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To cite this article: Mary Jo Coiro PhD, Alexandra H. Bettis MS & Bruce E. Compas PhD (2017) College students coping with interpersonal stress: Examining a control-based model of coping, Journal of American College Health, 65:3, 177-186, DOI: [10.1080/07448481.2016.1266641](https://doi.org/10.1080/07448481.2016.1266641)

To link to this article: <http://dx.doi.org/10.1080/07448481.2016.1266641>



Accepted author version posted online: 02 Dec 2016.  
Published online: 02 Dec 2016.



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MAJOR ARTICLE

## College students coping with interpersonal stress: Examining a control-based model of coping

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### ABSTRACT

**Objective:** The ways that college students cope with stress, particularly interpersonal stress, may be a critical factor in determining which students are at risk for impairing mental health disorders. Using a control-based model of coping, the present study examined associations between interpersonal stress, coping strategies, and symptoms. **Participants:** A total of 135 undergraduate students from 2 universities. **Methods:** Interpersonal stress, coping strategies, depression, anxiety, and somatization were assessed via self-report. **Results:** Students reporting more interpersonal stress reported more depression, anxiety, and somatization, and they reported less use of engagement coping strategies and greater use of disengagement coping strategies. Engagement coping strategies accounted for a significant portion of the association between interpersonal stress and mental health symptoms. Unexpectedly, coping strategies did not moderate the association between stress and mental health symptoms. **Conclusion:** Interventions designed to improve students' coping strategies may be an effective way to reduce mental health problems on college campuses.

### ARTICLE HISTORY

Received 26 December 2015  
Revised 2 September 2016  
Accepted 15 November 2016

### KEYWORDS

Anxiety; college students; coping; depression; somatization; stress

Rates of mental health problems among college students have increased steadily over the past 10 to 15 years,<sup>1,2</sup> and mental health problems are a leading cause of poor academic performance and withdrawal from college.<sup>3</sup> For example, a Web-based survey of almost 3,000 undergraduates found that 16% met clinical criteria for depression or anxiety disorders and 2.5% reported thinking about suicide in the past 4 weeks.<sup>4</sup> Further, a meta-analysis of depression rates among college students reported an even higher weighted mean prevalence of 30.6%.<sup>5</sup> Despite the widespread availability of on-campus counseling services and assertive outreach efforts designed to prevent mental health problems before they become severe or impairing, many college students do not obtain needed mental health services.<sup>6,7</sup> Therefore, screening and early identification of students at risk for mental health problems is a high priority.<sup>8</sup>

Exposure to acute and recurring sources of stress may be an important target for early identification of students at risk for mental health problems. The transition to college presents students with a number of new challenges, including increased academic demands, diminished contact with family members, interpersonal stressors with

roommates and romantic partners, and for many students, financial stress.<sup>4</sup> Recent large-scale surveys indicated that 87% of college students felt “overwhelmed by all [they] had to do” in the past year, and that a quarter of students reported that stress had hurt their academic performance, including lower grades or dropped courses.<sup>1</sup> Furthermore, perceived stress has consistently been associated with college students' symptoms of depression, anxiety, health problems, and risk-taking behavior, including alcohol use.<sup>9,10</sup>

Given the salience of stress in the lives of many college students, the ways that students cope with stress may be a critical factor in determining who is adversely affected and may serve as a target for interventions to increase resilience and prevent mental health disorders. Coping strategies, including efforts to regulate emotions in response to stress, have been identified as a key mechanism linking perceived stress and stressful life events to the development of mental health problems.<sup>11,12</sup> Coping is defined here as voluntary efforts to regulate one's cognitive, behavioral, emotional, or physiological responses to a stressor or toward the stressor itself.<sup>13</sup> Aldao and colleagues<sup>11</sup>

found evidence of significant associations between 3 coping/emotion regulation strategies that may be maladaptive (rumination, avoidance, suppression) and higher levels of 4 types of psychopathology (symptoms of anxiety, depression, eating disorders, substance abuse). Evidence was weaker (but still statistically significant) for associations between 3 coping/emotion regulation strategies that may be more adaptive (acceptance, cognitive reappraisal, problem solving) and lower levels of the 4 types of psychopathology examined. Evidence for the role of potentially more adaptive forms of coping may depend on the ways that coping is conceptualized and measured,<sup>14</sup> but it is needed in order to identify targets for interventions to enhance coping skills.

