

Adult Attachment Dimensions and College Student Distress: The Mediating Role of Hope Ψ

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Abstract

The present investigation examined dispositional hope as a psychological strength that mediates the associations between adult attachment dimensions and seven commonly assessed college student psychological symptoms, as measured by the Counseling Center Assessment of Psychological Symptoms–62 (CCAPS-62): depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, and academic distress. Structural equation modeling of data obtained from students at a large Midwestern university ($N = 2,644$) revealed that (a) adult attachment dimensions were positively associated with CCAPS-62 domains and negatively associated with hope, (b) hope was negatively associated with all seven CCAPS-62 domains with the exception of substance use, and (c) hope mediated the associations between attachment dimensions and all seven CCAPS-62 psychological symptoms, with the exception of substance use. Findings suggest that addressing adult attachment-driven automatic views of self and others may have important implications for hopeful thinking as well as for counseling intervention and prevention of college student psychological distress.

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A significant number of college-attending adults struggle with psychological symptoms (American College Health Association, 2013). Adult attachment theory (Hazan & Shaver, 1987; Mikulincer & Shaver, 2007) has emerged as an important framework for understanding mental health concerns in college students (e.g., Lopez, Mitchell, & Gormley, 2002). Although recent research has begun to examine adult attachment in relation to positive psychology variables such as self-compassion (e.g., Raque-Bogdan, Ericson, Jackson, Martin, & Bryan, 2011), investigators have historically focused on negative variables such as ineffective coping (e.g., Wei, Heppner, Russell, & Young, 2006) or maladaptive affect regulation strategies (e.g., Wei, Vogel, Ku, & Zakalik, 2005), when exploring possible mediators between adult attachment dimensions and psychological concerns. As such, a defining feature of counseling psychology (i.e., focusing on assets and strengths; Gelso & Fretz, 2001) is often overlooked with respect to adult attachment dimensions and mental health.

To address these issues, the present investigation examined dispositional hope (Snyder et al., 1991), defined as “the perceived ability to produce pathways to achieve desired goals and to motivate oneself to use those pathways” (Rand & Cheavens, 2009, p. 323), as a psychological strength that mediates the associations between adult attachment dimensions and a variety of college student psychological symptoms (i.e., depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, and academic distress). If hope is found to be a significant mediator of these associations, interventions aimed at fostering dispositional hope may be a viable avenue for prevention and intervention of attachment-driven concerns in college. In the sections to follow, evidence supporting the proposed mediation model (see Figure 1) is briefly reviewed.

Adult Attachment

According to attachment theory (Bowlby, 1969, 1973, 1980), repeated interactions with early caregivers generalize into cognitive working models of self and others. If the attachment figure is warm, responsive, and caring, repeated interactions may lead to positive working models of the self as deserving of love, and positive working models of others as trustworthy and dependable. However, if the attachment figure is perceived as unavailable,

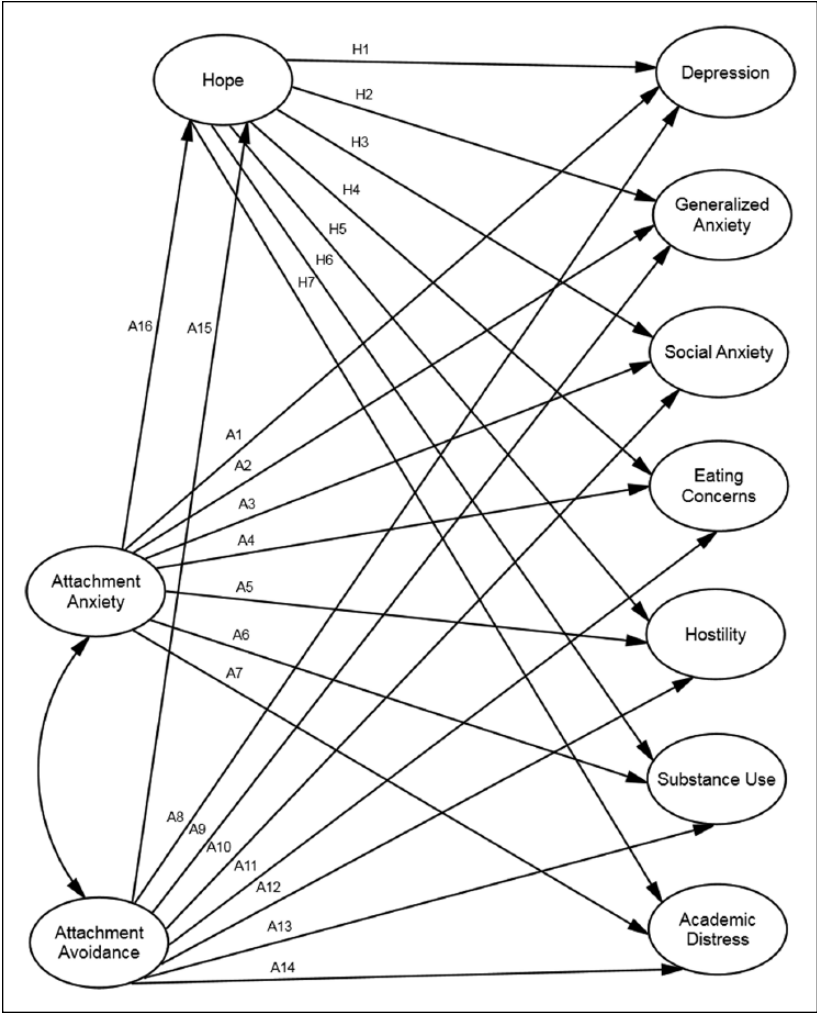


Figure 1. Conceptual model.
Note. Manifest variables, error terms, and covariances between the disturbance terms for the seven psychological distress latent variables are specified but not depicted in this figure to increase readability.

cold, unloving, or inconsistent, repeated interactions may generalize to negative working models of self and others in the form of problems with self-efficacy and self-worth, as well as difficulty trusting and depending on others.

Expanding on these concepts, Hazan and Shaver (1987) suggested that attachment in adult romantic relationships is similar to, and influenced by, attachment at an early age. A landmark study later revealed that adult attachment may be best understood as the relative contributions of two different dimensions: attachment anxiety and attachment avoidance (Brennan, Clark, & Shaver, 1998). Attachment anxiety represents a negative view of self manifested as fear of abandonment and chronic dependency, whereas attachment avoidance represents a negative view of others and is reflected by compulsive self-reliance and fear of intimacy. Lower levels of each dimension are indicative of a more secure attachment orientation (Fraley & Shaver, 2000).

