Check for updates

Article

Hammill Institute on Disabilities

Rehabilitation Counseling Bulletin
56(4) 240–250
© Hammill Institute on Disabilities 2013
Reprints and permissions:
sagepub.com/journalsPermissions.nav
DOI: 10.1177/0034355213480527
rcb.sagepub.com
SAGE

Investigating the Relationship of Resilience to Academic Persistence in College Students With Mental Health Issues

Michael T. Hartley, PhD[1]

Abstract

In this study, the relationships between measures of inter- and intrapersonal resilience and mental health were examined with respect to academic persistence in college students with mental health issues. A sample of 121 undergraduate students with mental health issues was recruited from campus mental health offices offering college counseling, psychiatric support, and disability support at two midwestern universities. Hierarchal (or sequential) regression analysis examined whether the resilience and mental health measures contributed to explaining variance in the response variables of university cumulative grade point average and time to credits completed. The results indicated that intrapersonal resilience was more important and operated differently for students with the most psychological distress. Furthermore, there was a strong statistical correlation between the resilience factors and mental health. The results indicate that a resilience framework may assist college students with mental health issues to cope more effectively with the complexities of college learning and improve college retention.

Keywords

counseling, college, mental health, resilience, rehabilitation

The increasing numbers of college students with mental health issues is encouraging universities to reexamine their campus mental health support policies (Nolan, Ford, Kress, Anderson, & Novak, 2005). Each year, approximately one in four Americans experiences a diagnosable mental illness (National Institute of Mental Health, 2006). Increasing numbers of these individuals are attending college (K. Collins, 2000). Recent estimates of the prevalence of mental health issues on college campuses are as high as 30% (Eisenberg, Golberstein, & Gollust, 2007), and survey data indicate that two thirds of individuals with severe and persistent mental illness want to attend college (Corrigan, 2008). One reason for the increase is the growing demand for new skills and advanced education and training in the workplace (Mowbray et al., 2006). In addition, improved psychotropic medications and more effective psychiatric treatments have made college a possibility for significantly more people with mental illness (M. E. Collins & Mowbray, 2005).

Research has found that individuals with mental health issues view participation in 2- and 4-year colleges as an opportunity for personal growth and fulfillment (Corrigan, 2008; Knis-Matthews, Bokara, DeMeo, Lepore, & Mavus, 2007; Stein, 2005). For many individuals, simply to have an opportunity for further education can assist in recovery from a mental health disorder (Davidson et al., 2001). However, colleges and universities currently are struggling to address the increasing number of students in need of mental health services (Nolan et al., 2005; Smith et al., 2007). In 1990, Stone and Archer first noted the "increasing numbers of students with serious psychological issues" (p. 543). More recently, Benton, Robertson, Tseng, Newton, and Benton (2003) reported that college counseling centers have struggled to address the growing demand for psychological services. Blacklock, Benson, Johnson, and Bloomberg (2003) pointed to the impact of untreated psychological issues on campus providers as staggering in terms of staff hours. Increasing numbers of students with psychological problems have resulted in many campus providers disclaiming responsibility for those students' problems due to a lack of resources (Mowbray et al., 2006).

[1]The University of Arizona, Tucson, USA

Corresponding Author:
Michael T. Hartley, Department of Disability and Psychoeducational Studies, College of Education, 1430 E. 2nd Street, Room 422, Tucson, AZ 85721–0069, USA.
Email: mthartley@email.arizona.edu

At the same time, recent tragedies such as the Virginia Tech shooting (Urbina, 2007) have brought increased scrutiny to how colleges monitor and support the mental health needs of today's college students.

In the past, university policy for students with mental illness was to recommend mandatory withdrawal (Hoffmann & Mastrianni, 1991). However, the Americans With Disabilities Act (ADA) of 1990 has ensured that individuals with mental illness have access to the same opportunities as individuals without disabilities (Kiuhara & Huefner, 2008). With expertise in disability services and Supported Education (SEd), rehabilitation counselors are well equipped to support more college students with mental health issues than ever before. Many rehabilitation counselors work in college disability service offices to provide academic accommodations (K. Collins, 2000; Dutta, Kundu, & Schiro-Geist, 2009; Mowbray & Megivern, 1999; Wilson, Livneh, & Duchesneau, 2002). Furthermore, rehabilitation counselors often work with SEd programs designed to increase retention of individuals with psychiatric disabilities (Anthony, 1993; Corrigan, 2003; Mowbray et al., 2006). Working hand-in-hand with campus disability service offices, "successful SEd implementation is collaboration among a variety of stakeholders: consumers and their organizations, community mental health centers, families and their organizations, postsecondary educational institutions, and vocational rehabilitation agencies" (Mowbray et al., 2006, p. 10). According to recent research, SEd programs have academically engaged individuals with mental illness, improved self-confidence and self-perceptions, and increased enrollment in postsecondary education (M. E. Collins, Bybee, & Mowbray, 1998; M. E. Collins, Mowbray, & Bybee, 2000). In addition to these efforts, research on resilience may be able to assist rehabilitation counselors to help students with mental health issues to cope more effectively with the complexities of college learning and development and improve college retention.

While resilience has a variety of meanings in everyday discourse, in research it has a specific purpose. Emerging from the positive psychology movement, resilience speaks to the many ways that individuals cope with adversity (Masten, 2001). Masten, Best, and Garmezy (1990) defined resilience as "the process of, capacity for, or outcome of successful adaptation despite challenging or threatening circumstances" (p. 426). Today, resilience is measured by "constitutional variables like temperament and personality, in addition to specific skills (e.g. active problem solving)" (Campbell-Sills, Cohan, & Stein, 2006, p. 586). One way to understand resilience is in relation to the classic stress–diathesis model, where "stress activates a diathesis, transforming the potential of predisposition into the presence of psychopathology" (Monroe & Simons, 1991, p. 406); however, from a resilience perspective, the stress–diathesis model fails to account for protective factors. As an interactionalist framework, resilience is the complex interplay between an individual and his or her environment, in which the individual can influence a successful outcome by using protective factors, defined as the personal qualities or contexts that predict positive outcomes under high-risk conditions (Eageland, Carlson, & Sroufe, 1993).

