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Examining Anxiety and Depression as Moderators of the Associations Between ADHD Symptoms and Academic and Social Problems in Hispanic Adolescents

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Abstract The effects of attention-deficit/hyperactivity disorder (ADHD) symptoms on the psychosocial functioning of Hispanic youth have been understudied. It also remains unclear if the well-established associations between ADHD symptoms and academic and social impairment are exacerbated by co-occurring internalizing symptoms. The purposes of the present study were to (1) examine whether ADHD symptoms would be associated with academic and social problems while also controlling for oppositional defiant disorder (ODD) symptoms, and (2) test the hypothesis that anxious and depressive symptoms would moderate the relations between ADHD symptoms and academic and social problems. Participants were 142 at-risk Hispanic adolescents (54 % male, ages 14–19) who reported on their anxious and depressive symptoms, as well as their teachers who reported on adolescents' ADHD symptoms, ODD symptoms, academic problems, and social problems. When the psychopathology variables were included simultaneously in a path model, ADHD was the only domain significantly positively associated with academic problems. In contrast, ODD and depressive symptoms were the only domains significantly positively associated with social problems when all of the psychopathology variables were included in the path model. No moderation effects were found in relation to academic problems, although a significant ADHD × depression interaction was found in relation to social problems. Specifically, ADHD symptoms were not associated with social problems among adolescents who reported low levels of depressive symptoms, but the association between ADHD symptoms and social problems was significant at higher levels of depression. In addition to targeting oppositionality, attending to the combined presence of ADHD and depressive symptoms will be important for reducing the social impairments among Hispanic adolescents.

Keywords Academic functioning · ADHD · Adolescence · Attention-deficit/hyperactivity disorder · Anxiety · Comorbidity · Depression · Hispanic youth · Social functioning

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The Hispanic population in the United States continues to grow rapidly. According to the United States (US) census, the number of individuals identifying as Hispanic grew by 43 % between 2000 and 2010 (Ennis et al. 2011). By 2050, it is estimated that Hispanic youth will make up 35 % of the US population under the age of 17 (Passel and Cohen 2008). As recently noted by the American Psychological Association (APA) Task Force on Immigration (2012), much more research is needed in order to meet the various needs of this growing population. Examining the relations between mental health symptoms and adjustment among minority youth in general is important to better understand the applicability of theories built predominately on research with White, non-Hispanic youth (Nagayama Hall and Maramba 2001; Safren et al. 2000). Although research with Hispanic youth may be more challenging than research with youth from other racial or ethnic groups due to concerns with protecting undocumented

immigrants' confidentiality and potential language barriers (APA Task Force on Immigration 2012), such research is essential in order to better understand these youths' development and meet their unique educational and mental health needs. For instance, Hispanic youth are more likely to drop out of high school and are also less likely to be enrolled in college than youth from other major racial and ethnic groups (KewalRamani et al. 2007; Lopez 2009). Examining factors that contribute to Hispanic youths' psychosocial and academic difficulties is a clear research priority. The specific purposes of the present study were to (1) examine whether attention-deficit/hyperactivity disorder (ADHD) symptoms, above and beyond oppositional defiant disorder (ODD) symptoms, are associated with academic and social problems in an at-risk sample of Hispanic adolescents, and (2) test the hypothesis that internalizing symptoms would exacerbate the relations between ADHD symptoms and academic and social problems.

ADHD in Hispanic Youth

Although ADHD is among the most common psychiatric disorders in childhood and adolescence (Merikangas et al. 2010), several studies report lower rates of ADHD and ADHD symptoms among Hispanic youth compared to non-Hispanic youth (Cuffe et al. 2005; de Ramirez and Shapiro 1998; Merikangas et al. 2010). Several cultural factors may account for these differences, including language barriers in reporting symptoms of ADHD, parental perceptions of problem behaviors and psychiatric diagnoses, and willingness to discuss behavior problems with healthcare providers (Hervey-Jumper et al. 2008; Schmitz and Velez 2003; Stevens et al. 2004; Varela and Hensley-Maloney 2009). Perhaps given these unique factors, Hispanic youth in the US are less likely than their peers to be identified with ADHD and receive associated treatments (Bauermeister et al. 2003; Stevens et al. 2004). Further, despite having lower rates of ADHD overall, Hispanic youth diagnosed with ADHD are more likely than other youth to also have comorbid mental health problems (Larson et al. 2011).

