J Abnorm Child Psychol (2007) 35:801–816
DOI 10.1007/s10802-007-9128-1

Racial/Ethnic Differences in Internalizing and Externalizing Symptoms in Adolescents

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Received: 18 December 2006 / Accepted: 7 March 2007 / Published online: 17 May 2007

Abstract The prevalence of most adult psychiatric disorders varies across racial/ethnic groups and has important implications for prevention and intervention efforts. Research on racial/ethnic differences in the prevalence of internalizing and externalizing symptoms and disorders in adolescents has been less consistent or generally lacking. The current study examined the prevalence of these symptom groups in a large sample of sixth, seventh, and eighth graders in which the three major racial/ethnic groups in the U.S. (White, Black, and Hispanic/Latino) were well-represented. Hispanic females reported experiencing higher levels of depression, anxiety, and reputational aggression than other groups. Black males reported the highest levels of overtly aggressive behavior and also reported higher levels of physiologic anxiety and disordered eating than males from other racial/ethnic groups. Hispanic females also exhibited higher levels of comorbidity than other racial/ethnic groups.

Keywords Racial/ethnic differences · Adolescence · Anxiety · Depression · Eating pathology · Aggression

Racial/ethnic differences in the prevalence of symptoms of depression (Blazer et al. 1994; Kessler et al. 1994), anxiety (Brown et al. 1990), and eating disorders (Striegel-Moore et al. 2003) have been documented in a number of studies utilizing adult samples. There has been substantially less work examining racial/ethnic differences in the prevalence of psychopathology in adolescents. Large epidemiologic studies of adolescent psychopathology have typically not focused on racial/ethnic group differences in symptoms or have not included substantial numbers of ethnic minorities. For example, in the Oregon Adolescent Depression Project (Lewinsohn et al. 1993) over 90% of participants were White. Similarly, in the Dunedin Multidisciplinary Health and Development Study the vast majority of participants were White (e.g., McGee et al. 1990). Understanding racial/ethnic differences in psychopathology is important for the identification of at-risk groups and targets for prevention efforts, improvement of mental health services, and as a first step in understanding the mechanisms by which risk factors confer vulnerability to psychopathology differentially on various segments of the population.

The research that has been conducted examining race/ethnicity differences in adolescent psychopathology has yielded inconsistent findings about differences in the prevalence of symptoms of depression, anxiety, eating disorders, and aggression. Some studies document significant group differences (e.g., Roberts and Chen 1995; Austin and Chorpita 2004) while others have reported no differences in symptoms across groups (e.g., Cole et al. 1998).

One explanation for discrepant findings across studies is lack of consistency in the groups being compared. Few studies have compared the rates of adolescent psychopathology among the three major racial/ethnic groups in the United States: Caucasian, African-American, and Hispanic/

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Latino.[1] The majority of studies have compared only two racial/ethnic groups, and many of these studies have focused on comparing White and Black adolescents (e.g., Garrison et al. 1990; Kistner et al. 2003). Hispanic individuals have largely not been included in studies examining racial/ethnic differences in adolescent psychopathology (see Bird 1996). This is noteworthy, given that over 37 million Hispanic individuals were living in the United States as of 2002, representing 13.3% of the total U.S. population (U.S. Census Bureau 2002). In addition, 34.4% of Hispanic individuals in the United States were under the age of 18 in 2002 compared to only 22.8% of White individuals. Hispanic children and adolescents thus represent an even larger proportion of youth in the U.S. than Hispanic adults represent in the adult population. Given the size of this minority group, the lack of comprehensive information on rates of psychological symptoms in Hispanic adolescents represents an important gap in the literature.

Another explanation for disparate findings in studies comparing rates of symptoms in different racial/ethnic groups involves the inclusion of children and adolescents from different age groups (e.g., Kistner et al. 2003; Ollendick et al. 1996). The prevalence of internalizing and externalizing symptoms varies markedly across childhood and adolescence (e.g., Last et al. 1992; Breton et al. 1999), making it important to limit comparisons of the rate of symptoms across racial/ethnic groups to one developmental period. Early adolescence represents a particularly important age group in which to make such comparisons. The transition to middle school or junior high is well-documented to be a trigger for the emergence of psychopathology and maladjustment (Eccles et al. 1993; Robinson et al. 1995; Seidman et al. 1994) given the many academic and social stressors and biological changes that occur during this time period. Moreover, an increase in rates of major depression in females is consistently documented to occur between the ages of 13 and 15 (see Twenge and Nolen-Hoeksema 2002), and the gender difference in depression is first observable during this period (Hankin et al. 1998). Onset of many of the anxiety disorders has also been found to occur during this time period, including social phobia and panic disorder (Last et al. 1992) as well as generalized anxiety disorder (Cambell et al. 2003). Adolescence also represents an important period for the development of symptoms of eating disorders. The majority of individuals who develop an eating disorder first experienced symptoms during adolescence (Mussell et al. 1995; Woodside and Garfinkle 1992), and the incidence of eating disorders also peaks during adolescence (Lewinsohn et al. 2000). Finally, research on aggression suggests that aggressive symptoms occurring in early adolescence may more reliably predict future psychopathology than symptoms occurring in childhood (Broidy et al. 2003), highlighting again the importance of studying this age group.

Another limitation in the present literature on racial/ethnic differences in adolescent psychopathology involves the lack of examination of the joint effects of gender and race/ethnicity on the prevalence of psychological symptoms. Some evidence suggests that gender and race/ethnicity may jointly influence psychopathology in adolescence. For example, in the National Comorbidity Survey (NCS), the gender difference in major depression was found to be more pronounced in Black and Hispanic groups than in Whites (Blazer et al. 1994). Surprisingly, detailed descriptions of the rates of internalizing and externalizing symptoms in adolescents as a function of both gender and race/ethnicity are lacking.

With the aforementioned limitations in mind, the current literature on racial/ethnic differences in adolescent psychopathology will first be reviewed. Specifically, evidence pertaining to race/ethnicity differences in symptoms of depression, anxiety, eating pathology, and aggression will be summarized.

Depression

Racial/ethnic group differences in the prevalence of adolescent depression and depressive symptoms have been studied more extensively than other types of psychopathology, and the majority of studies have found significant racial/ethnic group differences. Several studies have reported differences in depression between Black and White adolescents with some reporting higher levels of depressive symptomatology among Black adolescents (Franko et al. 2005; Garrison et al. 1990; Kistner et al. 2003), and some reporting higher levels among White adolescents (Doerfler et al. 1988). A number of studies have also found higher levels of symptoms among Hispanic adolescents than other racial/ethnic groups (Doi et al. 2001; Roberts and Chen 1995; Roberts and Sobhan 1992; Roberts et al. 1997; Schraedly et al. 1999; Siegel et al. 1999).

In contrast, three large studies have not found racial/ethnic group differences in depressive symptomatology (Costello et al. 1996; Cole et al. 1998; Franko et al. 2004). Two of these studies examined symptoms in Black and White adolescents (Cole et al. 1998; Franko et al. 2004), and the third study (Costello et al. 1996) was an epidemiologic study of psychiatric disorders in children and

[1] For the remainder of the paper, the term White will be used to refer to Caucasian individuals or individuals of European descent, the term Black will be used to refer to African-American individuals and other Black individuals of African or Caribbean origin, and the term Hispanic will be used to refer to individuals of Latin American origin including those from Mexican, Puerto-Rican, Cuban, and Central or South American backgrounds.

adolescents in the southeastern United States. None of these studies included Hispanic adolescents.