Adult Attachment and College Student Psychological Symptoms

Researchers have posited that lower levels of attachment anxiety and avoidance are critical for adaptive functioning in many life domains, including college, because positive perspectives of self and others provide a foundation for the development of adaptive personality characteristics (Lopez, 2009). Conversely, adult attachment insecurity, characterized by negative models of self and others, has been linked to a wide range of psychological problems (see Mikulincer & Shaver, 2007, for a review). It is important to note, however, that although most research has explored adult attachment and mental health variables using college student samples, comparatively fewer studies have examined issues specific to college student populations such as substance use (Kassel, Wardle, & Roberts, 2007) and academic distress (Berry & Kingswell, 2012).

Recognizing this gap in research, the present study examined adult attachment dimensions in relation to key domains of college student psychological symptoms identified by the Counseling Center Assessment of Psychological Symptoms–62 (CCAPS-62; Locke et al., 2011): depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, and academic distress.¹ The CCAPS-62 was developed and validated on more than 22,000 college student clients (Locke et al., 2011) and has been built into Titanium Schedule (an electronic record-keeping system used in more than 850 college and university counseling centers) as an intake and outcome assessment inventory of college students' psychological symptoms. Despite the wide use of the CCAPS-62, researchers have yet to examine CCAPS-62 scores in relation to fundamental mental health variables such as adult attachment.

Attachment theory, however, suggests that attachment anxiety and attachment avoidance should be related to a wide variety of mental health concerns, because negative internalized models of self and others interfere with the

development of mental stability, positive coping behaviors, and adaptive affect regulation in specific ways (Bowlby, 1988; Mikulincer & Shaver, 2007). For example, in support of Paths A1-A3 and A5 in Figure 1, higher levels of attachment anxiety have been associated with hyperactivating affect regulation strategies related to depression and anxiety symptoms (e.g., Wei, Vogel, et al., 2005), as well as anger management issues (Mikulincer, 1998). In addition, because attachment anxiety represents a negative view of self, anxiously attached individuals may be especially susceptible to peer and social pressures that increase the risk of body image disturbances, disordered eating (Cash, Thériault, & Annis, 2004; Cheng & Mallinckrodt, 2009), and engaging in unhealthy substance use behaviors (Kassel et al., 2007). These findings provide support for Paths A4 and A6, respectively. Recent research further suggests that attachment-driven negative self-views may inhibit academic self-efficacy and goal setting (Wright, Perrone-McGovern, Boo, & White, 2014). Attachment anxiety, therefore, may also be positively related to greater academic distress (Path A7).

On the contrary, attachment avoidance, because it represents a general fear of vulnerable emotions, compulsive self-reliance, and distrust of others, has been associated with deactivating emotion-regulation strategies (e.g., Wei, Vogel, et al., 2005) and avoidance coping (e.g., Wei, Heppner, & Mallinckrodt, 2003). Because cognitive, behavioral, and emotional avoidance strategies ultimately exacerbate psychological problems (Grant et al., 2013), higher levels of attachment avoidance should be expected to correlate with greater levels of psychological problems such as depression, anxiety, social anxiety, and eating concerns (Paths A8-A10 and A12). In addition, individuals with more avoidant attachment orientations tend to be viewed as cold and interpersonally hostile (Bartholomew & Horowitz, 1991), suggesting a logical path (A12) between attachment avoidance and hostility. In further support of these proposed paths, previous research has found a positive association between attachment avoidance and psychological issues such as depression and anxiety (e.g., Cantazaro & Wei, 2010; Mickelson, Kessler, & Shaver, 1997), interpersonal hostility (Cummings-Robbeau, Lopez, & Rice, 2009), and eating disorder symptomology (Tasca et al., 2009). Attachment avoidance has also been associated with avoidance of help-seeking (e.g., Vogel & Wei, 2005) and increased substance use problems (e.g., Mickelson et al., 1997). Students who seek help in college perform better academically (Bembenuddy & White, 2013), thus suggesting a connection between attachment avoidance and academic distress (Path A14). Likewise, students with more avoidant attachments may be more inclined to use alcohol as a form of avoidance coping, indicating a possible connection between attachment avoidance and substance use (Path A13). In support of these paths (A13 and A14), investigators

have found connections between attachment avoidance and problematic coping for academic problems (Berry & Kingswell, 2012) and substance use problems (Mickelson et al., 1997).

Taken together, research examining attachment dimensions and mental health suggests that each dimension provides a window into specific ways of thinking, feeling, and behaving. Examining the specific connections between mental health concerns and attachment anxiety and attachment avoidance allows researchers and clinicians to make predictions about particular interpersonal approaches, affect regulation strategies, and coping styles. Therefore, understanding the connections between attachment anxiety and attachment avoidance and CCAPS-62 scores separately may provide valuable empirical knowledge for counseling psychologists working with college student populations.

Dispositional Hope

Similar to adult attachment theory, Snyder's (1994, 1998, 2000, 2002) hope theory provides a framework for understanding adaptive and maladaptive functioning in adulthood. Hope is the combination of two interdependent cognitive factors essential to obtaining one's goals: agency and pathways. Whereas *agency* thinking reflects a general sense that "I can do this," *pathways* thinking represents peoples' ability to find different routes to their goals (Snyder et al., 1991). Hope, therefore, is the combination of perceiving that one has the ability to achieve goals (i.e., agency) and the ability to identify multiple pathways to overcome important obstacles along the way (Snyder, 2002). Hope theory suggests that the combination of agency and pathways thinking is crucial to positive mental health because (a) hopeful people have a wide variety of personal and interpersonal resources to help them accomplish their goals and overcome obstacles, (b) achieving one's goals creates a positive feedback loop that helps individuals feel more confident at each step of planning and executing of present and future goals, and (c) positive emotions are the consequence of successful goal pursuits, thus creating a more optimistic and future-oriented perspective with which to buffer the effects of negative life events (Snyder, 2002).

To date, investigators have yet to examine hope in relation to CCAPS-62 scores; however, research and theory suggest that hopeful students may have an important advantage for personal and academic success. For instance, higher levels of hope have been associated with greater positive affect and lower negative affect (e.g., Snyder et al., 1991), leading to speculations that beneficial emotional consequences of successful goal pursuits, in part, facilitate positive mental health over time (Rand & Cheavens, 2009). More recently,

Besser and Zeigler-Hill (2014) identified that higher levels of positive personality traits, including hope, significantly predicted less psychological distress in first-year university students throughout their first semester. Thus, higher levels of hope may serve as an important primary prevention factor against a variety of mental health problems. Concurrently, hope may also serve as a tertiary prevention factor. For instance, hope has been connected to more adaptive coping strategies and positive outcomes for everyday stressful events (e.g., Roesch, Duangado, Vaughn, Aldridge, & Villodas, 2010; Snyder et al., 1991) and serious life circumstances (e.g., Kennedy, Evans, & Sandhu, 2009). These findings suggest that hopeful college students may be better equipped to cope with negative experiences when they arise. In support of Paths H1 to H5 in Figure 1, therefore, the primary and tertiary preventive factors of hope may explain why researchers have found strong inverse connections between hope and measures of anxiety and depression (Besser & Zeigler-Hill, 2014; Shorey, Snyder, Yang, & Lewin, 2003), body image concerns (Cole, Davidson, & Gervais, 2013), and hostility (Crowson, Frueh, & Snyder, 2001). In addition, because hope indicates a positive goal orientation and an ability to avoid obstacles that might get in the way of goal success, it should logically be associated with less abuse of substances that could potentially inhibit one's personal or academic goals (Path H6). Indeed, investigators have found inverse associations between hope and college students' self-reported substance use frequency (Berg, Ritschel, Swan, An, & Ahluwalia, 2011).