It is well established that youth with ADHD experience more academic and social impairments than their peers without ADHD (Becker et al. 2012b; DuPaul and Stoner 2003; Hoza 2007). Even long-term medication use does not normalize the academic functioning of youth with ADHD (Langberg and Becker 2012), and the social problems associated with ADHD also remain after intensive interventions (McQuade and Hoza 2008). Of note, it is not only youth diagnosed with ADHD who experience social and academic impairments, as ADHD symptoms are associated with social and academic problems in community-based samples or samples of youth displaying subclinical attention problems (Becker et al. 2012a; DuPaul 1991; Rielly et al. 2006). Importantly, academic and social problems have been documented among Hispanic youth diagnosed with ADHD specifically (Bauermeister et al. 2005). In addition, Hispanic children suffering from ADHD have higher rates of internalizing symptoms than Hispanic children without an ADHD diagnosis (Bauermeister et al. 2005). Given the high rates of co-occurring internalizing symptoms among youth displaying ADHD symptoms, examining the degree to which these co-occurring symptoms affect the social and academic functioning of youth displaying ADHD symptoms is needed.

ADHD, Internalizing Symptoms, and Social Functioning

It remains unclear if depressive or anxious symptoms exacerbate the relation between ADHD symptoms and social functioning. No known studies have examined this issue in Hispanic youth specifically, even though as noted above Hispanic youth diagnosed with ADHD are more likely than other youth with ADHD to have comorbid mental health disorders (Larson et al. 2011). Among non-Hispanic youth, findings to date have been mixed, perhaps due to methodological differences across studies. First, as noted in a recent review by Becker et al. (2012c), studies have not consistently controlled for conduct problems when testing the hypothesis that internalizing symptoms exacerbate the link between ADHD and social impairment. That is, it is necessary to control for conduct problems in order to determine whether internalizing symptoms are themselves linked to increased social problems. Second, very few studies have separately examined anxious and depressive symptoms in the same sample of youth despite the possibility of differential effects between these internalizing domains. For example, Karustis and colleagues (2000) found in a cross-sectional study of elementary students diagnosed with ADHD that children's self-reported anxious symptoms were negatively associated with parent-reported (but not teacher-reported) social functioning after controlling for depressive symptoms, but found no relation between child-reported depression and parent- or teacher-reported social functioning above and beyond anxiety among youth with ADHD.

However, some additional analyses in the Karustis et al. (2000) paper suggested depressive symptoms adversely affect social functioning. Specifically, parents' reports of their child's depressive symptoms significantly predicted parent-reported social problems after controlling for anxious symptoms, whereas the reverse was not found. Other cross-sectional studies have also shown depressive symptoms to negatively influence social functioning in school- and community-based samples of youth with and without ADHD (Blackman et al. 2005; Fauber et al. 1987; Fröjd et al. 2008). Importantly, research further demonstrates that

depression in adolescence is longitudinally associated with poorer psychosocial adjustment in young adulthood (Rao et al. 1995). Likewise, Rose and colleagues (2011) examined both anxiety and depression in a short-term longitudinal study with a normative sample of children and found that depressive symptoms had a more adverse effect on the peer domain of dyadic friendship than anxiety. In sum, although some mixed findings regarding anxiety and depression have been reported, we hypothesized that depressive symptoms would be notably detrimental for youths' social functioning, particularly given our use of an adolescent sample (e.g., Fauber et al. 1987; Fröjd et al. 2008).

ADHD, Internalizing Symptoms, and Academic Functioning

As noted above, youth displaying clinically elevated levels of ADHD symptoms experience a wide range of academic impairments (DuPaul and Stoner 2003). Internalizing symptoms have also been linked to academic challenges (Baker 2006; Flook et al. 2005) and may be even more detrimental among samples of youth diagnosed with ADHD. For example, Massetti and colleagues (2008) found that internalizing symptoms predicted academic underachievement in youth with ADHD over an 8-year period. Further, Faraone et al. (1993) found that children diagnosed with ADHD who also had a comorbid internalizing disorder were more frequently placed in a special class than children diagnosed with ADHD alone, although having a comorbid disorder was not associated with other academic outcomes such as repeating a grade.