Although the literature on racial/ethnic differences in adolescent depression has produced mixed findings, higher levels of depressive symptomatology have been consistently found among Hispanic adolescents. Female adolescents may be particularly at risk for developing depressive symptoms during adolescence as a result of conflicting gender roles prescribed by the more traditional Hispanic cultural norms and those of mainstream American culture. In Hispanic cultures, high emphasis is placed on the importance of family (see Lugo Steidel and Contreras 2003; Sabogal et al. 1987), particularly for females. Hispanic females are expected to be passive, to place family needs above their own, and to promote harmony among family members, even at the expense of individual well-being (Gil and Vazquez 1997). In contrast, mainstream American culture emphasizes the development of autonomy and individuation from the family during adolescence. Conflicting cultural values for females may thus contribute to increased risk for depression among Hispanic females. Early adolescence is marked by the development of increasingly important romantic and peer relationships. Relationship quality between adolescents and their parents has been shown to influence quality of romantic and peer relationships (e.g., Crockett and Randall 2006). As such, family conflict arising from clashing cultural values may also negatively impact the quality of other important relationships for Hispanic females. Given the importance of peer relationships in adolescence, this may further increase risk for depression in this group.

Anxiety

In contrast to the relatively well-developed literature examining racial/ethnic differences in depressive symptoms among adolescents, there have been few large studies that have examined racial/ethnic differences across the spectrum of anxiety symptomatology. Virtually all of the studies that have been conducted have included children, most studies have focused on only one type of anxiety symptom, and many have utilized clinical samples of treatment-seeking youth.

Three large studies have examined the prevalence of anxiety symptoms across multiple racial/ethnic groups in community samples. Two of these studies examined frequency and intensity of common fears and reported variability across racial/ethnic groups (Ollendick et al. 1996; Shore and Rappaport 1998) with White children reporting the lowest levels of fear. A large study conducted in Hawaii reported significant group differences in the prevalence of symptoms of separation anxiety disorder, panic disorder, social anxiety, and obsessive–compulsive disorder (Austin and Chorpita 2004) with White children generally endorsing lower levels of symptoms than other groups (Filipino, Native Hawaiian, and Asian American). Three other studies have reported racial/ethnic differences in anxiety symptoms among clinical of children and adolescents seeking treatment for an anxiety disorder (Last and Perrin 1992; Ginsburg and Silverman 1996; Pina and Silverman 2004). Hispanic youth tended to report more somatic symptoms (Pina and Silverman 2004) and higher rates of separation anxiety disorder (Ginsburg and Silverman 1996) than non-Hispanic White participants. Another study also found that Hispanic youth reported more physiologic symptoms of anxiety and higher levels of worry than non-Hispanic White participants (Varela et al. 2004).

In contrast, three studies have not found racial/ethnic group differences in anxiety symptoms (Douglas and Rice 1979), in the prevalence of anxiety disorders (Beidel et al. 1994) or in clinical characteristics of youth with anxiety disorders (Treadwell et al. 1995). Each of these studies compared groups of Black and White children and adolescents. Overall, few consistent findings have emerged from the literature examining racial/ethnic group differences in anxiety symptoms. Studies examining Black, White, and Hispanic youth are lacking, and virtually all studies of anxiety symptomatology have included children.

Conflicting cultural values may lead to increased symptoms of anxiety among Hispanic adolescents, particularly females, in the same way that they may predispose this group to depression. Higher levels of anxiety disorders and somatization symptoms have been consistently documented among Hispanic adults, and it is likely that increases in these symptoms in this group first occurs during adolescence. Early adolescence is associated with a number of social and biological stressors (e.g., Eccles et al. 1993) that, paired with increased conflict between traditional and mainstream cultural values, may place Hispanic adolescents, particularly females, at higher risk for developing anxiety symptomatology during this period.

Eating Pathology

The prevalence of eating disorders and symptoms of eating pathology have traditionally been studied in White women in the United States, and epidemiologic studies examining the prevalence of eating disorders across racial/ethnic groups have largely not been conducted (Striegel-Moore and Smolak 2002). Recent evidence in adults suggests that anorexia and bulimia nervosa are more common in White women than in Black women (Striegel-Moore et al. 2003), but large-scale studies of eating disorder symptoms among ethnically diverse adolescents are lacking. Although diagnosable eating disorders appear to be more common in White women, evidence suggests that certain behaviors

associated with eating disorders, such as binge eating, are more common in other racial/ethnic groups. Specifically, higher rates of binge eating have been found among Black and Hispanic women relative to White women (Striegel-Moore et al. 2000; Fitzgibbon et al. 1998). However, almost no studies have been conducted examining racial/ethnic differences in eating disorder symptoms among adolescents. One study reported higher levels of binge eating among Black and Hispanic females compared to White females (Neumark-Sztainer et al. 2002). Moreover, this study found that Black females had lower body dissatisfaction than White females while Hispanic females had higher body dissatisfaction than White females. Among males, Black and Hispanic participants were more likely to engage in weight-control behaviors than White males (Neumark-Sztainer et al. 2002). Another study found that Black adolescents had a more positive body image than other racial/ethnic groups (Siegel et al. 1999).

Given that Black female adolescents have lower levels of body dissatisfaction and better body image than other groups (Franko and Striegel-Moore 2002), lower levels of eating disorder symptoms would be expected among this group. On the other hand, the higher levels of weight concern reported among Black and Hispanic male adolescents may be associated with increased eating disorder symptoms. At present, it is unclear when racial/ethnic differences in body image and dissatisfaction first emerge, how they impact upon the development of eating disorder symptoms, and whether gender differences are present across racial/ethnic groups.

Aggression

Similar to eating disorders, racial/ethnic differences in aggressive behavior have not been well-studied with representative samples including White, Black, and Hispanic adolescents. The typical pattern of findings among studies comparing Black and White adolescents on overt or physical aggression is that Black adolescents have higher levels of aggression (e.g., Buka et al. 2001; Fabrega et al. 1993; Laird et al. 2005). However, results have differed based on the informant. For example, in a study examining three different informants (adolescent, parent and teacher) for the same construct, Black adolescents were only rated as higher on aggression compared to Whites according to teacher report (Fabrega et al. 1996). There were no differences according to parent report, and it was White adolescents who were rated as higher on aggression by adolescent report. Missing from the literature on overt aggression are studies that include sizable numbers of Hispanic adolescents and we know very little about symptom levels of aggression among this group. Including Hispanic adolescents in this body of research is particularly important given that previous research has found that ethnicity is the best predictor of school-related outcomes such as conduct infractions (Hishinuma et al. 2004).

One of the best predictors of overt aggression is a hostile attributional bias, the tendency to attribute hostile intention in ambiguous interpersonal provocations (e.g., Dodge 2006). One experience that is expected to contribute to the development of a hostile attribution bias is being raised in a culture that "values self-defense, personal honor, and retaliation" (Dodge 2006, p. 793). African-American cultures have been reported to value confrontation and assertiveness (Harris and Majors 1993), which may lead to the development of a hostile attribution bias and high rates of aggression. Additionally, Hispanic cultures value machismo, a male honor code that has sometime been associated with aggression (Andres-Hyman et al. 2006). Based on this, we expect higher levels of overt aggression among male adolescents, particularly those who are Black and Hispanic.

