Journal of Emotional and Behavioral Disorders

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What is This?

Gender Differences in Depressive Symptoms During Adolescence:

Role of Gender-Typed Characteristics, Self-Esteem, Body Image, Stressful Life Events, and Pubertal Status

DIANE MARCOTTE, LAURIER FORTIN, PIERRE POTVIN,
AND MYRA PAPILLON

IN THE LAST TWO DECADES, DEPRESSION among teenagers has emerged as a major mental health problem. Between 20% to 35% of boys and 25% to 40% of girls have been identified as having experienced a depressed mood (Petersen et al., 1993), whereas between 8% and 18% of school populations have presented a clinical level of depressive symptoms (Reynolds, 1992).

The consequences of a depressive episode during adolescence are serious, the most dramatic being the risk of school dropout and suicidal behavior (Lewinsohn, Gotlib, & Seeley, 1995; Marcotte, 2000). Puig-Antich et al. (1993) found that adolescents with depression have shorter friendships and are less popular among their peers in school. They present learning difficulties more frequently (Dalley, Bolocofsky, Alcorn, & Baker, 1992). Moreover, the probability of experiencing a second depressive episode during adolescence or early adulthood constitutes a major risk (Kandel & Davies, 1986; Kovacs et al., 1984).

Although boys present a similar or even higher rate of depressive symptoms than girls prior to adolescence, girls become more depressive than boys during their teenage years. Pubertal changes have been suggested to be more stressful for girls than for boys. In addition, they occur more often in synchronicity with the transition to high school, accounting for the emergence of a higher rate of depressive symptoms in girls than in boys during adolescence. Five hundred and forty-seven French-speaking adolescents between the ages of 11 years and 18 years (M = 14.46 years; 279 girls and 268 boys) participated in the present cross-sectional study and completed the French versions of the Beck Depression Inventory, the Bem Sex-Role Inventory, the Life Event Questionnaire, the Rosenberg Self-Esteem Questionnaire, the body image subscale of the Offer Self-Image Questionnaire, and the Pubertal Development Scale. The results support the view that body image, self-esteem, and negative stressful life events mediate the relationship between gender and depressive symptoms during adolescence. Analyses of a subsample of adolescents who recently went through the transition to high school indicate that body image, self-esteem, and negative stressful life events mediate the relationship between pubertal status and depressive symptoms during the transition to high school.

Although significant progress has been achieved in the conceptualization of depression in adolescents in the last two decades, it still remains difficult to precisely determine its prevalence rates. Measures used in studies are heterogenous, varying from self-reports to diagnostic interviews (for a review of instruments, see Reynolds, 1992). In addition, the term *depression* has a number of meanings. The depressive syndrome is defined as a combination of symptoms often found together that affect functioning of the individual in the cognitive, behavioral, affective, and somatic domains. Also called "clinical level of depressive symptomatology," the depressive syndrome is often inferred from school samples using

self-report measures of depressive symptoms. The latter method of defining depression was retained in the present study, which was conducted in Quebec, a province of Canada where the rate of depressive symptoms and suicide among young people has been found to be particularly high (Marcotte, 1996; Tousignant, Hamel, & Bastien, 1988). Thus, the term *depressive symptoms* is used in the present study to designate a clinical level of depressive symptoms and to refer to a high score on the *Beck Depression Inventory* (BDI; Beck, 1978), a well-known self-report measure of depressive symptoms. This approach—defining depression as a dimension on a continuum rather than by categories, as with the diagnosistic approach—was recommended by Caron and Rutter (1991). Hinden, Compas, Howell, and Achenbach (1997) suggested that quantative variations offer a better reflection of psychopathology during childhood and adolescence, particularly regarding depression. Based on this recommendation, the subclinical level of depressive symptoms may be studied in relation to other problems of adolescence.

DEVELOPMENTAL CHANGES IN ADOLESCENT DEPRESSIVE SYMPTOM RATES

A marked increase in depressive symptoms appears in the time between childhood and adolescence. Although boys present a similar or even higher rate of depressive symptoms than girls prior to adolescence, a marked increase in depressive symptoms among girls occurs during the teenage years; the ratio of depression between girls and boys being about 2 to 1 in this age group (Allgood-Merten, Lewinsohn, & Hops, 1990; Nolen-Hoeksema, 1990; Rutter, 1986; Wichstrom, 1999). Highly different findings have been reported in the literature about the timing of the emergence of this difference between the genders. Some studies found that depressive disorders in girls begin to emerge as early as ages 10 years to 14 years (Angold, Costello, & Worthman, 1998; Kessler, McGonagle, Swartz, Blazer, & Nel-

son, 1993), whereas others suggested ages 15 years to 19 years (Burke, Burke, Regier, & Rae, 1990). The emergence of these higher depressive rates for girls than for boys during adolescence could possibly be linked to pubertal status rather than chronological age (Rutter, 1986). Angold et al. suggested that the Tanner stages of pubertal status covary more with depression rates than with age and that after mid-puberty, girls have higher depression rates than boys. The onset of a higher depression rate for girls during adolescence, which is maintained during adulthood (Culbertson, 1997; McGrath, Keita, Strickland, & Russo, 1990), emphasizes the importance of this developmental period during which factors leading to the onset of depression should be examined. Although many researchers have reported this gender difference, few have studied correlates associated with the emergence of that difference.

