

# Attention-Deficit/Hyperactivity Disorder Symptoms, Perceived Stress, and Resilience in College Students

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This research investigated the relationships among symptoms associated with attention-deficit/hyperactivity disorder (ADHD), perceived stress, and resilience in college students. In our study of 558 college students (175 men, 383 women), we confirmed the hypothesis that the relationship between ADHD symptoms and perceived stress is mediated by protective factors associated with resilience. The relationships were not significantly moderated by sex. Implications for increasing resilience in college students and lowering perceived stress for college students are discussed.

**Keywords:** resilience, perceived stress, resilience, attention-deficit/hyperactivity disorder symptoms, college students

In recent decades, there has been an increasing interest in individual differences in resilience, which has been defined as the ability to adapt to adverse conditions (Garmezy et al., 1984; Garmezy & Rutter, 1983; Masten, 2011; Masten et al., 1990; Windle et al., 2011). A growing number of researchers have shown that individuals with high levels of attention-deficit/hyperactivity disorder (ADHD) symptoms (e.g., problems sustaining attention, problems with organization, problems with forgetfulness) are less resilient than those without ADHD symptoms (Arruda et al., 2015; Dvorsky & Langberg, 2016; Gray et al., 2016; Latimer et al., 2003). Previous research has shown that individuals with high levels of ADHD symptoms are particularly susceptible to stress, which can lead to physiological changes in the body (i.e., release of stress hormone) and sometimes problems functioning in daily life (Combs et al., 2015; Harrison et al., 2013; Miklósi et al., 2016; Raz & Leykin, 2015; Wender, 1995). The aim of the present research was to examine the relationship between ADHD symptoms and stress and investigate the possibility that protective factors associated with resilience mediate the relationship between ADHD symptoms and perceived stress among college undergraduates.

ADHD is a neurological disorder whose symptoms typically emerge in childhood (American Psychiatric Association, 2013). Those who are diagnosed exhibit a persistent pattern of inattention and/or hyperactivity-impulsivity with a severity that interferes with developmental functioning in two or more settings; was present before age 12; and cannot be accounted for by another behavioral health disorder, such as depression, anxiety, or trauma. Research indicates that ADHD is a lifelong difficulty and that symptoms prevail well into

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adulthood for 60% to 78% of individuals diagnosed in childhood (Biederman et al., 2010; Sibley et al., 2012; Sobanski et al., 2008). Some researchers have estimated that nearly 1 in 20 adults in the United States are affected by symptoms of ADHD (Kessler et al., 2006). Longitudinal studies looking at young adults diagnosed with ADHD in childhood have found that 20% to 50% of these individuals go on to pursue a university degree (Barkley et al., 2008; Kuriyan et al., 2013). However, students with ADHD are less likely to complete college than those without ADHD (Barkley et al., 2008).

Some college students with ADHD symptoms may have received a formal diagnosis of ADHD, but others may not have (Heiligenstein & Keeling, 1995; Meaux et al., 2009; Wilmschurst et al., 2011; Wood et al., 2019). There are multiple factors predicting which college students may have a diagnosis for ADHD. Foremost, students from low socioeconomic backgrounds with high ADHD symptoms may not have been diagnosed earlier because of barriers, such as the cost of testing (Bussing et al., 2003). Second, individuals with ADHD symptoms may not recognize their own ADHD symptoms, which may contribute to them not seeking out ADHD screening (Manor et al., 2012). Third, some students with few or no ADHD symptoms may have sought and obtained a diagnosis of ADHD so that they would qualify for testing accommodations (e.g., extra time in a quiet location) on standardized tests (e.g., SAT, ACT, GRE) and also during college (Harrison, 2017). Finally, it is also possible that some college students may have received a diagnosis of ADHD during childhood, but their symptom level has decreased as they have aged (Faraone et al., 2006). Thus, in many college settings, a student's ADHD diagnosis status may not be strongly predictive of their level of ADHD symptoms.

