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Does self-competence predict gender differences in adolescent depression and anxiety?

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This longitudinal study examined 75 young adolescents to explore whether self-competence predicts the emergence of gender differences in depression and anxiety. During both 6th and 7th grade, boys reported significantly higher levels of self-competence than did girls. In addition, boys were significantly less depressed and anxious than girls in 7th grade, but not in 6th grade. Finally, when the variance contributed by self-competence was accounted for, the relationship between gender and trait anxiety weakened and the relationship between gender and depression became non-significant. These results support the hypothesis that self-competence is partially responsible for the emergence of gender differences in depression and anxiety during early adolescence.

Introduction

A vast literature has demonstrated that the prevalence of emotional problems, particularly depression and anxiety, rises dramatically during adolescence (Compas *et al.*, 1993; Lewinsohn *et al.*, 1994). Therefore, it is not surprising that many adolescents experience symptoms of depression. While the majority of adolescents cannot be diagnosed as being clinically depressed (about 3–9% experience severe depression; Brooks-Gunn and Petersen, 1991; Stewart *et al.*, 1994), many studies have indicated that approximately one-third of adolescents experience mild to moderate depressive symptoms (Compas *et al.*, 1993; Stewart *et al.*, 1994).

Compared to depression, the examination of adolescent anxiety has been relatively neglected. This is unfortunate since recent research (cf., Kashani and Orvaschel, 1990) has indicated that anxiety may be even more common than depression during adolescence. In addition, similar to depression, it is clear that the experience of anxiety increases during adolescence (Clark *et al.*, 1994; Ebata *et al.*, 1990). Conservative prevalence estimates indicate that about 16% of young adolescents (12-year-olds), 17% of middle adolescents (14–16-year-olds), and 21% of late adolescents (17-year-olds) meet the criteria necessary to be diagnosed with an anxiety disorder (Kashani and Orvaschel, 1990). Importantly, a larger majority of adolescents experience mild to moderate levels of anxiety which also may negatively affect their development (Ohannessian *et al.*, 1996).

Adolescent emotional problems and psychosocial adjustment

Since many adolescents experience symptoms of depression and anxiety, it is critical that more research be conducted examining the causes and consequences of these emotional

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problems. It is apparent that both depression and anxiety have implications for immediate and long-term psychosocial functioning. For example, adolescent depression and anxiety have been found to be related to academic problems, social problems, delinquency, substance abuse, and eating disorders during adolescence (Lehman, 1985; Kandel and Davies, 1986; Strauss et al., 1988). Moreover, emotional problems during adolescence (particularly depression) have been found to be significantly associated with adolescent suicide (Simons and Murphy, 1985; Buie and Maltsberger, 1989).

The experience of emotional problems during adolescence also has been linked to problems occurring during adulthood. This primarily appears to be due to the fact that emotional problems that emerge during adolescence tend to persist into adulthood (Weissman *et al.*, 1985; Ebata *et al.*, 1990). Therefore, it is not surprising that many adolescents who experience emotional problems are more likely to have psychosocial difficulties during adulthood, including marital problems, work-related problems, and substance abuse (Kandel and Davies, 1986).

Gender differences in depression and anxiety

The implications of emotional problems are especially pertinent to adolescent girls since a wealth of research has demonstrated that they are at a much greater risk for experiencing depression and anxiety than are adolescent boys. In fact, many studies have indicated that adolescent girls are at least twice as likely to develop clinical depression and anxiety disorders in comparison to adolescent boys (Kashani *et al.*, 1989; Cohen *et al.*, 1993). Adolescent girls also have been found to be significantly more likely to experience low and moderate levels of depression and anxiety than adolescent boys (Allgood-Merten *et al.*, 1990; Nolen-Hoeksema, 1990; Ohannessian *et al.*, 1996). Since emotional problems that develop during adolescence tend to persist into adulthood, it is not surprising that this gender difference similarly continues throughout adulthood, with women remaining twice as likely to experience emotional problems than men (Nolen-Hoeksema, 1990).