GENDER-TYPED CHARACTERISTICS AND ADOLESCENT DEPRESSION

A link between the learning of gender roles and depression has been postulated in the literature to explain gender differences regarding depression during adolescence. Derived from the "gender intensification hypothesis" (Hill & Lynch, 1983), this model hypothesized that body changes related to puberty heighten teenagers' attention to the significance of their gender. Because adolescents may still be unclear about gender role identification, they may tend to rely more on gender stereotypes. In accordance with that perspective, Alfieri, Ruble, and Higgins (1996) observed an increased adherence to feminine stereotypes in girls with age as well as an increased identification with masculine stereotypes in boys. However, different results were obtained by Galambos, Almeida, and Petersen (1990) and by Lapointe and Marcotte (2000), who found an increased adherence to feminine characteristics with age for both genders.

A positive relationship was reported in some studies between *instrumentality,* the

term proposed by Spence (1991) to define masculine gender-typed characteristics, and psychological well-being. Individuals who possessed a higher degree of instrumental characteristics reported less depressive symptoms and interiorized symptoms, higher self-esteem (Basoff & Glass, 1982; Lamke, 1982; Waelde, Silvern, & Hodges, 1994; Whitley & Gridley, 1993), and better problem-solving abilities (Marcotte, Alain, & Gosselin, 1999). Thus, the adoption of masculine gender-typed characteristics would represent a protective factor against depressive symptoms in adolescence (Allgood-Merten et al., 1990; Hart & Thompson, 1996). On the other hand, feminine gender-typed characteristics have been proposed as being more depressogenic. The results of studies regarding *expressivity,* the term proposed to define feminine gender-typed characteristics, are less consistent, however. Many of these studies' authors suggested that expressivity was not associated with the presence of depressive symptoms (Craighead & Green, 1989; Steenbarger & Greenberg, 1990; Waelde et al.; Whitley & Gridley), but Wong and Whitaker (1993) found a link between expressivity and symptoms of depression. Hart and Thompson (1996) found that a low level of instrumentality matched with undesirable feminine characteristics was associated with an increase in depressive symptoms.

SELF-ESTEEM, BODY IMAGE, PUBERTAL STATUS, AND DEPRESSIVE SYMPTOMS

There is also a difference in the way boys and girls experience the physical changes related to puberty (Graber, Petersen, & Brooks-Gunn, 1996). Boys express greater satisfaction concerning these changes, interpreting them as characterizing masculinity (Nolen-Hoeksema & Girgus, 1994). In contrast, for girls, body changes mean loss of the prepubertal body image valued in our society in addition to the discomfort associated with menarche and the stress of beginning an active sexual life (Usmiani & Daniluk, 1997). Dornbusch

et al. (1984) found that a growing percentage of girls desired to become thinner as they progressed toward pubertal status. In a study conducted by Wichstrom (1999), gender discrepancies increased, especially between 12 years and 14 years of age. Polce-Lynch, Myers, Kilmartin, Forssmann-Falck, and Kliewer (1998) suggested that the gender differential impact of negative body appreciation on self-esteem is stronger at the beginning of adolescence.

Gender differences in self-esteem during adolescence (Tobin-Richard, Boxer, McNeil Kavrell, & Petersen, 1984), as well as the relationship between self-esteem and depressive symptoms (Rosenberg, Schoenbach, Schooler, & Rosenberg, 1995), have been well-documented in the literature. The association between negative body image and depressive symptoms has also been reported in a number of studies conducted among adolescent populations (Koenig & Gladstone, 1998; Rierdan & Koff, 1991). Body image and self-esteem were identified by Allgood-Merten et al. (1990) as the two most important factors explaining gender differences in depressive feelings. A stronger association between these variables was found in girls than in boys, reflecting greater consideration of body image by girls than by boys.

Nolen-Hoeksema and Girgus (1994) considered the interaction of puberty, an event that is particularly stressful for girls, and the transition to high school, another stressful event occurring at the beginning of adolescence. This perspective is in accordance with other studies that have suggested that normative developmental transitions are more stressful if they occur simultaneously because they do not allow the adolescent to adjust to one change at a time (Coleman, 1989; Simmons, Blyth, Van Cleave, & Bush, 1979). This view was supported by the results of Petersen, Sarigiani, and Kennedy (1991), who noted higher depressive symptoms in girls who went through the high school transition at the same time as they experienced the 6-month peak of pubertal changes. According to this theory, the synchronicity of these stressful events accounts for the

higher rates of depressive symptoms among girls than among boys in adolescence. Not only are pubertal changes interpreted by boys as a positive event, but these changes start later in boys than in girls, thus reducing the likelihood that they will occur simultaneously with the transition to high school.