In today's demanding college environment, resilience is critical. Researchers have demonstrated that students with mental health issues are at high risk for college dropout: Based on a national survey, Kessler, Foster, Saunders, and Stang (1995) found that 86% of students with mental health disorders dropped out of college without completing a degree. This is twice as high as the general college drop-out rate, which is estimated to be between 30% and 40% (Astin & Oseguera, 2005; Porter, 1990). Particularly at a large university, the environment can be stressful and often is characterized by (a) high-stakes academic pressure, (b) minimal academic support compared with high school, (c) potential social isolation during the transition, and (d) long-term financial debt (Kadison & DiGeronimo, 2004). According to Mowbray et al. (2006), these factors represent the kinds of stresses that can worsen mental health symptoms. In addition to these general risk factors, students with mental health issues face further risks, including (a) temporary cognitive impairments, (b) stigma of mental illness, (c) lower academic self-confidence, and (d) conflicted peer relationships (Corrigan, 2004; Hartley, 2010; Knis-Matthews et al., 2007; Megivern, Pellerito, & Mowbray, 2003). As it is difficult to eliminate all college stressors, it is important to examine how students with mental health issues cope, ultimately finding ways to graduate with a college degree.

The importance of coping to student success has a strong foundation in student development. According to Tinto's Theory of Student Development (Tinto, 1993), students enter college with a variety of background characteristics, such as personal goals, motivation to study, and past repertoires of coping. Once in college, students interact with peers and teachers within the college environment. Importantly, academic persistence depends on the complex interplay between the student and his or her ability to integrate academically, referring to attending class and studying, and socially, referring to fitting in the university over time (Tinto, 1993). There is clear evidence that academic and social integration shape college retention (Pascarella & Terenzini, 2005). Few research studies, however, have explored a resilience framework and its congruence with Tinto's Theory of Student Departure. An advantage of a resilience framework is that it is premised on a dialogic relationship between an individual and his or her environment with an emphasis on successful adaptation (Masten, 2001). From a resilience

framework, rather than a single trait or skill, it is the cumulative effect of multiple protective or resilience factors that allows college students to be successful despite adversity (Eageland et al., 1993; Masten, 2001). In addition to traditional persistence factors, such as aptitude, achievement, hours employed, and hours involved in extracurricular activities (Fleming & Fairweather, 2012; Ishitani & DesJardins, 2002–2003; Mamiseishvili & Koch, 2010; Wolfe & Johnson, 1995), what matters most are the relationships between intrapersonal resilience factors, such as tenacity, commitment, and control (Aspinwall & Taylor, 1992; Hartley, 2011; Kirkpatrick, Stant, Downes, & Gaither, 2008; McCarthy, Fouladi, Juncker, & Matheny, 2006; Steinhardt & Dolbier, 2008) and interpersonal resilience factors, such as social support (Lidy & Kahn, 2006; Swenson, Nordstrom, & Hiester, 2008). From a resilience framework, all these factors work together with a cumulative effect (i.e., the more success from meeting challenges, the more resilience builds on itself; Eageland et al., 1993).

Offering an opportunity to examine the utility of a resilience framework, this article reports the results of a study that examined whether measures of intra- and interpersonal resilience factors contributed to explaining variance in the response variables of cumulative grade point average (GPA) and time to credits completed in addition to the variance explained by aptitude (i.e., American College Testing [ACT]/SAT), achievement (i.e., high school GPA), work hours, and extracurricular hours in a sample of students with mental health issues seeking assistance from campus mental health offices offering college counseling, psychiatric support, and disability support. The outcome variables are based on Tinto's (1993) concepts of academic and social integration and measured by cumulative university GPA and credits completed over time (Pascarella & Terenzini, 2005). The hierarchical (or sequential) regression analysis enters variables known to relate to academic persistence and then the research variables. Two-way interactions are tested and nonsignificant interactions removed sequentially. The resilience variables are examined as possible moderators. The research questions are as follows:

Research Question 1: Will the resilience variables contribute to explaining variance in the response variables (i.e., will the resilience variables be associated with higher cumulative GPAs and more credits completed over time)?

Research Question 2: Will the resilience variables moderate the relationship between mental health and the response variables (i.e., will the resilience variables be more important for students with the most elevated levels of psychological distress)?

Method

Participants and Procedure

After receiving approval from the Institutional Review Boards (IRB) of two land-grant midwestern universities, students were recruited from campus mental health offices offering college counseling, psychiatric support, and disability support—service providers who are increasingly being asked to collaborate and address the issue of increasing numbers of college students with psychological issues (Nolan et al., 2005). During the 2007–2008 academic year, recruitment flyers were placed in the waiting rooms of campus mental health offices soliciting students with self-reported mental health issues who were seeking help to complete a web survey. To screen participants, they were asked whether mental health issues had negatively affected college in the past year. A total of 121 participants completed the web survey. Participants were 87 (72%) women and 34 (28%) men, with a mean age of 21.06 years (SD = 4.07) and 63.78 credits completed (SD = 35.39), and cumulative university GPA of 3.22 (SD = 0.51). Of the total, 103 (85%) participants identified themselves as Caucasian, 8 (7%) as Asian American, 6 (5%) as Latino, 0 (0%) as African American, and 4 (3%) as of another race/ethnicity. The participants' majors primarily were in the arts and sciences—psychology, biology, English, education, and journalism. The sample contained a higher percentage of women than represented in the student bodies but were comparable in the percentage of ethnic minorities (see Table 1).

Measures and Variables

Variables related to academic persistence and demographics. A questionnaire requested the following information: (a) cumulative university GPA; (b) high school GPA; (c) ACT or SAT score; (d) if employed, number of hours per week; (e) if involved in extracurricular activities, number of hours per week; (f) number of credits completed; (g) sex; (h) race; and (i) age. Self-report of variables was chosen for feasibility, low cost, and the benefit of allowing participants to respond privately and anonymously (Foley, Manuel, & Vitolins, 2005).

