

Gender and depression

Joan S Girgus and Kaite Yang

This paper briefly reviews several recent lines of psychosocial research on the gender difference in depression. By the middle of adolescence and continuing at least until age 55, females are about twice as likely to be diagnosed with depression and exhibit twice as many depressive symptoms as males. Researchers have recently begun to propose models that specify complicated relationships among variables to explain the gender difference in depression and why it emerges in adolescence. These models need to be tested empirically and new models need to be formulated based on the data that emerge. Additionally, research is needed to explore whether there are gender differences in the chronicity and recurrence of depression as well as in initial episodes and whether the models that explain the gender difference in depression during adolescence also explain the continuing gender difference in young and middle-aged adults.

Address

Princeton University, United States

Corresponding author: Girgus, Joan S (girgus@princeton.edu)

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This article briefly summarizes several recent major lines of psychosocial research about the relationship between gender and unipolar depression. The data are drawn from studies of normative populations that were assessed either for Major Depressive Disorder (MDD) or for depressive symptoms. Although there is some disagreement about whether MDDs and depressive symptoms are on a continuum, there is a strong argument to be made that this is indeed the case [1]. In addition, even moderate levels of depressive symptoms that fall short of a diagnosis of MDD can be debilitating and lead to deficits in performance [1]. This article will therefore report data from research reporting both MDD and depressive symptoms.

One of the best known, and most extensively researched, facts about depression is that, beginning in mid-adolescence, females are much more likely to be depressed than

males [2–4]. There are three striking aspects to the research on this gender difference in recent years. First, much of the research has used a longitudinal approach, with measures taken at a minimum of two points in time. This makes it possible to control for initial levels of depression and thus to specify which variables predict increases in depression rather than simply which variables occur in tandem with depression. Second, much of the recent research is focused on the development and testing of theoretical models that have been proposed specifically to explain the emergence of the gender difference in depression in adolescence. Third, these models, without exception, invoke complicated relationships among numbers of predecessor variables in the prediction of the gender difference in depression. Prior to the last decade or so, most of the research on the gender difference hypothesized that it was the result of one — and only one — of the following: a particular maladaptive behavior or characteristic of the individual; a particular stressful experience; or an interaction between a maladaptive behavior or characteristic and stressful experiences. In recent years, aided by the development of new statistical techniques, the models that researchers have proposed to explain the gender difference in depression take a transactional, developmental approach, invoking relationships among a number of behaviors, characteristics, and stressors. Therefore, this paper, after a brief initial section describing the epidemiology of the gender difference, will focus on these models and the data that have been gathered to test them. Because most of these data come from adolescent participants, and because the gender difference in depression emerges during adolescence, this paper will focus on research with this age group.

Before examining the recent research on the gender difference in depression, it is important to consider the possibility that the gender difference is an artifact since there has been consistent speculation over the years that this might be the case. Possible artifacts include: that women are more willing than men to admit even to themselves that they feel depressed; that women are more willing than men to report depressed feelings when asked; and that women are more willing than men to seek help when they feel depressed. However, researchers who have considered these possibilities have uniformly concluded that none of them contributes to the gender difference in depression [3,5,6,7].

Epidemiology of the gender difference in depression

There does not seem to be any significant gender difference in either MDD or depressive symptoms during

childhood, although boys consistently report slightly higher numbers of depressive symptoms than girls [8]. A significant gender difference in depression begins to emerge around age 13 as girls' rates of depression begin to increase while boys' rates remain fairly constant [8]. By mid-to-late adolescence, girls are approximately twice as likely to be diagnosed with MDD and report approximately twice as many depressive symptoms as boys [9–14]. Although the absolute prevalence of both diagnosable depression and depressive symptoms varies across the age span, the gender difference continues with remarkable consistency at least until the age of about 55 [2,15,16]. There has been quite a lot of research on depression in the elderly in recent years but this has resulted in a remarkable lack of clarity about whether the gender difference continues throughout the life span or declines beginning at age 55 or 65 or even later. Some researchers have found no gender difference or a much smaller gender difference in depressive episodes and disorders among older adults, beginning as early as age 55 [17,18,19*,20–22], while others have found significantly higher numbers of depressive symptoms and disorders in females as compared with males over age 65 [23–26]. It is not possible to say what accounts for this inconsistency: sample sizes, demographic characteristics, countries of origin, and measures of depression varied from study to study.

