

ADHD Symptom Levels and Romantic Relationship Quality in Emerging Adults

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### Abstract

**Objective.** The purpose of this study was to examine whether ADHD symptom levels in college undergraduates are associated with poorer romantic relationship quality, and to test whether emotion regulation difficulties, perceived stress, and hostile relationship conflict mediate this association.

**Participants.** The sample consisted of 189 undergraduate students ages 18 to 25.

**Methods.** Self-report measures of ADHD symptoms, relationship quality, and the proposed mediators were collected via online survey from May through August of 2011.

**Results.** Participants who reported clinically significant levels of both hyperactivity-impulsivity and inattentiveness (consistent with ADHD-C) had lower relationship quality than those whose self-reported symptoms indicated no ADHD diagnosis. Further, for women only, both hyperactive/impulsive and inattentive symptom levels were negatively associated with relationship quality. Emotion regulation problems and hostile relationship conflict mediated this association.

**Conclusion.** Findings suggest that ADHD impairs relationship quality among young adults, and suggest mechanisms through which this impairment might occur.

### ADHD Symptom Levels and Romantic Relationship Quality in College Students

Attention-Deficit/Hyperactivity Disorder (ADHD) is a psychiatric condition characterized by inattention and/or hyperactivity-impulsivity.<sup>1</sup> There are three diagnostic subtypes of ADHD: Predominantly Inattentive Type (ADHD-IA), Predominately Hyperactive-Impulsive Type (ADHD-HI), and Combined Type (ADHD-C).<sup>1</sup> Though usually considered a childhood disorder, 2-8% of young adult college students report clinically significant levels of ADHD symptoms.<sup>2</sup> Because the salient developmental tasks of this life stage are achieving work/educational goals and establishing romantic partnerships,<sup>3</sup> understanding the impact of ADHD symptoms on college students requires attention to these two life domains.

A sizeable literature has documented associations between ADHD and impaired academic functioning.<sup>2</sup> In contrast, links between ADHD and romantic relationship functioning among young adults are not as well studied. A few studies have documented deficits in more general interpersonal functioning among university students. For example, ADHD symptoms have been associated with less liking and greater social rejection by peers.<sup>4</sup> There is also evidence that male undergraduates with ADHD-IA, although not those with ADHD-HI or ADHD-C, begin dating at a later age, have fewer romantic relationships, and are more likely to experience opposite-sex rejection than undergraduate men with no ADHD diagnosis.<sup>5</sup> Similarly, young adult women diagnosed with ADHD in childhood engage in fewer romantic relationships than those without ADHD.<sup>6</sup>

Once young adults with ADHD do enter into romantic relationships, however, it is unclear whether those relationships are at greater risk for dysfunction. Married adults with ADHD have a higher frequency of divorce than adults without ADHD,<sup>7</sup> and clinicians have reported anecdotally that marital problems are one of the most common presenting problems of

adults seeking treatment for ADHD.<sup>8</sup> To our knowledge, however, only three studies have investigated links between ADHD and relationship difficulties in unmarried, college-aged adults. In one study, 38 young women who had been diagnosed with ADHD as children and 24 community controls without a history of ADHD were compared on romantic relationship impairment (operationalized as self- and parent-responses to one item capturing degree of “current problems” with romantic relationships).<sup>6</sup> No differences were observed between groups. Similarly, in a sample of 77 undergraduate men in dating relationships, relationship satisfaction did not differ between men with ADHD-IA, ADHD-C, and no ADHD diagnosis.<sup>9</sup> The relatively small sample size in both of these studies, however, may have limited the ability to detect effects. The third study differed from the first two in that it examined ADHD symptom levels rather than diagnostic groups and used a much larger sample of 517 college students.<sup>10</sup> In this study, symptoms of inattention and symptoms of hyperactivity-impulsivity each showed small but significant negative correlations with relationship satisfaction ( $r_s = -.18$  and  $-.13$ , respectively,  $p_s < .01$ ).<sup>10</sup> When self-reported symptoms were used to categorize students as ADHD-IA, ADHD-HI, or ADHD-C, however, there were no significant differences between diagnostic groups.

In sum, research exploring the potential negative effects of ADHD on romantic relationship functioning among college students and other young adults is scarce, and findings are inconsistent. Further, insufficient attention has been paid to potential gender differences in associations between ADHD and relationship functioning. Because interpersonal relations are, on average, more central to women’s than men’s identities and self-concepts,<sup>11</sup> romantic relationships are theorized to be more strongly associated with women’s than men’s mental health. Both depressive symptoms and general psychological distress are more strongly

associated with marital satisfaction<sup>12,13</sup> and college dating relationship satisfaction<sup>14</sup> for women than for men. Most previous studies of ADHD and relationship functioning have either examined samples of one gender<sup>6,9</sup> or have not examined gender differences.<sup>15,16</sup> In the one exception, researchers found similar associations between ADHD symptoms and relationship satisfaction for college men and women.<sup>10</sup> Further study is needed to determine if gender differences exist.