Although hope has been examined in connection to a variety of mental health problems, it has received the greatest attention in relation to academic distress (Path H7). Meeting one's academic goals is an essential component of a successful college experience. As such, higher levels of hope consistently predict academic achievement (see Rand & Cheavens, 2009, for a review). For example, in a landmark longitudinal study, Snyder et al. (2002) found that higher dispositional hope measured at the first semester of college predicted greater academic success, higher graduation rates, and lower drop-out rates 6 years later, even when controlling for important covariates such as intelligence, previous academic performance, self-esteem, and college entrance exam scores. Recent research also suggests that hope can be increased through targeted interventions (Davidson, Feldman, & Margalit, 2012; Feldman & Dreher, 2012). Most notably, Feldman and Dreher (2012) demonstrated that hope can be increased with as little as one 90-minute outreach session addressing psychoeducation about hope theory and teaching students to visualize meeting their goals. The authors reported that students who were randomly assigned to participate in the hope outreach program group were significantly more likely to have met their identified goals at a 1-month follow-up compared with a control group.

Hope, Adult Attachment, and Mental Health

Because previous research suggests that hope is malleable and negatively related to a variety of college student distress variables, it may serve as an ideal positive mediating construct with respect to attachment and CCAPS-62 domains. In addition, hope theory and adult attachment theory overlap in some important ways. Hope theory asserts that agency and pathways thinking are facilitated by previous learning originating from parenting and early relationships (McDermott & Snyder, 2000). Similarly, attachment theory suggests that meeting the goal of felt security is essential to the creation and maintenance of one's working models of self and others (Bowlby, 1988). An integration of hope theory and attachment theory, therefore, implies that meeting the initial goal of felt security in childhood provides a positive foundation to meet future goals, thus facilitating the development of dispositional hope over time (Shorey et al., 2003). Because adult romantic attachment can be tracked longitudinally from attachment patterns in early relationships (e.g., Fraley, Roisman, Booth-LaForce, Owen, & Holland, 2013), individuals with lower levels of adult attachment anxiety likely possess the positive self-views necessary to strive toward important goals and to overcome obstacles along the way (Path A16), thus further building a history of successful goal pursuits and hopeful thinking that helps to reduce the likelihood or severity of mental health concerns (Paths H1-H7). Likewise, individuals with lower levels of adult attachment avoidance may possess the positive views of others necessary to adaptively enlist support in their goal pursuits (Path A15), thus further developing dispositional hope that may prevent or mitigate mental health concerns that may arise (Paths H1-H7). In support of these assertions, researchers have identified negative relationships between each attachment dimension and hope at the bivariate level (e.g., Jankowski & Sandage, 2011). To date, however, investigators have yet to examine the combined contributions of attachment anxiety and attachment avoidance in relation to hope and mental health.

Although research examining hope and adult attachment is scarce, one published study explored these constructs with respect to a secure attachment style rather than attachment dimensions. Specifically, Shorey et al. (2003) examined the connections between recollected parenting styles, adult attachment security, hope, and college student anxiety and depression. The authors posited that adult attachment provides a structure for hopeful thinking which, in turn, may provide a positive resource against mental health problems. To test this theory, Shorey et al. demonstrated that adult attachment security in romantic relationships, as measured by a latent attachment security variable, mediated the relationships between recollected parenting styles and dispositional hope in a cross-sectional sample of college students.

In the same model, the authors further demonstrated that hope partially mediated the relationships between adult attachment security and college student anxiety and depression symptoms. The authors concluded that college students with more secure attachment orientations may be less likely to experience anxiety and depression due, in part, to an increased propensity for hopeful thinking and the positive sequelae associated with successful goal pursuits.

The Present Study

Shorey et al. (2003) provided initial support for the mediating role of dispositional hope in the associations between adult attachment and anxiety and depression, but their study had two key limitations. First, their model precluded the ability to examine the relative contributions of adult attachment dimensions separately. Existing theory and research clearly suggest that hope should be associated with both dimensions of attachment, but the dearth of relevant literature means that it is unclear whether hope partially mediates the associations between *both* attachment dimensions and specific mental health problems in college students. If, for instance, hope emerged as a mediator only for attachment anxiety and mental health problems, such findings could have important implications for practice and future research. Second, Shorey et al.'s model only examined depression and anxiety, and thus, it is unclear whether the relationships between adult attachment dimensions and other key indicators of college student well-being, particularly those captured by the widely used CCAPS-62 (e.g., substance use, social anxiety, eating issues, and hostility), are also mediated by hope.

Accordingly, the present study extended Shorey et al.'s (2003) theoretical model by examining adult attachment dimensions separately, including hope as a mediator between attachment dimensions and CCAPS-62 domains, and examining a competing nonmediated model. We hypothesized the following:

Hypothesis 1: Adult attachment anxiety and adult attachment avoidance, respectively, would be negatively associated with hope but positively associated with CCAPS-62 domains (i.e., depression, eating concerns, generalized anxiety, social anxiety, eating concerns, substance use, and academic distress).

Hypothesis 2: Hope would be negatively associated with CCAPS-62 domains.

Hypothesis 3: Hope would significantly mediate the relationships between adult attachment dimensions and CCAPS-62 domains.

Method

Procedures and Participants

After our receipt of institutional review board approval, data were collected via an anonymous, secure online survey at a large university in the Midwest. Participants were contacted by email and invited to participate in a campus-wide study of mental health in exchange for a chance to win one of 20 US\$30 gift certificates to the university bookstore. All instruments were randomized, and a total of 2,644 completed the survey. Although a true response rate could not be calculated due to an inability to determine how many students received or opened the target email, 18% of the target population participated in the survey. Participants' mean age was 22.5 ($SD = 5.26$). The majority of the sample identified as heterosexual (85.3%) and were undergraduate students (59%), consisting of freshmen (17%), sophomores (13%), juniors (15%), and seniors (14%). The remaining participants were graduate students (41%). A small proportion of the sample (9.6%) comprised international students. The majority of the sample was not in counseling (91%) at the time of the survey. The racial/ethnic diversity represented was as follows: non-Latino/White (67%), Asian/Asian American (18%), multiracial (3.4%), African American/Black (3%), Latino/Latina (2.5%), and Pacific Islander (0.03%). The present sample population (49% male, 46% female, 5% did not respond) closely resembled the broader campus population in terms of gender, but Asian students were slightly overrepresented, and Latino/Latina students were slightly underrepresented by 2 to 3 percentage points, respectively.