Vulnerabilities and stressors

In general, psychosocial theories about the gender difference in depression rest on the bedrock of diathesis-stress models of psychopathology. Virtually every model that has been proposed to explain the gender difference in depression, not only in recent years but stretching back in time, has specified one or more characteristic of individuals (diatheses) that make them vulnerable to depression when stressors occur in their lives. It is important to realize that the gender difference in depression could result from gender differences in these diatheses or vulnerabilities, in the stressors that people experience, in both the diatheses and the stressors, or in the interaction between them.

Recent research has focused on a series of questions. Are there gender differences in the most prevalent vulnerabilities? Do these gender differences emerge during adolescence (or earlier or later)? Are there gender differences in the stressors that individuals experience and when do these gender differences emerge? What kinds of interactions among vulnerabilities and stressors best explain the gender difference in depression and its emergence during adolescence?

Cognitive vulnerabilities for depression

This section briefly describes three cognitive vulnerabilities for depression that have been well-represented in the recent literature.

Rumination/coping styles

The most extensively researched coping style that has been linked to depression is rumination, initially proposed by Susan Nolen-Hoeksema. Rumination occurs when stressors lead to negative moods and individuals respond to the negative moods by dwelling on them, their causes and their implications, rather than engaging in either problem-solving or distraction [27]. There is not much data about rumination in childhood, but numerous studies have found that adolescent girls score higher than boys on rumination [for meta-analyses see [28**–33]]. Rumination appears to mediate the relationship between interpersonal stress and depression; in addition, adolescent girls are more likely both to experience interpersonal stress compared to adolescent boys and to ruminate in response to this stress [34*]. At the same time, while females are more likely than males to ruminate throughout the life span [35**,36], the relationship between rumination and depression is the same for females and males: males who ruminate experience depressive consequences as much as females do [37*,38].

Co-rumination describes the passive discussion of negative emotions and events with close friends (instead of active problem-solving or distraction-based coping), and is associated with increased risk for depression. Adolescent girls tend to co-ruminate more than adolescent boys [39**,40**,41]. Furthermore, only girls (but not boys) report increased depressive symptoms after co-rumination [42]. The gender difference in co-rumination appears to mediate the gender difference in the emergence of depression [43].

Attributions/negative inferences for negative events

Individuals have characteristic ways that they describe the causes of the negative, uncontrollable events that occur in their lives. Those who attribute negative events to causes that are internal, global, and stable are more likely to become depressed than are those who attribute negative events to causes that are external, specific, and unstable, although there is some indication that the global and stable dimensions are more important than the internal dimension [44]. In recent years, researchers have broadened this approach to include negative inferences about the consequences of negative events and about the self-implications of negative events [45].

Although attributional style and negative inferences consistently predict depression in the presence of negative events, whether and how they might account for the gender difference in depression is less clear. Recent explorations of this question with adolescents have shown the following. In one study, boys' depression was predicted by the familiar diathesis-stress model but girls' depression was predicted by negative inferences alone, high numbers of stressors alone, and both together [44]. In another study, the negative inferences–stress interaction

predicted depression for girls but not for boys [46]. In yet another study, negative inferences mediated the gender difference in depression [45]. At the same time, still other recent studies have not found any relationship between negative inferences and the gender difference in depression in adolescence [47*,48*]. Thus, it is not clear what role negative inferences might play in explaining the gender difference in depression.

Interpersonal orientation (dependency, sociotropy)

There are considerable data indicating that females are more interpersonally oriented than males. Adolescent girls, compared to adolescent boys, indicate more affiliative needs and define themselves more in relational terms [9,49–51]. Perhaps as a consequence, girls are more concerned than boys are about what their peers think of them; this gender difference in social-evaluative concern has been shown to mediate the gender difference in depression [52] and deficits in peer approval are more strongly associated with emotional distress in girls than in boys [53]. Furthermore, girls are more reactive to relationship disturbances than boys are, and this too may contribute to the gender difference in depression [54].

In a similar vein, adolescent girls, as compared to adolescent boys, have higher levels of dependency and the need for approval [55,56]. In a longitudinal study that examined the relationships among sociotropy (dependency on others and a high need for approval and reassurance), negative inferences and depressive symptoms, both sociotropy and negative inferences partially mediated the gender difference in depression [57].

How do cognitive vulnerabilities arise?