In summary, differential socialization as well as differential reaction to pubertal maturation in relation to body image and self-esteem seem to influence the emergence of gender differences in depressive symptoms during early adolescence. The goal of this cross-sectional study was to explore differences in rates of depressive symptoms in boys and girls during adolescence in relation to gender-typed characteristics, body image, self-esteem, stressful life events, and pubertal status. Although some investigators have begun to examine the relationship between these variables and depressive symptoms, to date no research has evaluated them together. Moreover, the mediating roles of these variables in the relationship between gender and depressive symptoms, and in the relationship between pubertal status and depressive symptoms during high school transition, remain unexplored. Finally, as pointed out by Angold et al. (1998), with the exception of one study (Angold & Rutter, 1992), few investigations have directly examined the link between pubertal status and depression.

The following hypotheses were tested.

1. Girls are more depressed than boys during adolescence.
2. Higher rates of depressive symptoms are associated with a lower level of instrumental characteristics, lower self-esteem, a more negative body image, a higher level of negative stressful events, and more advanced pubertal status for girls.
3. Instrumental characteristics, self-esteem, body image, and negative stressful events mediate the relationship between gender and depressive symptoms during adolescence.
4. Instrumental characteristics, self-esteem, body image, and negative stressful events mediate the relation-

ship between pubertal status and depressive symptoms during the transition to high school.

METHOD

Participants

The 547 White, French-speaking adolescents who participated in the present study were 11 years to 18 years old ($M = 14.46$ years). There were 279 girls and 268 boys from Grades 6 through 12 who attended one elementary public school and one public high school located in an upper–middle class, urban community in Quebec, Canada. All the students who were present at these schools were invited to participate, and a participation rate of 92% was obtained. Absent students were not included in the sample, and 12 questionnaires were rejected. All the participants volunteered to enroll in the study. Participants—as well as their parents, if participants were younger than 14 years of age—signed consent forms prior to completing the questionnaires. The participants completed all questionnaires during a class. The general purpose of the study was explained to them by two trained research assistants, and informed consent forms were distributed. The questionnaires took approximately 40 minutes to complete.

Dependent Measures

BDI. The severity of depressive symptoms was assessed through use of the French version of the BDI (Bourque & Beaudette, 1982). The BDI is a well-known self-report measure of depressive symptoms consisting of 21 items assessing the severity of affective, behavioral, cognitive, and somatic symptoms of depression. Each item is scored on a 3-point scale. Total scores, obtained by adding the items, range between zero and 63. The validity of this measure for use with adolescents has been confirmed (Barrera & Garrison-Jones, 1988; Strober, Green, & Carlson, 1981; Teri, 1982). A sensitivity of 100% and a specificity of 93.2% were

obtained with a cutoff score of 16 in the selection of a subsample representative of the clinical population selected by a diagnostic of major depression (Barrera & Garrison-Jones). An internal consistency coefficient of .88 was obtained in the present study.

Bem Sex-Role Inventory (BSRI).

The BSRI (Bem, 1974) is a 60-item self-rating scale assessing instrumental (e.g., ambitious, analytical, assertive) and expressive (e.g., affectionate, gentle, loyal) characteristics related to gender roles. The French version of the BSRI (Alain, 1987) was used. Minor changes were made to the wording and vocabulary to render the items more suitable for adolescents. Each subscale contains 20 gender-typed items and 20 neutral items (e.g., adaptable, conscientious, friendly). Each of the items is assessed on a 7-point Likert scale (1 = never or almost never, 7 = always or almost always). Scores on each subscale, which are obtained by computing the mean of the 20 items, range between 1 and 7. For a sample of French adolescents, internal consistency was found to be .80 for the instrumentality scale and .77 for the expressivity scale (Marcotte et al., 1999). In the present study, these consistency coefficients were .83 and .81, respectively. In the original study, which used college students, Bem (1974) reported alpha coefficients of .86 and .80 for the instrumentality and expressivity scales, respectively.

Pubertal Development Scale (PDS).

This self-report measure (Petersen, Crockett, Richards, & Boxer, 1988) was used to assess pubertal status. Five categories were used to determine the participants' pubertal status. Boys were asked about pubic, axial, and facial hair growth and about voice changes. Girls were asked about pubic hair growth, breast development, and menses. For each item (except menses), the participant answered on a scale of 1 to 4 (1 = it had not started at all, 2 = it had just started, 3 = it was advanced, 4 = it was complete). For menses, girls indicated whether it had started or not. The validity and reliability of the self-report measures for maturational development

had been established previously (Peterson et al., 1988). The scores for the PDS range between 1 and 5, following the five categories (1 = prepubertal, 2 = early pubertal, 3 = midpubertal, 4 = late pubertal, and 5 = postpubertal).

Life Event Questionnaire (LEQ).