### **Potential Mechanisms Relating ADHD Symptoms and Relationship Satisfaction**

It is important not only to determine whether adults with ADHD have poorer quality relationships, but also to explore why this might be the case. Finding mechanisms through which ADHD symptoms might influence relationship satisfaction will help build a theoretical understanding of the association, directing future research and identifying targets for clinical interventions. To our knowledge, however, no research has yet attempted to identify factors that may mediate the association between ADHD and relationship dysfunction. Given evidence that individuals with ADHD exhibit more emotion regulation difficulties,<sup>17,18</sup> report higher levels of stress,<sup>19</sup> and experience more interpersonal conflict<sup>20,21</sup> than those without ADHD, these factors may help explain any associations between ADHD and relationship quality.

Emotion regulation is a multi-dimensional construct that encompasses affect recognition, emotional control, and the ability to refrain from impulsive behavior when experiencing intense emotions.<sup>22</sup> Individuals with ADHD demonstrate poorer affect recognition, greater emotional intensity, and more emotional impulsivity than those without ADHD,<sup>23,24</sup> possibly contributing to poor relationship quality. Adults with poor emotion regulation skills frequently report difficulties in their romantic relationships,<sup>25</sup> and couple-based treatments for severe emotion dysregulation in one partner generally improve the other partner's relationship satisfaction.<sup>26</sup>

Adults with ADHD also tend to report higher levels of perceived stress than do those

without ADHD.<sup>27</sup> Among college students, ADHD symptoms have been associated with higher levels of self-reported stressors in many areas of life, including time pressures, academics, friendships, and romantic relationships.<sup>10</sup> According to major models of marriage and couple relationships, such stressors represent significant risk factors for relationship distress and break-up.<sup>28,29</sup> Therefore, the negative association between ADHD symptoms and relationship quality may be partially mediated by perceived stress.

ADHD has also, among adolescents, been linked with more frequent and more hostile conflict with loved ones such as parents,<sup>30</sup> including higher levels of verbal aggression and anger.<sup>31</sup> Because hostility expressed toward parents in adolescence is highly predictive of hostility expressed towards romantic partners in adulthood,<sup>32</sup> it is likely that young adults with ADHD show elevated levels of hostile conflict with their dating partners. Given that hostile couple conflict is a well-established predictor of marital distress and divorce,<sup>33</sup> an association between ADHD symptoms and relationship satisfaction in college students might be accounted for by elevated hostile relationship conflict.

### **The Current Study**

In the current study, we sought to build knowledge about how ADHD may affect the romantic relationships of undergraduate college students. First, we aimed to replicate the findings of the one study that found significant associations between ADHD symptom levels and romantic relationship satisfaction.<sup>10</sup> This strategy, which involves assessing self-reported ADHD symptom levels rather than ADHD diagnoses based on full clinical evaluations, has several advantages. Specifically, it captures the full continuum of individual differences in ADHD symptom levels, allows for a larger sample size (given the lower cost and subject burden associated with self-report measures vs. clinical evaluations) and provides greater power to

detect small associations between ADHD and romantic relationship variables.<sup>10</sup> We evaluated associations of relationship satisfaction with hyperactive-impulsive symptoms and inattentive symptoms separately, given the differences in dating activities that have been observed between undergraduate men with different diagnostic subtypes of ADHD.<sup>5</sup> Further, to facilitate comparison with other previous studies, we also tested for group differences in relationship satisfaction between individuals who report symptom levels consistent with each of the three diagnostic subtypes of ADHD. Second, the present study was designed to extend previous research in two ways: (1) assessing for potential gender differences in the association between ADHD and relationship quality, which have been largely overlooked in existing studies, and (2) exploring *how* ADHD symptoms may negatively influence romantic relationship quality by assessing three potential mediators of this association: difficulties in emotion regulation, perceived stress, and hostile conflict in the relationship.