Whether or not anxious and depressive symptoms confer similar or differential risk for academic problems among youth displaying ADHD symptoms remains unclear. This is partly due to studies of youth with ADHD often collapsing anxiety and depression into a single, broader internalizing domain (e.g., Massetti et al. 2008). For studies that have studied these constructs separately, findings have been mixed as to whether anxiety or depression is more strongly associated with academic impairment. For example, among children diagnosed with ADHD, depression, but not anxiety, was related to homework problems (Karustis et al. 2000). Some evidence suggests this relation exists among Hispanic youth. For instance, in a sample of Hispanic adolescents, Alva and de Los Reyes (1999) found that depressive symptoms, but not anxious symptoms, were significantly negatively correlated with student grade point average (GPA). Still, several other studies suggest that anxiety may be especially associated with academic problems both cross-sectionally and longitudinally (Cowen et al. 1971; Ialongo et al. 1994, 1995; Van Ameringen et al. 2003; Woodward and Fergusson 2001). This is likely due to youth being nervous at school and in class, such as having fears about speaking up in front of the class, or experiencing text anxiety (Albano et al. 2003).

Research is needed to clarify the nature of the influence of depression and anxiety on academic performance. Despite mixed findings reported to date, depressive symptoms may not contribute to increased academic impairment in adolescence above and beyond the contribution of ADHD (Biederman et al. 2008). Further, Hispanic youth may be especially susceptible to anxious symptoms adversely affecting academic functioning due to a range of socio-cultural factors such as language, time in the US, documentation status, and poverty (Aspiazu et al. 1998; Gillock and Reyes 1999; Potochnick and Perreira 2010; Safren et al. 2000; Steinberg et al. 1984). As such, despite mixed findings reported in extant research conducted to date, we tentatively hypothesized that anxious symptoms would be more strongly associated with academic impairment than depressive symptoms in a sample of at-risk Hispanic adolescents.

The Present Study

Extant research suggests that Hispanic youth displaying ADHD symptoms are more likely than non-Hispanic youth with ADHD to have a comorbid mental health problem (Larson et al. 2011) and are also less likely to receive ADHD interventions (Bauermeister et al. 2003; Stevens et al. 2004). Despite these findings, few studies have examined the correlates and moderators of ADHD symptoms in Hispanic youth. Therefore, the purposes of the present study were to (1) examine whether ADHD symptoms would be associated with academic and social problems while also controlling for ODD symptoms, and (2) test the hypothesis that anxious and depressive symptoms would exacerbate the relations between ADHD symptoms and academic and social problems, respectively.

Method

Participants

Participants included 142 adolescents (77 males) in Grades 9 (32.4 %), 10 (23.9 %), 11 (19.7 %), and 12 (23.9 %) from a charter high school located in a large, Midwestern city, and their second-hour teacher. In response to high student dropout rates in the public schools, especially among Hispanic youth, the charter school was established with the specific goal of educating minority and impoverished youth, particularly Hispanic youth (>95 % of students in the school self-identify as Hispanic). Recruitment was conducted during

parent-teacher conferences, where study personnel set up a table in the school's main hallway and provided information to caregivers interested in enrolling their youth in the study. Consent forms were available in both English and Spanish to accommodate the large number of caregivers whose primary language was Spanish. School-sanctioned translators also helped the research team provide information to families and answer their questions about the study. Consent forms were sent home with the students whose caregivers did not attend the parent-teacher conferences. Adolescents 18 years of age and older were allowed to give consent for their own participation.

Of the 200 students enrolled in the school, written informed consent was obtained for 155 students (77.5 %); of these, 142 received written parental consent and 13 were old enough to provide their own written consent. Approximately two-thirds of the returned consent forms were the Spanish version. Teachers were consented and anonymously completed measures for the students enrolled in their class during the time of data collection. For the current study, only those adolescents who self-identified as Hispanic and who had both teacher- and self-report data (N=142) were included in the analysis. This final sample was comprised of 77 males and 65 females with a mean age of 16.25 years (SD=1.47, range= 14–19 years). Socioeconomic data were not available from the participants; however, per capita income for the county in which the high school is located was approximately $25, 605, with 16.5 % of individuals living below the federal poverty line (U. S. Census Bureau 2010). According to school records, 95.4 % of all students were eligible for free or reduced-price lunch.

