What Predicts Adjustment Among College Students? A Longitudinal Panel Study

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Abstract

Previous studies have reported that law students and medical students experience significant distress during their first year. We suspect that freshmen undergraduates might experience similar distress in their transition to college. This study examines the impact of the undergraduate experience on freshmen. Data replicate the declines reported in law and medical students' psychological and physical health. Negative coping tactics and perfectionism predicted poorer physical health and alcohol use at the end of the year. However, optimism and self-esteem predicted better physical and psychological outcomes.

Keywords: coping, self-esteem, optimism, perfectionism, extroversion

Previous studies of students in post-baccalaureate programs (e.g., law students and medical students) have shown a decline in psychological and physical health after matriculation [1; 2; 3]. Whereas comparisons of law students and the general population show no differences *before* they begin law school, psychological distress appears soon after law school begins [3; 4]. Research has found that law student distress is manifested in declines not only in psychological health, but in physical health as well[5]. Few studies have examined whether these types of changes occur in undergraduate students. It is not known whether undergraduates undergo similar declines in psychological and physical health as displayed by post-baccalaureate students.

In examining perceptions of the undergraduate experience, it is also unlikely that the college experience would affect all individuals to the same degree. For example, it has been found that approximately one-quarter of incoming freshman do not return to the same institution the following year, with half of these students making the decision to leave in the first six weeks[6]. Students who withdraw during first semester often cite emotional reasons for dropping out[7]. Clearly some students are better able to adjust to the undergraduate experience than are others. Such variability in responses to college emphasizes the importance of understanding what factors contribute to negative reactions to the college experience and whether undergraduate students experience similar changes in psychological and physical health as law students and medical students. Although previous research has suggested several factors that may contribute to the successful adjustment of college students (as will be discussed below), it has not been adequately established whether any of these factors (e.g., self esteem, coping tactics, perfectionism, optimism, and extroversion) play a negative or positive role in positive student health behaviors.

Coping tactics
Stressful life experiences have been shown to directly correlate with increased illness[8], and recent research has shown a dramatic increase in the levels of stress experienced by college students over the past thirty years[9]. In response to these increasing levels of stress, students often engage in negative health behaviors (e.g., drinking, smoking). Although certain coping tactics may decrease the impact of stress on psychological[10] and physical outcomes[11;12], it is unclear whether specific coping styles lead to poorer health outcomes. For example, some studies report that problem-focused coping is less likely to produce depressive symptoms, whereas emotion-focused coping correlates with increased depressive symptoms[13,14]. However, other studies have reported no relation or the opposite pattern[15; 16].

Self-esteem
Just as many students engage in negative health behaviors to deal with stress, many students also engage in negative health behaviors to deal with self-esteem issues. Studies have found that high self-regard scores and high self-actualizing scores predict better physical health[17]. Recent studies have found that alcohol abuse was predicted by

low self-esteem[18;19]. Nutritional practices were predicted by level of identity and self-confidence[19]. Self-esteem has also been found to relate to exercise participation in women, but not men[20]. However, other studies have found that self-efficacy predicts participation in health-related physical fitness activities regardless of gender[21].

Perfectionism
Previous research has shown that adjustment to college is predicted by personality[22]. For example, depression is predicted by maladaptive perfectionism[23]. In addition, competitiveness, often thought to be a component of perfectionism, is also related to depression[24]. Perfectionism has also been found to relate to health problems, such as insomnia[25].

Optimism
Optimism is another personality factor known to affect health. For example, increased optimism has been found to correlate with less infectious disease, poor health, and early mortality[26]. Many studies have found a connection between optimism and specific illnesses, such as heart disease and high blood pressure[27]. However, other studies question the link between optimism and mental and physical well-being[27;28].

Extroversion
A final personality variable that has been connected to health is extroversion. Studies have shown that extroverts tend to be happier and thus healthier than their introverted counterparts[29]. Other recent studies report that extroverts tend to be less depressed[30] and experience lower levels of pain[31]. Other studies have found no link between extroversion and health[32].