Mental health. The *Mental Health Inventory–5* (MHI-5) is a 5-item scale that measures current perceptions of mental health (Veit & Ware, 1983). Participants rate items on a 5-point scale from 1 (*all of the time*) to 5 (*none of the time*). The raw scores are standardized by linear transformations to a scale ranging between 0 and 100, with high scores indicating better mental health. The MHI-5 has reliability and validity statistics similar to the full 38-item MHI as a measure of global mental health (Berwick et al., 1991; Rumpf, Meyer, Hapke, & John, 2001) and is a widely used measure

Table 1. Demographic Statistics ($N = 121$).

Variable	*n*	%	*M* (*SD*)	Range
Gender				
Male	34	28		
Female	87	72		
Race				
Caucasian	103	85		
Asian American	8	7		
Latino	6	5		
African American	0	0		
Biracial/other	4	3		
Age			21.06 (4.07)	17–50
College credits completed			63.78 (35.39)	2–140
University cumulative GPA			3.22 (0.51)	1.53–4.00
High school GPA			3.67 (0.36)	2.60–4.00
ACT/SAT score			25.53 (3.22)	21–34
Work hours			8.70 (8.87)	0–40
Extracurricular hours			5.85 (8.55)	0–50
MHI-5			62.48 (17.36)	32–96
CD-RISC-10			19.56 (8.25)	3–40
SSQ-6			30.55 (5.69)	8–36

Note. GPA = grade point average; ACT = American College Testing; MHI-5 = *Mental Health Inventory–5* (Veit & Ware, 1983); CD-RISC = *Connor–Davidson Resilience Scale* (Connor & Davidson, 2003); SSQ-6 = *Social Support Questionnaire–6* (Sarason, Sarason, Shearin, & Pierce, 1987).

of mental health in nonclinical (as well as clinical) populations (Ostroff, Woolverton, Berry, & Lesko, 1996). Cronbach's alpha for the MHI-5 has been satisfactory, ranging from .74 (Rumpf et al., 2001) to .88 (McCabe, Thomas, Brazier, & Coleman, 1996). The MHI-5 has been validated as an appropriate screening test for *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; *DSM-IV*; American Psychiatric Association, 1994) Axis I mood and anxiety disorders (Berwick et al., 1991; Ostroff et al., 1996; Rumpf et al., 2001). The Cronbach's alpha in this study was .81.

Intrapersonal resilience. The *Connor–Davidson Resilience Scale* (CD-RISC-10) is a scale that measures the ability to "thrive in the face of adversity" (Connor & Davidson, 2003, p. 76). The original items of content were drawn from research on the characteristics of resilient people, including the constructs of the following: (a) tenacity and hardiness, (b) emotional intelligence and the ability to tolerate stress, (c) optimism and positive acceptance of change, (d) commitment and self-control, and (e) spirituality (Connor & Davidson, 2003). Participants rate items on a 5-point Likert-type scale from 0 (*not at all true*) to 4 (*true nearly all of the time*). The CD-RISC total scores have demonstrated strong reliability and validity (Campbell-Sills et al., 2006; Campbell-Sills & Stein, 2007; Connor & Davidson, 2003; Hartley, 2012). The CD-RISC has displayed "excellent psychometric properties and allows for efficient measurement of resilience" (Campbell-Sills & Stein, 2007, p. 1019). The CD-RISC has salient factor loadings (.39–.74) and Cronbach's alpha of .85 (Campbell-Sills & Stein, 2007). This study used the 10-item version. Cronbach's alpha in this study was .90 with factor loadings of .59 to .96 (see Table 2).

Table 2. Confirmatory Factor Analysis of the 10-Item CD-RISC ($N = 121$).

Item	Factor loading
I am able to adapt to change.	.82
I can deal with whatever comes.	.93
I see the humorous side of things.	.78
Coping with stress strengthens me.	.68
I tend to bounce back after illness or hardship.	.96
I can achieve my goals despite obstacles.	.80
Under pressure, I can focus and think clearly.	.59
I am not easily discouraged by failure.	.64
I think of myself as a strong person.	.87
I can handle unpleasant feelings.	.74
Cronbach's α	.90

Note. CD-RISC = Connor–Davidson Resilience Scale (Connor & Davidson, 2003).

Interpersonal resilience. The *Social Support Questionnaire–6* (SSQ-6) is a six-item scale that measures degree of satisfaction with available social supports (Sarason, Sarason, Shearin, & Pierce, 1987). Participants rate satisfaction on a 6-point Likert-type scale from 6 (*very satisfied*) to 1 (*very*

dissatisfied). The reliability of the SSQ-6 is quite high, and the SSQ-6 has correlated with personality indexes of well-being and self-esteem (Herzberg et al., 1999; McDowell & Newell, 1987; Sarason et al., 1987). As a measure of internal reliability, Cronbach's alpha was .93 (Herzberg et al., 1999). Research has indicated that a high score on the SSQ-6 can function as a buffer against the effects of stress (Herzberg et al., 1999). Cronbach's alpha in the present study was .92.

Data Analysis

The method of data analysis was hierarchical (or sequential) regression analysis designed to examine how much variance in the outcome variables was explained by adding variables in a sequential fashion (Pedhazur, 1997). The a priori decision was two hierarchical (or sequential) regression analyses examining the response variables separately. One analysis examined the variance in cumulative GPA and the other examined the variance in time to credits completed. To ensure that the sample size was large enough, the priori decision was to keep the regression models within an appropriate ratio of 10 observations to each parameter (Hoyt, Leierer, & Millington, 2006). A listwise comparison was used. The a priori alpha was .05. Prior to the analysis, to check for multicollinearity, the bivariate, zero-order correlations were examined for correlations of about .80 or larger (see Table 2; Belsley, Kuh, & Welsch, 1980). Furthermore, Variance Inflation Factors (VIF) were examined for scores of 10 or greater (Belsley et al., 1980). There was no evidence of multicollinearity.

Results

The first outcome variable was cumulative GPA. Using a listwise comparison, the sample was reduced to 108 participants. All tolerance statistics were well within the normal range. In the first step, the variables known to relate to academic persistence accounted for 13.1% of the variance in cumulative GPA, $F(4, 103) = 3.888$, $p = .006$. Unexpectedly, the rest of the sequential steps did not statistically contribute to explaining variance in cumulative GPA. Equally intriguing was that in the first step, only the known factor of high school GPA ($\beta = .289$) accounted for a significant amount of variance in cumulative GPA.