The LEQ (Newcomb, Huba, & Bentler, 1981) is composed of 39 items representing stressful events for adolescents (e.g., parents' divorce, school change, pregnancy). Each item is scored on two subscales. The first involves a subjective evaluation on a 5-point Likert scale of the positive, neutral, or negative impact of the event on the individual's life (very happy, happy, neutral, unhappy, very unhappy). The second score involves the prevalence of the given situation in the individual's life, indicated on a dichotomous scale (did or did not happen during the last 12 months or over the last year). In this study, only the frequencies of events evaluated as negatively stressful in the last year were used. Total scores obtained in the present study ranged between zero and 86. P. Baron, Toubert, & Mercier (1991) validated a French version of the LEQ and reported good psychometric properties with a sample of French-speaking high school adolescents.

Offer Self-Image Questionnaire (OSIQ).

Body image was assessed by a subscale of the OSIQ (Offer, Ostrov, & Howard, 1981), which is a well-known and widely used self-report inventory for adolescents. It measures the degree of satisfaction with body image of the respondent on a 7-item scale. Each item is scored on a 6-point Likert scale (1 = describes me very well, 6 = does not describe me at all). Total scores range between 7 and 42. The degree of satisfaction with general physical appearance and with body changes is assessed. In the present study, an internal consistency coefficient alpha of .70 was obtained. Allgood-Merten et al. (1990) reported a coefficient of .74 on an abbreviated measure of four items.

Rosenberg Self-Esteem Questionnaire (SEQ).

This well-known measure of self-esteem elaborated by Rosenberg (1989)

includes 10 items. Each item is scored on a 4-point scale (1 = completely agree, 4 = completely disagree). Total scores range between 10 and 40. An internal consistency coefficient alpha of .88 was obtained in the present study.

RESULTS

Changes in Depressive Symptoms and Other Variables

The means and standard deviations obtained for depressive symptoms, pubertal status, gender-typed characteristics, body image, self-esteem, and negative stressful life events in girls and boys by age groups are presented in Table 1. A 2 (Gender) × 4 (Age Group) analysis of variance (ANOVA) on depressive symptoms scores revealed that the girls reported higher levels of depressive symptoms than did the boys, $F(1, 423) = 10.06$, $p < .01$, in accordance with the first hypothesis. Although examination of the means showed that the discrepancy between girls and boys on depressive symptoms scores appeared to be more significant with age, the effect of the interaction between age group and gender was not significant. On the other hand, a 2 (Gender) × 4 (Age Group) ANOVA on instrumentality, expressivity (BSRI), body image (OSIQ), self-esteem (SEQ), negative stressful life events (LEQ), and pubertal status (PDS) scores revealed a main effect of gender on all these dimensions. The girls adopted more expressive characteristics than did the boys, $F(1, 423) = 67.41$, $p < .001$, whereas the boys adopted more instrumental characteristics than did the girls, $F(1, 423) = 14.00$, $p < .001$. The girls also reported a more negative body image, $F(1, 423) = 26.59$, $p < .001$; a lower self-esteem, $F(1, 405) = 6.50$, $p < .01$; a higher number of negative stressful life events, $F(1, 397) = 8.86$, $p < .01$; and a more advanced pubertal status, $F(1, 417) = 132.71$, $p < .001$, than did the boys. In order to support with more accuracy these gender differences and because gender differences was a major focus of the study, we computed the effect size indexes (d) for each of these gender comparisons so that girls were compared with boys

(Cohen, 1988). Because standard deviations sometimes differed, averaged standard deviations were calculated (Hopkins, Glass, & Hopkins, 1987). All the effect size indexes were significant, although they ranged from a small effect size for depressive symptoms ($d = .30$), instrumentality ($d = .31$), body image ($d = .48$), self-esteem ($d = .21$), and stressful life events ($d = .27$) to a medium effect size for pubertal status ($d = .78$) and expressivity ($d = .77$).

Group age effects were also detected for body image, $F(3, 4) = 4.95$, $p < .01$; self-esteem, $F(3, 4) = 3.55$, $p < .01$; stressful life events, $F(3, 4) = 6.97$; $p < .001$; and pubertal status, $F(3, 4) = 175.02$, $p < .001$. Scheffé multiple comparison analyses showed that the youngest age group (11 years–12 years) adopted a more positive body image than did the oldest age group (17 years–18 years) and a higher self-esteem than did the 13- and 14-year-old group. Moreover, the youngest age group also reported a lower number of stressful life events than did the other two age groups. On that dimension, the 13- to 14-year-old group reported a lower number of stressful events than the 15- to 16-year-old group. The pubertal status increased with age. No interaction effect was detected for the dependent variables in the study.

Prediction of Depressive Symptoms

Separated Pearson product-moment correlations for boys and girls were computed to explore the relationship between scores on the BDI and other variables examined. Given the number of correlations reported, an alpha level of .01 was used for testing the hypotheses. For both genders, BDI scores significantly and negatively correlated with scores on body image and self-esteem, and they positively correlated with scores on negative stressful life events (see Table 2). A low correlation was present between instrumentality and BDI scores for boys, but that relationship was not significant for girls. Expressivity did not correlate with depressive symptoms scores for either gender. These results support the second

hypothesis, suggesting that adolescents who are depressed have a more negative body image, lower self-esteem, and a higher number of negative stressful life events. The hypothesis of a relationship between a low level of instrumental characteristics and depressive symptoms was only weakly supported for boys.