The Present Study
This study builds on earlier work reporting stress and maladjustment caused by law school and medical school[1; 2; 3]. First, we examined how student psychological and physical health changes as a result of the college experience. Second, we determine what distinguishes students who are more or less affected by the college experience. Specifically, we determined whether coping propensities, self-esteem, perfectionism, optimism, or extroversion predict changes in these outcomes.

The longitudinal panel design of the present study enables examination of which physical and psychological differences are caused by the college experience, and determination of what individual variables are associated with such changes. This study is novel in that it focused on personality factors rather than demographic variables in predicting maladjustment among college students with the intent to pinpoint conditions that could be changed to improve the college experience, and, more broadly, to better understand variables that predict adjustment to stressful situations. We examined how coping tactics, self-esteem, perfectionism, optimism, and extroversion may generate individual differences in adjustment to college. Similar to studies with law students and medical students[1,2,3], we expect that physical and psychological health will decline over the freshman year in undergraduate students. However, we hypothesize that certain coping tactics, having a high self-esteem, being optimistic and being extroverted will serve as buffers to health problems, whereas being perfectionistic will cause a greater decrease in health.

Method

Procedure
We conducted a longitudinal investigation of first-year college students. Wave 1 data were collected during orientation week before the start of classes. We felt it was important to collect data before they began classes, as starting classes might have had some affect on their health data. We realize that the excitement of orientation week itself might have influenced student's baseline data, however, orientation week was the only forum that we could reach all incoming freshmen prior to the start of classes. Questionnaires were distributed to all 525 first year students at the University of Evansville with a cover letter explaining the study and that all responses would remain confidential. Wave 1 provided baseline measures of coping, health, self-esteem, and participation in student organizations and athletics. One month before the end of the second semester, we administered Wave 2 questionnaires, with questions similar to those found on Wave 1.

Participants
Three hundred fifty (67% of the first year class) students participated in Wave 1 (65% female) and 381 (73%) completed Wave 2 (60% female). Two hundred forty two individuals (46%) completed both Waves. Only data from these 242 students were used in the analyses. 94.5% were Caucasian, 2.5% were African American, .5% were

Hispanic, 1.5% were European, and 1% were Native American. Although only 46% of students completed both waves, their demographic breakdown was very similar to that of the freshman class. The average student age at Wave 1 was 18.02 ($\underline{SD}$ = 1.44) and at Wave 2 18.93 ($\underline{SD}$ = 1.30). Each participant read and completed an informed consent form prior to this study, and were informed that their responses would be confidential. The University Subcommittee for the Protection of Research Subjects prior to initiating the study had approved procedures for this investigation.

<div align="center">**Measures**</div>

Physical health

Physical health was assessed by asking students how many days during the past month they had experienced any of 21 health symptoms (e.g., cold or flu, shortness of breath).[33] Participants rated whether they had experienced each symptom on a 5-point scale (1 = never, 5 = 15+ days). Responses were summed to create a scale score (Wave 1 α = .73, Wave 2 α = .80). This measure has been used successfully in the past.[3] For information on the development of this survey, see the original authors' article[33].

Alcohol use and smoking

Participants were asked to indicate how often they drink (0=never/rarely, 1=once a month, 2=once a week, 3 = 2-3 times a week, 4=daily or almost daily), how often they drink until intoxication (0=never/rarely, 1=once a month, 2=once a week, 3 = 2-3 times a week, 4=daily or almost daily), and how much they drink at each drinking occasion (e.g., number of drinks, where one drink = 12 oz beer, 4 oz wine, 1 oz spirits). This scale has been shown to be reliable and valid.[34;35] Students were also asked how many cigarettes they smoke per day.

Stress

We assessed 57 stressful events specifically oriented to college students' lives (e.g., "struggling to meet your own academic standards") using the Inventory of College Student Recent Life Experiences[36]. Participants were asked to rate to what extent such events have been a part of their lives in the past month on a scale from 1= *not at all* part of my life to 4 = *very much* part of my life (Wave 1 α = .85, Wave 2 α = .89). This scale has been shown to be reliable and valid.[36]

Perfectionism

Perfectionistic tendencies were assessed by asking participants various questions on their performance levels in activities such as school and the influence of the expectations of others (e.g., family, teachers, parents; "Only outstanding performance is good enough in my family."). Responses were rated on a 6-point scale (1=never, 6=always). This measure is a subscale of the Eating Disorders Inventory[37] and demonstrated adequate reliability in this sample (Wave 1 α = .78). See the survey authors for validity and reliability information.[37]

Self-esteem

Levels of self-esteem were measured using the Rosenberg Self-Esteem Scale, which has been shown to be both valid and reliable[38]. This scale uses a variety of questions assessing personal feelings about oneself as well as positive and negative emotions (e.g., "I feel I have a number of good qualities."). Responses were measured on a 4-point scale (1=strongly agree, 4=strongly disagree) (Wave 1 α = .79).