The second outcome variable was time to credits completed (see Table 3). Using a listwise comparison, the sample was reduced to 108 participants. All tolerance statistics were well within the normal range. In the first step, the variables known to relate to academic persistence accounted for 19.2% of the variance in time to credits completed, $F(4, 103) = 6.112$, $p = .000$. Second, mental health as a main effect resulted in a significant R^2 change of .038, $F(1, 102) = 5.086$, $p = .026$. Third, entering the inter- and intrapersonal resilience factors as main effects resulted in a nonsignificant R^2 change of .001, $F(2, 100) = 0.019$, $p = .981$. Finally, in the fourth step, one significant interaction between intrapersonal resilience and mental health was found, resulting in a significant R^2 change of .026, $F(1, 99) = 3.514$, $p = .054$. In the final regression model, the standardized regression coefficients (β) were used to identify which variables explained variance in time to credits completed (Hoyt et al., 2006). Overall ACT score ($\beta = .289$) and number of work hours per week ($\beta = .351$) had a positive relationship with time to credits completed. In addition, mental health ($\beta = .548$) and intrapersonal resilience ($\beta = .961$) had a positive relationship with time to credits completed. Finally, there was a significant interaction between mental health and intrapersonal resilience, indicating that the relationship between intrapersonal resilience and time to credits completed became stronger for students with the most elevated levels of psychological distress. Previous research has used a MHI-5 score of 70 as indicative of elevated psychological distress (Berwick et al., 1991; Ostroff et al., 1996; Rumpf et al., 2001). When comparing the regression coefficients across a MHI-5 score of 70, there was a noticeable change in the magnitude and significance ($\beta = .311$) for students with the most psychological distress (see Table 4).

Discussion

The overall results of this study found evidence that a resilience framework may be an important avenue for promoting academic persistence in students with mental health issues. For Research Question 1, however, it is surprising that only high school GPA accounted for variance in the first response variable of cumulative university GPA. Other traditional predictors and the intra- and interpersonal resilience variables did not explain a significant amount of variance. One possible explanation is that self-report is an unreliable measure of cumulative GPA. Previous researchers have noted that self-report of GPA is subject to greater inflation by students with lower GPAs than by students with higher GPAs (Dobbins, Farh, & Werbel, 1993). A similar phenomenon may be occurring in the present study. Alternatively, it is possible that traditional predictors of persistence are not as robust for students with mental health issues. While there is considerable research on traditional predictors (Fleming & Fairweather, 2012; Ishitani & DesJardins, 2002–2003; Mamiseishvili & Koch, 2010; Wolfe & Johnson, 1995), there may be a need to consider disability-specific factors such as diagnosis and symptom severity. Mental health symptoms can temporarily interfere with the metacognition skills that are necessary for effective self-regulated learning (M. E. Collins & Mowbray, 2005; Knis-Matthews et al., 2007; Weiner & Wiener, 1996). Furthermore, the side effects of psychotropic medications

Table 3. Credit Completion Ratio Regression Analysis (n = 108).

Step and variable	R^2	R^2 change	F change	p	β	p
Step 1	.192	.192	6.112	.000**		
High school GPA					.089	.350
ACT score					.255	.009**
Extracurricular hours					−.052	.565
Work hours					.350	.000**
Step 2	.230	.038	5.086	.026*		
High school GPA					.070	.458
ACT score					.263	.006**
Extracurricular hours					−.022	.807
Work hours					.345	.000**
Mental health (MHI-5)					.199	.026*
Step 3	.231	.001	0.019	.981		
High school GPA					.068	.473
ACT score					.263	.007**
Extracurricular hours					−.020	.827
Work hours					.345	.000**
Mental health (MHI-5)					.228	.051*
Resilience (CD-RISC)					−.021	.848
Social Support Scale (SSQ-6)					.007	.943
Step 4	.257	.026	3.514	.054*		
High school GPA					.072	.443
ACT score					.289	.003**
Extracurricular hours					−.031	.732
Work hours					.351	.000**
Mental health (MHI-5)					.548	.010**
Resilience (CD-RISC)					.961	.052*
Social Support Scale (SSQ-6)					.000–1.207	.997
Mental Health × Resilience						.054*

Note. GPA = grade point average; ACT = American College Testing; MHI-5 = Mental Health Inventory–5 (Veit & Ware, 1983); CD-RISC = Connor–Davidson Resilience Scale (Connor & Davidson, 2003); SSQ-6 = Social Support Questionnaire–6 (Sarason, Sarason, Shearin, & Pierce, 1987).
* $p \leq .05$. ** $p \leq .01$.

have been found to impair students' attention, concentration, and stamina due to headaches, nausea, insomnia, and fatigue (Weiner & Wiener, 1996). With respect to cumulative GPA, these disability-specific factors may be more important than traditional predictors for students with mental health issues.

In contrast, for the second response variable in Research Question 1, time to credits completed, the known factors and research variables accounted for a significant amount of variance. More specifically, the regression coefficients for the ACT score and number of hours employed per week were positively associated with time to credits completed. Thus, while higher standardized test scores were not associated with higher cumulative GPAs, standardized test scores were associated with more credits completed over time. That is, there was evidence that students with higher ACT scores were able to effectively manage larger credit loads. Unexpectedly, there was also evidence that students who were employed more hours per week had more completed credits over time. One possible explanation is that these students were paying for school themselves and needed to complete credits more efficiently. In terms of the research variables, the mental health regression coefficient was positive, indicating that students with lower mental health scores completed fewer credits over time. Thus, while there was no relationship between level of psychological distress and cumulative GPA, there was one between level of psychological distress and time to credits completed. Finally, it was surprising that the interpersonal resilience factor of social support was nonsignificant. One explanation is that the participants were very satisfied with social support as measured by the SSQ-6, and there may not have been enough variance in the SSQ-6 to detect a significant relationship if one existed (see Table 1). Alternatively, it is possible that satisfaction with social support is less important than the type of peer group norms. As an example, it is easy to imagine students who may be equally satisfied with friends who excessively binge drink as with friends who

Table 4. Credit Completion Ratio Regression Analysis by Mental Health.