There is now a large body of research focusing on relational forms of aggression, which are characterized by rumor spreading and gossip (reputational aggression), along with social exclusion and manipulation. Relational aggression has been found to be more common among girls than boys, especially in adolescence (e.g., Cairns et al. 1989; Crick 1997). This gender difference has even been found in cross-cultural work. One study comparing Indonesian and American adolescents found that girls reported higher levels of relational aggression and boys reported higher levels of physical aggression; however, there were no differences between Indonesian and American girls (French et al. 2002). Perhaps there are not racial/ethnic differences in relational aggression, but because previous research has focused on gender differences and includes very little information regarding racial/ethic differences, this question remains unanswered.

The Present Study

The purpose of the current study was to examine racial/ethnic differences in both internalizing and externalizing symptoms in a large sample of adolescents. This study also aimed to extend previous research on racial/ethnic group differences in adolescent psychopathology by addressing a number of the limitations that have been present in prior studies in this area. In particular, the current study used a sample that included substantial numbers of White, Black, and Hispanic adolescents to allow comparisons to be made regarding the levels of internalizing and externalizing symptoms among the three major racial/ethnic groups in the U.S. The sample included adolescents in grades 6, 7, and 8 to

allow conclusions to be drawn specifically about racial/ethnic differences in psychological symptoms in early adolescence. Additionally, this study aimed to examine both the separate and joint effects of gender and race/ethnicity on psychopathology in this age group. Finally, this study assessed symptoms of depression, anxiety, eating pathology, and aggressive behavior to provide information on racial/ethnic group differences across the range of psychopathological symptoms present in early adolescence and to examine potential racial/ethnic differences in levels and patterns of comorbidity among symptoms.

We expected to find higher levels of depressive and anxious symptoms among Hispanic adolescents, particularly females. In regards to eating pathology, we found little consistent evidence or theoretical rationale to support predictions about differential symptom levels among the racial/ethnic groups being examined; however, higher levels of symptoms among females were expected. Finally, we anticipated finding higher levels of overt aggression among Black and Hispanic males and higher levels of relational aggression among females. Racial/ethnic differences in relational aggression were not expected.

Materials and Methods

Participants

The sample for this study was recruited from the total enrollment (approximately 1,400 students) of two middle schools (Grades 6–8) from one school district in central Connecticut (students in self-contained special education classrooms and students in technical programs who did not attend school for the majority of the school day were excluded). The community in which the schools are located is a small urban community (metropolitan population of 71,538). Schools were chosen for the study based on the demographic characteristics of the school district and their willingness to participate in the study.

The parents of all eligible children in the participating middle schools were asked to provide active consent for their children to participate in the study. Parents who did not return written consent forms to the school were contacted by telephone to obtain consent. Parents comprising 22.2% did not return consent forms and could not be reached to obtain consent, and 5.8% of parents declined to provide consent for their child to participate in the study. The overall participation rate in the study was 72.0%.

The sample had 51.2% (N=545) males and 48.8% (N=520) females. Participants were evenly distributed across grade level with 31.8% (N=337) of participants in the sixth grade, 33.9% (N=360) in the seventh grade, and 34.3% (N=364) in the eighth grade at the time of the study. The race/ethnicity composition of the sample was as follows: 13.2% (N=141) non-Hispanic White, 11.8% (N=126) non-Hispanic Black, 56.9% (N=610) Hispanic/Latino, 2.2% (N=24) Asian/Pacific Islander, 0.2% (N=2) Native American, 0.8% (N=9) Middle Eastern, 9.3% (N=100) Biracial or Multiracial, and 4.2% (N=45) reported being members of other racial/ethnic groups. A small percentage of participants, 1.3% (N=14), declined to provide information on their racial/ethnic background. The majority of adolescents within the Hispanic group were of Puerto Rican, Mexican, and Cuban descent. Approximately 14% of the Hispanic group reported ethnic backgrounds from elsewhere in Central and South America, and 5.7% of participants in this group were born outside of the United States. Participants comprising 27.4% (N=293) reported living in single-parent households. We did not ask the students to report on their family income because the validity of their reports was unlikely to be high. We did obtain family income information on a subsample (n=70) of students who underwent a more intensive interview for a separate study. These students' mothers were asked for family income data. No significant differences were found between racial/ethnic groups in family income. We also note that the community in which the participating middle schools reside is a uniformly lower SES community, with a per capita income of $18,404 (Connecticut Department of Education 2006 based on data from 2001). Census data do not reveal substantive differences in median household income among the three largest racial/ethnic groups in the study. Median household income was $35,249 for White households, $35,921 for Black households, and $28,871 for Hispanic households in the 2000 Census (Census Bureau 2000). School records indicated that 62.3% of students qualified for free or reduced lunch in the 2004–2005 school year.

Measures

Depression The Children's Depression Inventory (CDI; Kovacs 1992) is the most widely used self-report measure of depressive symptoms in children and adolescents. The CDI is a 27-item self-report measure of depressive symptoms that has been standardized on children and adolescents aged 7–17 years. Each item consists of three statements representing different levels of severity of a specific symptom of depression (e.g., depressed mood) or a consequence of depressive symptoms (e.g., social rejection). Items are assigned a numerical value from 0 (symptom absent) to 2 (symptom present and severe), and higher scores indicate higher levels of depression. The CDI has sound psychometric properties, including internal consistency (Reynolds 1994), test–retest reliability, and discriminant validity (Kovacs 1992). Additionally, convergent and discriminant validity have been established that indicate measurement

equivalence in White and Black children (Cole et al. 1998). The CDI has also been demonstrated to reliably identify children and adolescents with major depression and to differentiate children with major depression from those with an anxiety disorder or disruptive behavior disorder (Timbremont et al. 2004). The item pertaining to suicidal ideation was removed from the measure at the request of school officials and the human subjects committee. The CDI demonstrated good reliability in the sample as a whole (α=0.82) and within each of the racial/ethnic groups: White (α=0.82), Black (α=0.79), Hispanic (α=0.82), and Other (α=0.85).

Anxiety The Multidimensional Anxiety Scale for Children (MASC; March et al. 1997) is a 39-item measure which is the most widely used measure of anxiety in children. The MASC assesses physical symptoms of anxiety, harm avoidance, social anxiety, and separation anxiety and is appropriate for children ages of 8–19. Each item presents a symptom of anxiety, and participants indicate how true each item is for them or how frequently they experience that symptom on a four-point scale where 0=*never true/none of the time*, 1=*rarely true/once in awhile*, 2=*sometimes true/some of the time*, and 3=*very true/a lot of the time*. Higher scores reflect higher levels of anxious symptomatology. The MASC has high internal consistency and test–retest reliability across 3-month intervals, good convergent validity with other measures of child and adolescent anxiety, and divergent validity with measures of unrelated psychopathology (Muris et al. 2002). The MASC correlates more strongly with other anxiety measures than measures of depression, and it differentiates between anxious children, control children, and children with other types of psychopathology (March et al. 1999). The social anxiety scale of the MASC will not be reported in these analyses given that a more comprehensive measure of social anxiety was included in the study (see SPAI-C below).[2] The MASC demonstrated good reliability in the sample as a whole (α=0.88) and within each of the racial/ethnic groups: White (α=0.92), Black (α=0.86), Hispanic (α=0.87), and Other (α=0.88). The subscales of the MASC were also found to be reliable in this sample: Physical Symptoms (α=0.78), and Separation Anxiety (α=0.68).

