higher and more equal rates for MD [28,31]. We have speculated that the high rates of MD for men in our cohort reflect their lower rates of antisocial behaviour, smoking, alcohol and substance abuse, and higher rates of help-seeking than men in the general community.

We also found that gender differences in rates of lifetime depression were influenced by the definition of caseness and the vantage point from which rates were determined. We reported that if lifetime data were collected at one point only, the rates reflected the 2:1 female/male ratio, but the longitudinal design had allowed us to consider data from the 5 year waves separately and to demonstrate that gender differences varied depending on the method used. This was because men were more likely to forget episodes, particularly the less severe ones, while women were more likely to remember all episodes, even ones that had not previously reached case criteria. After correcting for such artefacts, sex differences in lifetime depression rates were no longer evident [32]. We noted that women were more likely to link their memory to an event (‘I was depressed when . . . . happened’), which prompted their later memory, while men simply recalled the episode itself (‘I was depressed’). This finding suggests that providing prompts from live events can assist recall of episodes and we encourage the use of a timeline to facilitate lifetime history gathering for both sexes, but the approach may be particularly relevant for men.

Neuroticism and anxiety as risk factors
to depression

Neuroticism has been consistently shown to be a very significant risk factor for the onset of MD [33–35] and repeated episodes of MD are associated with a scarring effect, producing progressive increases in neuroticism scores [33,36]. There is also evidence of links between neuroticism and anxiety disorders [37–40] but, because neuroticism is a heterogenous construct, it raises the question whether the underlying vulnerability is due to autonomic lability and/or increased interpersonal sensitivity. Overall, women scored more highly on measures of neuroticism, were more dependent and were more likely to engage in self-consoling behaviours and coping styles.

In addition, early-onset depression was strongly predicted by a lifetime episode of a major anxiety disorder, with generalized anxiety being a stronger and more consistent predictor than panic disorder, agoraphobia and minor anxiety disorders (i.e. social phobia, simple phobia) [41]. Thus, high trait anxiety, neuroticism and early onset of anxiety disorders were important vulnerability factors to both early onset depression and to repeated episodes of depression. As such, we suggest that the treatment of any existing anxiety disorder may be an important strategy to assist with decreasing the vulnerability to repeated MD episodes.

We also examined the relationship between the Interpersonal Sensitivity Measure (IPSM) and anxiety disorders, measured at two points (1988 and 1993) [42], assessing the effect of repeated episodes of depression and of gender. Again, women reported higher rates of separation anxiety and interpersonal awareness, which again seemed to reflect a greater emotional reactivity [33]. In 1993, further study examined whether IPSM scores could predict anxiety disorders, and whether this was further influenced by gender. Separation anxiety was found to be a predictor of panic disorder and generalized anxiety disorder (GAD) in women, and of simple phobia in men. Timidity was a predictor for agoraphobia and simple phobia in women. The remaining two subscales (interpersonal awareness and fragile inner self) did not make significant single contributions to any of the anxiety disorders.

Gender differences in potential psychosocial
risk factors to depression

While women consistently reported higher mean neuroticism scores, there were never any gender differences in the rates of self esteem, trait depression, dysfunctional attitudes, perception of important interpersonal relationships (using the Intimate Bond Measure and Parental Bonding Instrument), and the
perceived impact of life events. Thus while low self-esteem, dysfunctional attitudes, perception of low care in childhood and high trait depression are risk factors for depression onset, these constructs seemed to be relevant for both men and women. At baseline, high neuroticism and trait depression scores were associated with repeated episodes of depression for both sexes and both demonstrated a scarring effect because repeated episodes of MD were associated with progressive episode rises in both, while those with no MD episodes demonstrated improvement in both scores over times.

Role of normal depressed mood states

Depressive states (mood changes for hours to days) [43] were affirmed by at least 96% of participants at each assessment, with the mean number of episodes per assessment year ranging from 8.6 to 21.2. There were no gender differences in the number or duration of episodes, but women reported more symptoms per episode and this appeared confined to specific symptoms, including tearfulness, appetite and weight gain. The number of symptoms was also correlated with neuroticism, self-esteem and trait depression scores. However, the number of episodes was related to trait depression and self-esteem but not neuroticism. Despite gender being associated with differences in symptomatology, no association was found with masculine and feminine sex roles. The greater frequency, severity and duration of depressed mood states in those who met lifetime criteria for a MD episode were risk factors for both genders.