When do gender differences emerge? What is most intriguing about the gender difference in emotional problems is that it is absent during childhood (Nolen-Hoeksema, 1990; Brooks-Gunn and Petersen, 1991; Cohen *et al.*, 1993).[1] One important question, therefore, is when do these gender differences emerge? Presently, the answer to this question is unclear. Most of the research within this area conducted to date has focused on middle-to-late adolescents. Research focusing on these age groups has consistently demonstrated that adolescent girls are more likely to experience depression and anxiety (symptomatology and clinical disorders) than are adolescent boys (cf., Brooks-Gunn, 1991; Petersen *et al.*, 1991; Nolen-Hoeksema, 1994). It is important to note, however, that some studies examining younger adolescents (11–12-year-olds) have found the same pattern of results, indicating that even early adolescent females may be more at-risk for depression and anxiety than early adolescent males (Kandel and Davies, 1986; Ohannessian *et al.*, 1996). These latter studies point to the critical need to assess youngsters as early as late childhood to determine when this gender difference consistently emerges.

[1]The majority of studies have not found significant differences in reported levels of anxiety and depression during childhood. However, when differences have been reported, boys have been found to be more likely to exhibit emotional problems than girls (Nolen-Hoeksema, 1994).

Why do gender differences emerge? The other question that needs to be addressed is why do gender differences in emotional adjustment occur? What variables predict these differences? Many studies have found adolescent girls and boys to differ on a number of psychosocial variables; in turn, these differences have been hypothesized to be linked to gender differences in adolescent emotional adjustment. For example, research has shown that girls are more likely than are boys to use ruminative coping techniques (Compas *et al.*, 1993; Nolen-Hoeksema, 1994). During early adolescence, girls also have been found to have more negative body images in comparison to boys (Simmons and Blyth, 1987; Allgood-Merten *et al.*, 1990). In turn, ruminative coping and having a negative body image have been linked to depression (Brooks-Gunn, 1988; Nolen-Hoeksema *et al.*, 1993). Consistent with these findings, during adolescence, girls with less masculine sex-role behaviors have been found to be more likely to experience depressive symptomatology than girls with more masculine sex-role behaviors (Obeidallah *et al.*, 1994).

Much more research has examined the relationship between perceptions of the self and emotional adjustment during adolescence. This research has indicated that adolescent girls have lower levels of self-esteem, self-worth, perceived physical attractiveness, and athletic competence than do adolescent boys (Allgood-Merten *et al.*, 1990; Ohannessian *et al.*, 1996). Positive perceptions of the self, in turn, have been consistently associated with better emotional adjustment, as indicated by lower reported levels of depression and anxiety (Allgood-Merten *et al.*, 1990; Papini and Roggman, 1992).

Limitations of the current literature

Although the findings discussed above are intriguing, it is still unclear whether these psychosocial variables actually predict the emergence of gender differences in emotional adjustment during adolescence. To examine this issue, a number of criteria need to be met. First, longitudinal data are needed. Unfortunately, many of the studies conducted to date have relied on cross-sectional data, and therefore have not been able to examine predictive relationships. Second, using longitudinal data, one needs to demonstrate that there are significant gender differences in depression and/or anxiety during adolescence. Third, the predictor variable being examined (e.g. perceptions of the self) must be shown to be significantly associated with the dependent variable(s) (depression or anxiety). Finally, gender differences in the predictor variable must be shown to occur prior to gender differences in the dependent variable(s) (see Nolen-Hoeksema and Girgus, 1994, for a more detailed discussion of these criteria). If all of these criteria are met, the predictor variable may be said to at least partially account for gender differences in the dependent variable being assessed.

A study conducted by Allgood-Merten *et al.* (1990) met all of these criteria but one. Allgood-Merten *et al.* (1990) were unable to test whether gender differences in the predictor variable(s) (self-esteem and body image in their study) occurred prior to gender differences in the dependent variable (depression) since gender differences in depression occurred even in the youngest age group in their study (9th grade students). Nonetheless, the Allgood-Merten study yielded some important and interesting results. More specifically, the relationship between gender and depression was found to significantly diminish once the variance contributed by self-esteem and body image was accounted for.

The present study was designed to extend the findings of Allgood-Merten *et al.* (1990) by examining younger adolescents so that potential gender differences in the predictor variable(s) could be assessed prior to the emergence of gender differences in depression. In

addition to examining the influence of self-esteem on the relationship between gender and depression, the present study also was designed to assess the influence of the following self-competence variables on the relationship between gender and early adolescent depression: social competence, academic competence, athletic competence, and perceived physical attractiveness. Finally, it was deemed important to examine gender differences in anxiety, along with depression, since virtually no research has been conducted examining predictors of gender differences in adolescent anxiety and because anxiety problems become as common, if not more common, than depression during adolescence.