Measures

Demographics. Participants completed a short demographic form inquiring about age, sexual orientation, gender, race/ethnicity, academic class level, and current counseling status.

Adult attachment. Attachment dimensions were assessed using the Experiences in Close Relationships Scale–Short Form (ECR-S; Wei, Russell, Mallinckrodt, & Vogel, 2007). The ECR-S is a 12-item version of the original ECR (Brennan et al., 1998). Like the original ECR, the ECR-S assesses adult attachment dimensions using a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Items are then summed and averaged for each subscale. The Attachment Anxiety subscale (6-items; “I worry that romantic partners won’t care about me as much as I care about them”) assesses chronic fears of abandonment and a negative view of self. The Attachment Avoidance subscale (6-items; “I try to avoid getting too close to

my partner”) measures compulsive self-reliance and discomfort with intimacy. Higher subscale scores indicate greater levels of attachment anxiety and attachment avoidance, respectively. Evidence for the validity of the ECR-S has been demonstrated through confirmatory factor analysis and high correlations with the original ECR (Wei et al., 2007). The ECR-S has also shown good convergent validity with other related constructs such as affect regulation, psychological distress, and excessive reassurance seeking (Wei et al., 2007). Internal consistency estimates for ECR-S subscale scores in college students have ranged from .77 to .86 for attachment anxiety and .78 to .88 for attachment avoidance (Wei et al., 2007). Internal consistency coefficient alphas for the present study were acceptable for attachment anxiety (.81) and attachment avoidance (.87).

Dispositional hope. Hope was assessed using the Adult Trait Hope Scale (ATHS; Snyder et al., 1991). The ATHS consists of 12 items assessing two dimensions of hope: agency and pathways. Individuals rate each item using a Likert-type style scale ranging from 1 (*definitely false*) to 8 (*definitely true*). Four items comprise the Agency subscale, defined as the amount of determination one has to successfully meet one’s goals (e.g., “I meet the goals that I set for myself”). Four items comprise the Pathways subscale, defined as the perceived ability to identify ways and means to achieve one’s goals (e.g., “I can think of many ways to get the things in life that are important to me”). Four items are considered distractors and are not calculated into the final score (Snyder et al., 1991). The total hope score is calculated by summing the four agency and four pathways items together. In a review of 16 studies using the 8-item response format, Hellman, Pittman, and Munoz (2013) reported an average internal consistency reliability estimate of .82 for the total score. Similarly, Hellman et al. reported good test–retest reliability across 17 different studies (Mean $r = .80$). Researchers have confirmed the factor structure of the hope scale and found support for a higher order latent hope factor consisting of agency and pathways factors (e.g., Babyak, Snyder, & Yoshinobu, 1993). In a comprehensive review of research using the ATHS, Rand and Cheavens (2009) identified that hope total scores have correlated in expected directions with measures of optimism, expectancy for attaining goals, and self-esteem. In the present study, internal consistency estimates were acceptable for agency (.83), pathways (.79), and total hope scores (.87).

College student psychological distress. Psychological distress was assessed using the CCAPS-62 (Locke et al., 2011). Development and validation of the CCAPS-62 took place across a variety of studies involving college counseling center samples ($N = 22,205$). The current 62-item measure was refined

from the initial 70-item version. The scale instructions ask clients to indicate how well each item describes them during the past 2 weeks on a Likert-type scale ranging from 0 (*not at all*) to 4 (*extremely well*). Items are then summed and averaged for each subscale: depression (e.g., “I feel isolated and alone”), eating concerns (“I think about food more than I would like to”), substance use (“I drink more than I should”), generalized anxiety (“I have spells of terror or panic”), hostility (“I have difficulty controlling my temper”), social anxiety (“I am shy around others”), family distress (“My family is basically a happy one” [reverse scored]), and academic distress (“I am unable to keep up with my schoolwork”). Each subscale has evidenced reliability coefficients greater than .80 and demonstrated significant correlations in the expected directions with widely used measures of depression, anxiety, and alcohol use (Locke et al., 2011; McAleavey et al., 2012). Test–retest reliability coefficients over a 2-week period were also found to be adequate, ranging between .76 and .92 (Locke et al., 2011). In the present study, internal consistency coefficient alphas ranged from .81 for academic distress to .95 for depression.

Results

Preliminary Analyses

As a preliminary step, data were screened for missing values and outliers before conducting the primary analyses. Minimal data were missing, ranging from 0.07% for Agency to 1.8% for Attachment Anxiety. Following the recommendations of Schlomer, Bauman, and Card (2010), comparisons between participants with missing data and participants with complete values indicated that these two groups did not differ significantly on any of the research variables. This suggests that our data were suitable for the model-based method of full information maximum likelihood estimation for handling missing data (Arbuckle, 1996). Next, we found no univariate outliers for Attachment Anxiety and Social Anxiety, whereas univariate outliers for other variables ranged from 0.1% for Attachment Avoidance to 1.2% for Hostility. In terms of multivariate outliers, 1.9% participants were identified as multivariate outliers ($p < .001$) by the Mahalanobis distance procedures. However, in large samples like the present one, some outliers are expected, and Cohen, Cohen, West, and Aiken (2003) suggest leaving the outliers alone when they consist of only less than 2% of the sample. Therefore, all data were retained for the primary analyses.

Last, we examined data for normality and race/ethnicity differences. All of the subscale scores of the CCAPS-62, except Social Anxiety and Academic

Distress, were moderately and positively skewed (i.e., with skewness index near or slightly above 1), whereas the Agency and Pathways subscale scores of the Hope measure were moderately and negatively skewed (i.e., with skewness index near or slightly below -1). The scores on the remaining measures were normally distributed. To account for the nonnormality of the data, we used the maximum likelihood estimation with robust standard errors (MLR) method to estimate the parameters in our model. This method is robust to data nonnormality when missing data are present (Muthén & Muthén, 2012). To examine racial/ethnic differences, we used a series of one-way ANOVAs with follow-up post hoc tests. Results indicated that there were no significant differences in study variables across racial and ethnic groups. The means, standard deviations, and zero-order correlations for all of the research variables are summarized in Table 1.

Primary Analyses

We used Mplus version 7 (Muthén & Muthén, 2012) to perform structural equation modeling (SEM) to examine the direct and indirect effects of adult attachment dimensions and hope on the seven criterion variables of psychological distress as measured by the CCAPS-62. To form latent variables for SEM, the latent factor of hope was operationalized by its two indicators (i.e., subscales) of agency and pathways. For the rest of the latent variables presented in Figure 1 (i.e., attachment anxiety, attachment avoidance, and the seven outcome variables), we used procedures recommended by Russell, Kahn, Spoth, and Altmaier (1998) to generate three parcels of items for each of the latent constructs. Specifically, an exploratory factor analysis was performed on each measure with a one-factor solution, and individual items of a given measure were then assigned to item parcels according to their loadings in an iterative fashion (Russell et al., 1998).