Counselors routinely treat college students with ADHD symptoms (Hall & Gushee, 2002; Knouse & Fleming, 2016; Knouse et al., 2017; Ramsay & Rostain, 2007; Wiggins et al., 1999). Some students with an ADHD diagnosis may take medication to treat ADHD symptoms (Hall & Gushee, 2002); however, some students without an ADHD diagnosis may take ADHD medications for nonmedical purposes (e.g., as a study aid; Advokat et al., 2008). Research has shown that for those with ADHD symptoms who are receiving counseling, psychosocial treatments can be effective (Ramsay & Rostain, 2007; Wiggins et al., 1999), including those focused on skill building using cognitive behavior therapy (Knouse & Fleming, 2016; Knouse et al., 2017). Counselors can help with strengthening a variety of skills, including, but not limited to, creating and relying on a schedule for daily activities, planning tasks and prioritizing them, analyzing large tasks as a series of smaller tasks, and finding ways to reduce distractions. Interventions designed to increase resilience have been conducted with children (Gillham et al., 2007; Senior et al., 2020; Stallard & Buck, 2013) and college students (Galante et al., 2016), but we know of no intervention that has attempted to increase resilience for college students with ADHD symptoms.

In the present research, we investigated resilience in college students, specifically the extent to which resilience mediates the relationship between

ADHD symptoms and perceived stress in college students. Resilience theory has been influenced by the work of Garmezy and colleagues (Garmezy et al., 1984; Garmezy & Rutter, 1983; Masten et al., 1990). This work suggests that resilience is derived from protective factors that ease the effects of risk factors (Dumont & Provost, 1999; Garmezy et al., 1984; Masten et al., 2005; Obradović et al., 2012). Protective factors typically include social components (e.g., social support, social skills, quality of close relationships, positive attachment styles) and cognitive components (e.g., executive functioning; intellectual ability; problem-solving skills; various facets of self-regulation, such as coping strategy self-efficacy, goal efficacy, and planning behaviors). Multiple measures of resilience exist and assess the multifaceted aspects of resilience (Connor & Davidson, 2003; Ponce-Garcia et al., 2015; Smith et al., 2008; Wagnild & Young, 1993). Unlike older measures, which assess resilience as one or two factors, the Scale of Protective Factors (SPF; Ponce-Garcia et al., 2015) assesses four protective factors of resilience (i.e., social skills, social support, goal efficacy, and planning and prioritizing behavior; see also Madewell & Ponce-Garcia, 2016).

Previous research suggests that individuals with high levels of ADHD symptoms are particularly susceptible to stress (Combs et al., 2015; Harrison et al., 2013; Miklósi et al., 2016; Raz & Leykin, 2015; Wender, 1995). In early work, Wender (1995) noted the reduced ability to endure stress as a feature of ADHD. Recent research supports his observation, showing that individuals with ADHD have reductions in coping ability (Kaminski et al., 2006; Riley et al., 2006). We know of no study that has investigated whether resilience factors mediate the relationship between ADHD symptoms and perceived stress in college students. Most studies exploring the relationship between ADHD symptoms and daily functioning in an academic setting have focused on children and adolescents with a diagnosis of ADHD (DuPaul et al., 2009; Power, 2009). The present study filled a gap in the literature by focusing on college students with and without diagnoses of ADHD. We hypothesized that (a) more ADHD symptoms would predict higher levels of perceived stress and (b) one or more of the protective factors of resilience would mediate the relationship between ADHD symptoms and perceived stress.

## Method

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### Participants

The participants were 558 undergraduates (175 men, 383 women) who were enrolled in courses at a large public university in the midwestern region of the United States. They volunteered in exchange for course credit. The participant pool included courses in psychology and speech communications. The majority of these courses fulfilled general education requirements and enrolled students from all majors. In the pool, approximately 75% of the students identified as non-Hispanic White. In the sample, only 13% of the participants indicated

that they had been diagnosed with ADHD. Another 21% indicated that they had not been diagnosed with ADHD but suspected that they might have it.

## Measures

*ADHD symptoms.* We assessed ADHD symptoms using the Adult ADHD Self-Report Scale–v1.1 (ASRS-v1.1) Symptom Checklist (Adler et al., 2003), which is an 18-item measure of adult ADHD symptoms. Participants rated the frequency in which they experienced symptoms of ADHD over the previous 6 months using a 5-point Likert-type scale (1 = *never*, 2 = *rarely*, 3 = *sometimes*, 4 = *often*, 5 = *very often*). Items 1, 2, 3, 9, 12, 16, and 18 were scored as “1” for ratings of *sometimes*, *often*, and *very often*. The remaining items were scored as “1” for ratings of *often* or *very often*. A sum was computed, with higher sums reflecting higher levels of ADHD symptoms. Internal consistency and test-retest reliability for this scale are high, regardless of whether the scale is completed in a research survey or administered by a clinician ( $\alpha = .88-.89$ ; Adler et al., 2006). In the present study, we observed acceptable internal consistency ( $\alpha = .73$ ).