On the other hand, scores on instrumentality were positively correlated with body image and self-esteem for girls and boys, although the relationship between instrumentality and body image for girls was weak and lower than for boys. Thus, the adoption of instrumental characteristics was related to a more positive body image for boys and to higher self-esteem for both genders. Expressivity was positively correlated with scores on body image for girls and with scores on self-esteem for boys. On the other hand, girls and boys who had a positive body image reported higher self-esteem, and for girls a positive body image was also associated with a lower number of negative stressful life events during the last 12 months.

The relationship between depressive symptoms and the study variables was further examined by conducting hierarchical regression analyses using BDI scores as the dependent variable. A first hierarchical analysis was performed in which BDI scores served as the dependent variable. In the first step, pubertal status was found to account for a small but significant percentage of variance of the BDI scores, $F(1, 488) = 4.23$; R^2 change $= .01$, $p < .05$. Gender was entered in the second step of this analysis and accounted for an additional small percentage of variance, $F(2, 487) = 5.64$; R^2 change $= .01$, $p < .01$. The unique contribution of gender was found to be significant ($\beta = .11$, $p < .05$), but the contribution of pubertal status was not ($\beta = .05$, $p = ns$). In the third step of this analysis, scores on instrumentality, expressivity, body image, self-esteem, and negative stressful life events were entered in the equation. These variables accounted for a significant percentage of the variance in BDI scores, $F(7, 482) = 105.21$; R^2 change $= .51$, $p < .001$. Overall, among these variables, the unique contributions of body image ($\beta = -.23$, $p < .001$); self-esteem ($\beta = -.50$, $p < .001$); and nega-

tive life events ($\beta = .20$, $p < .001$) were significant.

The mediating role of body image, self-esteem, and negative stressful life events in the relationship between gender and depressive symptoms was then examined. A series of hierarchical regression analyses were conducted to verify the conditions of a mediating relationship.

1. If gender would predict the dependent variable (BDI scores).
2. If gender would predict the mediator.
3. If the mediator would predict the dependent variable (BDI scores).
4. When these relationships were controlled, if gender did not predict BDI scores, as suggested by R. M. Baron and Kenny (1986).

The results of these analyses are summarized in Table 3. As expected, gender was found to be a significant predictor of BDI scores. Gender was also a significant predictor of body image, negative stressful life events, and self-esteem. When body image was partialed out, a significant relationship between gender and depressive symptoms no longer existed. Similarly, when self-esteem was controlled, a significant relationship between gender and depressive symptoms no longer existed. Finally, once negative stressful life events were controlled, gender accounted for a lower percentage of the variance of BDI scores. In summary, these results support the third hypothesis, suggesting that body image, self-esteem, and negative stressful life events mediate the relationship between gender and depressive symptoms during adolescence.

Adolescent Depressive Symptoms

A subsample of younger adolescents who had recently gone through the transition to high school was examined. Participants in this subsample ($n = 276$) were selected following their grade and had experienced the high school transition in the last 14 months.

Results revealed that only the scores on body image and self-esteem negatively correlated with depressive symptoms for

TABLE 1
Means and Standard Deviations of Study Variables by Gender and Age Group

Variable	Ages 11-12		Ages 13-14		Ages 15-16		Ages 17-18		Total girls[i]	Total boys[j]
	Girls[a]	Boys[b]	Girls[c]	Boys[d]	Girls[e]	Boys[f]	Girls[g]	Boys[h]		
Depression (BDI)	9.27 (8.73)	7.92 (7.52)	11.77 (10.68)	9.21 (9.39)	10.69 (7.29)	7.56 (6.27)	10.26 (6.31)	8.12 (7.87)	10.62 (8.57)	8.19 (7.77)
Pubertal status (PDS)	2.98 (.76)	2.33 (.70)	3.92 (.55)	3.20 (.67)	4.40 (.52)	3.73 (.62)	4.71 (.50)	4.16 (.66)	4.02 (.84)	3.33 (.92)
Instrumentality (BSRI-I)	4.49 (.84)	4.71 (.90)	4.66 (.71)	4.83 (.66)	4.58 (.74)	4.92 (.71)	4.65 (.75)	4.85 (.62)	4.60 (.75)	4.83 (.73)
Expressivity (BSRI-E)	4.89 (.67)	4.37 (.83)	4.95 (.68)	4.50 (.71)	5.01 (.51)	4.55 (.61)	4.98 (.48)	4.45 (.49)	4.96 (.59)	4.47 (.68)
Body image (OSIQ)	29.64 (6.25)	32.17 (6.66)	28.15 (6.55)	32.27 (5.49)	27.79 (5.57)	30.59 (5.34)	27.56 (5.62)	28.96 (6.03)	28.25 (6.00)	31.10 (6.00)
Stress (LEQ)	6.90 (7.09)	4.31 (5.62)	10.11 (9.55)	9.70 (13.25)	8.52 (7.52)	5.73 (6.20)	11.31 (8.85)	8.10 (7.96)	9.15 (8.42)	6.84 (8.86)
Self-esteem (SEQ)	31.32 (5.29)	32.02 (5.21)	28.73 (5.61)	30.66 (5.75)	29.98 (4.80)	31.10 (3.84)	31.33 (4.90)	31.42 (5.07)	30.17 (5.24)	31.26 (4.96)