Social phobia was assessed using the Social Phobia and Anxiety Inventory for Children (SPAI-C; Beidel et al. 1995). The SPAI-C is a 26-item measure that assesses distress in social situations as manifested by cognitive, somatic, and behavioral symptoms of anxiety. Items are rated on a 3-point scale ranging from 0 (never) to 2 (most of the time or always). This scale assesses social anxiety across three domains: assertiveness/general conversation, traditional social encounters, and public performance. The SPAI-C has excellent test–retest reliability across short (two-weeks) and long (10 months) intervals, high internal consistency, and successfully differentiates socially anxious children from those without a disorder and those with externalizing disorders (Beidel et al. 1995; 2000), as well as from children with other anxiety disorders. The SPAI-C also demonstrates good convergent validity (Beidel et al. 1995), and the measure has also been found to be reliable and valid in an adolescent sample (Storch et al. 2004). The SPAI-C has also been demonstrated to be sensitive to changes in symptoms following treatment for social phobia (Beidel et al. 2000). The SPAI-C was found to be reliable in the sample as a whole (α=0.91) and within each of the racial/ethnic groups: White (α=0.92), Black (α=0.92), Hispanic (α=0.91), and Other (α=0.92).

The Penn State Worry Questionnaire for Children (PSWQ-C; Chorpita et al. 1997) is a 14-item measure that assesses worry including the frequency, severity, and controllability of worry. Items are rated on a 4-point scale where 0=*never true*, 1=*sometimes true*, 2=*most times true*, and 3=*always true*, and higher scores reflect greater engagement in worry. This measure was adapted from the adult version of the PSWQ (Meyer et al. 1990) and demonstrates sound psychometric properties, including high internal consistency, excellent test–retest reliability and high convergent and discriminant validity (Chorpita et al. 1997). The PSWQ-C successfully differentiates children with generalized anxiety disorder and children with other anxiety disorders from children with no anxiety or mood disorders (Chorpita et al. 1997). The PSWQ-C demonstrated good reliability in the sample as a whole (α=0.85) and within each of the racial/ethnic groups: White (α=0.86), Black (α=0.85), Hispanic (α=0.84), and Other (α=0.87).

Eating Pathology Eating attitudes and behavior were assessed using the Children's Eating Attitudes Test (ChEAT; Maloney et al. 1988). The ChEAT is a 26-item measure that assesses attitudes and behaviors that are associated with anorexia nervosa and bulimia nervosa. Participants rate how often they engage in specific behaviors or have specific beliefs about food (1=*never,* 2=*rarely*, 3=*sometimes*, 4=*often*, 5=*very often*, and 6=*always*). In the original scoring, items with a response of 6 were recoded to a score of 3, items with a response of 5 were recoded to a score of 2, and items with a response of 4 were recoded to a score of 1. Items with responses ranging from 1 to 3 were recoded as 0 (symptom absent). However, this system of scoring may minimize potentially harmful symptoms of eating disorders in children by coding all responses of "sometimes" as absence of symptoms. As such, the continuous 1–6 scale of the ChEAT was used in the scoring of the measure for the purposes of this study, yielding a potential range of scores of 0 to 156. This method has been used in other

[2] When the Social Anxiety subscale of the MASC was analyzed, the results mirrored those found using the SPAI-C as the dependent variable.

studies (e.g., Barr et al. 2001), and psychometric properties have remained good (McVey et al. 2004). The ChEAT has four subscales, three of which were of interest in this study: Dieting, Restricting and Purging, and Food Preoccupation. The ChEAT has demonstrated good test–retest reliability (Maloney et al. 1988) internal consistency and convergent validity (Smolak and Levine 1994). The continuously scored ChEAT demonstrated good internal consistency in the sample as a whole (α=0.94) and within each of the racial/ethnic groups: White (α=0.94), Black (α=0.95), Hispanic (α=0.93), and Other (α=0.93). The subscales of the ChEAT also demonstrated good reliability: Dieting (α=0.91), Restricting and Purging (α=0.88), and Food Preoccupation (α=0.83).

Aggression A revised version of the Revised Peer Experiences Questionnaire (RPEQ; Prinstein et al. 2001) was used to assess participants' engagement in aggression toward peers. The RPEQ was developed from the Peer Experiences Questionnaire (Vernberg et al. 1999) and assesses both overt and relational victimization by peers and aggression toward peers. The questionnaire includes 18 items that are presented in two versions. For the aggressor version, participants rate how often they engaged in a specific behavior toward others in the past year (e.g., "I threatened to hurt or beat up another kid") on a 5-point Likert scale (1=*never*, 2=*once or twice*, 3=*a few times*, 4=*about once a week*, and 5=*a few times a week*). The aggressor version includes four subscales, including Overt Aggression, Relational Aggression, Reputational Aggression, and Prosocial Behavior Towards Others. For the victim version, participants rate how often each aggressive behavior was directed towards them (e.g., "A kid threatened to hurt or beat me up"). The original Peer Experiences Questionnaire has demonstrated good test–retest reliability, internal consistency, and validity (Vernberg et al. 2000). The RPEQ has also demonstrated good internal consistency for both versions of the measure (aggressor and victim) as well as for the four subscales, and convergent validity (Prinstein et al. 2001). The RPEQ-Total Aggression demonstrated good internal consistency in the sample as a whole (α=0.90) and within each of the racial/ethnic groups: White (α=0.91), Black (α=0.88), Hispanic (α=0.90), and Other (α=0.91). The subscales of the RPEQ were also found to be reliable: Overt Aggression (α=0.80), Relational Aggression (α=0.72), and Reputational Aggression (α=0.79).

Measurement Equivalence

The measures being used in this study have all been used previously in samples of diverse children and/or adolescents. Establishing that these symptom scales actually measure the same underlying constructs in different populations remains an important issue. To address whether these measures are assessing the same constructs across the groups in our sample, we conducted a series of factor analyses within each racial/ethnic group on each of the measures included in this study. The results indicated that the underlying factor structure and item loadings were remarkably similar in each of the four racial/ethnic groups (Hilt, et al. in preparation). Moreover, the reliability of each of the measures is the same across all groups in the study. These findings strengthen our confidence in the equivalence of these symptom measures across racial/ethnic groups.

Procedure

Data were collected during the homeroom and first period of the school day on two consecutive days. Participants were given 90 min on each day to complete the assessments. The assessments were administered to students in their homeroom classrooms, and homeroom teachers along with one study personnel were present in the classroom during the assessment period. All data were collected anonymously, and participants were assured of the confidentiality of their responses and the voluntary nature of their participation.

Data Analysis

Data were excluded for four students (0.7% of the sample) whose patterns of responding indicated that they were not answering the questions truthfully (e.g., indicating that two mutually exclusive events had occurred) or that they were not reading the questions before responding (e.g., marking consecutive numbers repeatedly throughout the assessment, such as 1, 2, 3, 4, etc.). A final sample of 1,071 adolescents was included in the analyses.

Race/ethnicity groups were collapsed into White, Black, Hispanic/Latino, and Other categories for analysis. The "Other" group included biracial and multiracial participants and participants from the Asian, Middle Eastern, and Native American racial/ethnic groups. We also conducted all analyses using five racial/ethnic groups: White, Black, Hispanic/Latino, Biracial, and Other. The pattern of results was essentially unchanged when biracial and multiracial participants were examined separately. As such, the more parsimonious 4-group classification of racial/ethnic groups was used for all subsequent analyses.