Rates of anxiety and the relationship with major depression

Anxiety has been determined as a key predictor in early-onset depression, because it is considered that the high reporting of anxiety and neuroticism in women may be a key determinant of higher depression rates among women. [44]. The higher rates of anxiety are a real phenomenon, and appear related to women’s elevated neuroticism scores. At the 15 year review of this cohort, when the mean age was 39 years, no difference was reported between the genders for depressive disorders, yet women reported significantly more social, simple and combined anxiety disorders. It was also determined that women had a significantly younger age of onset for simple and social phobias. Overall, 33% (n = 55) of the cohort reported a lifetime history of an anxiety, 70% of which had experienced their first episode prior to the start of the study, much earlier than the depression onset.

Depression and life events

In 1979 a smaller group of cohort members (n = 97) provided us with ratings of impact of anticipated positive and negative life events. In 1983 the cohort (Table 1) assessed the actual impact of events experienced over the previous year as part of the 1983 follow-up wave. We found no gender differences in the scores for anticipated or actual impact of pleasant life events, or for anticipated unpleasant life events. However, there were no gender differences in number and type of live events but there was a significant sex difference between actual unpleasant life event scores, with female subjects rating events as being either more pleasurable or unpleasant than male subjects at both collection points. The actual impact of pleasant events was associated with higher dependency and masculinity scores, while unpleasant events was associated with higher dependency for women and higher parental overprotecion and dependency scores for men. Interestingly, we had reported that women had higher scores for anticipated enjoyment in work in 1978 and higher scores for work satisfaction at 1988.

We noted that women seemed to have a slightly broader range of emotional experience in both directions and speculated that the relationship between life event impact and dependency scores reflected a relationship between interpersonal investment and mood in women.

Coping styles

Despite there being no difference between men and women in the symptoms experienced during a depressive episode, significant differences were found in the way in which men and women dealt with the experience. While overall rates of substance use were very low for this cohort, depressed men tended to engage in more substance use, become more irritable and externalize their distress more often than women [45]. When coping styles were examined, recklessness was the only coping style more frequently endorsed by men. This poses the question of whether current
measures take into consideration the male experience of depression [46].

More recently, differences in individual coping styles used during stress have been examined in this cohort, with reference to possible genetic differences. Cohort members with the 1/1 variant of the serotonin promoter polymorphism (5-HTT) reported using more problem-solving strategies when dealing with stress. This genotype effect raises the possibility that a gene-related disposition to greater emotional reactivity may preclude those with the short variant of the 5-HTT promoter polymorphism from drawing on problem-solving strategies to deal with stress [47]. This finding had greater relevance to men and seemed to reflect the earlier findings related to the impact of life events [48], indicating that women had greater emotional reactivity but may have a greater repertoire of emotional regulation strategies than men.

Positive mental health

At the 1998 follow up 41% of all study participants had experienced at least one major depressive episode in their life, and 23% had experienced an anxiety disorder (agoraphobia, GAD, panic). We then considered two definitions of positive mental health in two ways; defined by high optimism scores (using the Life Orientation Test [49]) and by the absence of lifetime DSM caseness (i.e. lifetime history of major depression, agoraphobia, GAD and panic, using DSM criteria) [Wilhelm K, Wedgewood L, Parker G, Hadzi-Pavlović D: unpublished data, 2007]. It should be noted that participants with a history of bipolar disorder (n = 2) and eating disorder (n = 3), drug and alcohol abuse (n = 4) were also subsumed in this caseness group.

When positive mental health was defined by lack of caseness, significant predictors of mental health included fewer adverse life events, less anticipation of depression when self-set goals were not met, and higher self-esteem. When mental health was defined by optimism, significant predictors included fewer adverse life events, low neuroticism, higher self-esteem and higher femininity scores. Gender per se was not a significant factor.

Men’s perspective

Throughout the Teachers’ Study we reported equal rates of depression for self-report measures trait depression and MD onsets, with some differences in symptoms numbers. Where we did find gender differences, with one exception (risk-taking while depressed) it was almost always a female preponderance. We speculated that studies using standardized measuring instruments to measure prevalence rates of depression have increased reliability at the expense of attention to individual experience. This is relevant to consideration of gender differences in experience of depression. If standardized instruments are biased towards women’s experience, this may be particularly relevant to men’s experience.