Coping tactics

To assess what coping tactics students tend to use, participants reported how they would respond to a stressful event. Participants responded to a subset of items from the Brief COPE[39], which contains 14 tactics (active coping, planning, positive reframing, acceptance, humor, religion, using emotional support, using instrumental support, self-distraction, denial, venting, substance use, behavioral disengagement, and self-blame), with two items per scale. This measure has been tested on a variety of clinical and non-clinical populations[3, 40,41], and the measure has been validated and shown to be reliable on several populations[39,41].

Optimism/pessimism

Students were asked to respond to the 12-item Life Orientation Test[42] to assess whether they are optimists or pessimists. Responses were rated on a scale from 0 (strongly disagree) to 4 (strongly agree) (Wave 1 α = .75). This scale has been shown to be both valid and reliable.[43]

Psychological adaptation
To measure psychological adaptation, students responded to a 30-item short version of the Profile of Mood States (POMS), which has been shown to be valid and reliable[44]. The POMS assesses anxiety, tension, depression, anger, vigor, confusion, and fatigue. Responses were measured on a 5-point scale, from 1 (not at all) to 5 (extremely).

Personality
The Introversion/extraversion scale asked students to choose between two adjectives to describe their behavior (e.g., introverted v. extraverted)[45]. Participants responded by circling a number between 1 and 9, with one of the two adjectives serving as an endpoint. Responses were then summed to create a scale score (Wave 1 α = .89). This measure has been shown to be valid and reliable.[46]

Results

Change Over Time in Adjustment Variables
We first tested whether students' physical and psychological states declined over the course of their first year of school using repeated measures ANOVAs.

Adjustment
Means and standard deviations for outcome variables for each wave are provided in Table 1. Consistent with our hypotheses, health problems increased during the first year, F (1, 235) = 9.20, p < .01. Students did not increase the quantity of alcohol consumed on weekdays, F (1, 241) < 1; however, they did increase the quantity consumed on weekends, F (1, 233) = 14.53, p < .001. Students also increased their frequency of alcohol consumption over time, F (1, 233) = 33.25, p < .001, and their frequency of intoxication, F (1, 223) = 31.40, p < .001. However, cigarette usage did not increase over time, F (1, 228) = 2.33. Surprisingly student's stress levels also did not increase over time, F (1, 243) = 2.26. However, their negative moods (a combination of anxiety, tension, depression, anger, confusion, fatigue, and lack of vigor) did increase, F (1, 233) = 7.92, p < .01.

Table 1 about here

What Predicts Outcomes?
We tested whether propensity to use particular coping strategies, self-esteem, participation in athletics at Wave 1 predicted changes in the aspects of psychological and physical health that changed over time. To evaluate predictive value, we computed partial correlations between each predictor variable and each outcome variable at Wave 2, controlling for the outcome at Wave 1.

Health
Students who reported having more health problems at Wave 2 were also more likely to report higher levels of perfectionism, using the coping tactics of saying "this isn't real" (denial), criticizing oneself, and learning to live with it. Students who reported having more health problems were also more likely to report lower levels of self-esteem and optimism (see Table 2).

Table 2 about here

Alcohol consumption
Students who reported drinking more frequently were less likely to report high levels of perfectionism. Students who reported drinking to intoxication more frequently were also more likely to report using alcohol as a coping mechanism and learning to live with it, but were less likely to report that they coped by finding comfort in religion (see Table 3).