To examine differences in the level of reported symptoms across groups of participants, univariate ANOVAs were conducted with gender and race/ethnicity as between-subjects factors and each symptom measure as a separate dependent variable. Significant gender by race/ethnicity interactions were followed up by examining the simple effect of race/ethnicity within each gender. Significant main and simple effects of race/ethnicity and grade were followed-up

using Tukey's honestly significant difference (HSD) post-hoc tests to determine which racial/ethnic groups differed from each other.

To examine patterns of comorbidity across racial/ethnic groups, cutoff scores were used to create clinical analogue groups (i.e., groups with clinically meaningful symptoms) for depression, social phobia, panic disorder, separation anxiety disorder, generalized anxiety disorder (GAD), disordered eating, and aggression. A cutoff of 16 on the CDI was used to identify depressed participants. This cutoff score was found to maximize sensitivity and specificity of the CDI in identifying depressed adolescents in a study that used a standardized clinical interview as the gold standard (Timbremont et al. 2004). Participants with analogue social phobia were identified using cutoff of 18 on the SPAI (March et al. 1997). The Physical Symptoms subscale of the MASC (cutoff=17.5) and the Separation Anxiety subscale (cutoff=11.5) were used to identify participants with analogue panic disorder and separation anxiety disorder. These cutoffs maximized sensitivity and specificity when compared to a standardized clinical interview (Wood et al. 2002). A cutoff of 20 on the PSWQ-C was used to identify participants with analogue GAD. In a clinical sample of children with GAD, 20 was the lowest score reported on the measure while 16 was the highest score reported by non-anxious comparison children (Chorpita et al. 1997). Participants with clinically significant disordered eating were identified using a cutoff of 20 on the ChEAT (see Garner et al. 1982; Smolak and Levine 1994). Because no reliable cutoffs on the RPEQ have been established, we classified participants whose Total Aggression score was one and a half standard deviations above the sample mean or more as aggressive. After identifying participants with clinically significant symptoms, patterns of comorbidity among different types of symptoms were examined for each racial/ethnic group.

Results

Depression

To examine group differences in depressive symptoms, a 2 (gender: male, female) x 4 (race/ethnicity: White, Black, Hispanic, Other) univariate ANOVA was conducted with total CDI score as the dependent variable. A main effect of race/ethnicity emerged, $F(3, 1042)=4.38$, $p<0.01$, $\eta^2=0.01$, which was qualified by a significant gender by race/ethnicity interaction, $F(3, 1042)=3.97$, $p<0.01$, $\eta^2=0.01$. The simple effect of race/ethnicity within gender was then examined, revealing a simple effect of race/ethnicity within females, $F(3, 513)=7.71$, $p<0.001$, $\eta^2=0.04$, but not within males, $F(3, 529)=0.53$, $p=0.66$, $\eta^2=0.003$. Tukey's HSD post-hoc test indicated that Hispanic females reported higher levels of depressive symptoms on the CDI than White, $p<0.001$, Black, $p<0.05$, and Other, $p<0.05$, females. See Table 1 for means and standard deviations of all symptom measures by gender and race/ethnicity.

Table 1 Means and standard deviations on all symptom measures by race/ethnicity and gender

Measure	Male				Female			
	White	Black	Hispanic	Other	White	Black	Hispanic	Other
CDI	8.33(5.72)	9.55(6.68)	9.07(6.05)	9.41(7.67)	8.13(6.58)	8.52(5.18)	11.33(6.52)	9.18(6.19)
MASC	32.39(15.54)	37.07(14.63)	36.81(14.89)	39.02(14.91)	41.16(17.14)	41.89(12.62)	45.91(14.38)	40.99(15.55)
Physical	6.78(5.11)	9.41(5.25)	8.16(5.39)	8.62(5.35)	9.46(5.97)	8.46(4.74)	10.82(5.63)	10.08(6.40)
Harm Av	14.26(5.45)	15.66(4.85)	15.53(4.73)	16.21(5.20)	15.49(4.66)	16.89(4.49)	16.49(4.43)	16.03(4.80)
Separation	4.64(3.92)	5.07(3.86)	5.99(4.22)	6.00(4.53)	6.28(4.73)	6.79(3.89)	8.24(4.70)	6.79(4.47)
SPAI-C	10.43(9.22)	12.39(10.31)	10.23(8.74)	10.14(9.14)	11.75(8.62)	11.59(8.26)	14.34(8.97)	12.73(9.35)
PSWQ-C	11.57(6.03)	13.50(7.55)	13.13(6.58)	14.09(7.57)	14.21(7.46)	15.44(7.49)	16.80(7.54)	15.81(7.77)
ChEAT	31.16(28.35)	44.53(31.48)	34.79(27.63)	33.70(21.98)	33.24(23.81)	33.85(25.37)	40.49(24.82)	36.64(26.09)
Dieting	13.31(14.84)	19.37(15.88)	16.74(14.41)	15.81(11.90)	16.74(13.55)	16.26(14.62)	19.66(12.96)	16.58(14.62)
Restr/Purge	7.72(9.89)	12.94(11.83)	9.93(10.69)	8.94(8.27)	8.19(8.55)	8.45(8.99)	11.01(9.32)	9.50(9.70)
Food Preocc	5.29(5.79)	8.98(7.03)	5.89(6.14)	6.20(5.20)	4.88(5.46)	5.15(5.14)	6.57(5.81)	5.89(6.20)
RPEQ	6.35(6.41)	7.80(5.85)	5.51(5.79)	6.99(7.32)	4.33(5.38)	4.52(5.42)	5.86(6.63)	5.11(5.36)
Overt	2.43(2.65)	3.08(2.41)	1.89(2.09)	2.45(2.72)	1.50(2.49)	1.60(2.43)	1.90(2.44)	1.63(2.21)
Relational	2.17(2.28)	2.37(2.09)	1.94(2.31)	2.33(2.44)	1.57(1.77)	1.88(2.07)	2.05(2.23)	2.13(2.23)
Reputation	1.74(2.23)	2.35(2.55)	1.68(2.24)	2.20(2.69)	1.26(2.06)	1.04(1.80)	1.91(2.69)	1.36(2.01)

CDI Children's Depression Inventory, *MASC* Multidimensional Anxiety Scale for Children, *SPAI-C* Social Phobia and Anxiety Inventory for Children, *PSWQ-C* Penn State Worry Questionnaire for Children, *ChEAT* Children's Eating Attitudes Test, *Restr/Purge* Restricting Purging Subscale of the ChEAT, *Food Preocc* Food Preoccupation Subscale of the ChEAT, *RPEQ* Revised Peer Experiences Questionnaire.

Anxiety

MASC Univariate ANOVAs were conducted on total and subscale scores of the MASC with gender and race/ethnicity as between-subjects factors. This analysis revealed a main effect of gender, $F(3, 1027)=4.20$, $p<0.01$, $\eta^2=0.01$, and race/ethnicity, $F(1, 1027)=33.03$, $p<0.001$, $\eta^2=0.03$, on MASC total score. These main effects were qualified by a significant gender by race/ethnicity, $F(3, 1027)=2.78$, $p<0.05$, $\eta^2=0.01$, interaction. Examination of the simple effect of race/ethnicity within gender revealed a significant effect of race/ethnicity for males, $F(3, 534)=2.75$, $p<0.05$, $\eta^2=0.02$, and for females, $F(3, 513)=4.14$, $p<0.01$, $\eta^2=0.02$. Post-hoc tests revealed that males in the Other race/ethnicity group reported higher total scores on the MASC than White males, $p<0.05$, and Hispanic females had higher scores than Other females, $p<0.05$.