Goals of the present study

The primary aim of the present study was to examine a community sample of 75 young adolescent boys and girls (6th grade students) over two occasions (separated by a one-year time interval) to determine whether self-competence predicts the emergence of gender difference in both adolescent depression and anxiety. Since the sample was a community sample, depressive and anxiety symptomatology was assessed.[2] The assessment of moderate levels of depression and anxiety is important during adolescence since even moderate symptomatology has been found to be a risk factor the development of affective disorders in adulthood (Harrington *et al.*, 1990). Moreover, moderate levels of depression have been linked to school problems, problems with peer relations, and behavioral problems during adolescence (Achenbach and Edelbrock, 1987; Petersen *et al.*, 1991, Nolen-Hoeksema *et al.*, 1992).

In sum, then, the following research questions were addressed. (1) Are there significant gender differences in reported levels of emotional adjustment (depression and anxiety) during early adolescence? (2) Are there significant gender differences in reported levels of self-competence during early adolescence? (3) If there are significant gender differences in both emotional adjustment and self-competence during early adolescence, do the gender differences in self-competence precede the gender differences in emotional adjustment? (4) Are self-competence and emotional adjustment significantly associated with one another during early adolescence? And (5) does self-competence significantly account for the emergence of gender differences in emotional adjustment during early adolescence?

Method

Participants

The sample included 75 young adolescents (55% girls), all of whom were European–American. All of the participants were involved in the Replication and Extension of the Pennsylvania Early Adolescent Transitions Study (REPEATS; see Ohannessian *et al.*, 1996). The REPEATS is a short-term cohort-comparative study which was designed to follow two cohorts of 6th grade adolescent girls and boys (1989–1990 and 1990–1991) through their transition to middle school. At the beginning of the study, all of the adolescents were in the 6th grade and their mean age was 11·8 (S.D.=0·45).

The REPEATS data were collected in the fall and spring of the school year for 3 consecutive years. However, due to the goals of the present investigation and to problems

[2]It is important to note that many of the adolescents in the present study met the clinical cutoffs for depression and anxiety (Montgomery and Finch, 1974; Weissman *et al.*, 1977). More specifically, 38% of the sample scored in the clinical range for depression and 13% scored in the clinical range for anxiety.

with attrition, only adolescents who had complete data from Waves 2 and 4 (the spring of 1990 and 1991) were included in the current investigation.[3] These waves of data collection will hereafter be referred to as Time 1 and Time 2, respectively.

Measures

The primary aim of the present study was to examine whether adolescent self-competence predicts gender differences in depression and anxiety. The measures used to assess these constructs are described in detail below.

Self-competence. Harter's (1983) Self-Perception Profile (SPP) was used to measure the adolescents' self-competence. The SPP consists of subscales which index the following types of competence: social, academic, athletic, and perceived physical attractiveness. Two separate subscales assess conduct-behavior and global self-worth. All of the subscales, with the exception of conduct-behavior, were used in the present study. Each subscale includes six items which are averaged to compute the scale score. The response scale for these items is presented in a structured alternative format where 1="low perceived competence" and 4="high perceived competence".

Harter's SPP has been used in many other investigations examining adolescents and has demonstrated good psychometric properties (e.g. Lerner *et al.*, 1991). In the REPEATS sample, Cronbach alpha coefficients for the SPP subscales have been found to range from 0·76 to 0·86.

Depression. The Center for Epidemiological Studies Depression Scale for Children (CES-DC; Weissman *et al.*, 1980) was used to assess the adolescents' depressive symptomatology. This measure consists of 20 items that index recent feelings of depression. These items are summed to create a total score, with higher scores reflecting higher levels of depressive symptomatology. When completing the CES-DC, the adolescents are asked to respond to the items in relation to their feelings during the past week. Representative items from the CES-DC include "I was unhappy" and "I felt lonely, like I didn't have any friends". The response scale for this measure is four-point Likert-type scale which ranges from 1="not at all" to 4="a lot". The CES-DC has been found to be both a reliable and valid indicator of adolescent depressive symptomatology (Faulstich *et al.*, 1986). In the REPEATS sample, Cronbach alpha coefficients have been found to range from 0·87 to 0·90.