Table 3 about here

Negative mood
Controlling for negative mood (a combination of anxiety, tension, depression, anger, confusion, fatigue, and lack of vigor) at Wave 1, students who reported greater negative moods at Wave 2 were also more likely to report that they coped by criticizing themselves, but they were less likely to report high levels of self-esteem and optimism.

Table 4 about here

Discussion

This study is one of the few that used a longitudinal panel design to test for changes related to entry into college. Similar to findings with law students[3,4] and medical students[1,2], the results suggest that for many undergraduate students, the college experience may actually cause physical and psychological distress. These data indicate specific factors that are linked to physical and psychological health.

Declines in Physical and Psychological Health and Attitudes

Consistent with earlier studies of law students and medical students, we found that college students' physical and psychological states declined within a year following matriculation. Physical ailments, quantity of alcohol consumed on weekends, frequency of drinking, frequency of intoxication, and negative affect were more prevalent at the end of the first year than they were at the beginning. Surprisingly, stress levels did not increase over time. This may be because orientation in and of itself may be a stressful event as it is the first taste students have of college life. If we had been able to survey students prior to orientation, we likely would have found lower levels of stress than those reported in orientation week.

Predictors and Correlates of Adjustment

This study also extends understanding of students' difficulties in college by focusing on what predicts negative outcomes. We investigated several possible explanations.

Coping styles

Several coping propensities at Wave 1 predicted physical and psychological outcome at Wave 2. As noted above, previous studies have offered conflicting results concerning which coping styles are adaptive in nature. It may be that the adaptive value of particular strategies varies with situational variables (e.g., how much actual control is present). For instance, saying "this isn't real", criticizing oneself, and learning to live with it predicted poorer health outcomes at Wave 2. Using alcohol as a coping mechanism and learning to live with it predicted frequency of alcohol intoxication at Wave 2, whereas finding comfort in religion was negatively related to frequency of intoxication at Wave 2. Finally, criticizing oneself related to negative mood at Wave 2. These findings are consistent with the studies that have found using emotion-focused coping styles are related to negative psychological outcome [13; 14]. Future work should examine what specific situational or individual variables moderate whether specific coping tactics are adaptive.

Self-esteem

Similar to previous studies, we also found that individuals with low self-esteem reported more physical health problems[17]. Unlike previous research connecting self-esteem to alcohol use[18;19], we did not find any relation between self-esteem and alcohol usage. However, we did find a relationship between self-esteem and negative moods, with individuals possessing lower levels of self-esteem reporting more negative moods.

Perfectionism

Similar to previous research, we found that individuals who scored high in perfectionism were more likely to report physical health problems[25]. However, perfectionism was negatively related to frequency of drinking. Unlike previous studies of depression[23;24], however, we did not find that perfectionism related to psychological outcomes (mood). However, we examined overall mood and not depression per se. Perhaps perfectionism only relates to certain negative mood aspects, but not all of them.

Optimism

Similar to previous research[26], we found an inverse relationship between health and optimism[27]. Individuals scoring higher on optimism reported fewer health problems than did those scoring lower on optimism. We also found that optimism was inversely related to psychological health (i.e., negative moods). Individuals scoring higher on optimism also reported fewer psychological health problems than did those scoring lower on optimism.

Extroversion
Although we did not find the relationship between extroversion and physical health reported previously[29,31], we did find that extroverts drank more frequently than their introverted counterparts. Unlike some previous research[30], we found no relationship between psychological health and extroversion. However, that study[30] only measured depression, whereas we measured overall psychological health. Future studies should examine whether extroversion relates to specific aspects of psychological health.

Limitations and Conclusions

There are three primary limitations of these data. First, only one half of the first year class participated in the both waves of the research. Although this raises concern about possible biases caused by self-selection, 93% of the students responded to at least one of the waves. Second, these data are from a single college. Replication with broader samples would strengthen confidence in the generalizability of these findings. Finally, our baseline sample was administered during freshman orientation. Some may argue that orientation is not a true baseline because technically these students are now college students, even though they have not started their college coursework yet. In the future, perhaps researchers should mail the surveys to prospective students during the summer before they begin college or at the end of their senior year of high school.