It is quite clear that there are gender differences in rumination and in interpersonal orientation in adolescence (although data about gender differences in negative inferences are more mixed). Girls are more likely than boys to ruminate and girls are consistently more interpersonally oriented. Given the consistent data about gender differences in some cognitive vulnerabilities (and about connections between the gender differences in cognitive vulnerabilities and the gender difference in depression), it seems important to ask how the gender differences in cognitive vulnerabilities arise. The prevailing theory is that socialization processes shape the interpersonal orientations, coping styles, and attribution styles of girls and boys. Here again, there are more relevant data about interpersonal orientation and rumination than about negative inferences. Compared to boys, adults encourage girls' play to be more interpersonally focused, collaborative, and harmonious rather than aggressive and competitive, a pattern that persists through adolescence [58]. Adolescence may be a time of gender role intensification, particularly in Western cultures with increased sex role socialization and stereotyping of girls to be more interpersonally oriented [59,60]. In addition, girls may be socialized

to engage in more passive coping strategies such as rumination, rather than more active coping styles [61].

Stressors

The following section briefly describes the most prominent recent hypotheses about the contributions of stressors to the gender difference in depression, and particularly to the emergence of the gender difference during adolescence.

General stressors

The experience of stressful life events has long been associated with depression. Thus, gender differences in the frequency of and sensitivity to stressful life events in adolescence might at least in part explain the emergence of the gender difference in depression. Indeed, across the board, adolescent girls experience more general stressors than adolescent boys [[62,63], see [64] for a review], girls report more depression than boys in response to stress [62], and the experience of life stressors has been shown to account for the variance in depressive symptoms over time for adolescent girls but not adolescent boys [65].

Interpersonal stressors

There are normative social challenges that emerge during adolescence, especially with respect to interpersonal relationships and the emergence of romantic relationships. Adolescent girls experience more interpersonal stressors than do adolescent boys [see [64] for a review], and interpersonal stressors have been shown to partially mediate the gender difference in depression [51,62,66,67]. Furthermore, interpersonal stress predicts depression in adult women, but not in their male twins [6*].

Family discord, distress, and conflict are interpersonal stressors that may increase during adolescence, as adolescents seek to establish their independence from their parents. Adolescent girls who experience family discord such as divorce and parental distress are apparently at greater risk for depression than adolescent boys [68–72]. In addition, adolescent girls with depressed mothers are more likely to develop depression, compared to adolescent boys with depressed mothers [73,74]. There are several hypotheses about why there are stronger links between family stress and maternal depression on the one hand and depression on the other in adolescent daughters as compared to adolescent sons: mother–daughter relationships during adolescence may be more fraught with conflict and stress than mother–son relationships [75]; adolescent girls may be more likely to exhibit negative inferential styles which could interact with the stress of family discord and maternal depression [10,76]; gender intensification during adolescence could result in girls identifying with their mothers and modeling sex role behaviors exhibited by their mothers [74]; or adolescent girls may be more involved in comforting their mothers and suppressing their own negative emotions during

periods of parental distress, which could lead to increased stress and risk for depression [72].

Adolescent girls may also be more at risk for depression contagion within peer relationships. Adolescent girls with best friends who are depressed are also likely to develop depressive symptoms, but this does not occur in boy–boy friendships [77–79].

Finally, although it is not clear that girls experience more sexual abuse than boys during childhood [80,81], they clearly experience more sexual abuse than boys beginning in adolescence [82–84]. In addition, adolescent girls are more likely than adolescent boys to become depressed as a result of sexual abuse [80,85,86**,87,88].

Physiological changes at puberty

Biological, physical, and psychological changes accompany development through the stages of puberty. The biological changes that occur during puberty are coordinated by increased levels of sex hormones. Studies have found that levels of sex hormones alone account for little variance in depressive symptoms during adolescence [89–91]. On the other hand, numerous studies have found that earlier onset of puberty consistently confers increased risk for depression for adolescent girls, whereas the associations between pubertal timing and depression are more mixed for adolescent boys [92–97]. Several factors might explain why early onset of puberty confers risk for depression in adolescent girls: the onset of puberty may be associated with physical changes that are negatively perceived by girls [98]; early onset of puberty may be associated with earlier engagement in intimate relationships and sexual activity, events which may elevate risk for stress and depression [99,100]; or early onset of puberty may interact with stressful life events to predict increased risk for depression in adolescent girls [101,102], but not in adolescent boys [103].

Increased body fat and the development of secondary sex characteristics during puberty are seen as less desirable by girls in Western societies that value thinness [104,105]. Adolescent girls tend to report more dissatisfaction with their bodies than adolescent boys, and longitudinal studies have found that negative body image predicts increased depressive symptoms over time for adolescent girls [106–110]. Other studies have shown that the gender difference in depression is no longer significant when adolescents' body image and self-esteem are statistically controlled in regression analyses [111–113].