	MHI-5 score ≤ 70[a]		MHI-5 score > 70[b]	
Variable	β	*p*	β	*p*
High school GPA	.113	.506	.074	.538
ACT score	.189	.279	.347	.004**
Extracurricular hours	−.169	.317	.049	.659
Work hours	.301	.067	.375	.001**
Resilience (CD-RISC)	.311	.050*	−.103	.355
Social Support Scale (SSQ-6)	−.024	.882	.064	.572

Note. MHI-5 = Mental Health Inventory–5 (Veit & Ware, 1983); GPA = grade point average; ACT = American College Testing; CD-RISC = Connor–Davidson Resilience Scale (Connor & Davidson, 2003); SSQ-6 = Social Support Questionnaire–6 (Sarason, Sarason, Shearin, & Pierce, 1987).
[a]$R^2 = .217$; $F = 1.524$; $p = .201$; $n = 39$. [b]$R^2 = .284$; $F = 4.027$; $p = .002$; $n = 67$.
*$p \leq .05$. **$p \leq .01$.

Table 5. Listwise Correlations Among Variables Used in the Hierarchical Regression Analysis ($n = 108$).

Variable	Age	Credit hours	University cumulative GPA	High school GPA	ACT score	Work hours	Extracurricular hours	Mental health (MHI-5)	Intrapersonal resilience (CD-RISC)	Social support (SSQ-6)
Age	1.0									
Credit hours	0.411**	1.0								
University cumulative GPA	−0.099	−0.099	1.0							
High school GPA	−0.079	0.154	0.303**	1.0						
ACT score	0.096	0.239*	0.159	0.356**	1.0					
Work hours	0.116	0.321**	−0.132	0.007	−0.128	1.0				
Extracurricular hours	0.037	−0.051	0.173	0.046	0.134	−0.108	1.0			
Mental health (MHI-5)	0.040	0.201*	−0.001	0.076	−0.028	0.049	−0.154	1.0		
Intrapersonal resilience (CD-RISC)	−0.023	0.079	−0.003	0.011	−0.019	0.008	0.044	0.535**	1.0	
Social support (SSQ-6)	−0.066	0.064	−0.047	0.128	0.059	−0.028	0.095	0.358**	0.337**	1.0

Note. GPA = grade point average; ACT = American College Testing; MHI-5 = Mental Health Inventory–5 (Veit & Ware, 1983); CD-RISC = Connor–Davidson Resilience Scale (Connor & Davidson, 2003); SSQ-6 = Social Support Questionnaire–6 (Sarason, Sarason, Shearin, & Pierce, 1987). Upper diagonal is the same as lower diagonal.
* $p \leq .05$. **$p \leq .01$.

attend class and study, suggesting a need to account for peer group norms rather than satisfaction with social support.

Regarding Research Question 2, the most intriguing finding was the significant interaction between mental health and intrapersonal resilience, signifying that intrapersonal resilience was more important and operated differently for students with the most elevated and acute levels of psychological distress. From a resilience perspective, it makes sense that intrapersonal resilience would be most important for students dealing with the most psychological distress and adversity (Eageland et al., 1993; Masten, 2001). The present sample included students who had experienced mental health issues; however, there was still a range of mental health scores (see Table 1). When comparing the regression coefficients above and below a MHI-5 score of 70 (i.e., a cutoff score indicative of elevated psychological distress; Berwick et al., 1991; Ostroff et al., 1996; Rumpf et al., 2001), the intrapersonal resilience coefficients changed direction, magnitude, and significance (see Table 4). Thus, the present study provides evidence that intrapersonal resilience may be a critical factor in students with the most psychological distress being able to complete credits over time. However, more research is needed to interpret the cause of these differences.

Finally, for Research Question 2, it was surprising to find a lack of a significant interaction between the intra- and interpersonal resilience factors despite significant bivariate correlations (see Table 5). Resilience itself is the cumulative effect of multiple intra- and interpersonal resilience factors. Rather than a single trait or skill, it is the multifaceted relationships across these factors that should matter most. From a resilience perspective, a lack of significant statistical relationships between these variables was surprising because SEd researchers have found commitment, tenacity, and social support to be equally important in academic persistence (Blacklock et al., 2003; M. E. Collins et al., 2000; Knis-Matthews et al., 2007; Stein, 2005). It is possible that there was not enough variance in the measure of satisfaction with social support to detect a significant interaction if one existed (see Table 1). The sample in this study was cross-sectional and collected at one point in time. There was no way to test the interactions between variables over time.

Implications

This study adds evidence that a resilience framework can contribute to our understanding of how students with mental health disorders negotiate a stressful college environment. First, intrapersonal resilience was associated with more credits completed over time, indicating that higher intrapersonal resilience correlates with more academic persistence. Thus, as a preventive approach to mental health issues, rehabilitation counselors may be able to use empirically validated resilience interventions to increase academic persistence in students with the most psychological distress (Steinhardt & Dolbier, 2008). Rather than waiting for students with mental health issues to decompensate, rehabilitation counselors may be able to link resilience interventions to students' academic and career goals, making the information useful to students in understanding the past and creating change in the future. As universities shift toward one-stop campus mental health offices (Nolan et al., 2005), rehabilitation counselors can use resilience interventions to increase intrapersonal resilience and better prepare students with mental health issues to graduate from college (Boutin & Wilson, 2012).

Second, satisfaction with social support was not associated with cumulative GPA or credits completed over time. This finding is surprising and inconsistent with previous research (Lidy & Kahn 2006; Swenson et al., 2008). One explanation is that there may not have been enough variance in the SSQ-6 to detect a significant relationship if one existed. Another interpretation is that positive peer group norms may be more important than satisfaction. In fact, SEd researchers have consistently found positive peer group norms to play an important role in college persistence (Blacklock et al., 2003; M. E. Collins et al., 1998; M. E. Collins et al., 2000; Knis-Matthews et al., 2007; Silberner, 2008). If peer group norms are more important, then it may be beneficial for rehabilitation counselors to collaborate with existing college life service providers to promote positive peer group norms for students with mental health issues. Each year, thousands of 1st-year students are placed in academic seminars and orientation programs, which orient students to the university (Crissman Ishler & Upcraft, 2005). In addition, colleges and universities typically offer living–learning communities, which are cohorts of students who take the same courses, develop study skills together, and, in some instances, live in the same residence halls (Crissman Ishler & Upcraft, 2005; Zeller, 2005). Rehabilitation counselors can assist universities to design academic seminars and living–learning communities around the theme of effective coping with mental health issues.