Anxiety. The State–Trait Anxiety Inventory for Children (STAIC; Spielberger, 1973) was used to measure the adolescent's levels of both state anxiety (anxiety that fluctuates over time and varies in intensity) and trait anxiety (anxiety that remains relatively stable across time). This measure includes two 20-item subscales (one for state anxiety and one for trait anxiety). Items from the State Anxiety subscale are completed in relation to how the adolescent "feels right now, at this very moment", whereas items from the Trait Anxiety subscale are completed in regard to how the adolescent "usually feels". Sample items from

[3] *t*-Tests were conducted to determine whether adolescents who had data at both of these times of measurement systematically differed from those who had data at only one of the times of measurement. The dependent variables in these analyses included all of self-competence and emotional adjustment measures examined in the present study. Only one of the *t*-tests (6%) was significant. The significant *t*-test indicated that adolescents who had data at both times of measurement reported significantly lower levels of social competence at Time 2 in comparison to adolescents who had data at only one of the times of measurement. No significant differences were found for the self-competence measures at Time 1 or for the emotional adjustment measures at either time of measurement.

these subscales are "I feel . . . 1='very calm', 2='calm', 3='not calm'", and "I worry too much . . . 1='hardly ever', 2='sometimes', 3='often'", respectively.

The STAIC has been used in many prior investigations to assess anxiety in adolescents and adults. In addition, the psychometric properties of the STAIC have been noted to be good (Spielberger, 1973). In the REPEATS sample, Cronbach alpha coefficients for the State Anxiety and Trait Anxiety subscales have been found to range from 0·87 to 0·88.

Procedure

Prior to the beginning of the study, all of the adolescents attending three middle schools in a rural central Pennsylvania school district were invited to participate in the study. Those who were interested were given informed consent forms which were to be signed by the adolescent and a parent. Data were collected across 2 consecutive days (about 2 hours each morning) within the schools' cafeterias. During this time, one or two trained research assistants administered a series of self-report questionnaires to groups of about 10 adolescents. In addition to the measures described above, the questionnaires assessed many characteristics of the adolescent and his/her contexts, including the adolescent's temperament, his/her family environment, peer relations, cognitive abilities and coping abilities.

Results

The primary aim of the present investigation was to test whether self-competence predicts gender differences in depression and anxiety during early adolescence. Three analytical steps were undertaken to examine this question. First, a series of *t*-tests were conducted to determine whether levels of self-competence (self-worth, perceived physical appearance, social competence, academic competence, and athletic competence) and emotional adjustment (depression, state anxiety, and trait anxiety) significantly differed by gender. Second, Pearson product-moment correlations were calculated, within and across both times of measurement, to examine the bivariate relations between the self-competence and emotional adjustment measures. Finally, a series of one-way ANOVAs were conducted. In these analyses, the grouping factor was gender and the dependent variable was an emotional adjustment measure. In addition, self-competence was entered as a covariate (only the self-competence measures that significantly differed by gender were entered) to determine whether self-competence accounts for the gender differences in early adolescent depression and anxiety.

Gender differences in mean levels of self-competence, depression, and anxiety

As shown in Table 1, girls reported significantly lower levels of global self-worth [$t(72) = 2{\cdot}38$, $p < 0{\cdot}05$ at Time 1, and $t(73) = 3{\cdot}43$, $p < 0{\cdot}01$ at Time 2], perceived physical appearance [$t(72) = 2{\cdot}16$ $p < 0{\cdot}05$ at Time 1, and $t(73) = 3{\cdot}07$, $p < 0{\cdot}01$ at Time 2], and athletic competence [$t(72) = 3{\cdot}46$, $p > 0{\cdot}01$ at Time 1, and $t(73) = 3{\cdot}51$, $p < 0{\cdot}01$ at Time 2] than boys at both times of measurement.