Central to processes of coping is the role of controllability of the stressor; that is, successful coping involves both an accurate appraisal of one's control over the stressful situation and, based on that appraisal, the selection of an appropriate coping strategy.<sup>15–18</sup> Confirmatory factor analyses (CFAs) across a number of populations have shown support for a control-based model of coping measured with the Responses to Stress Questionnaire (RSQ).<sup>19</sup> This model includes primary control coping (ie, efforts to change a stressor or directly change one's emotional response to a stressor, including problem solving and emotional modulation), secondary control coping (ie, efforts to adapt to a stressor, including cognitive reappraisal and acceptance), and disengagement coping (ie, efforts to orient away from the stressor, including avoidance or wishful thinking).<sup>19</sup> Validation of this 3-factor model of coping using the RSQ and tested with CFA has included college students in the United States,<sup>19</sup> Spain,<sup>20</sup> and China.<sup>21</sup>

There is also evidence to support this control-based model of coping in relation to some symptoms of mental health disorders.<sup>12</sup> Focusing specifically on college students, Andreotti and colleagues<sup>22</sup> found that greater use of secondary control coping efforts was associated with lower symptoms of depression and anxiety. Similarly, Adler and colleagues<sup>23</sup> reported that college students who reported using coping strategies that involved reevaluating an initial thought (cognitive reappraisal) or generating a specific plan of action (problem solving) were less likely to experience an increase in depressive symptoms following moderate, recurrent stressors (specifically, receiving a disappointing examination grade); this association was strongest among students with high initial levels of depressive symptoms.

Based on these findings, identifying the strategies that college students use to cope with stress may play a role in screening to identify students at high risk for mental health problems and may inform the development of

interventions designed to prevent such problems. Using a control-based model of coping, the present study focuses on social or interpersonal stress, which has been identified as particularly salient for college students<sup>24,25</sup> and is widely examined in coping research (see Clarke<sup>26</sup> for a meta-analysis). The present study also utilizes the Patient Health Questionnaire,<sup>27</sup> a screener for mental health problems that is widely used by college counseling centers.<sup>28</sup> Drawing on the findings from the Aldao et al.<sup>11</sup> meta-analysis and expanding on previous studies with college students, we examine the association of primary control coping, secondary control coping, and disengagement coping with 3 different types of symptoms—depression, anxiety, and somatization. We hypothesize that (a) students reporting more interpersonal stress would report more symptoms of depression, anxiety, and somatization; (b) these students would report lower use of primary and secondary control coping and greater use of disengagement coping; (c) coping would account for a significant portion of the association between social stress and mental health symptoms; and (d) coping would moderate the association between stress and mental health symptoms, such that the association between stress and mental health would be weaker among students reporting greater use of primary and secondary control coping strategies, and stronger among students reporting greater use of disengagement coping strategies.

## Methods

### Participants

Participants were 135 undergraduate students from 2 medium-sized universities, predominately female (78%), white non-Hispanic (62%) with an average age of 19.4 years ( $SD = 2.4$ ; range: 18–22). Students were recruited through a variety of methods, including flyers around campus, tables at activity and wellness fairs, e-mails from university administrators, and offering extra credit in psychology classes. They volunteered to participate in an intervention designed to prevent anxiety and depression through development of coping strategies necessary to manage stress and through enhancement of executive functioning skills (higher-level cognitive processes, including attention, working memory, and cognitive flexibility<sup>29</sup>). The current study reports on baseline data prior to enrollment in the intervention. Two hundred twenty interested participants were screened via phone to determine that they were lifetime free of bipolar disorder, schizophrenia, and autism spectrum disorders. Eight students were excluded based on the phone screen;

77 additional students declined to participate in the study further; and the remaining 135 students completed online questionnaires assessing their stress levels, coping, and mental health symptoms.