*Perceived stress.* We assessed perceived stress using the Perceived Stress Scale (PSS; S. Cohen, 1988), which has 10 items. Participants rated the frequency in which stressful situations occurred over the previous month (e.g., “In the last month, how often have you felt that you were on top of things?”) using a 5-point Likert-type scale (0 = *never*, 4 = *very often*). The mean score was computed using six regular- and four reverse-scored items. Higher scores reflected more perceived stress. Internal consistency has been found to be acceptable ( $\alpha = .72$ ; S. Cohen et al., 1983). In the present study, we observed good internal consistency ( $\alpha = .85$ ).

*Resilience.* We assessed resilience using Ponce-Garcia et al.’s (2015) 24-item SPF, which assesses four protective factors of resilience (i.e., social skills, social support, goal efficacy, and planning and prioritizing behavior). Participants rated their agreement with each item (e.g., “I am confident in my ability to succeed”) using a 7-point Likert-type scale (1 = *not at all like me*, 7 = *exactly like me*). For each factor, a sum was computed for six items. Higher scores reflected higher resilience. Previous research has found excellent internal consistency ( $\alpha = .91$ ; Ponce-Garcia et al., 2015). In the present study, we also observed high internal consistency ( $\alpha = .96$ ).

*Demographic variables.* We also assessed demographic variables (e.g., age, sex, ADHD diagnosis status). The question assessing ADHD diagnosis status was phrased as follows:

Which of the following is true for you? A) I have never been diagnosed with an attention-related problem (e.g., ADHD or ADD [attention-deficit disorder]), and I don’t believe that I might have one; B) I have never been diagnosed with an attention-related problem (e.g., ADHD or ADD), but I strongly suspect that I might have one; or C) I have been diagnosed with an attention-related problem (e.g., ADHD or ADD) by a health professional.

## Procedure

Before recruitment, we obtained institutional review board approval for the study. Responses were collected via SurveyMonkey (<https://www.surveymonkey.com/>). The study was open to all students in the department's research participant pool. Participants received the questionnaires in the same order (i.e., SPF, PSS, ASRS-v1.1 Symptom Checklist, and demographic questionnaire). The survey was designed to take participants approximately 45 to 60 minutes to complete.

## Results

Participants' responses were used to calculate scores for the variables: ADHD symptoms, perceived stress, and the four protective factors of resilience (i.e., social skills, social support, goal efficacy, and planning and prioritizing behavior). Table 1 presents the descriptive statistics and Pearson product-moment correlations by participant sex. We observed that with the exception of perceived stress for men, most of the variables were slightly skewed, and two variables for the women were moderately skewed. After a  $z$ -score transformation, we compared scores for men and women and found that women reported significantly higher levels of perceived stress ( $t = -3.57$ ,  $p = .001$ ) and higher levels of two of the four protective factors of resilience:

**TABLE 1**

**Descriptive Statistics and Correlations for Attention-Deficit/Hyperactivity Disorder Symptoms (ADHD), Perceived Stress, and the Four Protective Factors of Resilience by Sex**

