A longitudinal study of 1st-year university student adjustment examined the effects of academic self-efficacy and optimism on students’ academic performance, stress, health, and commitment to remain in school. Predictor variables (high school grade-point average, academic self-efficacy, and optimism) and moderator variables (academic expectations and self-perceived coping ability) were measured at the end of the first academic quarter and were related to classroom performance, personal adjustment, stress, and health, measured at the end of the school year. Academic self-efficacy and optimism were strongly related to performance and adjustment, both directly on academic performance and indirectly through expectations and coping perceptions (challenge–threat evaluations) on classroom performance, stress, health, and overall satisfaction and commitment to remain in school. Observed relationships corresponded closely to the hypothesized model.

Change can be unsettling. The transition from high school to college can place significant demands on young adults (Tinto, 1982, 1993). College life can be demanding and stressful for a new student (Nocel, Levitz, & Saluri, 1985) and requires higher levels of independence, initiative, and self-regulation (Bryde & Milburn, 1990). It is the thesis of this article that confidence in one’s relevant abilities (i.e., self-efficacy) and optimism play a major role in an individual’s successful negotiation of challenging life transitions. We present evidence to support a theoretical model of the effects, both direct and indirect, of self-efficacy and optimism on academic performance and personal adjustment of 1st-year college students. We first argue for, and then test, a model in which moderator variables such as academic expectations and self-perceptions of coping ability mediate the effects of efficacy and optimism beliefs. Tinto (1993) argued that the key determinant of persistence and success at college is commitment. This emphasis on intention or commitment is shared by many researchers in this field (Anderson, 1985; Bean, 1990; Pascarella & Terenzini, 1980), and researchers agree that both personal and environmental characteristics interact in the prediction of persistence (Anderson, 1985; Bean, 1985, 1990; Pascarella & Terenzini, 1980; Rocha-Singh, 1990; Russell & Petrie, 1992). Both Tinto (1993) and Bean (1990) have talked about aptitudes and capabilities as contributing to a sense of academic confidence or efficacy that helps to determine goal commitment. There are some very good reasons for focusing attention more closely on academic self-efficacy as a central determinant of the success of high school to university transitions.

Self-Efficacy, Academic Persistence, and Success

Bandura (1997) described self-efficacy as “the belief in one’s capabilities to organize and execute courses of action required to produce given attainments” (p. 3). Efficacy beliefs influence the particular courses of action a person chooses to pursue, the amount of effort that will be expended, perseverance in the face of challenges and failures, resilience, and the ability to cope with the demands associated with the chosen course.

Self-efficacy has been related to persistence, tenacity, and achievement in educational settings (Bandura, 1986; Schunk, 1981; Zimmerman, 1989). A meta-analysis of research in educational settings (Multon, Brown, & Lent, 1991) found that self-efficacy was related both to academic performance (\( r = .38 \)) and to persistence (\( r = .34 \)). The contribution of self-efficacy to educational achievement is based both on the increased use of specific cognitive activities and strategies and on the positive impact of efficacy beliefs on the broader, more general classes of metacognitive skills and coping abilities.

The evidence that self-efficacy is able to improve performance in specific cognitive areas is well developed, and it is also very clear that self-efficacy is much more than the reflection of content-specific ability. In studies of mathematics problem solving, children with high efficacy were found to persist longer (Bouffard-Bouchard, Parent, & Larivee, 1991) and to use more efficient problem-solving strategies (Collins, 1982) than low-efficacy learners.

Even more impressive support for the independent contribution of efficacy beyond ability is provided by studies that manipulate, rather than measure, existing levels of efficacy. Bouffard-Bouchard (1990) and Cervone and Peake (1986) manipulated efficacy beliefs of students by providing fictitious performance norms during feedback. Students in the positive feedback (i.e., high self-efficacy) condition set higher aspirations, showed greater
strategic flexibility in the search for solutions, achieved higher performance, and were more accurate in evaluating the level of their performance than were students of equal ability who received less positive feedback.