Univariate analysis of MASC physical symptoms revealed a main effect of gender, $F(1, 1047)=12.51$, $p<0.001$, $\eta^2=0.01$, which was qualified by a gender by race/ethnicity interaction, $F(3, 1047)=3.98$, $p<0.01$, $\eta^2=0.01$. Examination of simple effects revealed a significant effect of race/ethnicity within males, $F(3, 534)=3.11$, $p<0.05$, $\eta^2=0.02$, and within females, $F(3, 513)=3.26$, $p<0.05$, $\eta^2=0.02$. Among males, Black participants reported the highest levels of physical symptoms and reported significantly more symptoms than White participants, $p<0.05$, who reported the lowest levels of physical symptoms. In contrast, Hispanic participants reported the highest levels of physical symptoms among females and reported significantly more symptoms than Black participants, $p<0.05$, who reported the lowest levels of physical symptoms (see Table 1).

Analysis of MASC harm avoidance subscale scores revealed main effects of gender, $F(1, 1027)=6.40$, $p<0.05$, $\eta^2=0.006$, and race/ethnicity, $F(3, 1027)=2.88$, $p<0.05$, $\eta^2=0.01$. Female participants reported higher levels of harm avoidance (M=16.28, SD=4.53) than male participants (M=15.40, SD=4.94). Although Black participants scored the highest on the MASC harm avoidance scale (M=16.39, SD=4.72), they did not differ significantly from any of the other racial/ethnic groups. Hispanic participants reported significantly more harm avoidance symptoms (M=16.06, SD=4.63) than White participants (M=14.89, SD=5.10), $p<0.05$.

The separation anxiety subscale of the MASC was also examined in univariate analyses, revealing significant main effects of gender, $F(1, 1027)=24.20$, $p<0.001$, $\eta^2=0.02$, and race/ethnicity, $F(3, 1027)=7.44$, $p<0.001$, $\eta^2=0.02$. Female participants reported higher levels of separation anxiety (M=7.03, SD=4.64) than males (M=5.42, SD=4.20). Post-hoc tests indicated that Hispanic participants reported higher levels of separation anxiety (M=7.14, SD=4.60) than White participants (M=5.44, SD=4.40), $p<0.001$, and Black participants (M=5.94, SD=3.95), $p<0.05$, but not Other participants (M=6.38, SD=4.51). No other racial/ethnic group differences in separation anxiety emerged.

SPAI-C Univariate analysis of social anxiety symptoms using the total score on the SPAI revealed a main effect of gender, $F(1, 926)=6.64$, $p<0.01$, $\eta^2=0.01$, was qualified by a gender by race/ethnicity interaction, $F(3, 926)=2.70$, $p<0.05$, $\eta^2=0.01$. Analysis of the simple effect of race/ethnicity within gender revealed no effect of race/ethnicity in males, $F(3, 455)=0.97$, $p=0.41$, $\eta^2=0.01$, and a significant simple effect of race/ethnicity in females, $F(3, 475)=2.62$, $p<0.05$, $\eta^2=0.02$. Hispanic females reported the highest levels of social anxiety on the SPAI, followed by Other, Black, and White females. However, post-hoc tests indicated no significant differences among female racial/ethnic groups.

PSWQ-C Analysis of worry using the PSWQ total score revealed a main effect of gender, $F(1, 983)=20.70$, $p<0.001$, $\eta^2=0.02$, and of race/ethnicity, $F(3, 983)=3.20$, $p<0.05$, $\eta^2=0.01$. Females reported higher levels of worry (M=16.11, SD=7.58), than males, (M=13.15, SD=6.71). Post-hoc tests revealed that Hispanic participants reported significantly higher levels of worry (M=15.01, SD=7.19) than White participants (M=12.83, SD=6.85), $p<0.01$.

Eating Pathology

Univariate analysis of eating disorder symptoms on the ChEAT revealed a marginally significant gender by race/ethnicity interaction, $F(3, 752)=2.55$, $p=0.055$, $\eta^2=0.01$. Because the interaction did not reach statistical significance, examination of the simple effect of race/ethnicity within gender was not justified. However, examination of the mean ChEAT scores by gender and race/ethnicity revealed that among males, Black participants scored highest and White participants scored lowest, while among females, Hispanic participants scored highest and White participants scored lowest (see Table 1).

When the dieting subscale of the ChEAT was examined, a significant gender by grade interaction emerged, $F(2, 732)=3.15$, $p<0.05$, $\eta^2=0.01$. However, examination of the simple effect of grade within gender revealed no effect for males, $F(2, 353)=0.29$, $p=0.75$, $\eta^2=0.002$, or for females, $F(1, 398)=2.68$, $p=0.07$, $\eta^2=0.01$. Inspection of the means revealed that Black participants scored highest on the dieting scale and White participants scored lowest among males, and Hispanic participants scored highest and Black participants scored lowest on the dieting scale among females (see Table 1).

No effects were found for the ChEAT restricting and purging subscale.

Examination of the food preoccupation subscale of the ChEAT revealed a significant gender by race/ethnicity inter-

Table 2 Number of participants with clinically meaningful symptoms based on analogue criteria by race/ethnicity

Number of clinically meaningful symptom groups	White		Black		Hispanic		Other	
	N	%	N	%	N	%	N	%
0	76	53.90	53	42.06	247	40.49	87	47.28
1	32	22.70	36	28.57	160	26.23	45	24.46
2	18	12.77	19	15.08	87	14.26	23	12.50
≥3	15	10.64	18	14.28	116	19.03	29	15.75

action, $F(3, 747)=3.79$, $p<0.01$, $\eta^2=0.02$. When the simple effect of race/ethnicity within gender was examined, a significant effect emerged for males, $F(3, 352)=4.03$, $p<0.01$, $\eta^2=0.03$, but not for females, $F(3, 395)=1.81$, $p=0.15$, $\eta^2=0.01$. Post-hoc tests revealed that Black male participants reported greater preoccupation with food than White, $p<0.01$, and Hispanic males, $p<0.01$, but not Other males.

Aggression

Aggressive behavior was examined using the total and subscale scores from the RPEQ. Univariate analyses of the RPEQ total score revealed a main effect of gender, $F(1, 757)=10.50$, $p<0.001$, $\eta^2=0.01$, which was qualified by a significant gender by race/ethnicity interaction, $F(3, 757)=3.00$, $p<0.05$, $\eta^2=0.01$. However, analysis of the simple effect of race/ethnicity within each gender revealed no effect in males, $F(3, 358)=2.01$, $p=0.11$, $\eta^2=0.02$, or females, $F(3, 399)=1.32$, $p=0.27$, $\eta^2=0.01$. Inspection of mean scores on total aggression revealed that Black participants scored the highest among males, and Hispanic participants scored the highest among females (see Table 1).

Examination of the overt aggression subscale on the RPEQ revealed a main effect of gender, $F(1, 757)=15.35$, $p<0.001$, $\eta^2=0.02$, which was qualified by a significant gender by race/ethnicity interaction, $F(3, 757)=3.18$, $p<0.05$, $\eta^2=0.01$. Analysis of simple effects revealed a significant effect of race/ethnicity in males, $F(3, 358)=3.49$, $p<0.05$, $\eta^2=0.03$, but not in females, $F(3, 399)=0.56$, $p=0.64$, $\eta^2=0.004$. Among males, Black participants reported the highest levels of aggressive behavior and had significantly higher scores on this subscale than Hispanic participants, $p<0.05$. No other racial/ethnic group differences in overt aggression were found for males.