Note. BDI = Beck Depression Inventory (Beck, 1978); PDS = Pubertal Developmental Scale (Petersen et al., 1988); BSRI = Bem Sex-Role Inventory (Bem, 1974); OSIQ = Offer Self-Image Questionnaire (Offer et al., 1981); LEQ = Life Event Questionnaire (Newcomb et al., 1981); SEQ = Rosenberg Self-Esteem Questionnaire (Rosenberg, 1989).
[a]n = 60. [b]n = 65. [c]n = 81. [d]n = 70. [e]n = 88. [f]n = 82. [g]n = 50. [h]n = 51. [i]n = 279. [j]n = 268.

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TABLE 2
Pearson Product-Moment Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8
1. Age	—	.73***	.01	.05	.06	-.21***	-.05	.10
2. Pubertal satus	.72**	—	.01	.09	.05	-.08	-.02	.07
3. Depression	.02	.12	—	-.15**	-.10	-.40***	-.62***	.24***
4. Instrumentality	.06	.05	-.14	—	.38***	.30***	.24***	-.01
5. Expressivity	.10	.04	-.12	.15**	—	.11	.28***	.06
6. Body image	-.11	-.09	-.64***	.16**	.22***	—	.46***	-.15
7. Self-esteem	.04	-.06	-.69***	.23***	.14	.60***	—	-.14
8. Stress	.13	.12	.49***	.05	-.01	-.35***	-.33***	—

Note. Bottom and left: girls; top and right: boys.
**$p < .01.$ ***$p < .001.$

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Variable	Dependent variable	F change	R^2 change	β
Gender and	Depression	8.65	.02**	.13
gender	Body image	22.60	.04***	−.21
	Stress	6.26	.01**	.11
	Self-esteem	5.42	.01*	−.10
Body image (Block 1)	Depression	203.84	.29***	−.54
Gender (Block 2)	Depression	0.23	.00	.02
Self-esteem (Block 1)	Depression	392.78	.45***	−.67
Gender (Block 2)	Depression	3.44	.00	.06
Stress (Block 1)	Depression	84.76	.15**	.38
Gender (Block 2)	Depression	4.60	.01*	.09

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

boys, whereas the scores on body image, self-esteem, and stress correlated with depressive symptoms for girls (see Table 4). Because an alpha level of .01 was also retained in the interpretation of these results, scores on pubertal status were not significantly correlated with BDI scores for either gender. On the other hand, negative stressful life events highly correlated with body image and self-esteem and moderately correlated with pubertal status for girls, but that relationship was not significant for boys.

The relationship between depressive symptoms and the study variables was further examined for this subsample of adolescents who had gone through the transition to high school. We conducted hierarchical regression analyses using BDI scores as the dependent variable. A first hierarchical analysis was performed in which BDI scores were used as the dependent variable. In the first step, pubertal status was found to account for a small but significant percentage of the variance in BDI scores, $F(1, 125) = 5.06$, R^2 change $= .04, p < .05$. Gender was entered in the second step of this analysis, but it did not account for a significant percentage of the variance, $F(2, 124) = 0$, R^2 change $= 0$, ns. Overall, the unique contribution of pubertal status was found to

be significant ($\beta = .20, p < .05$), but the contribution of gender was not. In the third step of the analysis, scores on instrumentality, expressivity, body image, self-esteem, and negative stressful life events were entered in the analysis. Here again, these variables accounted for a significant percentage of the variance in BDI scores, $F(7, 119) = 21.42$, R^2 change $= .46$, $p < .001$. Among these variables, only the unique contribution of self-esteem was significant ($\beta = -.55, p < .001$), although the contributions of body image ($\beta = -.17$, $p = .056$) and negative stressful life events ($\beta = .13, p = .058$) almost attained statistical significance.

The mediating role of body image, self-esteem, and negative stressful life events in the relationship between pubertal status and depressive symptoms was then examined. A series of hierarchical regression analyses was conducted to verify the condition of a mediating relationship (see Table 5). Pubertal status was found to be a significant predictor of BDI scores and also of self-esteem, body image, and negative stressful life events. When self-esteem was partialed out, a relationship no longer existed between pubertal status and depressive symptoms. Similarly, when body image was controlled, a relationship no longer existed between pubertal status

and depressive symptoms. Finally, once negative stressful life events were controlled, no relationship existed between pubertal status and depressive symptoms. These results thus support the hypothesis that body image, self-esteem, and negative stressful life events mediate the relationship between pubertal status and depressive symptoms during the transition to high school.