Significant gender differences were not found for any of the emotional adjustment measures at Time 1. However, girls reported significantly higher levels of both depression

Table 1 *Means and standard deviations of the self-competence and emotional adjustment variables for girls and boys at Time 1 and Time 2*

	Time 1		Time 2	
	Girls	Boys	Girls	Boys
Self-competence				
Worth*†	2·86 (0·58)	3·17 (0·53)	2·65 (0·57)	3·09 (0·55)
Appearance*†	2·44 (0·76)	2·80 (0·65)	2·31 (0·66)	2·80 (0·72)
Social	2·98 (0·64)	3·09 (0·62)	2·77 (0·58)	2·99 (0·51)
Academic	3·03 (0·53)	2·95 (0·58)	2·92 (0·59)	2·97 (0·50)
Athletic*†	2·42 (0·67)	2·99 (0·76)	2·51 (0·66)	3·04 (0·65)
Depression†	36·56 (10·54)	34·94 (10·21)	35·87 (11·09)	30·73 (9·68)
Anxiety				
State	29·95 (6·19)	29·68 (6·15)	29·03 (4·99)	27·82 (5·36)
Trait†	34·15 (5·86)	31·73 (7·20)	35·67 (6·34)	31·56 (6·91)

*Significant gender difference ($p < 0·05$) at Time 1; †=significant gender difference ($p < 0·05$) at Time 2.

[$t(69) = -2·07$, $p < 0·05$] and trait anxiety [$t(72) = -2·67$, $p < 0·01$] than boys at Time 2 (see Table 1).[4]

The results from the *t*-tests indicate that consistent gender differences in self-competence and emotional adjustment occur even during early adolescence. More importantly, gender differences in self-competence were found prior to gender differences in emotional adjustment. Therefore, gender differences in self-competence may partially account for the emergence of gender differences in depression and anxiety during early adolescence. The analyses that follow further test this hypothesis.

Bivariate relations between self-competence and emotional adjustment

As stated earlier, Pearson product-moment correlations, by gender, were calculated to examine the interrelations between self-competence and depression and anxiety, both within and across time. The results for girls and boys are presented in Tables 2 and 3, respectively. As shown, all but a few of these correlations were negative.

Results for girls As illustrated in Table 2, higher levels of academic competence and self-worth (at Time 2) were consistently associated with lower levels of depression and anxiety for girls. Higher levels of physical appearance at both times of measurement also were negatively correlated with trait anxiety at Time 2. Finally, higher levels of athletic competence at Time 2 were related to lower levels of state anxiety at Time 1. These correlations suggest that girls with higher levels of self-competence are less likely to be anxious and/or depressed than girls with lower levels of self-competence.

[4]The significant gender difference in trait anxiety between boys and girls at Time 2 appears to be due to an increase in anxiety for girls between Time 1 and Time 2. This increase is consistent with the literature suggesting that anxiety tends to increase during early adolescence, especially for girls (Ebata *et al.*, 1990). In contrast, the gender difference in depression at Time 2 appears to be due to a decrease in depression for boys between Time 1 and Time 2. Although this finding may not seem intuitive at first, this pattern of results is consistent with studies that have found an increase in emotional adjustment for boys as they enter puberty and subsequently develop more muscle mass and better body images (Crockett and Petersen, 1987).

Table 2 *Pearson product-moment correlations between the self-competence and emotional adjustment variables for girls*

	Time 1			Time 2		
Self-competence	Depression	State anxiety	Trait anxiety	Depression	State anxiety	Trait anxiety
Time 1						
Worth	−0·29	−0·18	−0·13	−0·20	−0·08	−0·26
Appearance	−0·20	−0·27	−0·22	−0·20	−0·20	−0·32*
Social	−0·21	−0·08	−0·25	0·00	0·03	−0·24
Academic	−0·21	−0·05	−0·42**	−0·35*	−0·16	−0·34*
Athletic	−0·30	−0·08	−0·01	−0·31	−0·18	−0·11
Time 2						
Worth	−0·39*	−0·13	−0·44**	−0·63***	−0·44**	−0·34*
Appearance	−0·25	−0·24	−0·31	−0·31	−0·21	−0·53***
Social	−0·17	0·07	−0·11	−0·17	−0·11	−0·22
Academic	−0·01	−0·09	−0·34*	−0·21	−0·41*	−0·23
Athletic	−0·27	−0·33*	−0·13	−0·13	−0·17	−0·30

*$p < 0{\cdot}05$; **$p < 0{\cdot}01$; ***$p < 0{\cdot}001$.