## Measures

### Patient health questionnaire

The Patient Health Questionnaire (PHQ)<sup>27</sup> is a self-administered diagnostic tool for mental health disorders designed for use by health care professionals. The PHQ consists of 5 modules measuring symptoms corresponding to DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition) diagnoses: depression (9 items), panic disorder (15 items), somatization (13 items), alcohol use (6 items), generalized anxiety disorder (7 items), and eating disorders (8 items). Response values for items in each subscale are summed to yield a severity rating, with established cutoffs indicating mild, moderate, and severe symptom levels. The reliability and validity of PHQ modules has been demonstrated in a variety of large samples.<sup>30</sup> Specifically, the internal consistency ( $\alpha$ ) of responses ranged from .80 to .92, whereas test-retest reliability ranged from .83 to .84.<sup>30–32</sup> Diagnoses determined by the PHQ have shown high levels of agreement with independent diagnoses made by mental health professionals.<sup>27,31,32</sup>

The PHQ, particularly the depression module, has been widely used with college students, both to document rates of mental health disorders<sup>4,6</sup> and as a screener to identify those in need of mental health treatment.<sup>28</sup> We extend this work by utilizing the 3 most widely used PHQ modules, those for depression, generalized anxiety, and somatization (a disorder characterized by pain and gastrointestinal, sexual, and pseudoneurological symptoms) and by examining whether PHQ scores are predicted by students' experience of social stress and coping, which may serve as useful targets for intervention in this population.

### Interpersonal stressors

Fourteen items from the Adolescent Perceived Events Scale (APES)<sup>33</sup> assessed the frequency of interpersonal stressors within the past 6 months. Items such as "Having trouble making new friends/meeting people" and "Being teased/hassled by other people" were endorsed on a 4-point scale ranging from "not at all" to "very often." Total scores represent the sum of these responses. The APES has been used in several other studies of coping with interpersonal stress.<sup>19,22,34</sup> Cronbach's alpha was .72 in the current study.

### Coping

The Responses to Stress Questionnaire (RSQ) consists of 57 items that assess 3 factors of coping (primary control engagement coping, secondary control engagement coping, and disengagement coping) and 2 factors of involuntary stress responses (involuntary engagement/stress reactivity and involuntary disengagement).<sup>19</sup> The RSQ has been used to assess coping in response to a variety of stressors, including parental depression<sup>35</sup> and pediatric cancer<sup>36</sup>, and with college students in the United States and abroad.<sup>22,37</sup> The current study utilized the Interpersonal Stress version of the RSQ, in which participants first completed the Interpersonal Stressor Scale (described above). Next, students rated 57 potential coping responses according to "how much you do or feel these things when you are trying to deal with the stressful aspects of problems with friends or other people like the ones you just checked off. Please let us know about everything you do, think, and feel, even if you don't think it helps make things better." Each RSQ item was rated on a 4-point scale from 1 (*not at all*) to 4 (*a lot*). To control for response bias and individual differences in base rates of item endorsement, proportion scores were calculated for each category of coping.<sup>38</sup> Because the current study is interested in voluntary coping responses, proportion scores for primary control, secondary control, and disengagement coping were used in the present analyses; these scores had Cronbach's alphas of .82, .84, and .71, respectively.