Similar to previous studies of law students and medical students[1,2,3], we found that undergraduates' physical and psychological health declined over time. We found certain coping tactics, perfectionism, low optimism, extroversion, and low self-esteem accounted for students' physical and psychological decline. Future studies should investigate steps colleges can take to help alleviate some of these problems. Regardless, we hope that the information provided by this study will help university administrators gain some insight into why college results in such a negative experience for some students, and what factors may enable students to thrive in this environment. Perhaps colleges could offer workshops for incoming freshmen during orientation week to teach them better strategies for how to cope with the rigors of college and threats to self-esteem. Many colleges have counseling centers that might be able to offer such workshops as required seminars during their orientation week. In addition, many colleges have peer advising or peer support groups that would be able to give their fellow students first hand information on what to expect during their first year of college and how to prepare for and cope with the possible challenges that they might face. Interested colleges could administer pre- and post-workshop surveys to evaluate the effectiveness of such interventions. Colleges might also wish to better encourage involvement in student organizations so that students have the opportunities to interact with their fellow freshmen. Previous studies have suggested that student involvement can help protect against maladjustment to college life[6,47].

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Table 1

Means and Standard Deviations for Changes in Physical and Psychological Health

	Wave 1	Wave 2
Health Symptoms**	7.27 (5.65)	8.49 (6.07)
Quantity of Alcohol Used on Weekdays	.38 (1.34)	.43 (1.47)
Quantity of Alcohol Used on Weekends (# drinks)***	1.58 (3.06)	2.32 (3.88)
Frequency of Alcohol Consumption***	.62 (.92)	.97 (1.16)
Frequency of Alcohol Intoxication***	.25 (.56)	.57 (.96)
Number of Cigarettes Smoked Per Day	.57 (2.63)	.88 (3.61)
Stress	1.96 (.33)	1.93 (.34)
Negative Mood**	76.06 (15.04)	78.96 (15.84)

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

Note: For Frequency of Alcohol Consumption and Intoxication, 0=never/rarely, 1=once a month, 2=once a week, 3 = 2-3 times a week, 4=daily or almost daily

Table 2

Partial Correlations between Physical Health and Predictor Variables at Wave 2 Controlling for

Wave 1 Health Status

	Health Problems at Wave 2
Coping Propensity at Wave 1	
Denial	.14*
Criticizing yourself	.16*
Learn to live with it	.13*
Self-esteem	-.21**
Perfectionism	.14*
Optimism	-.16*

* p < .05, ** p < .01

Note: Coping tactics were rated on a 4-point scale (1=I wouldn't do this at all, 4=I would do this a lot). Optimism was rated on a 5-point scale, 0 (strongly disagree) to 4 (strongly agree). Perfectionism was rated on a 6-point scale (1=never, 6=always). Self esteem was measured on a 4-point scale (1=strongly agree, 4=strongly disagree).

Table 3

Partial Correlations between Alcohol Consumption and Predictor Variables at Wave 2

Controlling for Wave 1 Alcohol Consumption

	Alcohol on Weekends	Frequency	Intoxication
Coping Propensity at Wave 1			
Use alcohol to feel better	-.02	.05	.25***
Find comfort in religion	-.09	-.06	.-.19**
Learn to live with it	-.08	.05	.15*
Perfectionism	-.08	-.20*	-.07
Extroversion	.03	.16*	.08

* p < .05, ** p < .01, *** p < .001

Note: Coping tactics were rated on a 4-point scale (1=I wouldn't do this at all, 4=I would do this a lot).
Perfectionism was rated on a 6-point scale (1=never, 6=always). Extroversion was measured on a 9-point scale with one of the two adjectives (e.g., introversion, extroversion) serving as an endpoint.

Table 4

Partial Correlations between Negative Mood and Predictor Variables at Wave 2 Controlling for

Negative Mood at Wave 1

	Negative Mood at Wave 2
Coping Propensity at Wave 1	
Criticizing yourself	.19**
Self-esteem	-.34***
Optimism	-.29***

** $p < .01$, *** $p < .001$

Note: Coping tactics were rated on a 4-point scale (1=I wouldn't do this at all, 4=I would do this a lot), as was optimism (0=strongly disagree; 4=strongly agree). Self esteem was measured on a 4-point scale (1=strongly agree, 4=strongly disagree).