Table 3 *Pearson product-moment correlations between the self-competence and emotional adjustment variables for boys*

	Time 1			Time 2		
Self-competence	Depression	State anxiety	Trait anxiety	Depression	State anxiety	Trait anxiety
Time 1						
Worth	−0·04	−0·18	−0·16	0·11	−0·33	−0·19
Appearance	−0·22	−0·22	−0·20	0·10	−0·37*	−0·21
Social	−0·53**	−0·10	−0·37*	−0·37*	0·01	0·13
Academic	−0·19	−0·29	−0·37*	−0·02	−0·26	−0·04
Athletic	−0·26	0·17	−0·18	−0·26	0·21	0·20
Time 2						
Worth	−0·30	−0·14	−0·05	−0·52**	−0·40*	−0·19
Appearance	−0·14	−0·14	0·11	−0·39*	−0·30	−0·12
Social	−0·23	−0·01	−0·12	−0·48**	−0·07	0·02
Academic	−0·47**	−0·25	−0·29	−0·49**	−0·40*	−0·33
Athletic	−0·27	−0·04	−0·20	−0·25	−0·22	−0·16

*$p < 0{\cdot}05$; **$p < 0{\cdot}01$; ***$p < 0{\cdot}001$.

Results for boys. Similar to the results for girls, higher levels of self-worth were significantly associated with lower levels of depression and state anxiety at Time 2 for boys. In addition, higher levels of perceived physical appearance, social competence, and academic competence at both times of measurement were related to lower levels of emotional adjustment (see Table 3). Again, these results indicate that boys with higher levels of self-competence are less depressed and/or anxious than are boys with lower levels of self-competence.

The influence of self-competence on the relationship between gender and emotional adjustment

As mentioned previously, a series of one-way ANOVAs was conducted to examine whether self-competence accounted for the gender differences in depression and anxiety. Because significant gender differences were found only for depression and trait anxiety, these two variables were the dependent variables examined in these analyses (no gender differences were found for state anxiety). Both dependent variables were assessed at Time 2, when the gender differences occurred. In addition, since only self-worth, physical appearance, and athletic competence significantly differed by gender in the present study, only these self-competence variables were included in the ANOVA analyses as covariates. The self-competence variables were assessed at Time 1.

Depression. As a preliminary step, an ANOVA was calculated predicting depression from gender. This model was significant [$F(1, 70) = 4{\cdot}26$, $p = 0{\cdot}043$]. Three additional ANOVAs were then conducted, covarying self-worth, physical appearance, and athletic competence in the models, respectively. When self-worth was entered as a covariate, gender no longer significantly predicted depression [$F(1) = 2{\cdot}79$, $p = 0{\cdot}100$]. The same results emerged when physical appearance and athletic competence were entered as covariates in the ANOVA models [$F(1) = 2{\cdot}84$, $p = 0{\cdot}097$ for physical appearance model, and $F(1) = 0{\cdot}86$, $p = 0{\cdot}356$ for the athletic competence model]. To summarize, gender no longer significantly predicted depression in all of the models when a self-competence measures was entered as a covariate. These results suggest that self-competence (specifically self-worth, perceived physical appearance, and athletic competence) at least partially accounts for the gender differences in depression during early adolescence.

In addition to these analyses, more stringent tests were conducted to determine whether the amount of variance explained significantly increased when the covariates were included. In these analyses, the models including self-worth and physical appearance did not significantly differ from the original model predicting depression from gender only [$F(1, 67) = -1{\cdot}14$, p=n.s.; and $F(1, 67) = -1{\cdot}07$, p=n.s., respectively]. In contrast, the model including athletic competence as a covariate did significantly differ from the model predicting depression from gender only [$F(1, 67) = 4{\cdot}46$, $p < 0{\cdot}05$]. These results further support the finding that athletic competence partially contributes to the emergence of gender differences in depression during early adolescence.