### Procedure

All study procedures were approved by the institutional review boards at Vanderbilt University and Loyola University Maryland, and all participants provided informed consent. Data were obtained from a baseline assessment prior to an intervention designed to prevent depression and anxiety among college students. In contrast to most prior research in this area that assessed students' mental health via single items or broad measures of distress, mental health problems were assessed in the current study using the PHQ,<sup>27</sup> which corresponds to DSM-IV diagnostic criteria for depression, anxiety, and somatization disorder. Following a phone screen, participants completed online questionnaires using Research Electronic Data Capture (REDCap), a secure Web application for building and managing online surveys and databases.

### Data analytic techniques

All data analyses were conducted using IBM SPSS 23.0.<sup>39</sup> To examine whether coping strategies accounted for a

significant portion of the association between interpersonal stress and mental health symptoms, a series of hierarchical multiple regression analyses were conducted using the PROCESS macro for SPSS.<sup>40</sup> (Such analyses are sometimes termed “mediational” models, but some statisticians discourage the use of the term “mediation” when using cross-sectional data.<sup>41</sup>) The coefficient for the indirect effect of coping, with bias-corrected bootstrapped confidence intervals, indicates the extent to which coping accounts for the association between stress and mental health. The PROCESS macro was also used to examine whether coping moderated the association between stress and mental health. For these analyses, interpersonal stress and RSQ scores were centered by subtracting the mean for this sample from each score; these centered scores were used both as independent variables and to create an interaction term. A significant interaction term would indicate the presence of moderation.

## Results

### Descriptive analyses

As shown in Table 1, mean interpersonal stress scores indicated that the typical student had experienced “a little” social stress in the past 6 months, although scores showed substantial variation in amount of stress experienced. On the RSQ, students reported primarily relying on secondary control coping strategies, particularly cognitive reappraisal, and primary control coping strategies, particularly problem solving, to manage interpersonal stress. Mean levels of self-reported symptoms of depression, anxiety, and somatization on the PHQ were all in the mild, nonclinical range. The percentage of students exceeding cutoffs for moderate symptom levels for these 3 disorders was 15%, 9%, and 26%, respectively, indicating a possible clinically

significant condition; and for severe symptom levels was 5%, 1.5%, and 6%, respectively, indicating that active treatment is likely warranted.

### Variation by demographic factors

There were no differences in stress levels, coping, or mental health symptoms according to participants’ age or race/ethnicity. However, some gender differences were observed, such that compared with male students, female students reported significantly less use of secondary control coping,  $M(SD)_{\text{female}} = 0.25(0.10)$ ,  $M(SD)_{\text{male}} = 0.32(0.09)$ ;  $t(133) = 3.28$ ,  $p = .001$ ,  $d = 0.07$ , 95% confidence interval (CI) (0.03, 0.10), and more somatic symptoms,  $M(SD)_{\text{female}} = 7.76(4.14)$ ,  $M(SD)_{\text{male}} = 4.47(4.14)$ ;  $t(133) = 4.01$ ,  $p < .001$ ,  $d = -3.29$ , 95% CI (-4.92, -1.67). Therefore, gender was included as a covariate in multivariate analyses.

### Correlations: Stress, coping, and mental health

As hypothesized, interpersonal stress levels were significantly correlated with the 3 types of coping on the RSQ (Table 1), such that higher stress was associated with less use of primary and secondary control coping strategies, and greater use of disengagement coping. Also as hypothesized, interpersonal stress was significantly and positively correlated with students’ self-reported symptoms of depression, anxiety, and somatization.

### Linear multiple regression analyses

#### Does coping account for the association between stress and mental health symptoms?

For these analyses, PHQ depression, anxiety, and somatization symptoms served separately as dependent variables; gender was included as a covariate; interpersonal

**Table 1.** Descriptive statistics and correlations among stress, coping, and symptoms.

Measure	Mean	SD	Cronbach's alpha	1	2	3	4	5	6	7
1. Interpersonal stress	8.23	5.37	.72	—	-.39***	-.48***	.34***	.38***	.30***	.33***
2. Primary control coping	0.24	0.08	.82		—	.35***	-.60***	-.36***	-.32***	-.28***
3. Secondary control coping	0.27	0.10	.84			—	-.36***	-.39***	-.38***	-.39***
4. Disengagement coping	0.14	0.05	.71				—	.19*	.08	.15
5. Depression	5.59	4.27	.83					—	.76***	.66***
6. Anxiety	4.84	3.37	.77						—	.71***
7. Somatization	6.93	4.37	.78							—

Note. \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 2.** Hierarchical multiple regression analyses predicting symptoms of depression from interpersonal stress, coping, and their interaction.