We then followed several steps to examine our hypotheses. First, we examined a measurement model to understand whether the latent variables had been adequately reflected by their respective indicators. Next, we tested a structural model to estimate the regression weights of the hypothesized prediction paths. Following the examination of a structural model, we examined differences in model fit between the proposed partially mediated model and an alternative, parsimonious model in which all non-significant paths were removed. Finally, we performed tests to determine the significance levels of the indirect effects hypothesized in the proposed model. Across each model, we used four goodness-of-fit indices suggested by Kline (2011) and commonly used in studies using SEM: the comparative fit index (CFI; .95 or greater suggests a good fit), the Tucker–Lewis Index (TLI; .95 or greater

Table 1. Means, Standard Deviations, and Zero-Order Correlations Among the Measured Research Variables.

Variable	1	2	3	4	5	6	7	8	9	10	11	M	SD
1. ECR-Anx	—	.27***	-.26***	-.25***	.41***	.27***	.10***	.36***	.29***	.33***	.28***	3.60	1.31
2. ECR-Avd		—	-.27***	-.22***	.34***	.17***	.12***	.25***	.19***	.26***	.23***	2.91	1.35
3. Agency			—	.66***	-.60***	-.22***	-.07***	-.37***	-.31***	-.45***	-.60***	25.35	4.94
4. Pathways				—	-.48***	-.19***	-.03	-.32***	-.24***	-.43***	-.43***	24.82	4.52
5. Depression					—	.39***	.17***	.71***	.60***	.61***	.67***	0.97	0.81
6. Eating						—	.20***	.38***	.31***	.31***	.28***	0.95	0.84
7. Substance							—	.20***	.26***	.02	.17***	0.78	0.84
8. Anxiety								—	.59***	.53***	.54***	1.02	0.76
9. Hostility									—	.38***	.43***	0.68	0.68
10. Soc Anx										—	.43***	1.67	0.84
11. Academic											—	1.32	0.89

Note. N = 2,644. ECR-Anx = Attachment Anxiety subscale of the ECR-S measure; ECR-Avd = Attachment Avoidance subscale of the ECR-S measure; Agency = Agency subscale of the Hope Scale; Pathways = Pathways subscale of the Hope Scale; Depression = Depression subscale of the CCAPS-62; Eating = Eating Issues subscale of the CCAPS-62; Substance = Substance Use subscale of the CCAPS-62; Anxiety = Generalized Anxiety subscale of the CCAPS-62; Hostility = Hostility subscale of the CCAPS-62; Soc Anx = Social Anxiety subscale of the CCAPS-62; Academic = Academic Concerns subscale of the CCAPS-62; CCAPS = Counseling Center Assessment of Psychological Symptoms.
***p < .001.

indicates a good fit), the root mean square error of approximation (RMSEA; .06 or less denotes an adequate fit) with a 90% confidence interval (CI), and the standardized root mean square residual (SRMR; .08 or less suggests an adequate fit). When comparing between nested models, we calculated the Satorra–Bentler chi-square difference test statistic based on the formulas indicated on the Mplus website (<http://www.statmodel.com/chidiff.shtml>) to identify the better fitting model.

Measurement model. After the latent constructs were formed, we performed a confirmatory factor analysis to examine the measurement model. Results indicated a good fit: $\chi^2(332, N = 2644) = 2,432.55, p < .001$, CFI = .95, TLI = .94, RMSEA = .049, 90% CI [.047, .051], and SRMR = .05. As shown in Table 2, all of the factor loadings were statistically significant, suggesting that the latent constructs were adequately represented by their indicators. Table 3 summarizes the intercorrelations of the latent constructs. Attachment anxiety and attachment avoidance were each, respectively, associated with lower levels of hope and higher levels of psychological symptoms. Hope, however, was negatively associated with psychological symptom domains.²

Structural model. To test the proposed mediated structural model (i.e., Figure 1), which represents a partial mediation of hope between attachment dimensions and the outcome variables of psychological symptoms, we estimated the model by specifying unidirectional prediction paths (a) from attachment dimensions to hope, (b) from attachment dimensions to the seven criterion variables of psychological symptoms, and (c) from hope to the seven variables of psychological symptoms. Results yielded a good fit of the structural model to the data: $\chi^2(332, N = 2644) = 2,432.55, p < .001$, CFI = .95, TLI = .94, RMSEA = .049, 90% CI [.047, .051], and SRMR = .05. To identify a structural model that could provide an equivalent fit but was more parsimonious than the original model, we trimmed the nonsignificant paths. Specifically, two nonsignificant paths (i.e., Hope → Substance Use; Attachment Avoidance → Academic Distress) were eliminated. Fit indices for this trimmed model were as follows: $\chi^2(334, N = 2644) = 2,434.80, p < .001$, CFI = .95, TLI = .94, RMSEA = .049, 90% CI [.047, .051], and SRMR = .05. A Satorra–Bentler chi-square difference test comparing this trimmed model with the original model indicated $\Delta\chi^2(2, N = 2644) = 2.07, p = .36$, suggesting no significant difference. Thus, this trimmed model served as an equivalent but more parsimonious model than the original model to the data. The trimmed model was retained for further testing, and the path coefficients are summarized in Figure 2. Figure 2 also indicates that lower levels of attachment anxiety and lower attachment

Table 2. Factor Loading of the Measured Indicators on the Latent Variables in the Measurement Model (N = 2,644).

Variable	Unstandardized factor loading	SE	Z	Standardized factor loading
Attachment anxiety				
Parcel 1	1.00	—	—	.82***
Parcel 2	0.95	0.03	33.48	.84***
Parcel 3	0.69	0.02	31.33	.61***
Attachment avoidance				
Parcel 1	1.00	—	—	.75***
Parcel 2	0.78	0.02	38.06	.72***
Parcel 3	1.05	0.03	40.17	.99***
Hope				
Agency	1.00	—	—	.91***
Pathways	0.72	0.02	29.67	.72***
Depression				
Parcel 1	1.00	—	—	.91***
Parcel 2	1.07	0.02	65.21	.89***
Parcel 3	1.16	0.02	70.84	.93***
Eating issues				
Parcel 1	1.00	—	—	.88***
Parcel 2	1.03	0.03	39.05	.76***
Parcel 3	0.85	0.02	44.31	.87***
Substance use				
Parcel 1	1.00	—	—	.77***
Parcel 2	1.62	0.05	34.43	.90***
Parcel 3	1.35	0.04	33.29	.85***
Generalized anxiety				
Parcel 1	1.00	—	—	.75***
Parcel 2	1.28	0.04	35.32	.84***
Parcel 3	1.07	0.03	37.25	.83***
Hostility				
Parcel 1	1.00	—	—	.85***
Parcel 2	1.06	0.03	41.56	.85***
Parcel 3	1.36	0.05	27.44	.80***
Social anxiety				
Parcel 1	1.00	—	—	.82***
Parcel 2	0.88	0.02	39.14	.73***
Parcel 3	1.06	0.02	43.10	.86***
Academic distress				
Parcel 1	1.00	—	—	.77***
Parcel 2	0.67	0.02	43.76	.78***
Parcel 3	0.86	0.02	45.28	.85***

***p < .001.

Table 3. Intercorrelations Among the Latent Variables in the Measurement Model ($N = 2,644$).