Trait anxiety. As a first step, an ANOVA was conducted predicting trait anxiety from gender. This model was significant [$F(1, 73) = 7{\cdot}13$, $p = 0{\cdot}009$]. Three additional ANOVAs were again calculated entering self-worth, physical appearance, and athletic competence as covariates, respectively. When self-worth was entered as a covariate, the model remained significant. However, the relationship between gender and trait anxiety weakened [$F(1) = 4{\cdot}11$, $p < 0{\cdot}046$]. Similar results emerged when the physical appearance model was

examined. Gender also continued to be a significant predictor in this model [$F(1)=4{\cdot}04$, $p=0{\cdot}048$], although the relationship between gender and trait anxiety was attenuated by the inclusion of physical appearance in the model. Finally, the inclusion of athletic competence in the ANOVA did not appear to have a substantial influence on the relationship between gender and trait anxiety. In this model, gender still had a strong and significant influence on trait anxiety [$F(1)=6{\cdot}36$, $p<0{\cdot}014$]. To summarize, the results from these analyses indicated that self-competence (self-worth and perceived physical appearance) somewhat weakened the relationship between gender and trait anxiety. Although the ANOVA models remained marginally significant, these effects must be considered in relation to the fact that the power was limited since the sample was quite small.

Again, more stringent analyses were conducted to examine whether the three models with the covariates significantly differed from the model predicting trait anxiety from gender only. In these analyses, the models including self-worth and athletic competence did not significantly differ from the original model predicting trait anxiety from gender only [$F(1, 70)=2{\cdot}36$, $p=$n.s.; and $F(1, 70)=-1{\cdot}19$, $p=$n.s., respectively]. However, the model including physical appearance as a covariate did significantly differ from the model predicting trait anxiety from gender only [$F(1, 70)=4{\cdot}19$, $p=<0{\cdot}05$]. These findings provide additional support that physical appearance partially accounts for the emergence of gender differences in trait anxiety during early adolescence.[5]

Discussion

The primary objective of the present study was to examine whether self-competence predicts the emergence of gender differences in depression and anxiety during early adolescence. Consistent with the literature (Allgood-Merten *et al.*, 1990; Ohannessian *et al.*,1996), adolescent girls were found to have significantly lower levels of perceived self-worth, physical appearance, and athletic competence than adolescent boys during 6th and 7th grade. In addition, adolescent girls reported significantly higher levels of depression and trait anxiety than adolescent boys during 7th grade. These results are consistent with recent studies which have indicated that adolescent girls report higher levels of depressive and anxiety symptomatology as early as 11 or 12 years of age (Kandel and Davies, 1986; Ohannessian *et al.,* 1996). It is important to note that in present study, significant differences in depression and anxiety were not found during 6th grade. Although there were significant differences in self-competence during sixth grade, differences in depression and anxiety had not yet emerged.

Since gender differences in self-competence were found to precede gender differences in depression and anxiety, these results are compatible with the hypothesis that gender

[5]We recognize that the statistical procedure that we have opted to use to examine whether self-competence accounts for gender differences in depression and anxiety is not the only approach to take. However, since the present study was exploratory and a primary goal of the study was to extend the work of Nolen-Hoeksema and Girgus (1994), we thought that it was important to follow their suggested statistical criteria. A more stringent test would be to statistically compare models that predict depression and anxiety from gender to similar models that also include self-competence as a covariate. Although we did conduct a variation of these conservative analyses, a consistent pattern of results was not found since the power to statistically detect differences across models was somewhat compromised due to our relatively small sample. Future investigations need to be conducted using larger samples in order to verify the intriguing, yet exploratory results found in the present study.

differences in self-competence predict the emergence of gender differences in emotional adjustment. In order to further test this hypothesis, the bivariate relations between he measures of self-competence and emotional adjustment were examined to determine whether they were significantly associated with one another. For both girls and boys, the pattern of results indicated that higher levels of self-competence (e.g. self-worth, perceived physical appearance, social competence, academic competence, and athletic competence) were related to lower levels of depression and anxiety. These results also are consistent with recent research which has shown that perceptions of the self and emotional adjustment are positively related during early adolescence (Papini and Roggman, 1992).

To summarize thus far, results from the present study indicated that (1) gender differences in self-competence, depression, and anxiety occur during early adolescence; (2) gender differences in self-competence precede gender differences in emotional adjustment; and (3) self-competence is inversely related to depression and anxiety for both boys and girls during early adolescence. In order to test whether gender differences in self-competence predict gender differences in depression and anxiety, the self-competence variables were entered as covariates in a series of ANOVAs predicting emotional adjustment from gender. In these analyses, the relationship between gender and depression became non-significant when the variance contributed by self-worth, perceived physical appearance, or athletic competence was accounted for. Similar, although not as striking, results were found for trait anxiety since the relationship between gender and trait anxiety diminished, but remained significant, when the self-competence variables were covaried in the ANOVA models. These results are consistent with those found by Allgood-Merten *et al.* (1990), who found that the relationship between gender and depression during middle adolescence (using a sample of 9th–12th grade students) became non-significant once the variance contributed by self-esteem was accounted for.