Measures

ADHD and ODD Symptoms Teacher-reported symptoms of ADHD and ODD were assessed using the *Disruptive Behavior Disorder Checklist* (DBD; Pelham et al. 1992). The DBD includes items assessing inattentive (e.g., "Is often easily distracted by extraneous stimuli") and hyperactive-impulsive (e.g., "Often leaves seat in classroom or in other situations in which remaining seated is expected") symptoms of ADHD, as well as ODD symptoms (e.g., "Often argues with adults"). Responses were rated on a four-point scale ranging from 1 (*Not at All*) to 4 (*Very Much*). Consistent with previous research using the DBD (e.g., Becker et al. 2012a; Milich et al. 1993), items were recorded to indicate the presence or absence of a symptom; more specifically, those items rated as "Pretty Much" or "Very Much" were considered as an endorsement of each symptom whereas items rated as "Not at All" or "Just a Little" were considered to be negative endorsement of a symptom. The ADHD and ODD subscales demonstrated good reliability in this sample (αs=.94 and .91, respectively). Mean scores were calculated and used for analyses, with the ADHD subscale the primary focus of the current study and the ODD subscale included as a covariate in the analyses.

Academic Problems Academic problems were assessed using teacher responses to two items developed for use in the current study: "How does this child perform academically relative to other students in your class?" and "When thinking about this student, how would you describe their overall academic performance (reputation based on all their classes)?" Responses were rated on the following five-point scale: 1 = *Well Below Average*, 2 = *Below Average*, 3 = *Average*, 4 = *Above Average*, 5 = *Well Above Average*. For the current analysis, items were reverse-coded and averaged such that higher scores indicated more academic problems. The resulting scale demonstrated good reliability in this sample (α=.93).

Social Problems Teacher-reported social problems were assessed using four items from the *Teacher Report Form* (TRF; Achenbach and Rescorla 2001), which involve difficulties with peer relationships (e.g., not getting along with others, being the target of frequent teasing). Teachers responded using a three-point scale (1 = *Not True*, 2 = *Somewhat or Sometimes True*, 3 = *Very or Often True*) according to whether the item accurately described the adolescent at that time or within the past 6 months. Mean scores were calculated and used for analyses. The scale demonstrated adequate internal consistency in this sample (α=.80).

Anxious Symptoms Self-reported anxious symptoms were assessed using the Short Form of the *Revised Children's Manifest Anxiety Scale—Second Edition* (RCMAS-2; Reynolds and Richmond 2008). Adolescents responded to 10 items according to whether or not statements regarding social anxiety, worry, and physiological symptoms of anxiety were true for them (0 = *No*; 1 = *Yes*). The total number of anxious symptoms endorsed was summed across items, with higher scores indicating greater symptom severity. In this sample, the RCMAS-2 Short Form demonstrated adequate internal consistency (α=.77).

Depressive Symptoms Depressive symptoms were assessed using adolescents' responses to the Withdrawn/Depressed scale of the *Youth Self-Report* (YSR; Achenbach and Rescorla 2001). The scale consists of eight items involving feeling unhappy, sad, or depressed, lacking energy, and preferring to be alone. Adolescents indicated whether each item was true for them at that time or within the past 6 months on a 3-point scale (1 = *Not True*, 2 = *Somewhat or Sometimes True*, 3 = *Very or Often True*). Total scores were created by summing all items, with higher scores indicating higher levels

of depressive symptoms. The withdrawn/depressed scale demonstrated adequate reliability in this sample (α=.78).

Procedures

All study procedures were approved by the university Institutional Review Board (IRB). To accommodate Spanish-speaking students and parents, informed consent materials were available in both English and Spanish, with forward- and back-translation performed by separate translators affiliated with the high school and the researchers' institution. Students also had the option of receiving Spanish assistance with materials, but only three students (2.1 %) chose this option.