Mediating Processes of Self-Efficacy Effects

Cognitive Processes

Confidence in one's ability to complete a task or solve a problem contributes to a more calm and thoughtful approach. For example, making decisions in complex environments requires integrating large amounts of diverse information, interpreting feedback, testing and revising knowledge, and implementing selection options. In an extensive series of studies of decision making, Bandura and his associates (Bandura & Jourden, 1991; Bandura & Wood, 1989; Wood & Bandura, 1989; Wood, Bandura, & Bailey, 1990) found that participants (usually M.B.A. students) who were higher in decision-making self-efficacy, either through self-appraisal or through manipulated performance feedback, used more thoughtful and skillful analytic strategies for improving performance than did less efficacious participants.

Self-efficacy acts on a broader level through the more effective use of metacognitive strategies, which involve planning and self-regulation—skills that become increasingly important as an individual progresses through educational levels to environments that are less ordered and constrained (e.g., college or university life). Metacognition involves the appraisal and control of one's cognitive activity (i.e., thinking about thinking) and making use of all the resources available in the task and social environment to achieve goal attainment (Zimmerman, 1995; Zimmerman & Martinez-Pons, 1988). Students high in academic self-efficacy make greater use of effective cognitive strategies in learning, manage their time and learning environments more effectively, and are better at monitoring and regulating their own effort. Academic self-efficacy is related to students' confidence in mastering academic subjects, which in turn predicted grades in school.

Motivational Processes

Bandura (1997) argued that self-efficacy has its most powerful motivational effects through the process of cognized goals. Goals provide the basis for self-regulation of effort by providing a standard for judging the adequacy and effectiveness of goal-relevant effort and strategy (Bandura & Cervone, 1983). Specific and difficult (but not impossible) goals are strongly related to performance in a wide variety of tasks and settings (Locke & Latham, 1990). Self-efficacy leads to higher goals being set (Wood et al., 1990; Zimmerman, Bandura, & Martinez-Pons, 1992), and high goals increase the positive effects of self-efficacy by providing an evaluative context to aid self-regulation (Cervone, Jiwni, & Wood, 1991). When goals provide a standard, highly efficacious persons show a stronger relationship among self-evaluation, self-direction, and performance (Bandura & Schunk, 1981). Goals, and the broader category of positive expectations, are one type of vehicle by which efficacy effects are manifested.

Affective Processes

Anxiety and negative emotions can be debilitating. Self-efficacy has an impact on affect through its effects on attention and con-
particular, we expected generalized positive expectations of optimists to be related to the more specific academic expectations, which we hypothesized to underlie classroom performance. Optimism should also have considerable influence on the perceptions of extant demands and available resources that are at the core of challenge and threat evaluations.

Challenge–Threat Evaluations as Moderators of the Self-Efficacy–Adjustment Relationship

The most extensive operationalization, elaboration, and extension of the challenge–threat concept has been offered by Blascovich and his associates (Blascovich & Tomaka, 1996; Tomaka, Blascovich, Kelsey, & Leiten, 1993). Their work is particularly relevant to the present study because of their focus on “motivated performance situations,” which are situations that are “goal relevant for performers and require instrumental cognitive–behavioral responses by them” (Blascovich, Mendes, Lickel, & Hunter, in press, p. 3). Transitions to university life do indeed involve goal-relevant performance requiring effective response across an extended time period.

The perception of a situation as challenging or threatening depends on the individual’s phenomenological experience of the relationship between situational demands and coping resources. Threat occurs when the individual experiences resources as insufficient to meet demands, and challenge occurs when resources are felt to be adequate to demands. A considerable body of empirical work has shown that the challenge–threat evaluation is strongly related to affective responses and physiological reactivity, with threat evaluations associated with potentially pernicious patterns of cardiovascular reactivity.