Stress generation

In addition to gender differences in the experience of stress and its relation to depression, there may also be gender differences in stress generation behaviors in adolescence. Stress generation describes how depressed individuals create stress, particularly within interpersonal

relationships, which in turn increases risk for future depression [64]. Several of the recent models that have been proposed to explain the gender difference in depression have included stress generation as an important component. At the same time, there has been relatively little research on the question of whether there are gender differences in the stress generation process, and the results of that research are somewhat complicated. In one study, previous levels of depressive symptoms predicted stressful life events, and girls, as compared to boys, reported both higher numbers of depressive symptoms and higher number of life events [114]. In another study, female college students (but not male college students) with more negative cognitive styles generated more dependent and interpersonal events than female college students with more positive cognitive styles [115]. In a third study, while female college students did not generate more interpersonal stress than male college students, sociotropy predicted higher levels of dependent interpersonal stress in women but not in men, and this interpersonal stress generation partially mediated the relationship between sociotropy and depression [116]. While these results suggest that there may be a role for stress generation in explaining the gender difference in depression, it seems clear that considerably more research will be needed in order to clarify the nature of that role.

Models designed to explain the gender difference in depression

There are three major models that have been used in recent explanations of the gender difference in depression. The *diathesis-stress model* proposes that individuals have characteristic ways of dealing with the stressors in their lives, and the interaction between these diatheses and stressors leads to depression. In this model, if either or both of the diatheses and stressors are more prevalent in women than in men, then a gender difference in depression would result. The *mediation model* also proposes that individuals have characteristic ways of dealing with the stressors in their lives. In this model, however, it is not the interaction between the diatheses and the stressors that leads to depression but rather the stressor is proposed to trigger or lead to the diathesis which in turn leads to depression. Finally, the *stress generation or transactional model* proposes that depressed individuals contribute to the creation or continuation of a stressful environment that then can interact in an ongoing way with existing diatheses to maintain depressive symptoms or to lead to recurrent depressive episodes [64]. It is possible that models that combine these processes, like that proposed by Hankin and Abramson [10], will eventually prove to be most fruitful. Any of these models could undergird the gender differences in depression from adolescence to old age insofar as females have a greater incidence than males of the relevant diatheses either throughout the life span or beginning in adolescence and/or females experience or generate more stressors

(or possibly more of certain kinds of stressors) beginning in adolescence. It is important to remember that whatever model or combination of models eventually proves most fruitful, there will almost certainly be many paths to depression and many variables that contribute to the gender difference that characterizes so much of the human life span [9,11,117].

Conclusion

A great deal of research has been done on the gender difference in unipolar depression in recent years, and we have, as a result, learned a good deal about the epidemiology of the gender difference, the reasons why it emerges in early adolescence, and the multivariate possibilities that might explain why it occurs. At the same time, the recent research has served to highlight the substantial gaps in our knowledge. For example, we know quite a lot about the epidemiology of the gender difference in the United States and Western Europe but much less about Asia and South America, and almost nothing about Africa. We know a fair amount about possible causes of the gender difference in adolescence and early adulthood (particularly among college students in the United States), but we know much less about possible causes in the general adult population and the elderly. It is important to remember that the causes of the gender difference in unipolar depression may very well be different at different ages and in different cultures.

One of the aspects of the gender difference in depression with which researchers probably should be more concerned is the question of whether there is only a gender difference in initial episodes of depression or whether there are also gender differences in the chronicity of depression, in the recurrence of depression, or in the speed of episodic recovery. Generally speaking, any or all of these, could lead to the observed overall gender difference in depression. On the basis of epidemiological evidence, Kessler [118] has suggested that there is only a gender difference in initial episodes of depression. Nolen-Hoeksema's response styles theory [119], on the other hand, specifically argues that women are much more likely than men to ruminate about their depressive symptoms and rumination leads to greater likelihood of recurrence and chronicity and to slower recovery [27], and insofar as there are gender differences in stress generation, this too could lead to chronic and recurrent depression [64].

Historically, one of the things that has made the gender difference in depression particularly difficult to understand has been the valiant attempts by researchers to find 'the' cause. Only more recently have investigators gathered data on variables representing multiple possible causes to see how they might concatenate to explain the gender difference. Even though more studies are now being done that look at multiple possible causes

simultaneously, most of these studies operate on an implicit additive model that asks whether each of several variables accounts for a significant part of the variance in the gender difference [56,63,70]. Only a few studies begin with a model that specifies the processes that might be involved in creating and maintaining the gender difference and then specifically test that model. These studies are to be commended. Clearly, more of them are needed.

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