Variable	1	2	3	4	5	6	7	8	9	10
1. Attachment anxiety	—	.35***	-.34***	.48***	.30***	.12***	.42***	.32***	.40***	.34***
2. Attachment avoidance		—	-.28***	.34***	.17***	.11***	.27***	.21***	.27***	.25***
3. Hope			—	-.68***	-.25***	-.06*	-.43***	-.35***	-.56***	-.69***
4. Depression				—	.42***	.17***	.79***	.64***	.69***	.75***
5. Eating issues					—	.23***	.42***	.34***	.36***	.32***
6. Substance use						—	.22***	.27***	.02	.19***
7. Generalized anxiety							—	.67***	.61***	.64***
8. Hostility								—	.43***	.49***
9. Social anxiety									—	.52***
10. Academic distress										—

* $p < .05$. *** $p < .001$.

avoidance, respectively, predicted higher levels of hope, which then predicted lower levels of all of the psychological distress variables except substance use.

Bootstrapping to examine significance of mediation effects. After confirming that the parsimonious partially mediated model was the best fit to the data, we used bootstrap procedures recommended by Shrout and Bolger (2002) that involved instructing Mplus to generate 1,000 bootstrap samples based on our data and to estimate a CI for each indirect effect. If the 95% CI does not include zero, the indirect effect is considered to be statistically significant at the .05 level (Shrout & Bolger, 2002). Table 4 presents the bootstrapping results and indicates that all indirect paths involved in our final model were significant, suggesting that hope mediated the associations between adult attachment dimensions and all seven CCAPS-62 symptom domains except substance use, which was not significantly related to hope in the structural model. The final model accounted for 14% of variance in hope, 54% of variance in depression, 12% of variance in eating issues, 2% of variance in substance use, 28% of variance in generalized anxiety, 17% of variance in hostility, 37% of variance in social anxiety, and 49% of variance in academic distress.

Discussion

Recent research suggests that many college students experience personal, interpersonal, and academic distress (American College Health Association, 2013), and that positive psychology constructs, such as hopeful thinking

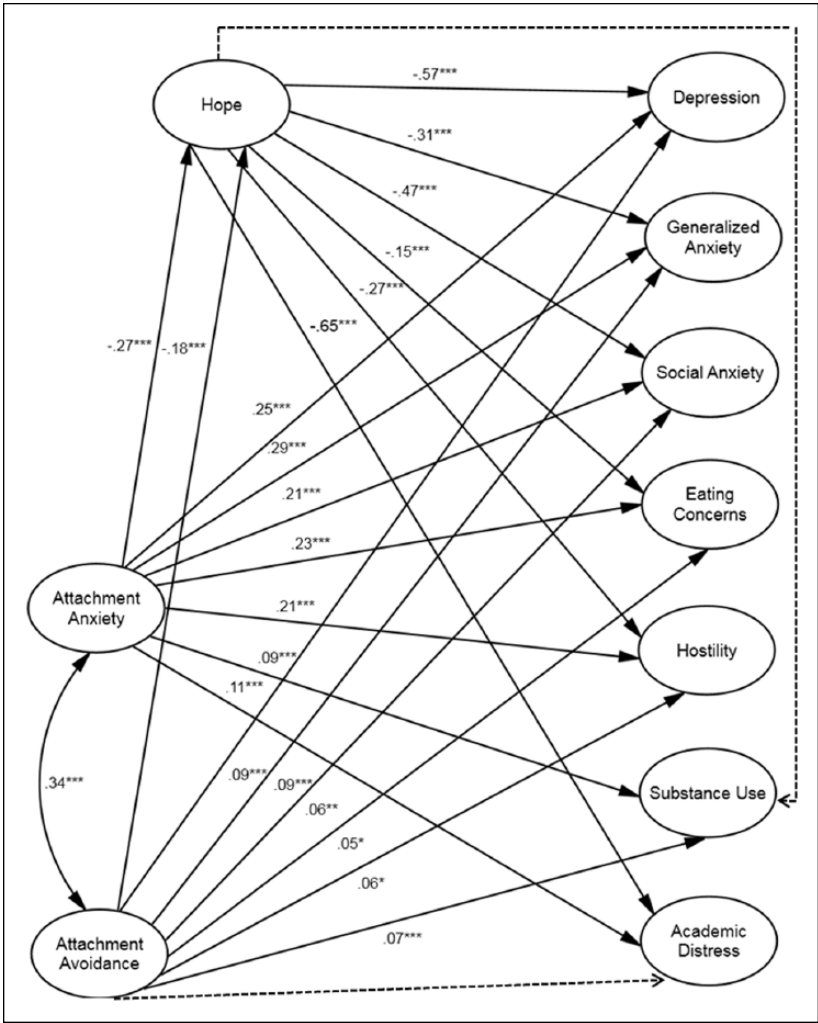


Figure 2. Partially mediated, parsimonious model.
Note. Manifest variables, error terms, and covariances between the disturbance terms for the seven psychological distress latent variables are specified but not depicted in this figure to increase readability. Dashed lines indicate nonsignificant paths that were removed in the final, parsimonious model.
* $p < .05$. ** $p < .01$. *** $p < .001$.

(Snyder et al., 1991), help protect against a variety of negative college student experiences over time (Besser & Zeigler-Hill, 2014). Adult attachment

Table 4. Bootstrap Analysis of the Final Model, Magnitude, and Statistical Significance of Indirect Effects.