## **Method**

### **Participants & Procedure**

Participants were 189 (73 male, 116 female) undergraduate students who volunteered to complete an IRB approved on-line study of dating relationships to fulfill requirements for psychology courses at a large Midwestern university. Inclusion criteria were an age of 18-25 years and current involvement in a romantic relationship of at least 3 months duration. The participants were predominantly White (87%; 6% African American, 3% Asian, 3% multiracial, 2% Hispanic/Latino). Mean age was 19.58 ( $SD = 1.38$ ). Over half were first years (54%), 26% were sophomores, 10% were juniors, 10% were seniors, and 1% had graduated but were taking additional courses. Almost half (46%) of the sample reported a parental income of \$70,000 or more and 13% reported a parental income of less than \$30,000; median parental income fell into

the \$60,000 - \$69,999 range. Participants were in their current relationship for an average of 18.59 ( $SD = 14.35$ ) months. The majority (72%) considered themselves to be dating exclusively; 10% were dating casually, 13% were dating regularly, 4% were engaged, and 2% were married or in a domestic partnership. Twelve percent were cohabiting, and 2% had children from either a current or past relationship. Two percent were dating a partner of the same sex. Finally, based on self-reported symptom level, 23% of the sample fell into the ADHD-IA group, 12% fell into the ADHD-HI group, 21% fell into the ADHD-C group, and 44% fell into the no-ADHD group.

Participants completed a password-protected online survey containing an informed consent document and self-report measures of a variety of personal and relationship characteristics. Only measures relevant to the present hypotheses are described in this paper.

## Measures

**Relationship status and length.** A basic demographic information form included items to assess relationship status and relationship length in months.

**ADHD Symptoms.** ADHD symptoms were measured using the Adult ADHD Self-Report Scale (ASRS),<sup>34</sup> an 18-item scale based on the *DSM-IV* criteria for ADHD designed to identify individuals at risk for ADHD. Participants rate their experience of each of the *DSM-IV*'s nine symptoms of inattentiveness and nine symptoms of hyperactivity-impulsivity in the last 6 months on a 5-point Likert scale (0 = *never*; 4 = *very often*). Responses to all 18 items are summed for a global measure of ADHD symptom severity. Subscale scores were calculated by summing the items for inattentiveness (IA) and hyperactivity-impulsivity (HI). The ASRS has good reliability and validity in both clinical and community samples.<sup>35</sup> In the current study, internal consistency (Cronbach's alpha) was .80 for the inattentiveness subscale, .78 for the hyperactivity-impulsivity subscale, and .86 for the full scale.



Consistent with strategies used in previous research,<sup>10</sup> participants were classified into one of three subclinical ADHD presentations corresponding to the three ADHD subtypes defined by the *DSM-IV-TR*: Primarily Inattentive (ADHD-IA), Primarily Hyperactive/Impulsive (ADHD-HI), or Combined Type (ADHD-C). Scores above 16 on either of the ASRS subscales indicate a likelihood of having ADHD,<sup>36</sup> so we used this cutoff score to categorize participants into the ADHD-IA or ADHD-HI groups. Participants who scored above 16 on both subscales were categorized as ADHD-C, and participants who did not meet the cutoff on either subscale made up a control (no ADHD) group.

**Relationship Satisfaction.** Using the 16-item Couples Satisfaction Index (CSI-16),<sup>37</sup> participants evaluated their romantic relationship on 6- and 7- point Likert-type scales, and described their relationship on a bipolar adjective scale for each of six characteristics (e.g., 0 = *miserable*, 5 = *enjoyable*). All ratings were summed; higher scores indicate greater satisfaction. The CSI-16 has demonstrated good reliability and validity with college age dating relationships.<sup>37</sup> In this sample, internal consistency was excellent ( $\alpha = .95$ ).

**Emotion Regulation Problems.** Participants completed the Difficulties in Emotion Regulation Scale (DERS),<sup>22</sup> a 36 item measure that captures difficulties in six dimensions of emotion regulation, including lack of awareness, clarity, and acceptance of emotional responses; difficulties with impulse control and goal-directed behavior when experiencing negative emotions; and limited effective emotion regulation strategies. Each item states an emotion regulation difficulty (e.g., “When I’m upset, I feel out of control”) and is rated on a 5-point scale (1 = *almost never*; 5 = *almost always*). Scores are summed to create an index of total emotion regulation problems. The DERS has demonstrated evidence of reliability and validity.<sup>22</sup> In this sample, internal consistency was excellent ( $\alpha = .94$ ).

**Perceived Stress.** Participants completed the 10-item Perceived Stress Scale (PSS),<sup>38</sup> a self-report measure that captures the degree to which situations in one's life are considered stressful on a 5-point scale (0 = *never*; 4 = *very often*). Responses to all items are summed. The PSS has shown good validity and reliability.<sup>39</sup> In the present sample, internal consistency was very good ( $\alpha = .85$ ).

**Hostile Relationship Conflict.** Using the eight-item Negative Conflict scale of the Communication Skills Test,<sup>40</sup> participants rated the frequency of negative relationship conflict events, including withdrawal, negative escalation, and invalidation, on a 7-point scale (1 = *Never*; 7 = *Most of the time*). Mean response across items represent participants' relationship conflict scores. The subscale has shown internal consistency and evidence of validity.<sup>41</sup> In the present sample, internal consistency was high ( $\alpha = .89$ ).