When the relational aggression subscale of the RPEQ was examined, no significant effects of gender or race/ethnicity emerged.

Univariate analysis of the reputational aggression subscale on the RPEQ revealed a main effect of gender, $F(1, 757)=8.98$, $p<0.01$, $\eta^2=0.01$, which was qualified by a significant gender by race/ethnicity interaction, $F(3, 757)=3.72$, $p<0.05$, $\eta^2=0.02$. Examination of the simple effect of race/ethnicity within gender revealed no effect in males, $F(3, 358)=1.54$, $p=0.20$, $\eta^2=0.01$, and a significant effect in females, $F(3, 399)=2.73$ $p<0.05$, $\eta^2=0.02$. Among females, Hispanic participants reported the highest levels of reputational aggression, and Black females reported the lowest levels (see Table 1); however, post-hoc tests indicated that none of the racial/ethnic groups were significantly different from one another.

Comorbidity

To examine racial/ethnic differences in patterns of co-occurrence of clinically meaningful symptoms, the number of participants in each racial/ethnic group that scored above the clinical cutoff for each symptom measure was examined (see Table 2). To examine whether race/ethnicity and gender were associated with the number of clinically meaningful symptoms that participants reported, a negative binomial regression analysis was conducted with dummy variables for race/ethnicity, using White adolescents as the comparison group, and gender as predictors and number of analogue disorders as the dependent variable. This analysis was performed because the number of analogue disorders was not normally distributed. This analysis was performed separately among males and females to examine the effect of race/ethnicity within each gender. The results indicated that among females, being Hispanic was associated with having a higher number of analogue disorders, $\beta=0.54$, $p<0.001$. There was a trend for Black males to report a greater number of clinically meaningful symptoms, however this did not reach statistical significance, $\beta=0.39$, $p<0.10$.

Discussion

The purpose of this study was to examine racial/ethnic differences in symptoms of depression, anxiety, eating pathology, and aggression in large ethnically diverse sample of adolescents. This research aimed to extend previous work by examining differences across the three largest racial/ethnic groups in the United States, by assessing a wide range of psychopathological symptoms including both internalizing and externalizing symptoms, by examining patterns of co-occurrence of symptoms, and by examining the independent and joint effects of gender and race/ethnicity on symptom-

atology. Additionally, we sought to explore racial/ethnic differences in symptoms during a particularly vulnerable developmental time period, and thus we restricted our sample to early adolescents. Several consistent patterns of racial/ethnic differences in symptomatology emerged.

We found that depressive symptoms differed as a function of gender and race/ethnicity with Hispanic females reporting the highest levels of symptoms. Higher rates of depressive symptoms among Hispanic adolescents have been documented in several other studies (Doi et al. 2001; Roberts and Chen 1995; Roberts and Sobhan 1992; Roberts et al. 1997; Siegel et al. 1999). Moreover, large epidemiologic studies have found markedly higher rates of suicidal ideation and suicide attempts among Hispanic female adolescents (Centers for Disease Control and Prevention 2000; Grunbaum et al. 2002; Eaton et al. 2006). The findings from numerous studies are thus consistent with the results of this study, and with theoretical predictions regarding conflicting cultural values that become prominent during adolescence, and suggest that Hispanic adolescents, particularly females, are at greater risk for developing depressive symptoms in adolescence and represent an important population for intervention and preventive efforts.

Our results regarding group differences in anxiety symptomatology indicated that Hispanic adolescents, particularly females, and Black males report higher levels of anxiety symptoms than other groups. Separation anxiety and worry were reported at higher levels among Hispanic adolescents, regardless of gender. Moreover, Hispanic females reported the highest levels of global anxiety symptoms and physical symptoms of anxiety. In addition, Black participants reported the highest levels of separation anxiety symptoms among males. Previous research examining racial/ethnic differences in adolescent anxiety have largely not included sizeable numbers of White, Black, and Hispanic adolescents; as such, this study is the first to our knowledge to document elevated anxiety symptoms in Hispanic adolescents, particularly females, across the range of anxiety symptomatology. These findings are consistent with several studies that have reported higher levels of somatic symptoms and distress among Hispanic youth (Pina and Silverman 2004; Varela et al. 2004) and one study that reported higher levels of separation anxiety disorder among treatment-seeking Hispanic youth (Ginsburg and Silverman 1996).

Racial/ethnic differences in eating pathology were largely absent in this sample. This is not surprising, given that eating disorder symptoms typically emerge in late adolescence (ages 16–18; Stice et al. 1998) while our sample was comprised of young adolescents (aged 11–13). Hispanic females and Black males reported higher levels of eating pathology than individuals from other racial/ethnic groups; however, only racial/ethnic differences in food preoccupation among males reached statistical significance. In a previous study that examined eating attitudes and behaviors among a diverse group of adolescents (Fitzgibbon et al. 1998; Neumark-Sztainer et al. 2002), Black participants also had the highest levels of weight concern among males. Recent evidence from an epidemiologic study are also consistent with these findings and suggest that Black males and Hispanic females engaged in the highest levels of unhealthy behaviors to lose weight and to prevent weight gain (Eaton et al. 2006). At present, it appears that preventive interventions targeting eating pathology may be implemented among diverse samples without substantial modification for race/ethnicity differences, although future research should examine racial/ethnic differences in eating pathology among older adolescents among whom these symptoms are more prevalent.

Our findings regarding aggressive behavior indicated that Black males reported engaging in the highest levels of aggression. Black males reported higher levels of both total aggression and overt aggression than males from other racial/ethnic groups, which is consistent with a large body of literature documenting higher levels of aggressive behavior among Black males relative to White males (e.g., Lansford et al. 2006). We also found that Hispanic participants reported engaging in the highest levels of reputational aggression among females, although Hispanic females did not statistically differ from other groups in post hoc analyses. To our knowledge, this finding is novel given that aggressive behavior has not been well-studied among Hispanic adolescents.

We also examined comorbidity across racial/ethnic groups. The results from these analyses were consistent with our findings examining separate types of symptoms and indicated that Hispanic females exhibited the highest levels of co-occurring symptoms. Hispanic females qualified for the highest number of clinically meaningful symptoms among the study groups, which is not surprising given that they reported the highest levels of both internalizing and externalizing symptoms across a wide range of specific symptoms that were assessed in the study. There was a trend for Black males to report higher levels of co-occurring symptoms as well, although this trend did not reach statistical significance. These findings further highlight Hispanic females, and to a less extent Black males, as particularly groups at particularly high risk for developing psychopathology in adolescence.

We found consistent evidence for increased levels of symptomatology among Hispanic females and Black males in our sample. An important question, however, is whether these group differences are meaningful. Given the large sample size of the study, significant differences between groups may not necessarily reflect functionally meaningful differences in symptom levels. The effect sizes for many of the comparisons were small in magnitude, raising concerns about the importance of significant group differences. The

findings regarding the number of participants with clinically meaningful internalizing and externalizing symptoms shed some light on this issue. Hispanic females reported more clinically meaningful symptoms than any other group, and Black males also reported high levels of co-occurring symptoms, although this trend did not reach statistical significance. These findings suggest that the differences in symptom levels likely represent clinically meaningful differences between the groups.