Student-reported data were collected during a required writing course, with class sizes ranging between 9 and 24 students per classroom. School personnel and non-consented students left the room prior to survey administration and did not return until all participants had finished. The purposes of the study were described and verbal assent was obtained from all student participants. Students then completed a number of measures, including those on anxiety and depressive symptoms discussed above. All items were read aloud by the research team members while students followed along on their paper copy of the survey. Data collection took approximately 30 min, and students received a $5.00 gift card as compensation for their participation.

Teacher-reported data were gathered through the Qualtrics web-based survey platform. An online survey was developed to include the above measures on ADHD symptoms and academic and social problems, as well as other measures and items. Teachers were asked to complete the survey multiple times, once for every student in his or her second-hour class. Each survey took approximately 10 min to complete. All teacher data were collected within a period of 2 weeks, roughly concurrent with student-reported data collection. As compensation, teachers received a $10.00 gift card for each survey completed.

Statistical Analyses

Bivariate correlations were first examined to test the hypothesis that ADHD symptoms would be associated with both social problems and academic problems. In addition, ODD symptoms, as well as adolescent age and sex, were examined as potential covariates and were included in subsequent path models if they were significantly correlated (p <.05) with the academic or social functioning outcome of interest. Next, path models using Mplus Version 6.11 (Muthén and Muthén 1998–2010) were estimated to examine the main and interaction effects of ADHD, anxious, and depressive symptoms in relation to social and academic functioning (controlling for correlated ODD symptoms and demographic variables). Since the path models were fully saturated (i.e., no degrees of freedom) and thus provided a perfect fit to the data, model fit statistics are not reported. No study variable had a skewness above 3 (values ranging from 0.22 to 2.39), and so maximum likelihood (ML) estimation was used since issues of non-normality were not a concern (Kline 2005). All continuous independent variables were mean-centered prior to estimation of the path models in order to aid in the interpretation of the interaction effects. Statistically significant interactions were then probed and graphed at high (+1SD) and low (−1SD) levels of the moderator (i.e., anxious or depressive symptoms).

Results

Correlation Analyses

Means, standard deviations, and intercorrelations among study variables are displayed in Table 1. As shown, males exhibited higher rates of ADHD symptoms and academic problems than females, whereas females exhibited higher rates of depressive symptoms than males. Given the association between participant sex and academic problems, sex was included as a covariate in the path analyses.[1] Participant age was not correlated with any study variable and was therefore not included as a covariate in the path analyses. As expected, ADHD symptoms were significantly associated with both academic and social problems (rs=.61 and .34, respectively). ODD symptoms were also significantly correlated with academic problems (r=.23, p=.006) and social problems (r=.50, p<.001).In contrast, youth-reported anxious and depressive symptoms were not bivariately correlated with teacher-reported academic or social problems (ps>.05).

Path Analyses

First, a main effects path model was estimated with sex, ODD symptoms, ADHD symptoms, anxious symptoms, and depressive symptoms examined as predictor variables of academic and social problems. Results of this first order

[1] Given the significant bivariate correlation between sex and academic problems, sex was included as a covariate in the subsequent path models. However, results were unchanged when sex was no longer included as a covariate. Since sex differences may be present when examining the interrelations of social functioning and internalizing symptoms among youth with ADHD (Becker et al. 2013), additional analyses were also conducted in order to determine if our primary results might differ between males and females. When three-way interactions (i.e., ADHD × Depression × Sex and ADHD × Anxiety × Sex) were added to the model, neither were statistically significant (ps>.05), indicating that our results were not due to differences in associations between males and females.