## Results

Means and standard deviations are presented separately for men and women in Table 1. Zero-order correlations are presented separately for men and women in Table 2.

### Associations between ADHD Symptoms and Relationship Quality

To test whether ADHD symptoms were associated with relationship quality, we first calculated zero-order correlations between CSI scores and the hyperactive, inattentive, and total symptom scores from the ASRS. Contrary to hypotheses, for the full sample, relationship satisfaction was not associated with any of the three ADHD symptom scores ( $r = -.12, p = .10$  for hyperactive-impulsive;  $r = -.12, p = .11$  for inattentive;  $r = -.13, p = .07$  for total symptoms; not displayed in table). Running correlations separately by gender, however, revealed that relationship satisfaction was negatively associated with all three ADHD symptom variables for women (see Table 2). It was not significantly correlated with any of the ADHD variables for

men. Therefore, our first hypothesis was supported for women only; compared to women with fewer ADHD symptoms, those with more symptoms reported less romantic relationship satisfaction. Despite this finding, a Fisher  $r$ -to- $z$  transformation showed that the correlation did not significantly differ by gender ( $z = 1.82, p = .07$ ), suggesting that ADHD symptoms are not more strongly linked with relationship satisfaction for women than for men.

Second, we assessed group differences in relationship satisfaction among the three subclinical ADHD presentations (ADHD-C, ADHD-IA, and ADHD-HI) and the no-ADHD group. First, we ran a 4 (ADHD group)  $\times$  2 (gender) analysis of variance (ANOVA) predicting relationship satisfaction scores. There was no interaction between ADHD group and gender, indicating that results were consistent across men and women. Therefore, for simplicity, we present group means collapsing across gender (see Table 3, top row). A one-way ANOVA predicting relationship satisfaction with ADHD type indicated significant group differences for relationship satisfaction. Post hoc analysis using the LSD post hoc criterion for significance indicated that relationship satisfaction was higher for those without ADHD than for those with ADHD-C (Cohen's  $d = .57$ , medium effect). There were no other differences between groups.

### **Associations between ADHD Symptoms and Emotion Regulation Problems, Stress, and Hostile Relationship Conflict**

We evaluated whether ADHD symptom levels were associated with the proposed mediators first by examining correlations between variables (See Table 2). As hypothesized, for both men and women, higher ADHD symptoms (hyperactive-impulsive, inattentive, and total) showed moderate positive associations with emotion regulation difficulties and with perceived stress scores. Fischer's  $r$  to  $z$  comparisons indicated that the magnitude of these correlations did not differ by gender, and dependent correlation comparisons indicated that they did not differ by

ADHD symptom subtype. All ADHD symptom variables showed expected positive correlations with hostile conflict for women; in contrast, for men, only hyperactive-impulsive symptoms were associated with hostile relationship conflict.

Second, we tested for group differences in the three proposed mediators among the four types of subclinical ADHD presentations. Results of initial 4 (ADHD group) x 2 (gender) ANOVAs predicting each proposed mediator indicated that there was no interaction between ADHD group and gender. The results can therefore be assumed to be consistent across young adult men and women. For simplicity, we present group means collapsing across gender (see Table 3) and ran one-way ANOVAs predicting each potential mediator (emotion regulation difficulties, perceived stress, and hostile relationship conflict) with ADHD type as the independent variable. As shown in Table 3, there were significant group differences for all three mediators. Post hoc analyses using the LSD post hoc criterion for significance indicated that the ADHD-IA and ADHD-C groups had higher average emotion regulation difficulties than the no-ADHD group ( $d = .61$  and  $d = 1.05$ , medium and large effects, respectively) and higher perceived stress than the no-ADHD group ( $d = .74$  and  $d = .98$ , medium and large effects, respectively). In addition, participants with ADHD-C reported more emotion regulation difficulties than those with ADHD-HI ( $d = .56$ , medium effect), and those with ADHD-IA and ADHD-C had higher perceived stress than those with ADHD-HI ( $d = .53$  and  $d = .77$ , respectively; both medium effects,). Finally, all three diagnostic groups had higher mean couple conflict than the no-ADHD group ( $d = .43$ , small effect, for ADHD-IA;  $d = .52$ , medium effect, for ADHD-HI; and  $d = .93$ , large effect, for ADHD-C) and the ADHD-C group reported more conflict than the ADHD-IA group ( $d = .47$ , small effect).

Together, these two sets of analyses indicate that undergraduate students' level of ADHD

symptoms is associated with the three proposed mediators.