Recently, Blascovich and Mendes (in press) more finely elucidated the factors that influence demand and resource evaluations. Demand evaluations are based on perceptions of the amount of required effort, danger, and uncertainty involved in the particular performance situation. The 1st year of college might contain elements of all three of these factors in varying amounts. Clearly, estimates of required effort are very prominent in the new student’s appraisal of the situation. Uncertainty about new friends, living conditions, and finances is also likely to be a part of many students’ worries. The potential for academic failure, social embarrassment, or even physical threats (e.g., from sexual attack, drug or alcohol availability, etc.) may also enter into a new student’s evaluations of situational demand.

Blascovich and Mendes (in press) described resource evaluations to include perceptions of one’s knowledge and abilities relevant to the task, availability of external support, and dispositional characteristics. Students who come from scholastically excellent high schools with a strong college-preparatory curriculum may see themselves as possessing many resources. Available support networks of family, peers, faculty, or institutional structure also enhance resource evaluations. In particular, the present research hypothesizes that dispositional characteristics related to efficacy and optimism should have a very strong impact on resource perceptions. Students high in academic self-efficacy should see themselves as more able to meet the demands of the situation and should therefore be more likely to regard the 1st year of college as a challenge rather than a threat. Optimism, associated with generalized positive expectations and more active coping styles, should be related both to higher expectations for success in academic pursuits and to more positive expectations and reactions to adversity or emotional demand (i.e., stress).

The Hypothesized Model

In the present study, we surveyed the 1st-year class at a state university. Measures of academic self-efficacy, optimism, and challenge–threat evaluation were taken immediately after the completion of the first quarter of university work but before students had received formal evaluation feedback. Measures of self-rated academic performance, future academic expectations, stress, health, and satisfaction were taken at the same time. In a follow-up survey conducted near the end of the first academic year, measures of academic performance (self-rated), academic expectations, stress, health, and adjustment were repeated. Faculty ratings of academic performance for all courses taken during the 1st year were also collected.

On the basis of our interpretation of the efficacy literature, we expected academic self-efficacy to have a profound impact on the academic performance and personal adjustment of 1st-year college students as they navigate the demanding environment of university life. Self-efficacy was expected to exert direct and mediated effects on performance, health, and adjustment. Figure 1 displays the path diagram for the hypothesized model.

Previous findings on the relationship of self-efficacy to academic and cognitive performance (e.g., Zimmerman, 1989) suggest that the calm and thoughtful demeanor encouraged by confidence should result in direct effects of academic self-efficacy on classroom performance. Highly efficacious students should make better use of analytic strategies and metacognitive skills for managing the learning environment, resulting in better learning and better evaluations.

Given the importance of goals on perseverance and the effective use of self-regulatory strategies, we also expected academic self-efficacy to affect performance through its impact on academic expectations. However, we believe that expectations arise out of broad evaluations of the situation and its demands, so we expected an indirect path to expectations through challenge–threat evaluations. We predicted that self-efficacy and optimism would influence challenge–threat evaluations, which would in turn have an effect on academic expectations, which would predict academic performance.

The impact of self-efficacy on personal adjustment and health was presumed to be moderated by challenge–threat evaluations. The challenge–threat evaluation seems most closely related to affective coping and stress management. We predicted that the effects of dispositional characteristics, academic self-efficacy, and optimism on perceived stress, health, and adjustment would be moderated by challenge–threat evaluations. Note that high school grade-point average (GPA) was included in the model as a covariate.

Method

Overview

The participants in this study were members of the 1st-year class at the University of California, Santa Cruz. All 1st-year students received a questionnaire packet during the 1st week of the winter quarter. The
University of California, Santa Cruz, campus has an unconventional grading policy involving written evaluations in place of formal grades, and at this point in the school year, the students had experienced one quarter of university-level work but had not yet received a detailed evaluation of their performance. Participants received a second packet of questionnaires in the last weeks of the spring quarter, close to the end of the academic year.