Finally, while traditional predictors will likely play a role in academic persistence, the results of this study found that known predictors were less important for students with the lowest mental health scores. If traditional predictors are not as robust for students with mental health issues, then rehabilitation counselors should consider the impact of disability-specific factors, such as diagnosis, symptom severity, and age of onset. Rather than treating students with mental health issues as a single population, there is a need to consider the impact of specific mental health symptoms on college learning and development. For instance, periods of depression can cause deficits in short-term memory, especially on tasks that require effortful information processing (Colby & Gotlib, 1988). In contrast, cognitive components of anxiety and worry can cause poor academic performance due to perseverating on certain details (Hembree, 1988). It is easy to imagine, for instance, that students with depression may use individualized learning strategies that differ from students with obsessive-compulsive disorder. In addition to providing access to academic accommodations, rehabilitation counselors can work with students to cope with the challenges of college learning that make them stronger for it. Thus, rehabilitation counselors can engage students in a dialogue of how to use inter- and intraresilience factors to respond to the stressful demands of college learning. Rehabilitation counselors can even share stories of successful students who experienced similar mental health issues and found ways to cope.

Future Research

While a breadth of scholarship defines risk in higher education for students with mental health issues, more research is needed to examine resilience and how these students cope. Consistent evidence indicates that psychological distress impedes the academic performance of approximately a third of the college population (American College Health Association, 2009). With respect to promoting mental health and college retention, it may be more practical to increase resilience than to eliminate risk. Future research can explore the complex relationships across intra- and interpersonal resilience factors. For instance, previous research exposed the connection between hardiness and social support (Herzberg et al., 1999; McDowell & Newell, 1987; Sarason et al., 1987); however, students may be equally satisfied with friends who excessively binge drink as with friends who attend class and study. Rather than satisfaction with social support, there is a need to examine the impact of group norms over time. Furthermore, the ability to tolerate stress may be associated with less studying unless the student is tenacious and committed to getting good grades. These examples illustrate the need to consider the relationships across intra- and interpersonal resilience factors, including moderating and mediating variables.

In addition, the results of this study indicate a need for more research on disability-specific factors and college outcomes. Rather than treating all students with mental health disorders as a monolithic group, more research is needed to

examine differences across diagnostic categories. Thus, there is need to consider how traditional predictors of academic persistence intersect with disability-specific factors, such as type of diagnosis, severity of symptoms, and age of onset. Furthermore, the experience of disability may be different for men and women, middle-class White and nondominant minority communities, and heterosexual and lesbian, gay, bisexual, and transgender people (Davis, 2006). Future research can examine the interactions between disability-specific factors and traditional predictors of academic persistence, such as aptitude, achievement, employment, parental education level, socioeconomic status, and English as a second language.

Finally, although this study adds evidence that a resilience framework can contribute to our understanding of how students with mental health disorders negotiate a stressful college environment, additional longitudinal research is needed to examine the effect of resilience interventions on college learning and development over time. The example of implementing resilience educational campaigns and interventions within living–learning communities and academic seminars can be a means to collect longitudinal data on the impact of a preventive resilience framework. Working with campus life offices, student groups, and mental health offices, researchers can examine the impact on students' ability to manage the interrelated cognitive, social, and emotional demands of learning and development over time. In conjunction with other support policies, such as promoting academic study skills and time management, resilience interventions may be able to improve students' academic success, happiness, and ability to compete in a demanding postsecondary environment. Longitudinal research may be able to demonstrate the utility of a resilience framework to increase resilience and decrease college dropout for students with mental health issues in 2- and 4-year colleges and universities.

Limitations

There were limitations to this study, which may restrict the interpretation but do not negate the findings. First, the sampling introduced two types of sampling error: (a) sampling bias and (b) sampling variance. Not all undergraduate students had an equal chance to participate in this study, and the sample statistics may not reflect the true population. For instance, the sample was overwhelmingly Caucasian and female, which does not represent the general population or undergraduate population in the United States. Second, self-report was a limitation, as researchers have demonstrated that an individual's self-report of mental health cannot distinguish between an individual's genuine mental health and his or her perception of mental health (Shedler, Mayman, & Manis, 1993). In this study, there was not enough objective information to evaluate the accuracy of the participants' self-report data or the severity of the presenting psychological issues. Self-report was chosen for feasibility, low cost, and benefit of allowing participants to respond anonymously (Foley et al., 2005).

Conclusion

To be sure, the demands on current college students with mental health issues are significant, and the students who can manage the social and emotional demands of college learning are better able to excel in an increasingly global educational environment. The results of this study are significant in terms of further exposing the relationships between resilience, mental health, and academic persistence. The intrapersonal resilience factors accounted for variance in credits completed over time, and the intra- and interpersonal resilience factors were related to one another. There is a need for more research on the concept of resilience as it relates to college health and academic persistence. The importance of coping is particularly critical for students with mental health issues.

Acknowledgment

The author wishes to thank Albert Hood and his family for their financial support.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The study was funded in part by The University of Iowa Albert Hood Promising Scholar Award.

References

American College Health Association. (2009). American College Health Association–National College Health Assessment (ACHA–NCHA) Spring 2008 reference group data report (abridged). *Journal of American College Health*, *57*, 477–488.

American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.

Anthony, W. A. (1993). Recovery from mental illness: The guiding vision of mental service systems in the 1990s. *Psychosocial Rehabilitation Journal*, *16*, 65–73.

Aspinwall, L. G., & Taylor, S. E. (1992). Modeling cognitive adaptation. *Journal of Personality and Social Psychology*, *63*, 989–1003.

Astin, A. W., & Oseguera, L. (2005). Degree attainment rates at American colleges and universities. Los Angeles, CA: Higher Education Research Institute.

Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics*. New York, NY: John Wiley.

Benton, S. A., Robertson, J. M., Tseng, W., Newton, F. B., & Benton, S. L. (2003). Changes in counseling center client problems across 13 years. *Professional Psychology: Research and Practice*, *34*, 66–72. doi:10.1037/0735-7028.34.1.66

Berwick, D., Murphy, J., Goldman, P., Ware, J., Barsky, A., & Weinstein, M. (1991). Performance of a five-item mental health screening test. *Medical Care*, *29*, 169–176.