Model	Type of coping strategy					
	Primary		Secondary		Disengagement	
	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$
Model 1		.15***		.15***		.15***
Gender	-0.15		-0.15		-0.15	
Interpersonal stress	0.30***		0.30***		0.30***	
Model 2		.05**		.05**		.004
Gender	0.10		-0.73		-0.11	
Interpersonal stress	0.23**		0.20**		0.29***	
Coping	-12.14**		-11.65**		5.41	
Model 3		.004		.002		.004
Gender	0.16		-0.70		0.01	
Interpersonal stress	0.24**		0.21**		0.30***	
Coping	-10.96*		-11.22*		4.89	
Stress $\times$ Coping	0.62		0.37		-1.03	

Note. *b* = unstandardized regression coefficient;  $\Delta R^2$  = change in total variance explained from prior model. Gender entered as female = 1, male = 0. *N* for all models = 135. \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

stress scores were entered in the first step; and RSQ coping scores were entered in the second step (separately for primary control, secondary control, and disengagement).

As shown in Table 2, the significant association between interpersonal stress and depression was significantly reduced when primary control and secondary control coping were added to the model, but it was largely unchanged when disengagement coping was

added. For depression symptoms, the indirect effect was significant for primary control (*b* = 0.08, 95% CI [0.03, 0.16]) and secondary control coping (*b* = 0.10, 95% CI [0.04, 0.18]), such that greater use of these strategies was associated with lower levels of depressive symptoms. The indirect effect was not significant for disengagement coping (*b* = 0.02, 95% CI [-0.03, 0.07]). Similarly, as shown in Table 3, the significant association between

**Table 3.** Hierarchical multiple regression analyses predicting symptoms of generalized anxiety from interpersonal stress, coping, and their interaction.

Model	Type of coping strategy					
	Primary		Secondary		Disengagement	
	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$
Model 1		.09**		.09**		.09**
Gender	0.004		0.004		0.004	
Interpersonal stress	0.19**		0.19**		0.19***	
Model 2		.05*		.08***		.0004
Gender	0.19		-0.53		-0.01	
Interpersonal stress	0.13		0.10		0.19**	
Coping	-9.30*		-10.64***		-1.36	
Model 3		.02		.001		.009
Gender	0.30		-0.51		0.13	
Interpersonal stress	0.15 <sup>†</sup>		0.10		0.21**	
Coping	-7.39		-10.39***		-1.96	
Stress $\times$ Coping	1.00		0.22		-1.21	

Note. *b* = unstandardized regression coefficient;  $\Delta R^2$  = change in total variance explained from prior model. Gender entered as female = 1, male = 0. *N* for all models = 135. <sup>†</sup>*p* < .10; \**p* < .05; \*\**p* < .01; \*\*\**p* < .001.

**Table 4.** Hierarchical multiple regression analyses predicting symptoms of somatization from interpersonal stress, coping, and their interaction.

Model	Type of coping strategy					
	Primary		Secondary		Disengagement	
	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$	<i>b</i>	$\Delta R^2$
Model 1		.19***		.19***		.19***
Gender	2.87***		2.87***		2.87***	
Interpersonal stress	0.24***		0.24***		0.24***	
Model 2		.001		.04*		.004
Gender	3.09***		2.36***		2.91***	
Interpersonal stress	0.16*		0.15*		0.22**	
Coping	-10.84*		-10.17**		5.10	
Model 3		.01		.001		.001
Gender	3.19***		2.40**		2.96***	
Interpersonal stress	0.18**		0.16*		0.22**	
Coping	-9.02		-9.66*		4.87	
Stress $\times$ Coping	0.95		0.45		-0.44	

Note. *b* = unstandardized regression coefficient;  $\Delta R^2$  = change in total variance explained from prior model.