| Variable                | <i>M</i> | <i>SD</i> | Min  | Max   | Skew | Kur  | 1     | 2     | 3    | 4    | 5    | 6 |
|-------------------------|----------|-----------|------|-------|------|------|-------|-------|------|------|------|---|
| Men ( <i>n</i> = 175)   |          |           |      |       |      |      |       |       |      |      |      |   |
| 1. ADHD                 | 5.58     | 3.68      | 0.00 | 15.00 | .44  | -.51 | —     |       |      |      |      |   |
| 2. Stress               | 15.79    | 6.49      | 0.00 | 40.00 | .00  | .62  | .37*  | —     |      |      |      |   |
| 3. Social skills        | 4.85     | 1.22      | 1.00 | 7.00  | -.16 | -.54 | -.13  | -.51* | —    |      |      |   |
| 4. Support              | 4.80     | 1.12      | 1.33 | 7.00  | -.17 | -.14 | -.23* | -.50* | .65* | —    |      |   |
| 5. Goal                 | 5.29     | 1.11      | 1.17 | 7.00  | -.42 | -.02 | -.26* | -.61* | .65* | .66* | —    |   |
| 6. Planning             | 4.53     | 1.24      | 1.67 | 7.00  | .04  | -.52 | -.28* | -.38* | .47* | .58* | .67* | — |
| Women ( <i>n</i> = 383) |          |           |      |       |      |      |       |       |      |      |      |   |
| 1. ADHD                 | 5.89     | 4.09      | 0.00 | 18.00 | .46  | -.24 | —     |       |      |      |      |   |
| 2. Stress               | 17.79    | 6.59      | 0.00 | 36.00 | -.13 | .02  | .40*  | —     |      |      |      |   |
| 3. Social skills        | 4.99     | 1.27      | 1.00 | 7.00  | -.54 | -.08 | -.22* | -.41* | —    |      |      |   |
| 4. Support              | 5.11     | 1.15      | 1.50 | 7.00  | -.42 | -.17 | -.33* | -.43* | .55* | —    |      |   |
| 5. Goal                 | 5.20     | 1.16      | 1.00 | 7.00  | -.65 | -.12 | -.34* | -.49* | .69* | .70* | —    |   |
| 6. Planning             | 4.98     | 1.26      | 1.00 | 7.00  | -.36 | -.12 | -.39* | -.45* | .56* | .69* | .80* | — |

*Note.* Min = minimum; Max = maximum; Skew = skewness; Kur = kurtosis; Stress = perceived stress; Support = social support; Goal = goal efficacy; Planning = planning and prioritizing behavior.

\* $p < .01$ .

social support ( $t = -3.16, p = .002$ ) and planning and prioritizing behavior ( $t = -4.26, p = .001$ ). Other variables did not differ significantly for men and women: ADHD symptoms ( $t = -0.89, p = .37$ ), social skills ( $t = -1.25, p = .21$ ), and goal efficacy ( $t = 1.23, p = .20$ ).

We compared the level of ADHD symptoms for individuals with and without a diagnosis for ADHD. We found that some individuals with the highest levels of symptoms did not have a diagnosis of ADHD, and some individuals with no symptoms of ADHD had a diagnosis of ADHD. The level of ADHD symptoms was highest in those without a diagnosis who suspected that they had ADHD (i.e.,  $M = 7.65$ ) compared with the other two groups (group with ADHD diagnosis:  $M = 7.23, t = 0.74, p = .46$ ; group without an ADHD diagnosis with no suspicion of having ADHD:  $M = 4.86, t = -7.76, p < .001$ ). When we examined the cases representing the highest and lowest levels of ADHD symptoms, we found that these cases included people from each of the three diagnosis groups. Approximately 10% of the participants (i.e., 56 individuals) reported 12 or more symptoms. Of these individuals, 16 indicated that they were diagnosed with ADHD, 21 indicated that they were not diagnosed but suspected that they had it, and 19 indicated that they were not diagnosed and did not suspect that they had it. Approximately 10% of the participants (i.e., 56 individuals) reported no ADHD symptoms. These included five participants with a diagnosis of ADHD, eight without a diagnosis but who suspected that they had it, and 43 without a diagnosis or suspicion of having it.

To test the first hypothesis—that more ADHD symptoms would predict higher levels of perceived stress—we conducted a hierarchical regression analysis. Assumptions for multiple regression were met (J. Cohen et al., 2003; see also Hayes, 2018). In the analysis, we used perceived stress as the dependent variable. In Block 1, participant sex was entered as an independent variable. Sex accounted for 2% of the variance in perceived stress,  $F(1, 556) = 13.57$ . In Block 2, ADHD symptoms (a continuous composite score) were entered as an independent variable. The results supported the hypothesis, showing that when sex is controlled for, more ADHD symptoms predicted greater perceived stress,  $B = 0.65, p < .001, R^2 = .17, F(1, 555) = 98.88$ . ADHD symptoms accounted for 15% of the variance in perceived stress over and above sex ( $\Delta R^2 = .15$ ). Table 2 presents the summary of these results.