Table 1 Means, standard deviations, and bivariate correlations of study variables

Variable	1	2	3	4	5	6	7	8
1. Sex	–	.10	.13	.29**	−.14	−.17*	.08	.26**
2. Age		–	−.10	−.13	−.08	.08	−.01	−.07
3. ODD symptoms			–	.55***	−.02	−.01	.50**	.23***
4. ADHD symptoms				–	−.12	−.19*	.34***	.61***
5. Anxious symptoms					–	.45***	.003	−.02
6. Depressive symptoms						–	.12	−.04
7. Social problems							–	.24**
8. Academic problems								–
Mean	–	16.25	1.35	1.51	2.61	4.25	1.12	2.67
Standard deviation	–	1.47	0.50	0.55	2.45	3.17	0.26	1.08

$N = 142$. Because sex is a dichotomous variable (female = 0, male = 1), correlation coefficients that include sex represent point-biserial correlations. Age is calculated in years

ADHD attention-deficit/hyperactivity disorder, *ODD* oppositional defiant disorder

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

effects path model are displayed in Fig. 1. As displayed, although both ODD and ADHD symptoms were significantly positively correlated with academic problems, when entered simultaneously into the path model ADHD symptoms remained positively associated with academic problems ($B = 1.34$, $p < .001$) whereas ODD symptoms were negatively associated with academic problems ($B = -0.34$, $p = .04$). Sex, anxiety, and depression were not significantly associated with academic problems (ps $> .05$) when ADHD and ODD symptoms were also in the model.

In contrast to academic problems, ODD symptoms were significantly positively associated with social problems

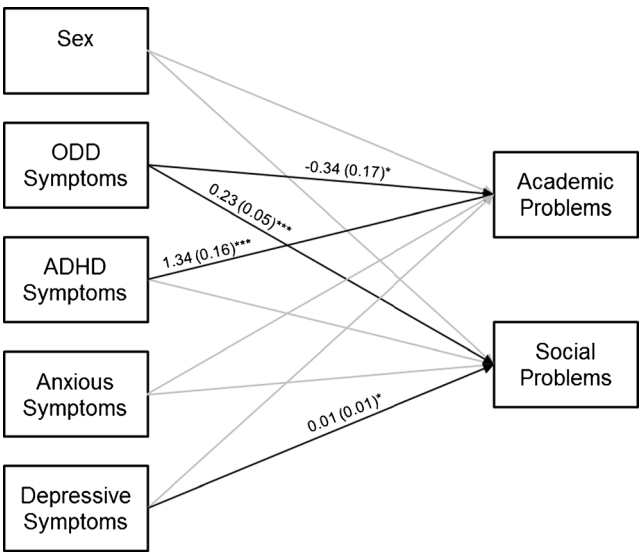

Fig. 1 Estimated path model. *Note:* For clarity purposes, path coefficients (unstandardized) for only statistically significant paths are displayed and covariances between exogenous and endogenous variables are not depicted. *ADHD* attention-deficit/hyperactivity disorder, *ODD* oppositional defiant disorder. For sex, female = 0, male = 1

($B = 0.23$ $p < .001$), but ADHD symptoms were not ($B = 0.06$, $p = .17$; see Fig. 1). In addition to the positive association between ODD symptoms and social problems, depressive symptoms were also significantly positively associated with social problems in the path model ($B = 0.01$, $p = .04$). Neither sex nor anxious symptoms were significantly associated with social problems.

Finally, the interactions between ADHD symptoms and anxious symptoms and ADHD symptoms and depressive symptoms were added as predictors to the path model. Results indicated that there was not an interaction effect of depressive or anxious symptoms in relation to youths' academic problems. In addition, there was not an interaction effect of anxiety symptoms in relation to social problems. However, a significant ADHD symptoms × depressive symptoms interaction emerged in predicting youths' social problems. This significant interaction was plotted and is shown in Fig. 2. As displayed, at low levels of depressive symptoms, ADHD symptoms were unrelated to social problems ($B = -0.03$, $p = 0.64$). However, ADHD symptoms were significantly positively associated with social problems at high levels of depression ($B = 0.22$, $p = .001$).

Discussion

The present study examined the association between ADHD symptoms and academic/social problems in a sample of at-risk Hispanic adolescents. Further, internalizing symptoms were examined as potential moderators of the relation between ADHD symptoms and academic and social problems, controlling for ODD symptoms. This study offers an important contribution to the available literature by studying ADHD in a sample of Hispanic youth, incorporating