### **Associations of Emotion Regulation Problems, Stress, and Hostile Relationship Conflict with Relationship Satisfaction**

Consistent with hypotheses, for women, all three proposed mediators were negatively associated with relationship satisfaction ( $r_s = -.26 - .69, p < .01$ ; see Table 2). However, for men, only hostile relationship conflict was correlated with lower relationship satisfaction.

### **Tests of Mediation**

Based on the findings presented so far, it was determined that tests of mediation models could be performed only for women. Although ADHD symptom levels and diagnostic groups were associated with the three proposed mediators for both men and women equally, neither ADHD symptoms nor two of the three mediators were associated with men's relationship satisfaction. Therefore, for women only, potential mediators of the associations were tested using a series of regression analyses as outlined by Baron and Kenny.<sup>42</sup> Because the simple associations of ADHD symptoms with all of the proposed mediators and relationship satisfaction were nearly identical across ADHD symptom type (inattentive, hyperactive-impulsive, and total), we ran the mediation analyses using only the total symptom score. Findings were consistent when these analyses were re-run using the separate inattentive and hyperactive-impulsive scores (not presented here). The resulting mediation models are shown in Figure 1, using standardized regression coefficients to aid in interpretation. For each model, the significance of the mediated (i.e., indirect) effect was tested using the product of coefficients method and with bootstrapping techniques, which is the recommended method for sample sizes smaller than 400.<sup>43</sup> Indirect effects are reported as unstandardized regression coefficients, in the text.

**Emotion Regulation.** When emotion regulation was included in the regression model predicting relationship satisfaction, the association between ADHD symptoms and satisfaction was reduced to nonsignificance, indicating mediation (see Figure 1a). As predicted, there was a negative indirect effect of ADHD symptoms on relationship satisfaction (unstandardized coefficient =  $-.14$ ,  $SE = .08$ ; 95%  $CI = -.35$  to  $-.02$ ); because zero is not within the confidence interval, the indirect effect is significant at the  $p < .05$  level.

**Perceived Stress.** When perceived stress was entered into the regression model predicting relationship satisfaction, the path from ADHD symptoms to relationship satisfaction dropped to nonsignificance (see Figure 1b). However, bootstrapping methods failed to find evidence of mediation; the indirect effect of ADHD symptoms on relationship satisfaction through perceived stress was not significantly different from zero (unstandardized coefficient =  $-.12$ ,  $SE = .08$ ; 95%  $CI = -.33$  to  $.01$ ).

**Hostile Relationship Conflict.** As shown in Figure 1c, when conflict was entered into the regression model, the association between ADHD symptoms and relationship satisfaction was reduced to zero. As hypothesized, there was an indirect effect of ADHD symptoms on relationship satisfaction (unstandardized coefficient =  $-.39$ ,  $SE = .14$ ; 95%  $CI = -.62$  to  $-.08$ ;  $p < .01$ ).

### Comment

Overall, study findings indicated that college students' ADHD symptoms may be associated with less satisfying romantic relationships, although this association differed somewhat by how ADHD was measured and by gender. First, individuals whose self-reports of ADHD symptoms were consistent with ADHD-C reported lower relationship satisfaction than did those classified as having no ADHD (a medium-sized effect, consistent across men and

women). Second, when ADHD symptom level rather than group classification was examined, relationship satisfaction was negatively associated with hyperactive-impulsive, inattentive, and total symptoms, but for women only. The magnitude of this association was small but is consistent with previous research<sup>10</sup> and anecdotal evidence,<sup>8</sup> and suggests that young women's ADHD symptoms may negatively influence their romantic relationship quality.

As in previous studies, gender did not moderate the associations of relationship satisfaction with ADHD in this sample. Lower relationship satisfaction associated with the ADHD-C category was present for both men and women. However, the association between ADHD symptom level and relationship satisfaction was significant for women only. In fact, with the exception of hostile relationship conflict, no study variables – including hyperactive/impulsive symptom levels, inattentive symptom levels, emotional regulation problems, and stress - were correlated with men's relationship satisfaction. This pattern of findings may reflect how college-age men show comparatively lower investment in their romantic relationships than do women,<sup>44</sup> limiting the extent to which romantic relationship quality is linked to other areas of their lives. Other studies have shown that college men's relationship quality is unrelated to personal characteristics such as masculinity, femininity, and neuroticism, despite significant correlations between these variables observed in college women and older adult men.<sup>45</sup> The present findings suggest that, similarly, college men's evaluations of their romantic relationships are not intertwined with their perceived stress, difficulties with emotion regulation, or ADHD symptom levels. As such, they are consistent with previous research<sup>10</sup> that reported no differences in undergraduate men's relationship satisfaction by ADHD status. On the other hand, results from analyses comparing ADHD groups suggested that both men and women with ADHD-C reported lower relationship satisfaction than the no ADHD

group. Future research is needed to clarify these associations among men.