Independent variable	Mediator variable	Dependent variable	β (standardized path coefficient and product)	Mean indirect effect (b) ^a	SE of M^a	95% confidence interval for mean indirect effect ^a (lower and upper)
ECR-Anxiety →	Hope →	Depression	$-.27 \times (-.57) = .154$	.042	.004	[.034, .051]
ECR-Anxiety →	Hope →	Eating Issues	$-.27 \times (-.15) = .041$	.013	.003	[.008, .018]
ECR-Anxiety →	Hope →	Anxiety	$-.27 \times (-.31) = .084$	.020	.003	[.015, .025]
ECR-Anxiety →	Hope →	Hostility	$-.27 \times (-.27) = .073$	.015	.002	[.011, .020]
ECR-Anxiety →	Hope →	Social Anxiety	$-.27 \times (-.48) = .130$	.038	.004	[.030, .047]
ECR-Anxiety →	Hope →	Academic Distress	$-.27 \times (-.65) = .176$	.067	.007	[.053, .081]
ECR-Avoidance →	Hope →	Depression	$-.19 \times (-.57) = .108$	.029	.004	[.022, .038]
ECR-Avoidance →	Hope →	Eating Issues	$-.19 \times (-.15) = .029$	.009	.002	[.005, .013]
ECR-Avoidance →	Hope →	Anxiety	$-.19 \times (-.31) = .059$	.014	.002	[.010, .019]
ECR-Avoidance →	Hope →	Hostility	$-.19 \times (-.27) = .051$	.011	.002	[.007, .015]
ECR-Avoidance →	Hope →	Social Anxiety	$-.19 \times (-.48) = .091$	.026	.004	[.019, .033]
ECR-Avoidance →	Hope →	Academic Distress	$-.19 \times (-.65) = .124$	.046	.006	[.034, .059]

Note. $N = 2,644$. ECR-Anxiety = Attachment Anxiety; ECR-Avoidance = Attachment Avoidance.

^aThese values are based on unstandardized path coefficients.

theory may provide a framework to understand the positive benefits of hopeful thinking in college (Shorey et al., 2003). To evaluate the utility of this conceptual framework in informing college mental health research and practice, we examined adult attachment dimensions and hope in relation to seven commonly assessed CCAPS-62 domains of college student psychological symptoms: depression, eating concerns, substance use, generalized anxiety, hostility, social anxiety, and academic distress. The following hypotheses were advanced:

Hypothesis 1: Insecure adult attachment dimensions would be negatively associated with hope but positively related to CCAPS-62 psychological symptoms.

Hypothesis 2: Hope would be negatively associated with CCAPS-62 psychological symptoms.

Hypothesis 3: Hope would significantly mediate the relationships between adult attachment dimensions and CCAPS-62 psychological symptoms.

In support of our first hypothesis, adult attachment anxiety and attachment avoidance evidenced significant positive relationships with each of the seven domains of the CCAPS-62 but were negatively associated with hope. This was especially true in the measurement model (see Table 3). These findings are consistent with previous research linking adult attachment security to hope (Shorey et al., 2003), as well as reviews connecting each attachment dimension to a wide variety of mood, anxiety, eating, and substance use concerns (Mikulincer & Shaver, 2007). However, in the structural model, attachment avoidance consistently evidenced noticeably smaller, but still significant, associations with each of the seven CCAPS-62 domains compared with attachment anxiety when hope was included. The present findings further highlight the importance of studying adult attachment dimensions separately in relation to mental health variables in college student populations.

In support of our second hypothesis and in line with comprehensive reviews of hope research (e.g., Rand & Cheavens, 2009), higher levels of hopeful thinking were generally related to lower CCAPS-62 scores. Contrary to our predictions, however, the modest association between hope and substance use present in the measurement model disappeared in the structural model when the effects of adult attachment dimensions were included. These findings are consistent with previous research connecting adult attachment dimensions to substance use in college (e.g., Kassel et al., 2007), but they conflict with the only previous investigation of hope and college substance use that found a moderate negative relationship (i.e., Berg et al., 2011). It is important to note, however, that Berg et al. used a frequency measure

assessing the number of times a student used a particular substance in the last 30 days. The CCAPS-62 does not include an assessment of actual frequency of substance use and instead addresses one's perceived *problematic* use (e.g., "I drink more than I should" and "I use drugs more than I should"). Given the high rates of normative substance use on college campuses (American College Health Association, 2013), it is possible that many students do not see their substance use as problematic or may even see it as a pathway for achieving goals of social inclusion, thus neutralizing any possible associations. Future research is needed to explore the potentially complex connections between hope and substance use.

Despite the lack of a clear relationship between hope and substance use, the present results supported our third hypothesis, providing evidence for the mediating role of hope between adult attachment dimensions and CCAPS-62 domains. With the exception of the association between attachment avoidance and academic distress, which was fully mediated, hope emerged as a significant partial mediator for all CCAPS-62 domains except substance use. Because the present study extended the previous research examining the connections between adult attachment, hope, and college student anxiety and depression (i.e., Shorey et al., 2003) to include assessments of social anxiety, eating issues, hostility, and academic distress, these mediating relationships point toward the importance of studying hope and adult attachment dimensions as key variables related to a wide variety of college student distress issues. In addition, because Shorey et al.'s analysis precluded the ability to examine attachment dimensions separately, our results help confirm that hope plays a mediating role between *both* attachment anxiety and attachment avoidance with respect to college student distress domains. The present findings also add to a small but growing body of literature examining adult attachment dimensions and mental health in relation to other positive mediating psychological constructs such as self-compassion (Raque-Bogdan et al., 2011; Wei, Liao, Ku, & Shaffer, 2011) and basic psychological needs satisfaction (Wei, Shaffer, Young, & Zakalik, 2005).

In line with previous research and theory (e.g., Lopez, 2009; Shorey et al., 2003), the present findings provide further evidence to suggest that adult attachment security (i.e., lower levels of attachment anxiety and attachment avoidance) may form, in part, a base for hopeful thinking that prevents or mitigates a variety of mental health concerns. Based on the percentage of variance predicted in each dependent measure, the present model may be especially relevant for understanding college student depression (49%), generalized anxiety (24%), social anxiety (30%), and academic distress (42%). Because each attachment dimension provides a window into specific views of self and other, affect regulation tendencies, and coping strategies, future

research should consider examining these connections in more detail to determine the specific mechanisms by which adult attachment dimensions and hope are associated with personal, interpersonal, and academic issues in college. Indeed, given that, in addition to evidencing significant indirect effects, including hope in the model visibly reduced the magnitude of the associations between attachment avoidance and CCAPS-62 domains, it is clear that lower levels of attachment avoidance may be especially important for college students' hope and, in turn, the positive consequences of hope. Considering that attachment avoidance has been linked to less support-seeking coping strategies (Schottenbauer et al., 2006) and less problem-solving coping strategies in response to academic stress (Berry & Kingswell, 2012), students with a high degree of attachment avoidance may have difficulty proactively seeking help for academic problems and personal problems. Avoidance of help-seeking may, in turn, lower agency and pathways thinking and significantly reduce students' abilities to overcome academic obstacles. Thus, future research may benefit from examining the combined contributions of adult attachment dimensions and hope in the prediction of help-seeking behaviors in college.