DISCUSSION

A first objective of the present study was to examine gender differences in depressive symptoms for adolescents from a wide age range. Our findings revealed the presence of a higher level of depressive symptoms for girls in comparison to boys. These data support the first hypothesis and confirm the results of preceding studies conducted with subsamples of early or late adolescents that indicated that girls experience more depressive symptoms than boys during adolescence (Angold et al., 1998; Nolen-Hoeksema & Girgus, 1994). Results of the present study also support the presence of gender differences on correlates of depressive symptoms— gender-typed characteristics, body image, self-esteem, and number of stressful life events. Girls reported more negative body

TABLE 4
Pearson Product-Moment Correlations Among Variables for Transition to High School

Variable	1	2	3	4	5	6	7	8
1. Age	—	.35**	-.10	.46***	.23	.08	.11	.08
2. Pubertal status	.19	—	.07	.20	.04	-.03	-.06	.11
3. Depression	.04	.26	—	-.12	-.08	-.31**	-.60***	.15
4. Instrumentality	.26	-.07	-.07	—	.62***	.18	.26	.03
5. Expressivity	.06	.09	.02	.22	—	.12	.20	.05
6. Body image	-.15	-.15	-.64***	.18	.05	—	.49***	-.09
7. Self-esteem	-.09	-.31**	-.72***	.24	.03	.65***	—	-.15
8. Stress	.02	.26**	.58***	.14	.11	-.43***	-.48***	—

Note. Subsample *n* = 276. Bottom and left: girls; top and right: boys.
**p < .01. ***p < .001.

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TABLE 5
TABLE 5
Mediating Role of Body Image, Self-Esteem and Stress on the Relationship of Gender and Depression for Transition Sample

Variable	Dependent variable	F change	R^2 change	β
Pubertal status and	Depression	5.06	.04*	.20
pubertal status	Self-esteem	6.08	.05*	−.22
	Body image	8.00	.06**	−.26
	Stress	4.20	.03*	.18
Self-esteem (Block 1)	Depression	102.31	.45***	−.67
Pubertal status (Block 2)	Depression	0.66	.00	.06
Body image (Block 1)	Depression	42.95	.26***	−.51
Pubertal status (Block 2)	Depression	.96	.01	.08
Stress (Block 1)	Depression	16.35	.12***	.34
Pubertal status (Block 2)	Depression	2.74	.02	.14

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

image and self-esteem and indicated that they had experienced a greater number of negative stressful life events in the last 12 months.

A second objective of the present study was to examine the relationship between depressive symptoms and gender-typed characteristics, body image, self-esteem, stressful negative life events, and pubertal status for girls and boys during adolescence. Our results also confirm some of the findings of preceding studies in which relationships between depressive symptoms and these variables were examined, but it did not support results obtained in other studies. Adolescents who had a negative body image and a low self-esteem, and who had experienced a high number of stressful life events, reported more depressive symptoms. When the subsample of younger adolescents who had recently made the transition to high school was examined, it was found that adolescents of this group, who also had a negative body image and low self-esteem, reported more depressive symptoms. However, a high number of stressful life events was associated with depressive symptoms for girls but not for boys. The association between depressive symptoms and body image seemed to be more important for girls than

for boys, which was also noted by Koenig and Wasserman (1995). In addition, the association between depressive symptoms and stressful life events also appeared to be stronger for girls than for boys. Our results did not reveal a direct association between pubertal status and depressive symptoms for either gender; moreover, the relationship reported in some previous studies between instrumental characteristics and depressive symptoms was only weakly supported for boys.

Although the present results support the adherence to gender-typed characteristics during adolescence, they do not confirm an increase in the adoption of these attributes during that developmental period, as postulated by the gender intensification hypothesis. Both genders adopted gender-typed characteristics related to their gender, but no increase of this conformity to gender roles was observed in the older age groups in comparison with the younger age groups. These present results are also consistent with findings reported in preceeding studies suggesting that expressivity was not directly associated with the presence of depressive symptoms (Steenbarger & Greenberg, 1990; Waelde et al., 1994; Whitley & Gridley, 1993).

The present results confirmed that the components of adolescent development, which are gender-typed characteristics, body image, self-esteem, and stress, were interrelated. For both genders, positive association between self-esteem and instrumental characteristics and an association between body image and instrumental characteristics was found, although the latter association was less pronounced for girls. Also, boys and girls who had a positive body image had higher self-esteem. An association between a positive body image and a low level of stressful life events was also detected for girls.

Beside the examination of these associations, an important objective of the present study was to explore the mediating role of body image, self-esteem, and stressful life events in the relationship between gender and depressive symptoms during adolescence. In keeping with the third hypothesis, our findings supported the theory of a higher level of depressive symptoms in girls than in boys during adolescence, although it was of less importance in magnitude than expected. This can be explained by the fact that the girls appreciated their body less, had a lower self-esteem, and experienced a higher number of stressful events than did the

boys. The present results also supported the influence of pubertal status, although modest, in the prediction of depressive symptoms in adolescents who experienced the high school transition. Again, the results of this study confirmed, as proposed by the fourth hypothesis, that self-esteem, body image, and stressful life events also play a mediating role in the prediction of depressive symptoms by pubertal status during the transition to high school. The contribution of pubertal status to the higher prevalence of depressive symptoms in girls during adolescence had been proposed by other authors (Koenig & Gladstone, 1998; Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1991). The present results suggest that the impact of puberty differs, depending on the appreciation of the adolescent of his or her appearance and self-esteem and on the level of stress he or she is experiencing. In this context, girls who have a positive appreciation of themselves and their bodies would be much less vulnerable to depression in spite of the fact that they experience the changes of puberty at the same time as they experience the high school transition.