Pollack had earlier proposed a male-type depression that includes an increase in intensity or frequency of angry outbursts, increase in rigid demands for autonomy, and over-involvement with work [50], and Real has also identified overt expressions of depression in men, manifest in acting-out behaviours such as substance abuse and risk-taking [51].

In a related study we sought to explore whether there were male experiences of depression that were not being reported. That study was undertaken by the research group investigating the experience of depression, coping and help-seeking from men’s perspectives, in a sample of male technical college teachers and students. Women were also recruited as a comparative group. Qualitative data suggested that men were more socially conditioned to suppress emotional pain, which translated into delayed help-seeking. When men sought help, presentations of physical illness (such as chest pain), or behaviours such as deliberate self-harm or drug and alcohol abuse were more frequently reported. It is considered that these may mask emotional distress. This suggests that symptoms of depression may be overlooked in general practice, when men may expect doctors to read the signs and symptoms, without explicitly having to self-disclose [52].

We proposed a model of depression involving an emotional escalation, termed the ‘big build’, which was more aligned with the accounts of clinicians than with the measuring instruments used to detect depressive symptoms in men. Thus men’s hidden symptoms of depression seemed to explain the black hole we were finding in men’s experience. Based on this, we produced a Men’s Prompt Sheet for use in general practice [53] that uses questions that take into account men’s experience and expression of depression and are more likely to close the gap on reported gender difference in depression. We have produced a series of workshops on mood mapping for men, to enhance emotional intelligence and decrease vulnerability to depression and deliberate self-harm in men.
National Survey of Mental Health and Well-being
Study of general population

To complement our work with the Teacher’s Study cohort, we explored prevalence and correlates of major depression in the general adult Australian population using data from the National Survey of Mental Health and Well-being (NSMHWB), and compared the results with other national studies [9]. The overall weighted prevalence of current (30 day) major depression was 3.2%, with the highest rate (5.2%) being found in women in mid-life. This rate is between those of the US and British community studies. The strongest correlates for reported current major depression include being unemployed, smoking, having a medical condition, followed by being in mid-life, previously married, and female in that order. Living with a partner and drinking 1 to 2 glasses of alcohol per day were least correlated. In the NSMHWB study female gender was not the most significant correlate of major depression, and a number of the factors related to social disadvantage and lifestyle issues. We recommended that lowering the prevalence rate of major depression will require public health approaches to address the relationships between smoking, social isolation, poor health, mood and physical well-being [9].

Research from a cohort of patients with established episodes of major depression

The finding that men and women had a fairly similar experience of depression symptoms was borne out in another study of gender differences in people with established episodes of major depression visiting a mood disorders unit [45]. The 98 men and 172 women did not differ in mean age, years of education or in marital state. Here too, in a very different group to the teachers, the only significant gender difference in symptoms was women’s higher reported rates of crying. There were no differences in rates of reporting of loss of interest, anger towards self or others, irritability, trouble concentrating, suicidal ideation, sleep disturbance, feelings of hopelessness or helplessness nor in duration of episode, or severity as measured by the Beck Depression Inventory or Hamilton Rating Scale (20.4 for men and 20.5 for women, t = −0.2). There were also no significant differences in rates of DSM-IV diagnoses for psychotic, melancholic and non-melancholic episodes. For previous depression history, there were no differences between men and women in age of onset of first episode, number of episodes over lifetime, duration of shortest or longest episodes, total reported time spent as depressed or manic or total number of hospital admissions for depression or mania. The main differences were in relation to expression of anxiety (with women reporting higher rates of feeling on edge and short of breath but not in the overall number of anxiety symptoms).

While there were no differences in rates of anxiolytic use overall, we have noted some gender differences in relation to antidepressant prescription. The relationship between antidepressants prior to presentation and earlier anxiolytic dependence in women may be indirect evidence for a greater role for anxiety in depression for women. Men had a higher rate of GAD, suggesting a different (less intense) style of expressing anxiety. For men, there was an inverse relationship between use of stimulants and antidepressants. This could represent an attempt at self-medication by some men. While expression of anger when depressed has been considered to be more evident in men [16], there were no apparent gender effects in the present group.