Gender entered as female = 1, male = 0.

*N* for all models = 135.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

interpersonal stress and generalized anxiety symptoms was also reduced when engagement coping strategies were added to the model, with significant indirect effects for both primary control ( $b = 0.06$ , 95% CI [0.01, 0.13]) and secondary control coping ( $b = 0.09$ , 95% CI [0.05, 0.16]) such that greater use of these strategies was associated with lower levels of anxiety symptoms. The indirect effect for disengagement coping was small and not significant ( $b = -0.005$ , 95% CI [-0.03, 0.03]). Finally, as shown in Table 4, the significant association between interpersonal stress and somatization symptoms was also reduced when engagement coping was added to the model, with significant indirect effects for primary control coping ( $b = 0.07$ , 95% CI [0.01, 0.16]) and secondary control coping ( $b = 0.09$ , 95% CI [0.03, 0.17]), such that greater use of primary and secondary control coping was associated with fewer somatization symptoms. The indirect effect was not significant for disengagement coping ( $b = 0.02$ , 95% CI [-0.03, 0.07]).

### **Does coping moderate the association between stress and mental health symptoms?**

Finally, primary control, secondary control, and disengagement coping strategies were examined as potential moderators to determine whether the association between interpersonal stress and mental health symptoms varied according to the extent to which one uses various coping strategies. Separate models were estimated for PHQ depression, anxiety, and somatization

symptoms; and for RSQ primary control, secondary control, and disengagement coping. As shown in the lower panel of Tables 2, 3, and 4, labeled Model 3, the interaction of stress and coping did not reach statistical significance in models predicting symptoms of depression, anxiety, or somatization, indicating that coping did not moderate associations between interpersonal stress and mental health symptoms.

### **Comment**

In this sample of college students, there was a strong positive association between interpersonal stress levels and the presence of symptoms of depression, anxiety, and somatization. The measure of interpersonal stress included the frequency of problems that are particularly salient for college students such as having few friends, being pressured by peers, and being rejected by a romantic partner.<sup>33</sup> The current findings are consistent with prior research<sup>42-44</sup>; however, previous researchers typically utilized broad measures of stressful life events or perceived stress among college students, whereas here the focus was specifically on social and interpersonal stress. Similarly, others have typically utilized broad measures of distress or mental health symptoms, whereas the current study used modules of the PHQ that correspond specifically to diagnostic criteria. The current findings suggest that efforts to screen college students based

on PHQ depression scores only<sup>28</sup> could benefit by being expanded to screen for anxiety and somatization.

The current study also found a robust association between mental health symptoms and coping at the bivariate level, specifically that greater use of coping strategies designed to change or adapt to the stressor (ie, primary and secondary control coping) was associated with fewer symptoms of depression, anxiety, and somatization; conversely, more use of coping strategies designed to avoid or deny the stressor (ie, disengagement coping) was related to higher levels of depression symptoms but was not related to anxiety or somatic symptoms. These findings extend previous findings<sup>22</sup> to include coping in relation to a broader range of mental health outcomes relevant to college populations. However, these results differ in some important respects from a meta-analysis of more than 100 studies linking coping and emotion regulation strategies to mental health symptoms.<sup>11</sup> The authors of the meta-analysis concluded that disengagement coping strategies, specifically rumination and suppression or avoidance of distressing thoughts and emotions, were significantly associated with psychopathology in general, and with both depression and anxiety specifically. The current findings, which did not support a significant association between disengagement coping and symptoms other than depression, may indicate that the salience of various coping strategies varies by age, such that among college students, efforts to avoid or disengage from the stressor may not always be adaptive or maladaptive. Future research is needed to better understand the impact of using disengagement strategies across age ranges as well as in the presence of more adaptive strategies (such as primary and secondary control coping).<sup>45</sup> More importantly, the current study found stronger support for associations of 2 types of coping, primary control and secondary control, with lower levels of symptoms. The magnitude of these associations are stronger in the current study than in the Aldao et al. meta-analysis<sup>11</sup> for cognitive reappraisal and acceptance (2 subtypes of secondary control coping). The current pattern of findings suggests the utility of the broader categories of coping included in a control-based model.