A number of limitations of the present research must be pointed out. The first is our use of self-reported symptomatology rather than DSM-IV diagnoses based on a structured clinical interview. Although administration of a structured interview to establish diagnoses would represent a methodological improvement, the validity of the self-report measures used in this study is well-established. Furthermore, virtually all studies of racial/ethnic differences in adolescent symptomatology have relied on self-report measures (e.g., Austin and Chorpita 2004; Cole et al. 1998; Roberts et al. 1997). Nonetheless, epidemiologic studies of diagnosed psychiatric disorders among adolescents should be conducted with a particular focus on examining differences in prevalence and incidence across racial/ethnic groups.

Second, we did not collect information on each participant's socio-economic status (SES). Low SES has consistently been found to be associated with higher rates of depression and other psychiatric disorders in epidemiologic studies (e.g., Kessler et al. 1994; Kessler et al. 2006). Because participants were aged 11 to 13, the validity of any data collected regarding family income in this study would have been questionable, so we did not ask participants to provide this information. However, Census data indicate that there are not meaningful income differences among the three main groups in our study in the Census tracts contained within the school district that participated in the study. We also attempted to determine whether SES differences were present among the racial/ethnic groups in the study by examining family income in a sub-sample of participants. In this sample, income data were provided by participants' mothers, and no differences in income across racial/ethnic groups were found.

Another limitation concerns power to detect group differences. The Hispanic group was much larger than the other racial/ethnic groups in the study, and as a result, there was more power to detect differences for this group. Despite this limitation, there were sizeable numbers of participants from each of the racial/ethnic groups being examined in the study. Moreover, the findings are consistent with previous research and with theory regarding racial/ethnic differences in symptoms among adolescents. As such, we feel that the larger size of the Hispanic group did not bias our findings.

A final limitation of the current study involves measurement equivalence. The measures used in this study have been well-established with White adolescents; however, it is unknown whether these measures yield corresponding data for ethnic minority youth. Specifically, data are lacking on cross-group equivalence of the measures used in the study. As such, the race/ethnicity differences that were found may not reflect differences in symptomatology per se, but rather differences in what the measures are actually assessing in each group. For example, the consistent finding that Hispanic females reported higher levels of symptomatology may reflect an increased willingness to report about symptoms of anxiety, depression, and disordered eating among this group. While further research on the cross-cultural equivalency of these symptom measures is warranted, we feel that the group differences that emerged in this study reflect true differences in symptomatology for a number of reasons. First, we have examined the factor structure of each symptom measure in each of the four racial/ethnic groups in our sample. These analyses indicated a similar factor structure for each measure across all racial/ethnic groups (Hilt et al. in preparation). Second, our pattern of findings suggests that Hispanic adolescents are not uniformly reporting elevated levels of symptoms, as only female Hispanic adolescents in our sample reported increased symptomatology. This suggests that cultural reporting biases or reporting differences cannot serve as a reasonable alternative explanation for our findings. Finally, our findings are consistent with prior work documenting elevated rates of depression among Hispanic females (Roberts and Chen 1995; Roberts and Sobhan 1992; Roberts et al. 1997). Moreover, large nationally representative epidemiologic studies have consistently documented higher rates of suicidal ideation and suicide attempts serious enough to warrant medical attention among Hispanic females (Centers for Disease Control and Prevention 2000; Eaton et al. 2006; Grunbaum et al. 2002). As such, the increased levels of internalizing symptoms among this group are clearly related to functional outcomes, suggesting that reporting differences alone are not responsible for the observed higher levels of symptomatology in this group. However, future research should seek to establish measurement equivalence for common measures of adolescent psychopathology across racial/ethnic groups.

Despite these limitations, this study represents one of the only large community studies of racial/ethnic differences in adolescent psychopathology that has included representative numbers of White, Black, and Hispanic adolescents. Our results document elevated symptomatology among Hispanic females and Black males and are consistent with prior research on these groups. One important direction for future research is to understand the processes by which internalizing and externalizing symptoms develop. Even though

symptoms levels differ by racial/ethnic group, the same mechanisms may be operating to produce these symptoms; or, perhaps different mechanisms are at play that may account for the differences in symptom levels. Current research in this area is rather mixed. For example, some studies of aggression (e.g., Bellmore et al. 2005; Laird et al. 2005) have found different symptom levels across racial/ethnic groups but found similar processes involved in predicting symptoms. In one study, low social preference and high antisocial peer involvement were related to delinquent behavior among both Black and White adolescents (Laird et al. 2005). Other studies have found that different processes may be involved in the development of aggression among different racial/ethnic groups. For example, one study found that race moderated the relationship between physical discipline and adolescent externalizing problems such that physical discipline at an early age was related to subsequent increases in levels of externalizing behavior for White adolescents but to subsequent decreases for Black adolescents (Lansford et al. 2006). Understanding differences in symptoms levels among racial/ethnic groups is important for targeting prevention and intervention efforts, but a better understanding of the processes by which symptoms develop is necessary for earlier targeting of high-risk individuals. Future research should aim to identify the mechanisms leading Hispanic female and Black male adolescents to develop symptomatology in adolescence at higher rates than other groups.

In conclusion, this study provides a comprehensive description of racial/ethnic differences in symptoms of depression, anxiety, eating pathology, and aggression in early adolescents. The results of this study indicate that while there are not large racial/ethnic differences in symptoms, Hispanic adolescents, particularly females, report higher levels of internalizing and externalizing symptoms than other racial/ethnic groups and also exhibit higher levels of comorbidity among symptoms. Black males also report higher levels of both internalizing and externalizing symptoms relative to all groups except Hispanic females. Future research should aim to identify potential mechanisms leading to racial/ethnic group differences in the prevalence of adolescent psychopathology. Research examining the development of emotion regulation skills may prove particularly fruitful in this regard. Socialization and parental expression of emotion have been demonstrated to impact the development of expressive behavior and emotion regulation skills in children (e.g., Garner et al. 1994; 1997). Cultural differences in emotion socialization, in the acceptability of expressing negative emotions, or in the types of strategies that parents model to their children for managing emotions may lead to differences in the development of emotion regulation skills across racial/ethnic groups. Recent evidence documents cultural differences in emotion socialization and their impacts on child emotional expression (Cole et al. 2006). Given the relevance of emotion socialization (Suveg et al. 2005) and emotion regulation skills (Silk et al. 2003; Suveg and Zeman 2004; Zeman et al. 2002) to the development of both internalizing and externalizing problems in youth, racial/ethnic differences in symptomatology may be partially explained by differences in emotion regulation across groups. Research examining differences in the development of emotion regulation skills across racial/ethnic groups and the associations that these differences have with adolescent psychopathology may provide insight into potential mechanisms by which certain racial/ethnic groups are at higher risk for developing psychopathology during adolescence. Perhaps more importantly, intervention and prevention efforts targeted at groups that are at high risk for the development of psychopathology in adolescents, particularly Hispanic females and Black males, should be undertaken. Identification of the mechanisms through which racial/ethnic group differences emerge will aid in developing interventions that can most effectively target these high-risk groups.

Acknowledgement The writing of this article was supported in part by a grant from the Yale Institute for Social and Policy Studies awarded to Susan Nolen-Hoeksema. We would like to thank Sean Bland, Elizabeth Chereji, Erica Newland, and Margaret Scotti for their invaluable help on this project.

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