In contrast, the findings add to a growing literature documenting associations between poor relationship functioning and mental health risks among young college women (e.g., depressive symptoms<sup>14</sup>). In our sample, women's ADHD symptom levels were negatively associated with relationship quality. Further, in the female participants, ADHD was associated with higher levels of emotion regulation difficulties, perceived stress, and hostile relationship conflict, partially explaining the association between ADHD and relationship satisfaction. These results replicate previous research documenting associations between ADHD symptoms and difficulties with emotion regulation<sup>27</sup> and extend that research by indicating that emotion regulation difficulties may be a mechanism through which ADHD symptoms negatively influence relationship quality for college women. Together with evidence that emotion regulation mediates the association between ADHD and depressive symptoms,<sup>17</sup> these findings highlight how impaired emotion regulation in ADHD represents a key mechanism through which it may impair an individual's functioning.

The current findings also provided strong support for the mediating effect of hostile relationship conflict. Extending previous findings that children with ADHD show elevated levels of conflict with parents,<sup>20</sup> the present data indicate that young adults, especially women, with ADHD report heightened conflict with their romantic partners. This suggests that the difficulties with communication and conflict resolution observed in childhood ADHD may persist into young adulthood. Further, hostile relationship conflict fully mediated the associations between emerging adult women's ADHD symptom levels and relationship quality. Together with literature documenting hostile conflict as a powerful predictor of couple relationship distress and break-up,<sup>33</sup> the present findings suggest that young adults – especially undergraduate women –



with elevated ADHD symptoms may benefit from healthy relationship programming that emphasizes constructive communication and conflict resolution skills.<sup>46</sup>

### **Limitations**

There are some limitations to this study that should be noted. First, while testing for mediation implies a causal model (i.e., ADHD symptoms cause relationship dissatisfaction), the correlational nature of the data prohibits conclusions regarding causality. Second, although the total sample size was sufficient for analysis, the sample of men ( $n = 73$ ) was somewhat small. However, given that the association between ADHD symptoms and relationship satisfaction for men was close to zero ( $r = .04$ ), it is unlikely that low power led to a failure to detect a true effect. Third, while the median parental income in our sample was similar to recent national and regional estimates,<sup>47</sup> nearly half of participants reported parental income of \$70,000 or above. Thus, the current findings may not generalize to college students from low-income families.

Finally, we measured ADHD symptoms via a self-report measure and did not collect data regarding formal ADHD diagnosis or use of prescription medication to treat ADHD symptoms. Participants who were being successfully treated for ADHD may have reported lower ADHD symptoms than they would experience without medication; this may have introduced unaccounted-for error and reduced the power of our analyses. The present findings also do not speak directly to the relationship satisfaction of undergraduates formally diagnosed with ADHD. However, over half (56%) of the sample reported clinical levels of ADHD symptoms ( $>16$  on one or both subscales). This value is much higher than established prevalence rates for ADHD in young adult college students (2-8%),<sup>2</sup> and is consistent with previous studies that have reported much higher rates of clinical ADHD symptoms than is found in the general population.<sup>5,10</sup> Research suggests that college undergraduates are prone to over-report ADHD symptoms on

self-report measures in both clinical and research contexts,<sup>48</sup> and thus the generalizability of the current findings to clinical ADHD may be limited.

### **Clinical Implications**

Stimulant medication continues to be the most common treatment for ADHD at all ages,<sup>49</sup> and on the whole the literature supports its effectiveness in adults.<sup>50</sup> However, no controlled studies have specifically assessed the effectiveness of medication treatments for ADHD in college populations.<sup>49</sup> Further, those studies that exist suggest that many adults treated with medication either do not experience significant reduction in ADHD symptoms or experience intolerable side effects.<sup>50</sup> Most of these studies operationalize response to medication as 30% symptom reduction; thus, even those adults for whom pharmacotherapy is “successful” often continue to experience considerable impairment related to the core symptoms of ADHD. Thus, other forms of treatment are needed to augment the limited utility of pharmacotherapy for some individuals with ADHD. The literature increasingly supports the efficacy of psychosocial interventions for the treatment of adult ADHD.<sup>49</sup> Specifically, research assessing cognitive-behavioral approaches to treating ADHD in (primarily middle-aged) adults has shown pre-post effect sizes in the moderate to very large range.<sup>49</sup> Preliminary evidence suggests that cognitive-behavioral approaches are effective for college students as well,<sup>51</sup> although the topic remains understudied.