In addition, future investigations may consider a closer examination of the present model by examining other potential mediators (e.g., affect regulation strategies) between attachment dimensions and hope to further illuminate attachment's potential etiological role in shaping hope in relation to psychological well-being. For instance, students with adult attachment anxiety may be likely to use hyperactivating strategies (e.g., Wei, Vogel, et al., 2005) that contribute to college student distress, in part, by exaggerating important obstacles and perceiving less hope to goal attainment. Likewise, students with adult attachment avoidance may be likely to use deactivating strategies (Mikulincer & Shaver, 2005), which could be indirectly related to college student distress by minimizing important obstacles, discounting the benefit of hopeful planning, and not addressing barriers directly. Lower levels of adult attachment insecurity and higher levels of hope, therefore, may help differentiate those students who begin a downward cycle after not being able to meet a personal or academic goal compared with students who persist with hopeful attitudes to try again or find additional ways to meet their goals (e.g., changing a major or seeking personal or professional help). Further research is needed to address these issues, especially with marginalized students who are disproportionately at risk of not seeking help or not completing college. Relatedly, investigators may also consider incorporating important cultural variables, such as experiences of racism and discrimination, as moderators in future investigations of hope, adult attachment, and college student distress.

Limitations

Before discussing implications of the present findings, several key limitations must be addressed. First, the convenience sample was drawn from an institution in the Midwest, and findings may not be generalizable to other institutions or regions. Second, although the present sample was generally representative of the overall university population, the sample consisted predominately of non-Latino White college students. The present study also used a cross-sectional mediation analysis, precluding any firm conclusions about causality or the temporal relationships among the study variables. For example, a mediation model with the path directions reversed (e.g., hope $\rightarrow$ attachment) would yield the same fit indices as the present model.³ However, given that CCAPS-62 domains are an indicator of psychological symptomology in the last 2 weeks, it is unlikely that psychological symptomology predicts hope and adult attachment dimensions, which are long-standing patterns of behavior. This does not preclude the possibility, however, that hope and adult attachment dimensions may constitute a feedback loop. For example, because positive emotions are believed to be the sequelae of successful goal pursuits in hope theory (Rand & Cheavens, 2009), students with more secure adult attachment may not only be more likely to possess resilience of hope to achieve their goals, but those achievements may also feed back to further reinforce positive views of self and others over time (i.e., secure attachment), thus suggesting a possible bidirectional feedback loop between attachment and hope over time. Longitudinal (e.g., cross-lagged models) or experimental designs may further clarify the mechanisms by which hope and adult attachment work together in relation to college student psychological symptoms. Finally, although statistically significant, attachment dimensions only explained 14% of variance in hope, suggesting that other sources in addition to adult attachment may be related to hopeful thinking. One possibility is that racial and ethnic factors not addressed in the present study may predict unique variance in college students of color. For instance, experiences of racism and discrimination have been shown to adversely impact domain-specific hope in college students, possibly because they represent barriers to goals that an individual cannot change or easily work around (e.g., Thompson, Her, & Nitzarim, 2014). Thus, some students' deficits in dispositional hope may be driven by external/societal factors rather than internal representations of attachments. Likewise, another possibility for future inquiry is that college students' hopeful thinking may originate from positive experiences not directly related to adult attachment dimensions such as previous academic achievements (e.g., the fact that they have met the goal of attending

college; Snyder et al., 1991). Future research should continue to examine hope and adult attachment while also considering other important factors related to hopeful thinking.

Implications

Despite these limitations, our findings present important implications for the incorporation of adult attachment and hope in counseling practice. First, both hope theory (Snyder, Ilardi, Michael, & Cheavens, 2000) and adult attachment theory (Shorey & Snyder, 2006) are critical lenses with which to understand therapeutic change. Thus, integrating hope and attachment theory may provide a valuable conceptual framework for clinicians. When discussing personal or academic goals, for instance, counselors may consider exploring the degree to which attachment-driven views of self and others may become barriers to success. Second, because attachment theory provides a framework for rehabilitating psychological dysfunction in the context of the therapeutic relationship (Mikulincer & Shaver, 2007), and hope interventions reduce psychological symptoms while also enhancing strengths (Cheavens, Feldman, Woodward, & Snyder, 2006), clinicians may benefit from relational methods focused on increasing hope in their clients. For example, counselors can work collaboratively with their clients to correct maladaptive attachment-driven reactions to stress in college that have potentially inhibited agency and pathways thinking. Counselors may consider helping their clients set small, attainable goals to build a sense of agency to counteract attachment-driven feelings of insecurity. Likewise, counselors may find it helpful to examine a client's previous goal attainments to increase agency and pathways thinking toward future goals.

Our findings also suggest potential implications for counseling outreach and prevention. Several methods for directly increasing hope have been proposed (McDermott & Snyder, 1999), and investigators have demonstrated success of large psychoeducation groups in increasing hope in college students (e.g., Feldman & Dreher, 2012). The present study suggests that a direction for future applied research is to explore whether a prevention program's efficacy may be further increased by including self-assessments and discussions of adult attachment. Such inclusions may lead to useful conversations of how positive or negative automatic views of self and others may either help or inhibit the cultivation of hope and successful goal pursuits.

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Notes

1. Although the Counseling Center Assessment of Psychological Symptoms–62 (CCAPS-62) also contains a Family Distress subscale, we excluded these scores from our primary analysis because family distress could logically be a predictor of adult attachment as opposed to a criterion variable in the present model.
2. We also tested the measurement model for potential racial and ethnic differences between majority and minority participants. Specifically, we examined differences in model fit between a model in which all regression coefficients and factor loadings were freely estimated across the two groups (i.e., majority vs. minority participants) and a model in which these paths were fixed as equivalent across groups. Kline's (2011) review of the literature demonstrated that the nested chi-square difference test is inappropriate for multigroup comparisons with very large sample sizes, because even a modest change in chi-square will be significant in a large sample when all factor loadings are fixed to be equal across groups. Thus, following best practice recommendations for multigroup comparisons, we examined differences in the comparative fit index (CFI) across each model. According to Kline (2011), a $\Delta CFI \leq .01$ indicates that the null hypothesis that there is no difference in model fit across groups should not be rejected. The ΔCFI comparing between a freely estimated model and a model with no cross-group equality constraints was .002, suggesting that there were no meaningful differences across groups at the measurement level.
3. To bring greater clarity to the present findings and in accordance with best practices in structural equation modeling (SEM) research (e.g., Kline, 2011), we deemed it important to test a competing model in which adult attachment dimensions and hope were reversed. This alternative model was one in which adult attachment dimensions mediated the relationships between hope and CCAPS-62 domains. However, given that reversing these latent variables neither constrains nor adds any paths to the model, a nested chi-square difference test was not possible. To work around this issue, we examined the Satorra–Bentler chi-square differences between a fully mediated model (i.e., where all direct effects were specified through the mediator to CCAPS-62 domains) based on our originally proposed order of relationships (i.e., adult attachment dimensions predicted hope, which, in turn, predicted CCAPS-62 domains) and a fully mediated alternative model in which hope predicted adult attachment dimensions, which, in turn,

predicted CCAPS-62 domains. The results of the Satorra–Bentler chi-square difference test suggested that a model in which adult attachment dimensions predicted hope was a significantly better fit to the data compared with a model in which hope predicted adult attachment dimensions $\Delta\chi^2$ (5, $N = 2644$) = 1,392, $p < .001$.

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