Importantly, findings from the present study extend those found by Allgood-Merten *et al.*(1990) since: (1) younger adolescents were assessed prior to the emergence of gender differences in emotional problems (specifically, depression and anxiety); (2) many constructs relating to the adolescents' perceptions of the self were examined, along with self-esteem; and (3) gender differences in both depression and anxiety were examined. To date, virtually all of the research that has examined predictors of gender differences in adolescent emotional adjustment has focused solely on depression. However, it is apparent that much more research needs to be conducted examining potential predictors of gender differences in anxiety since anxiety symptomatology and disorders both increase significantly during adolescence (Ebata *et al.*, 1990; Clark *et al.*, 1994) and since gender differences in anxiety problems become apparent during this time, with girls becoming much more at-risk for experiencing these problems than boys (Kashani *et al.*, 1989; Ohannessian *et al.*, 1996).

Although the results from the present study indicate that self-competence partially accounts for the emergence of gender differences in adolescent depression and anxiety, it should be noted that these results do not imply causality. For example, even though gender differences in self-competence were found to precede gender differences in emotional adjustment, it may be the case that a third variable (e.g. changes in the adolescent–parent relationship during early adolescence) predicts the emergence of gender difference in both self-competence and emotional adjustment during early adolesence. Future investigations need to address this possibility.

In addition, the findings are constrained by limitations of the sample and design. For example, in the present study, only European–American, lower-middle class, young

adolescents who resided in a relatively rural area in the Northeast U.S. were examined. Therefore, the results can only be generalized to adolescents with similar characteristics. In order to validate the present findings, future studies need to be conducted examining adolescents with differing demographic characteristics (e.g. African–Americans and Hispanics, upperclass adolescents, urban adolescents). The present study also was limited by the relatively small sample size. Therefore, lack of power probably contributed to some of the marginally significant results obtained.

In addition to examining larger samples with diverse demographic characteristics, it is paramount that future studies assess the relations between gender and emotional adjustment over time. Importantly, the present study examined adolescents immediately prior to the emergence of gender differences in depression and anxiety and followed them throughout the year. However, it would be important for future research to assess even younger youth in order to determine when gender differences in hypothesized predictor variables(s) occur. For example, in the present study, gender differences in self-competence were found prior to gender differences in depression and anxiety. However, the present study was not able to determine when gender differences in self-competence initially occurred. For theoretical and intervention purposes, it would be important to know whether gender differences in self-competence occur immediately prior to gender differences in emotional problems or whether they occur even earlier in childhood.

Finally, and most importantly, future investigations need to systematically examine additional psychosocial variables that may predict the emergence of gender differences in emotional problems. Prior research has suggested that having a negative body image, low levels of masculinity, and ruminative coping techniques may be related to gender differences in depression (Allgood-Merten *et al.*, 1990; Nolen-Hoeksema, 1994). These hypotheses need to be tested systematically using longitudinal data in order to determine whether gender differences in the predictor variable actually precede and predict gender differences in depression. Future studies also need to demonstrate that the hypothesized predictor variable at least partially accounts for the variance between gender and adolescent emotional problems.

Although exploratory in nature, the results from the present study have important implications for possible interventions. Consistent with prior research (Kandel and Davies, 1986; Ohannessian *et al.*, 1996), this study has demonstrated that gender differences in depression and anxiety are apparent even in early adolescence. Therefore, interventions aimed at decreasing levels of depression and anxiety during adolescence need to begin prior to the onset of adolescence. Findings from the present study also indicate that decreasing perceptions of self-competence (particularly self-worth, physical appearance, and athletic competence) contribute to the escalation of anxiety and depressive symptomatology among early adolescent girls. Therefore, programs that are designed to reduce adolescent depression and anxiety should aim to increase youths' perceptions of self-competence beginning no later than late childhood, especially for girls.

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