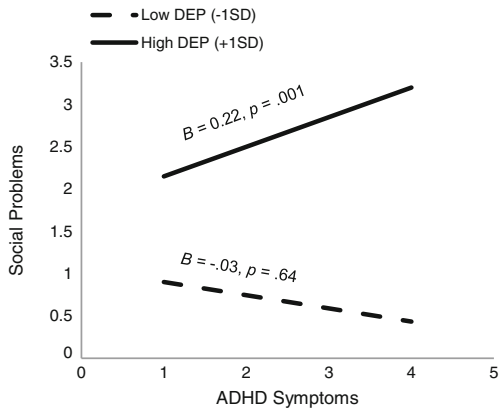

Fig. 2 Depressive symptoms moderate the relation between attention-deficit/hyperactivity disorder (ADHD Symptoms) and social problems

adolescents' self-reports of internalizing symptoms, and examining anxious and depressive symptoms as having potentially differential effects in academic and social domains of adjustment.

First, evidence was found in the present study for a significant correlation between ADHD symptoms and both academic and social problems among Hispanic adolescents, with a stronger association of ADHD symptoms to academic problems than to social problems. This was especially evident in the path model whereby ADHD was the only psychopathology domain to be significantly positively associated with academic problems. Interestingly, when controlling for ADHD and internalizing symptoms, ODD symptoms were negatively associated with academic problems in the path model analysis. This result is counterintuitive and likely due to the relation between ODD and academic problems being largely accounted for by the presence of ADHD symptoms (Fergusson and Horwood 1995; HInshaw 1992; Pardini and Fite 2010). Particularly since ODD symptoms were positively associated with academic problems in the correlation analyses ($r = .23$), it is likely that the negative relation between ODD symptoms and academic problems in the path analysis reflects a suppression effect when ADHD and ODD symptoms are simultaneously included in the model. Despite this unexpected finding related to ODD symptoms, our finding that ADHD symptoms is strongly associated with academic impairment in Hispanic adolescents is consistent with a large body of research demonstrating ADHD to be particularly detrimental for youths' academic functioning (Frazier et al. 2007; Loe and Feldman 2007; Pardini and Fite 2010).

In contrast to the strong association between ADHD symptoms and academic problems, ADHD symptoms were no longer significantly associated with social problems in the path model, whereas ODD and depressive symptoms were both significantly positively associated with social problems. Although a main effect of ADHD symptoms in relation to social functioning was not found in the path analyses, a significant interaction effect was found whereby depressive symptoms moderated the link between ADHD symptoms and social problems. This moderation effect was such that teacher-reported ADHD symptoms were not associated with teacher-reported social problems among adolescents who reported low levels of depressive symptoms, but an association between ADHD symptoms and social problems was present at higher levels of depression. Compared to anxiety, fewer studies have examined the effect of depression on the social functioning of youth with ADHD (see Becker et al. 2012c). Of the available studies, mixed results have been reported, but our findings are consistent with those of Blackman and colleagues (2005) who found in a school-based sample that children diagnosed with ADHD and depression had lower social competence scores than non-depressed children with ADHD. In contrast, Biederman et al. (1996) did not find clinic-referred youth with comorbid ADHD and depression to differ from youth diagnosed with either ADHD or depression alone. Therefore, it is possible that depression exacerbates the relation between ADHD and social functioning in school-based rather than clinic-referred samples, although additional studies are needed before drawing firm conclusions regarding this possibility.

In contrast to our hypothesis, anxious symptoms did not moderate the association between ADHD symptoms and academic problems. Internalizing symptoms broadly have been prospectively linked to academic underachievement in youth with ADHD (Massetti et al. 2008), but we did not find either anxious or depressive symptoms to exacerbate the link between ADHD symptoms and academic problems. This may be due to our sample consisting of at-risk Hispanic youth, for whom other factors such as acculturation, racism/discrimination, and socio-economic status may be as important or even more detrimental for academic functioning than sub-clinical internalizing symptoms (e.g., DeGarmo and Martinez 2006; Williams 1999). Alternatively, studies to date with other school- and clinic-based samples have offered mixed findings in terms of whether or not internalizing symptoms adversely affect the academic functioning of youth with ADHD. Our results are generally consistent to the findings of Karustis et al. (2000), who found little evidence for internalizing symptoms in relation to the academic functioning of children diagnosed with ADHD, with depressive symptoms more impairing than anxious symptoms when effects were found. It is possible that ADHD symptoms are so strongly and pervasively associated with academic impairment that the presence or absence of co-occurring internalizing symptoms does not affect this association for better or for worse.