Body image in the context of puberty and its relationship to self-esteem, and the stress associated with the transition to high school, appear to be crucial components in the identification of young people at risk for depression. These risk factors are present for both genders throughout adolescence, but their intensity seems to be stronger for girls. As suggested in some studies (Brooks-Gunn & Attie, 1996; Koenig & Gladstone, 1998), the negative body image and self-esteem of girls during adolescence may be interpreted in relation to cultural values. Pubertal changes are associated with more negative meanings and consequences for girls than for boys in our culture. In addition to the discomfort of menarche, during adolescence, girls experience the loss of the prepubertal body image valued in Western society because of fat gain associated with hormonal changes. In addition, girls experience more stress associated with the beginning of an active sexual life than do boys. Studies of gender differences in depression conducted among adults in developing countries supported the contribution of a social component in explaining gender differences in depression (see Culbertson, 1997).

The present findings also suggest that the gender differences in depressive symptoms during adolescence should be interpreted in the context of school transition. It has been postulated (Koenig & Gladstone, 1998; Nolen-Hoeksema & Girgus, 1994; Petersen et al., 1991) that girls are more likely to experience the transition toward pubertal maturity at the same time as they experience the transition from elementary and junior high to high school because they start puberty 2 years earlier than do boys (Nolen-Hoeksema, 1990). Following the theoretical hypothesis that normative developmental transitions are less stressful if they are experienced sequentially rather than simultaneously, thus giving adolescents the opportunity to adjust to one change at a time (Coleman, 1989), girls would be more at risk of developing depressive symptoms at the beginning of adolescence. The present data also support the results of empirical studies such as those of Simmons et al. (1979) and Petersen et al. (1991) in which negative affect and lower self-esteem occurred in adolescent girls who experienced two or more changes in synchronicity.

These findings have important implications for the development of intervention programs for adolescents who present depressive symptoms. To date, these programs (for a review see Marcotte, 1997; Reynolds, 1992) have often been implemented in the school context, which is, from our point of view, an optimal context because intervention programs can be offered within the academic curriculum in a way that facilitates the participation of adolescents. Moreover, the school context offers the possibility of screening for depression in adolescents and inviting them to participate in the intervention with a lower degree of stigmatization than in the context of mental health clinics. Among the existing programs, many have included some components directed toward developing cognitive and behavioral abilities such as problem-solving, communication, and social skills (Jaycox, Reivich, Gilham, & Seligman, 1994; Lewinsohn, Clarke, Hops, & Andrew, 1990). It is possible to think that improving these abilities facilitates the development of instrumental characteristics and self-esteem. To date, however, none of these programs has included a component to address the negative body image of adolescents with depression, nor have any of them addressed the stress related to the transition from elementary and junior high to high school. It would also be important to consider the possibility of developing distinct programs for girls and boys to offer differential intervention components specific to each gender.

The present study tried to remedy some weaknesses found in preceding studies on the same subject. Most previous work had relied on age and menarche as the only developmental markers of pubertal status, or they had not used adequate measures of depressive symptoms. In the present study, standardized measures of pubertal status and depressive symptoms were employed with an adolescent population with a wide age range. Several limitations associated with this study should be noted, however. One of these limitations was the use of a self-reported measure of depressive symptoms rather than a clinical diagnosis of major depression. Our results therefore should be replicated with a clinical subsample of adolescents who have been diagnosed with depression to permit generalizability to a clinical population of adolescents with depression. Also, because of the cross-sectional nature of the present investigation, we could not follow a sample of adolescents from the beginning to the end of adolescence to examine changes in depressive symptoms and their correlates in girls and boys during that developmental period. Finally, the sample was composed of adolescents living in a single community, and the order of completion of questionnaires should have been counterbalanced in order to avoid the possibility that some findings were due to order effects.

In addition to conducting longitudinal studies, it would be interesting in future research to examine gender differences in

depressive symptoms in younger children. Our findings suggest that a gender discrepancy might already be present before the beginning of adolescence, before young people experience the transition to high school. Angold and Rutter (1992) postulated that a gender difference could emerge as early as 10 years of age. Following the beginning of adolescence, an increase in gender differences could take place, but depressive symptom rates do seem not to follow a stable progression between the beginning and end of adolescence (Angold et al., 1998). The developmental pathway of depressive symptoms during adolescence needs to be examined more precisely.

Conclusions

The results of this study contribute to support for the importance of considering self-esteem, body image, pubertal status, and stressful negative life events in the development of a comprehensive model of the emergence of gender differences in depressive symptoms during adolescence. The context of the transition to high school should also be taken into consideration as an important factor that influences the stress experienced by adolescents, especially adolescent girls. The contribution of gender-typed characteristics needs to be explored further.

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