To test the second hypothesis—that one or more of the four resilience factors would mediate the relationship between ADHD symptoms and perceived stress—we used the PROCESS macro (Version 3.2) for SPSS (Version 24; Model 4; Hayes, 2018) to test four indirect effects, one for each of the four resilience factors using 5,000 bootstrapped samples. The mediated effects were assessed using the 95% confidence intervals (CIs) provided by PROCESS. CIs that do not contain zero indicate a statistically significant mediated effect. The mediated effect of each resilience factor on perceived stress and ADHD symptoms was statistically significant, thus supporting the hypothesis. Figure 1 displays the model tested in PROCESS. Results from these models are shown in Table 3. Each of the four indirect effects related to the resilience factors reduced the increase in perceived stress due to relatively higher levels

TABLE 2

**Summary of Hierarchical Regression Analysis for  
Variables Predicting Perceived Stress**

| Predictor Variable    | Block 1  |             |         | Block 2  |             |         |
|-----------------------|----------|-------------|---------|----------|-------------|---------|
|                       | <i>B</i> | <i>SE B</i> | $\beta$ | <i>B</i> | <i>SE B</i> | $\beta$ |
| Intercept             | 15.61    | 0.50        |         | 11.99    | 0.59        |         |
| Participant sex       | 2.21     | 0.60        | .15     | 2.06     | 0.55        | .14     |
| ADHD symptoms         |          |             |         | 0.65     | 0.07        | .38     |
| Adjusted $R^2$        |          | .02         |         |          | .17         |         |
| Adjusted $\Delta R^2$ |          | .02         |         |          | .15         |         |
| $\Delta R^2$          |          | .00**       |         |          | .00**       |         |

*Note.* Block 1 = participant sex entered as an independent variable; Block 2 = ADHD symptoms (a continuous composite score) entered as an independent variable; ADHD = attention-deficit/hyperactivity disorder.

\*\* $p < .001$ .

of ADHD symptoms: social skills (bootstrapped unstandardized indirect effect = .12,  $SE = .03$ , 95% CI [.06, .19],  $p < .05$ ), social support (bootstrapped unstandardized indirect effect = .17,  $SE = .03$ , 95% CI [.12, .26],  $p < .05$ ), goal efficacy (bootstrapped unstandardized indirect effect = .24,  $SE = .04$ , 95%

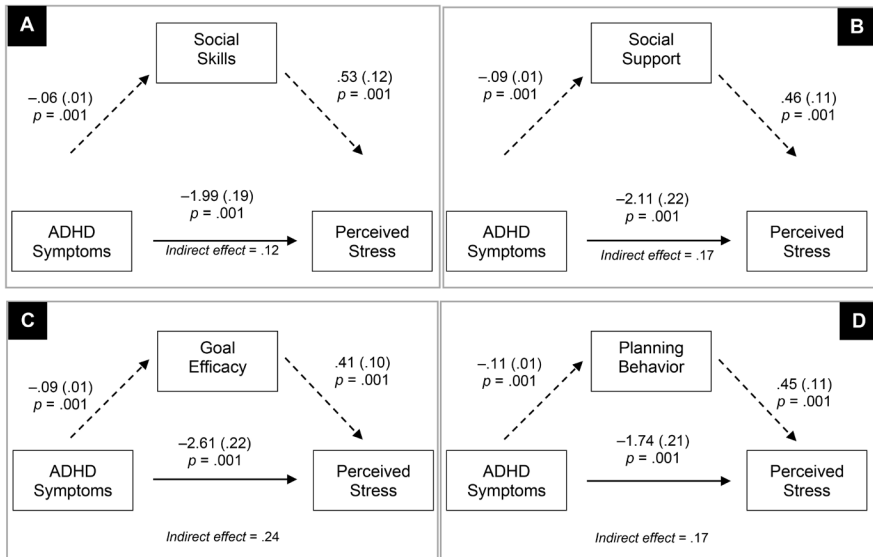


FIGURE 1

**Relationship Between Attention-Deficit/Hyperactivity Disorder  
(ADHD) Symptoms and Perceived Stress as Mediated by Protective  
Factors of Resilience**

*Note.* Unstandardized regression coefficients are shown with standard errors in parentheses. Solid lines indicate direct effects, and dashed lines indicate indirect effects. Planning Behavior = planning and prioritizing behavior.