Furthermore, the current study found that coping strategies accounted for much of the association between stress and mental health. In other words, students experiencing high levels of interpersonal stress also reported less use of coping strategies that involve engagement with the stressor, including primary control coping strategies such as problem solving or emotion modulation and secondary control coping strategies such as cognitive reappraisal and acceptance. In turn, their decreased use of such coping strategies was associated

with more symptoms of depression, anxiety, and somatization. Coping strategies that reflect disengagement from the stressor, such as denial or avoidance, were more common among students experiencing more interpersonal stress but did not account for the association between stress and mental health. These findings regarding the role of coping are similar to others<sup>22,23,46</sup> who demonstrated the importance of coping in college student mental health. Further, the current study is the first to provide evidence for the association of coping with the PHQ, an important instrument for screening for mental health problems in college students.<sup>28</sup> Finally, we examined coping as a moderator, in other words, whether the association between stress and mental health varies according to (or interacts with) the level of each coping strategy used. Our failure to demonstrate a moderating role for primary, secondary, or disengagement coping indicates that the significant, positive association between stress and mental health symptoms is robust at all levels of coping.

### Limitations

Future research in this area can seek to overcome limitations of the present study, including a reliance on self-report data, and the use of a convenience sample of college students who likely were not representative of the range of mental health problems found on college campuses today.<sup>47</sup> Further analyses using longitudinal data will provide more definitive support for the mediating role of coping, when mediation is conceptualized as statistical evidence for a mechanism by which one variable influences another.<sup>48</sup> More specifically, longitudinal research may provide evidence that students exposed to high stress levels develop a tendency to rely less on engaged coping strategies, and that in turn this decreased use of engaged coping leads to the development of mental health problems.

### Conclusions

Findings showing substantial variation in college students' use of primary and secondary control engagement coping strategies, and that use of such strategies was closely related to mental health outcomes, support the potential value of teaching coping skills in interventions.<sup>49,50</sup> Furthermore, the consistency of our findings across 3 domains of symptoms—depression, anxiety, and somatization—suggests that interventions focused on teaching engagement coping skills may exert broad effects on college students' mental health. A range of



preventive interventions have been developed for college students; however, these programs vary widely in the specific skills taught, length of both the intervention and follow-up period, and outcomes associated with each intervention.<sup>51,52</sup> A replicable, theoretically based, empirically supported approach to prevent diagnosable mental health problems among college students has yet to emerge. Compas and colleagues<sup>53,54</sup> demonstrated that the effectiveness of a preventive intervention for children of depressed parents was mediated by increases in secondary control coping; that program has potential to be adapted to high-risk college students. Future research to examine the long-term preventive effects of such programs for a college student population, and to identify subgroups of college students who would most benefit, is encouraged.

### Conflict of interest disclosure

The authors have no conflicts of interest to report. The authors confirm that the research presented in this article met the ethical guidelines, including adherence to the legal requirements, of the United States and received approval from the Institutional Review Boards of Loyola University Maryland and Vanderbilt University.

### Funding

This work was supported by gifts from Patricia and Rodes Hart and an anonymous donor, and by the Vanderbilt Institute for Clinical and Translational Research under grant UL1 TR000445 from National Center for Advancing Translational Sciences, National Institutes of Health.

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