Clinicians experienced with adult ADHD suggest a key component of successful psychosocial treatment in this population is to frame interventions within the context of the client’s most salient distress.<sup>52</sup> The present findings, which link ADHD to poor romantic relationship quality in college undergraduate women, suggest that framing cognitive-behavioral interventions for ADHD in terms of how they can improve relationship satisfaction may help to

increase client motivation for and success in treatment. Further, the results of mediation analyses suggest that poor emotional regulation and elevated hostile couple conflict are potential intervention targets within such a framework. One possibility is that dialectical behavior therapy (DBT)<sup>25</sup> strategies could be used to target emotion regulation difficulties in young adults with ADHD, especially those experiencing relationship dysfunction. DBT has received strong empirical support for a wide and increasing range of psychological and emotional problems, including both ADHD<sup>53</sup> and romantic relationship functioning.<sup>54</sup> Mindfulness-based strategies represent another potential approach, which have been shown to benefit adults with ADHD,<sup>49</sup> and to improve abilities in observing and describing inner emotional experience, and being non-judgmental and non-reactive of one's emotions.<sup>55</sup> These abilities are highly consistent with emotion regulation skills.<sup>56-58</sup>

The current finding that hostile relationship conflict fully mediated the association between ADHD and relationship quality highlights the importance of assessing if and how a client's ADHD symptoms might be contributing to negative couple interactions. Relationship education aimed at building healthy communication and improving conflict resolution skills<sup>46</sup> may be a useful strategy for treating comorbid ADHD and romantic relationship dysfunction. Relationship education can be effectively delivered to individuals, including college students, so that they can apply the communication and other relationship skills to present and future relationships.<sup>59,60</sup> Further, for those students whose partner would be interested, couple therapy could be used to teach the couple healthier ways of communicating and also include psychoeducation about ADHD to help partners understand the individual's ADHD-related behaviors.

**Conclusions**

The current study adds to the literature by indicating that ADHD symptoms in undergraduate college students, particularly women, may be associated with lower quality romantic relationships. Though further study is necessary before confident conclusions can be drawn, these findings highlight how college students with ADHD may be at risk for poor outcomes in romantic relationships. The results also provide insight into mechanisms that may account for this association among women, suggesting potential intervention targets in this relatively new area of study.

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Table 1

*Means and Standard Deviations of Variables*

	Men	Women
	(n = 73)	(n = 116)
Variables	<i>M (SD)</i>	<i>M (SD)</i>
1. ADHD Hyperactive-Impulsive Symptoms	14.09 (4.89)	14.08 (5.31)
2. ADHD Inattentive Symptoms	16.38 (5.27)	16.13 (5.45)
3. ADHD Total Symptoms	30.49 (8.77)	30.20 (9.57)
4. Relationship Satisfaction	57.92 (16.02)	61.69 (16.13)
5. Emotion Regulation Problems	83.89 (21.09)	82.87 (22.01)
6. Perceived Stress	16.36 (6.15)	18.47 (6.46)
7. Hostile Relationship Conflict	3.20 (1.21)	2.90 (1.15)

Table 2

*Correlations Among Variables*

Variables	1	2	3	4	5	6	7
1. ADHD Hyperactivity-Impulsivity	--	.50**	.85**	.04	.48**	.30**	.27*
2. ADHD Inattentiveness	.60**	--	.88**	.04	.39**	.53**	.13
3. ADHD Total Symptoms	.89**	.90**	--	.04	.50**	.49**	.23
4. Relationship Satisfaction	-.21*	-.21*	-.23*	--	-.12	-.12	-.43**
5. Emotion Regulation Problems	.29**	.30**	.33**	-.31**	--	.63**	.36**
6. Perceived Stress	.32**	.31**	.35**	-.26**	.60**	--	.31**
7. Hostile Relationship Conflict	.32**	.28**	.33**	-.69**	.38**	.38**	--

*Note.* Correlations for men are reported above the diagonal; women below the diagonal.

\* $p < .05$ ; \*\* $p < .01$

Table 3

*Mean Levels of Relationship Satisfaction and Proposed Mediators as a Function of ADHD Type*

Variable	ADHD Type				<i>F</i>	<i>p</i>
	Combined <i>n</i> = 40	Inatten <i>n</i> = 43	Hyp-Imp <i>n</i> = 22	None <i>n</i> = 84		
Relationship Satisfaction	54.30 <sup>a</sup>	60.89 <sup>ab</sup>	59.50 <sup>ab</sup>	62.94 <sup>b</sup>	2.68	.048
Emotion Regulation Problems	95.07 <sup>a</sup>	87.78 <sup>ab</sup>	84.28 <sup>bc</sup>	75.06 <sup>c</sup>	9.88	<.001
Perceived Stress	21.02 <sup>a</sup>	19.80 <sup>a</sup>	16.70 <sup>b</sup>	15.20 <sup>b</sup>	11.08	<.001
Hostile Relationship Conflict	3.62 <sup>a</sup>	3.10 <sup>b</sup>	3.25 <sup>ab</sup>	2.62 <sup>c</sup>	7.83	<.001

*Note.* Within each row, means not sharing a common superscript letter are significantly different according to LSD post-hoc analyses ( $p < .05$ ).