Blacklock, B., Benson, B., Johnson, D., & Bloomberg, L. (2003). *Needs assessment project*. Minneapolis: University of Minnesota Disability Services.

Boutin, D. L., & Wilson, K. B. (2012). Who is going to college? Predicting education training from pre-VR consumer characteristics. *Rehabilitation Counseling Bulletin*, *55*, 166–175.

Campbell-Sills, L., Cohan, S. L., & Stein, M. B. (2006). Relationship of resilience to personality, coping, and psychiatric symptoms. *Behavior Research and Therapy*, *44*, 585–599. doi:10.1016/j.brat.2005.05.001

Campbell-Sills, L., & Stein, M. B. (2007). Psychometric analysis and refinement of the CD-RISC. *Journal of Traumatic Stress*, *20*, 1019–1028. doi:10.1002/jts.20271

Colby, C. A., & Gotlib, I. H. (1988). Memory deficits in depression. *Cognitive Therapy and Research*, *12*, 611–627.

Collins, K. (2000). Coordination of rehabilitation services in higher education for students with psychiatric disabilities. *Journal of Applied Rehabilitation Counseling*, *31*, 36–39.

Collins, M. E., Bybee, D., & Mowbray, C. T. (1998). Effectiveness of supported education for individuals with psychiatric disabilities. *Community Mental Health Journal*, *34*, 595–613.

Collins, M. E., & Mowbray, C. T. (2005). Higher education and psychiatric disabilities: National survey of campus disability services. *American Journal of Orthopsychiatry*, *75*, 304–315.

Collins, M. E., Mowbray, C. T., & Bybee, D. (2000). Characteristics predicting successful outcomes of participants with severe mental illness in supported education. *Psychiatric Services*, *51*, 774–780.

Connor, K. M., & Davidson, J. (2003). Development of a new resilience scale. *Depression and Anxiety*, *18*, 76–82. doi.10.1002/da.10113

Corrigan, P. W. (2003). Toward an integrated, structural model of psychiatric rehabilitation. *Psychiatric Rehabilitation Journal*, *26*, 346–358.

Corrigan, P. W. (2004). How stigma interferes with health care. *American Psychologist*, *59*, 614–625.

Corrigan, P. W. (2008). The educational goals of people with psychiatric disabilities. *Psychiatric Rehabilitation Journal*, *32*, 67–70.

Crissman Ishler, J. L., & Upcraft, M. L. (2005). The keys to first-year student persistence. In M. L. Upcraft, J. N. Gardner, & B. O. Barefoot (Eds.), *Challenging and supporting the first-year student* (pp. 27–46). San Francisco, CA: John Wiley.

Davidson, L., Stayner, D. A., Nickou, C., Styron, T. H., Rowe, M., & Chinman, M. L. (2001). Simply to be let in. *Psychiatric Rehabilitation Journal*, *24*, 375–388.

Davis, L. J. (Ed.). (2006). *The disability studies reader* (2nd ed.). New York, NY: Routledge.

Dobbins, G. H., Farh, J. L., & Werbel, J. D. (1993). The influence of self-monitoring and inflation of grade-point averages for research and selection purposes. *Journal of Applied Social Psychology*, *23*, 321–334.

Dutta, A., Kundu, M. M., & Schiro-Geist, C. (2009). Coordination of postsecondary transition services for students with disabilities. *Journal of Rehabilitation*, *75*, 10–17.

Eageland, B., Carlson, E., & Sroufe, L. A. (1993). Resilience as a process. *Development and Psychopathology*, *5*, 517–528.

Eisenberg, D., Golberstein, E., & Gollust, S. E. (2007). Help-seeking and access to mental health care in a university student population. *Medical Care*, *45*, 594–601.

Fleming, A. R., & Fairweather, J. S. (2012). The role of postsecondary education in the path from high school to work for youth with disabilities. *Rehabilitation Counseling Bulletin*, *55*, 71–81. doi:10.1177/0034355211423303

Foley, K. L., Manuel, J., & Vitolins, M. (2005). The utility of self-report in medical outcomes research. *Evidence-Based Healthcare & Public Health*, *9*, 263–264. doi:10.1016/j.ehbc.2005.03.032

Hartley, M. T. (2010). Increasing resilience: Strategies for reducing dropout rates for college students with psychiatric disabilities. *American Journal of Psychiatric Rehabilitation*, *13*, 295–315.

Hartley, M. T. (2011). Examining the relationships between resilience, mental health, and academic persistence in undergraduate college students. *American Journal of College Health*, *59*, 596–604.

Hartley, M. T. (2012). Assessing and promoting resilience: An additional tool to address the increasing numbers of college students with psychological problems. *Journal of College Counseling*, *15*, 37–50.

Hembree, R. (1988). Correlates, causes, effects, and treatment of test anxiety. *Review of Educational Research*, *58*, 47–77.

Herzberg, D. S., Hammen, C., Burge, D., Daley, S. E., Davila, J., & Lindberg, N. (1999). Attachment cognitions predict perceived and enacted social support during late adolescence. *Journal of Adolescent Research*, *14*, 387–404. doi:10.1177/0743558499144001

Hoffmann, F., & Mastrianni, X. (1991). Psychiatric leave policies: Myth and reality. *Journal of College Student Psychotherapy*, *6*, 3–20.

Hoyt, W. T., Leierer, S., & Millington, M. (2006). Analysis and interpretation of findings using multiple regression techniques. *Rehabilitation Counseling Bulletin*, *49*, 223–233. doi:10.1177/0034355211423303

Ishitani, T. T., & DesJardins, S. L. (2002–2003). A longitudinal investigation of dropout from college in the United States. *Journal of College Student Retention*, *4*, 173–201.

Kadison, R. D., & DiGeronimo, T. F. (2004). *College of the overwhelmed: The campus mental health crisis and what to do about it*. San Francisco, CA: Jossey-Bass.

Kessler, R. C., Foster, C. L., Saunders, W. B., & Stang, P. E. (1995). Social consequences of psychiatric disorders, I: Educational attainment. *American Journal of Psychiatry*, *152*, 1026–1032.