**TABLE 3**  
**PROCESS Model Summary for the Four Protective Factors**  
**of Resilience**

| Variable                           | <i>B</i> | <i>SE B</i> | <i>t</i> | <i>p</i> | 95% CI         |
|------------------------------------|----------|-------------|----------|----------|----------------|
| Social Skills                      |          |             |          |          |                |
| Constant                           | 22.38    | 1.14        | 19.60    | <.001    | [20.14, 24.62] |
| ADHD symptoms                      | 0.53     | 0.06        | 8.65     | <.001    | [0.41, 0.65]   |
| Social skills                      | -1.99    | 0.19        | -10.32   | <.001    | [-2.38, -1.61] |
| Participant sex                    | 2.32     | 0.51        | 4.56     | <.001    | [1.32, 3.32]   |
| Interaction                        | 0.53     | 0.06        | 8.65     | <.001    | [0.41, 0.65]   |
| Social Support                     |          |             |          |          |                |
| Constant                           | 23.27    | 1.29        | 17.99    | <.001    | [20.73, 25.81] |
| ADHD symptoms                      | 0.46     | 0.06        | 7.30     | <.001    | [0.34, 0.59]   |
| Social support                     | -2.11    | 0.22        | -9.62    | <.001    | [-2.54, -1.68] |
| Participant sex                    | 2.60     | 0.52        | 5.04     | <.001    | [1.59, 3.61]   |
| Interaction                        | 0.46     | 0.06        | 7.30     | <.001    | [0.34, 0.59]   |
| Goal Efficacy                      |          |             |          |          |                |
| Constant                           | 27.25    | 1.36        | 19.96    | <.001    | [24.57, 29.93] |
| ADHD symptoms                      | 0.41     | 0.06        | 6.71     | <.001    | [0.29, 0.53]   |
| Goal efficacy                      | -2.61    | 0.22        | -12.10   | <.001    | [-3.04, -2.19] |
| Participant sex                    | 1.77     | 0.49        | 3.58     | <.001    | [0.80, 2.74]   |
| Interaction                        | 0.41     | 0.06        | 6.71     | <.001    | [0.29, 0.53]   |
| Planning and Prioritizing Behavior |          |             |          |          |                |
| Constant                           | 21.01    | 1.22        | 17.26    | <.001    | [18.62, 23.40] |
| ADHD symptoms                      | 0.45     | 0.07        | 6.88     | <.001    | [0.32, 0.58]   |
| Planning behavior                  | -1.74    | 0.21        | -8.33    | <.001    | [-2.15, -1.33] |
| Participant sex                    | 2.84     | 0.53        | 5.34     | <.001    | [1.79, 3.88]   |
| Interaction                        | 0.45     | 0.07        | 6.88     | <.001    | [0.32, 0.58]   |

*Note.* CI = confidence interval; ADHD = attention-deficit/hyperactivity disorder; Planning behavior = planning and prioritizing behavior.

CI [.17, .31],  $p < .05$ ), and planning and prioritizing behavior (bootstrapped nonstandardized indirect effect = .17,  $SE = .03$ , 95% CI [.13, .27],  $p < .05$ ).

We also explored the possibility that the indirect effect of each of the four resilience factors between perceived stress and ADHD symptoms would be moderated by sex. A separate moderated mediation analysis was conducted for each of the four resilience factors using PROCESS for SPSS (Model 8; Hayes, 2018). The results did not suggest a moderated mediation. None of the interaction terms were statistically significant. Furthermore, the index of moderated mediation was nonsignificant based on the 95% CIs for social skills (95% CI [-.08, .18], *ns*), social support (95% CI [-.07, .17], *ns*), goal efficacy (95% CI [-.10, .19], *ns*), and planning and prioritizing behavior (95% CI [-.06, .16], *ns*).

Finally, we carried out additional analyses in which we examined the same relationships for the 90% of individuals who reported at least one ADHD symptom. These analyses were highly similar to the overall analysis that we have reported. In this analysis, ADHD symptoms accounted for 15% of the variance in perceived

stress over and above sex,  $\Delta R^2 = .15$ ,  $F(1, 542) = 95.64$ ,  $p < .001$ . The mediation and moderation results were also similar to those of the overall analysis.