Taken together, results from the present study indicate that it is important to attend to ADHD symptoms especially in order to protect against increased academic difficulties among at-risk Hispanic adolescents, as well as to assess for ADHD,

ODD, and depressive symptoms when considering social difficulties. Unfortunately, Hispanic youth are less likely than their peers to be identified when ADHD is present, and they are also less likely to receive ADHD interventions (Bauermeister et al. 2003; Stevens et al. 2004). This may be due in part to parents of minority youth viewing psychopharmacology for ADHD as less acceptable and more stigmatizing than parents of nonminority youth (Hervey-Jumper et al. 2008; Krain et al. 2005). As such, using culturally informed treatments is critical (see Bernal and Domenech Rodríguez 2009; Eiraldi et al. 2006), and there have thankfully been promising efforts toward developing and disseminating treatments for Hispanic youth and their families. For example, Myers and colleagues (2010) found that a collaborative care model (involving a case manager as a liaison between pediatricians and psychiatrics) for the treatment of Hispanic children with ADHD in underserved communities was feasible, acceptable, and promising in terms of treatment effectiveness. Another example is Familias Unidas, a Hispanic-specific, parent-centered intervention designed to reduce behavior problems such as ODD in Hispanic adolescents (Pantin et al. 2009).

Whereas family-based interventions may be beneficial for targeting Hispanic youths' ADHD and ODD symptoms, COPE (Creating Opportunities for Personal Empowerment) Healthy Lifestyles TEEN (Thinking, Emotions, Exercise, and Nutrition) is a school-based program incorporating cognitive behavior therapy (CBT) that has been shown to reduce depressive and anxious symptoms in Hispanic adolescents (Melnyk et al. 2009). This is in line with recent research suggesting CBT-informed treatment to be effective in reducing the internalizing symptoms of adolescents with ADHD (Antshel et al. 2012; Houghton et al. 2013). Clearly, although promising work has begun to emerge, increased attention to the development, efficacy, effectiveness, and portability of interventions for adolescents with ADHD, and at-risk minority youth especially, is needed.

Limitations and Future Directions

Several limitations of the present study are important to note. Perhaps most importantly, this study used a school-based sample and did not include adolescents diagnosed with ADHD, anxiety, or depression, and research is needed in order to examine these relations in clinical populations. Although ADHD symptoms are associated with impairment in nondiagnosed samples (e.g., Becker et al. 2012a; Rielly et al. 2006), results using nondiagnosed samples may differ from studies using clinically-diagnosed samples and so it will be important to determine if results presented in this study are replicated in adolescents diagnosed with ADHD. In addition, results of the present study are subject to potential selection biases (e.g., absence from school during data collection, parental non-consent) and reporter biases (e.g., teachers' limited observation of social problems) that can occur in any school-based research. For this reason, it would have been desirable to obtain converging data from multiple informants (e.g., parent-reported ADHD/ODD symptoms, peer-reports of social functioning). However, data were intentionally collected from reporters who were expected to be the most accurate and knowledgeable informants for particular variables. That is, adolescents provided ratings of their own internalizing symptoms (i.e., anxiety, depression), whereas teacher provided ratings of adolescents' ADHD/ODD symptoms, social problems, and academic problems. Also, because these students were attending an urban charter school emphasizing academic achievement and improving long-term outcomes, results cannot be assumed to generalize to all Hispanic adolescents, and future studies should also include measures of socioeconomic status in order to disentangle ethnic minority status and socioeconomic status (LaVeist 2005). Since this study used a cross-sectional design, causal inferences cannot be made. There is a crucial need for research that examines interrelations of ADHD, internalizing symptoms, and social and academic problems by using prospective longitudinal research designs. Finally, anxiety and depression were treated as unitary constructs in the present study, and it would be beneficial for future studies with larger samples to consider the multidimensional nature of anxiety and depression (as well as related constructs like negative affect). In an effort to further our understanding of ethnic and other cultural factors that may moderate such findings, such studies should also work to include a large enough number of ethnic minority youth so that meaningful comparisons can be made.

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