Kirkpatrick, M. A., Stant, K., Downes, S., & Gaither, L. (2008). Perceived locus of control and academic performance. *Journal of College Student Development*, *49*, 486–496.

Kiuhara, S. A., & Huefner, D. S. (2008). Students with psychiatric disabilities in higher education settings. *Journal of Disability Policy Studies*, *19*, 103–113.

Knis-Matthews, L., Bokara, J., DeMeo, L., Lepore, N., & Mavus, L. (2007). The meaning of higher education for people diagnosed

with a mental illness: Four students share their experiences. *Psychiatric Rehabilitation Journal*, *31*, 107–114.

Lidy, K. M., & Kahn, J. H. (2006). Personality as a predictor of first-semester adjustment to college. *Journal of College Counseling*, *9*, 123–134.

Mamiseishvili, K., & Koch, L. C. (2010). First-to-second-year persistence of students with disabilities in postsecondary institutions in the United States. *Rehabilitation Counseling Bulletin*, *54*, 93–105. doi:10.1177/0034355210382580

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*, *56*, 227–238. doi:10.1037/0003-066X.56.3.227

Masten, A. S., Best, K. M., & Garmezy, N. (1990). Resilience and development: Contributions from the study of children who overcome adversity. *Development & Psychopathology*, *2*, 425–444.

McCabe, C. J., Thomas, K. J., Brazier, J. E., & Coleman, P. (1996). Measuring the mental health status of a population. *British Journal of Psychiatry*, *169*, 517–521.

McCarthy, C. J., Fouladi, R. T., Juncker, B. D., & Matheny, K. B. (2006). Psychological resources as stress buffers. *Journal of College Counseling*, *9*, 99–110.

McDowell, I., & Newell, C. (1987). *Measuring health: A guide to rating scales and questionnaires*. New York, NY: Oxford University Press.

Megivern, D., Pellerito, S., & Mowbray, C. (2003). Barriers to higher education for individuals with psychiatric disabilities. *Psychiatric Rehabilitation Journal*, *26*, 217–231.

Monroe, S. M., & Simons, A. D. (1991). Diathesis-stress theories in the context of life-stress research: Implications for the depressive disorders. *Psychological Bulletin*, *110*, 406–425.

Mowbray, C. T., Mandiberg, J. M., Strauss, S., Stein, C. H., Collins, K. D., Kopels, S., & Lett, R. (2006). Campus mental health services: Recommendations for change. *American Journal of Orthopsychiatry*, *76*, 226–237. doi:10.1037/0002-9432.76.2.226

Mowbray, C. T., & Megivern, D. (1999). Higher education and rehabilitation for people with psychiatric disabilities. *Journal of Rehabilitation*, *65*, 31–38.

National Institute of Mental Health. (2006). *Mental disorders in America* (NIH Publication No. 06–4584). Bethesda, MD: Author.

Nolan, J. M., Ford, S., Kress, V. E., Anderson, R. I., & Novak, T. C. (2005). A comprehensive model for addressing severe and persistent mental illness on campus: The new diversity initiative. *Journal of College Counseling*, *8*, 172–179.

Ostroff, J. S., Woolverton, K. S., Berry, C., & Lesko, L. M. (1996). Use of the Mental Health Inventory for adolescents. *Psychological Assessments*, *8*, 105–107.

Pascarella, E. T., & Terenzini, P. (2005). *How college affects students*. San Francisco, CA: Jossey-Bass.

Pedhazur, E. (1997). *Multiple regression* (3rd ed.). New York, NY: Wadsworth.

Porter, O. F. (1990). *Undergraduate completion and persistence at four-year colleges and universities*. Washington, DC: National Institute of Independent Colleges.

Rumpf, H., Meyer, C., Hapke, U., & John, U. (2001). Screening for mental health. *Psychiatric Research*, *105*, 243–253.

Sarason, I. G., Sarason, B. R., Shearin, E. N., & Pierce, G. R. (1987). A brief measure of social support. *Journal of Social and Personal Relationships*, *4*, 497–510.

Shedler, J., Mayman, M., & Manis, M. (1993). The illusion of mental health. *American Psychologist*, *48*, 1117–1131.

Smith, T. B., Dean, B., Floyd, S., Silva, C., Yamashita, M., Durtschi, J., & Heaps, R. A. (2007). Pressing issues in college counseling. *Journal of College Counseling*, *10*, 64–78.

Stein, C. H. (2005). Aspirations, ability, and support: Consumers' perceptions of attending college. *Community Mental Health Journal*, *41*, 451–468.

Steinhardt, M., & Dolbier, C. (2008). Evaluation of a resilience intervention to enhance coping strategies and protective factors and decrease symptomatology. *Journal of American College Health*, *56*, 445–453.

Swenson, L. M., Nordstrom, A., & Hiester, M. (2008). The role of peer relationships in adjustment to college. *Journal of College Student Development*, *49*, 551–567.

Tinto, V. (1993). *Leaving college* (2nd ed.). Chicago, IL: University of Chicago Press.

Urbina, I. (2007, August 30). Virginia Tech criticized for actions in shooting. *The New York Times*. Retrieved from http://www.nytimes.com/2007/08/30/us/30school.html?ref=virginiapolytechnicinstituteandstateuniversity

Veit, C., & Ware, J. (1983). The structure of psychological distress and well-being in general populations. *Journal of Consulting and Clinical Psychology*, *51*, 730–742.

Weiner, E., & Wiener, J. (1996). Concerns and needs of university students with psychiatric disabilities. *Journal of Postsecondary Education and Disability*, *12*, 2–9.

Wilson, L. M., Livneh, H., & Duchesneau, A. (2002). Disability services in higher education and rehabilitation counseling. *Rehabilitation Education*, *16*, 283–293.

Wolfe, R. N., & Johnson, S. D. (1995). Personality as a predictor of college performance. *Educational and Psychological Measurement*, *55*, 177–185.

Zeller, W. (2005). First-year living. In M. Upcraft, J. Gardner, & B. Barefoot (Eds.), *Challenging and supporting the first-year student* (pp. 410–427). San Francisco, CA: John Wiley.