Another finding about the perceived importance of the role that anxiety plays in depression came from research undertaken with this clinical group concerning the rates and perceived effectiveness of actions used to cope with depression prior to attending the clinic [54]. One hundred and seventy-six patients (74 male, 102 female) aged 16–82 years (mean = 42 years, SD = 14.4 years) with a current MD episode were assessed. Most of the interventions used and perceived to be effective in alleviating depressive symptoms by the depressed subjects were self-help and complementary therapies. These were of particular salience for younger patients and those with an episode of anxiety disorder, while being female was the strongest predictor for their effectiveness.

We also asked these patients what they were expecting from the clinic and found that young women with major depression recognized the importance of comorbid anxiety (trait anxiety and anxiety disorders) as a treatment issue and were the most likely to expect psychoeducation and psychological intervention as part of their visit to a mood disorders clinic.

In the mood disorders clinic sample [45] we reported that nearly three times as many women reported some form of mental illness in their family. While more than half of both the men and women reported their father as being dysfunctional, the women were twice as likely as men to report having a dysfunctional mother (odds ratio = 2.22, 95%
confidence interval = 1.3–3.8), and rate their mother’s care as significantly lower on the PBI and to report having been exposed to childhood sexual abuse. In a different study of families in which at least one member was identified as having a mood disorder, we found that daughters were better than sons at appraising the level of care that their parents showed to each other, which would fit with the increased reporting of dysfunctional families by women in the clinic sample [55].

Discussion

Characteristics of the sample

The cohort examined in the Teacher’s Study is clearly a select group, and there are some shortcomings to using such a homogenous sample. The nature of the Teachers’ Study required selection of a group in which male and female members had a number of important social risk factors to depression initially controlled. In addition, members were predominantly middle class. They were voluntary participants, who demonstrated high compliance rates and were agreeable to lengthy interviews. Given the special nature of the present sample, depression rates (and the calculated sex differences) are unlikely to be generalizable to the general population. However, we have included research findings from other data sets and there does seem to be consistency in the findings. We suggest, however, that the issues identified provide important information about general factors influencing depression rates, both genuine and artefactual. To conclude, we discuss some of the main issues arising from the Teacher’s Study and other research.

Nature of depression

Depression is now identified as a major health issue, being a major cause of both psychological and physical morbidity. It is predicted to be second only to ischaemic heart disease in terms of total burden of disease burden to 2020 [56]. However, the definition of depression has undergone a number of changes over time, reflecting clinical and research fashions, evolving theories concerning psychological and biological causations of disease, and the wider social context in which the problem is perceived.

The cohort study has evoked some critical discussion about why rates of major depression would be so high in a group who have so much going for them [57]. We have concluded that there are a number of issues. First, the threshold for major depression may be too low – and some of those people who attract the diagnosis may have anxiety disorders that have in fact a higher threshold for both symptoms and duration. Second, that these rates may be more accurate because of the regular follow ups with life charts to prompt recall of episodes. Third, this group of adults are not engaging in alcohol and substance abuse or behavioural disturbances and are therefore more likely to present with depression. Fourth, this group has sought help, ensuring that depression is recognized and treated and is also then more likely to be recalled. We have earlier noted the gender differences in recall that were also noted by Angst and Dobler-Mikola [58].

There are surprisingly few differences in the actual experience of depression. Differences in age of onset of anxiety disorders and the diverging gender differences in depression noted from puberty are likely to have biological underpinnings as well as social factors related to social expectations. We note that Piccinelli and Wilkinson conclude that psychological vulnerabilities to life events and certain coping styles were likely to be key factors 'which contribute to the recognized gender differences in depression' [17]. We have noted the areas where our research has contributed and a number of different threads that are woven together to pinpoint women’s increased emotional reactivity during the child-bearing age range, leading to increased arousal and higher rates of anxiety disorders, starting at puberty. The other factors are women’s increased awareness of and investment in their social relationships. There are also differences in how men and women deal with emotional arousal and variability that can influence the duration of episodes. These three areas could all be influenced by a combination of genetic and other biological factors, and amplified (or otherwise) by psychosocial factors. The physiological determinants of these have not been pursued here.

In summary, the focus on gender differences provides a useful framework for examining various psychosocial issues related to the appearance of depression. While there is evidence that when men and women have equal social opportunities (such as work, social support and education), gender differences in rates of depression are diminished or disappear [1,3,30,32,59], there were still some gender differences particularly in the relationship to anxiety and styles of coping with stress and depression. Thus, it is important to continue to question observed gender differences in depression, and to evaluate the
risk factors of depression for both genders, while continuing to appraise the accepted definitions and conceptualizations of depression.

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