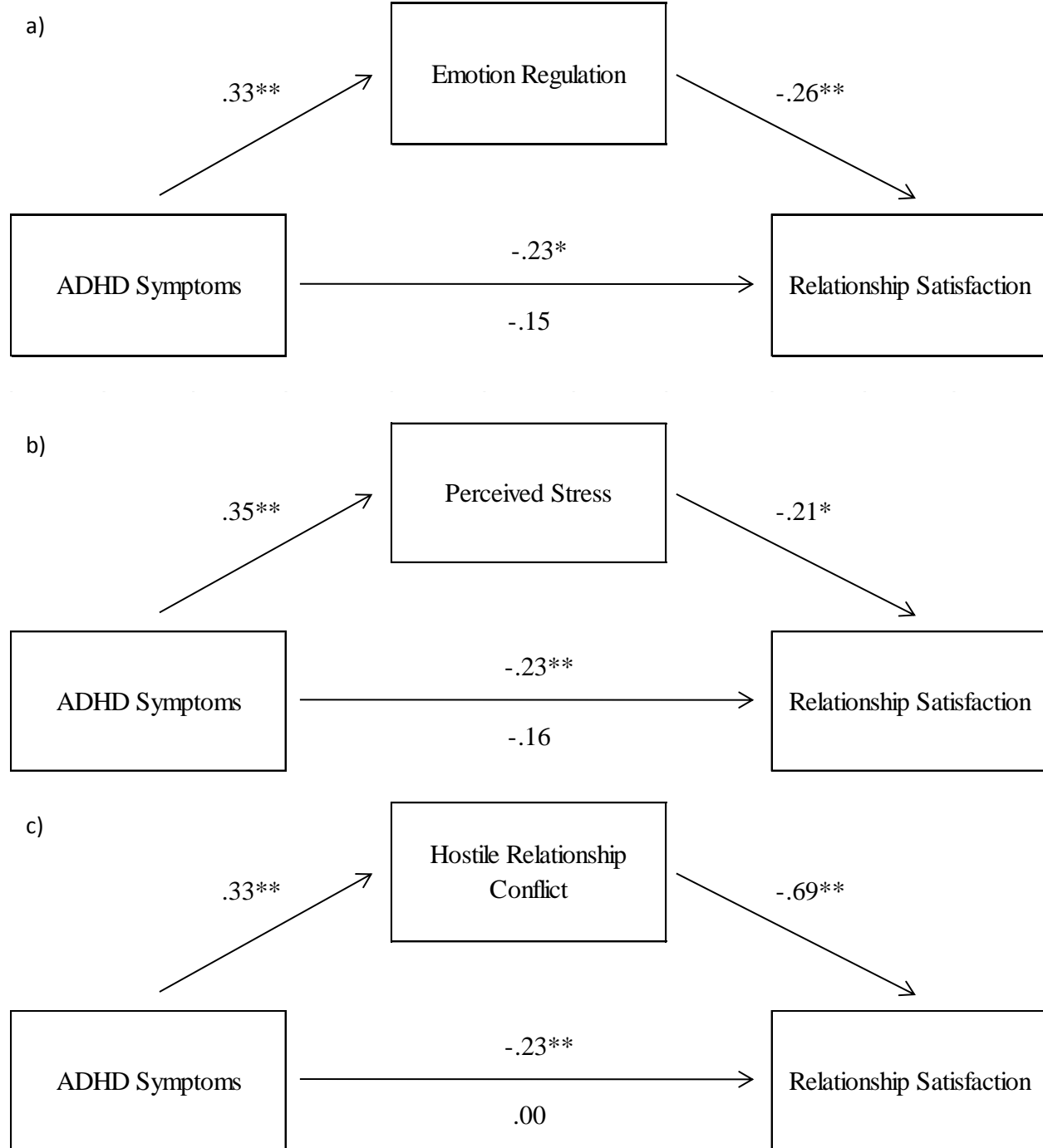


Figure 1. Mediation models for a) emotion regulation, b) perceived stress, and c) hostile relationship conflict predicting relationship satisfaction. Values are standardized regression coefficients. Total effects (i.e., unmediated associations between ADHD and relationship satisfaction) are displayed above the path and direct effects (i.e., the associations between ADHD and relationship satisfaction when the mediator is included in the model) are shown below the path. These models are shown for women only. Note:  $*p < .05$ ;  $**p < .01$ .