## Discussion

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The present research aimed to understand the relationships among ADHD symptoms, perceived stress, and protective factors of resilience in college students. The results of the hierarchical regression analysis supported the hypotheses that those reporting higher levels of ADHD symptoms would also report higher levels of perceived stress. This finding is consistent with previous research (Combs et al., 2015; Harrison et al., 2013; Miklósi et al., 2016; Raz & Leykin, 2015; Wender, 1995). As in prior research, we found that those reporting higher levels of ADHD symptoms also reported lower levels of resilience (Arruda et al., 2015; Dvorsky & Langberg, 2016; Gray et al., 2016; Latimer et al., 2003). The results also supported the hypothesis that the relationship between ADHD symptoms and perceived stress would be mediated by resilience factors. Our findings showed that each of the four protective factors of resilience (i.e., social skills, social support, goal efficacy, and planning and prioritizing behaviors) mediated the relationship between ADHD symptoms and perceived stress. Further analyses showed that there was no evidence that participant sex moderated these mediation relationships. However, women reported significantly higher levels of perceived stress and higher levels of two of the four protective factors of resilience (i.e., social support and planning and prioritizing behavior).

This study is the first to document that the protective factors of resilience may offset stress that is associated with ADHD symptoms in college students. This demonstration is important because it provides a clear path forward for the development of interventions for college students who are dealing with ADHD symptoms and high levels of stress. Interventions focused on increasing resilience in college students with ADHD symptoms are particularly lacking. Most previous studies testing the effectiveness of interventions to increase resilience in individuals with ADHD have focused on children (Gillham et al., 2007; Senior et al., 2020; Stallard & Buck, 2013). Future interventions could be developed with the aim of strengthening one or more of the four protective factors examined in the present study. Furthermore, interventions that strengthen one or more of the protective factors could be tailored to a population's or an individual's area(s) of weakness.

Our findings are consistent with previous research suggesting that among college students, one's diagnosis status for ADHD may not be a strong predictor of one's level of ADHD symptoms. Some college students who have ADHD may not have received a diagnosis in the past because of a variety of reasons (e.g., cost; Bussing et al., 2003). Others without ADHD may have received a diagnosis as part of a strategy to receive test-taking accommodations in college (Harrison, 2017). In our sample, we found that among those with the highest levels of ADHD symptoms were not only individuals with a diagnosis of ADHD but also those without a diagnosis who did not suspect

that they had it and those without a diagnosis who suspected that they had it. We also found in the sample that individuals reporting no ADHD symptoms included individuals from each of the three diagnosis groups.

## Limitations

This research has several limitations. Foremost, the study did not use a clinical sample. The present research used a nonclinical college population; thus, the results may not generalize to other populations, where ADHD symptoms may be higher. Second, this research used self-report measures of the variables from one source, the individual with ADHD symptoms. Self-reporting can be problematic in studies of individuals with ADHD because research suggests that individuals with ADHD frequently underestimate their own ADHD-related impairments (Manor et al., 2012). Third, the study did not assess participants' current use of medications related to stress and/or ADHD symptoms. It is unclear whether the relationships among perceived stress, ADHD symptoms, and resilience would be different for participants taking medication for stress and/or ADHD symptoms versus unmedicated participants. Fourth, we did not assess information about the sources or causes of the participants' stress. It is possible that individuals with ADHD symptoms may have different sources of stress than those without ADHD symptoms and that the relationships among protective factors of resilience, ADHD symptoms, and perceived stress depend on the specific type of stress one is experiencing. Finally, the length of the survey may be a limitation, because it may have been a challenge for some individuals to complete, especially those with high levels of ADHD symptoms. It is possible that individuals with the highest levels of ADHD symptoms may not be represented in our sample.

## Implications for College Counseling

The results of the present research suggest that college students reporting high levels of ADHD symptoms as well as high levels of perceived stress may be helped by strategies that are focused on increasing the students' protective factors of resilience (i.e., social skills, social support, goal efficacy, and planning and prioritizing behavior). Assisting students to increase their levels of each of these factors may lead to students experiencing reduced levels of stress. Strategies that focus just on stress reduction or reducing ADHD symptoms (e.g., forgetfulness, distractability, disorganization) are likely to have been tried in the past by students without success. Students may be easier to motivate to pursue strategies designed to increase resilience factors, given that increasing levels of the four protective factors can appear to be activities beneficial for any college student, not just those confronting challenges in a counseling setting. Strategies to increase planning and prioritizing behavior as well as goal efficacy and social skills in college students appear feasible. Counselors may find it challenging to assist students in increasing the students' level of social support; however, counselors may already routinely discuss with

students the broad benefits of social support to mental health. The present research suggests that increasing social support may also be helpful to students experiencing high levels of ADHD symptoms. Future research is needed to assess the extent to which short-term interventions can lead to increases in the protective factors of resilience and whether such interventions produce the reductions in stress that are suggested by our findings.

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