The questionnaires focused on academic and social adjustment during the 1st year. The first questionnaire elicited student self-reports regarding their perceived academic self-efficacy, social self-efficacy, and general optimism as well as ratings of current and expected academic performance, ratings of current and expected social adjustment and social support, assessments of the level of stress-eliciting demand in their academic and social environments and their abilities to cope with that demand (i.e., challenge-threat assessments), and ratings of stress and illness. The second questionnaire repeated the measures that were included in the first administration, with the exception of self-efficacy and optimism. (The present article reports the results of this study with respect to academic achievement and does not include results related to social adjustment. The effects for social adjustment were based on a different model that was tested separately.)

Questionnaires were mailed to 1,600 1st-year students at their campus addresses in the eight residential colleges of the university. Each questionnaire was preceded by a letter from the college provost (the chief academic officer of the college) encouraging participation in the study. These letters were identical for all colleges. The provost's letter was followed by a letter from the principal investigator, which explained the purposes of the study (i.e., "an attempt to understand the psychological and social factors that influence student adjustment to college") and included a plea for participation, release forms, and information regarding informed consent. As an added incentive for participation in each administration of the survey, all participants would become eligible for a lottery drawing for gift certificates at the campus bookstore, including one $250 prize and five $50 prizes. Approximately 1 week after each mailing, research assistants attempted to call every student to encourage return of the questionnaire. At each contact, students were informed that participation was completely voluntary and that all responses would be kept anonymous and confidential.

Participants

The first questionnaire administration elicited complete responses from 373 (23%) students. The second questionnaire was mailed only to those participating students, and of those, 256 (69%) responded again. Table 1 provides a breakdown of the samples by demographic characteristics. Responders and nonresponders to the second administration were compared on data from the first administration, and very slight and nonsignificant differences between the two groups were found.

Measures

High school GPA. Participants' secondary school GPAs were obtained from their university records (with permission).

Academic self-efficacy. An eight-item measure was developed for the present study. Participants were asked to rate on 7-point Likert scales reflecting their confidence in their ability to

<p>| Table 1 |
| Participants’ Characteristics |</p>
<table>
<thead>
<tr>
<th>Wave 1 (n = 373)</th>
<th>Wave 2 (n = 256)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>78 (21%)</td>
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<tr>
<td>Females</td>
<td>295 (79%)</td>
</tr>
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<td>Age</td>
<td></td>
</tr>
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<td>17</td>
<td>3 (0.8%)</td>
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<td>18</td>
<td>217 (60%)</td>
</tr>
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<td>19</td>
<td>142 (38%)</td>
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<tr>
<td>20+</td>
<td>7 (0.3%)</td>
</tr>
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<td>Ethnicity</td>
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<td>White</td>
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</tr>
<tr>
<td>Hispanic</td>
<td>54 (15%)</td>
</tr>
<tr>
<td>Asian</td>
<td>58 (16%)</td>
</tr>
<tr>
<td>Other</td>
<td>51 (14%)</td>
</tr>
</tbody>
</table>
perform well academically. Following Bandura (1997), the measure was designed to reflect a variety of specific skills pertinent to academic achievement, including scheduling of tasks, note taking, test taking, and researching and writing papers, and included general statements regarding scholarly ability. Because the intent was to predict overall college performance, the self-efficacy measure did not focus on highly specific subjects such as math, science, languages, and so on. Coefficient alpha was .81.

Optimism. The Life Orientations Test (Scheier & Carver, 1985) was used as a measure of generalized optimism. Eleven items were rated on 5-point scales of agreement ranging from 1 (strongly agree) to 5 (strongly disagree). High scores on the measure indicate that respondents “believe that things usually work out well for them,” “expect things to go their way,” “are always optimistic,” and so on. Scheier and Carver (1985) reported a coefficient alpha of .76 and test-retest reliability of .79 (at 4 weeks). For the present sample, the coefficient alpha was .80.

Challenge–threat. Using a procedure similar to that used by Blascovich and his colleagues (Blascovich & Tomaka, 1996), we asked participants to rate the “level of pressure and demand expected in your academic work during the next year” on a 7-point scale ranging from 1 (not much at all) to 7 (a very great deal). Following that response, we asked participants to rate their ability to cope with the rated level of academic pressure and demand (these ratings were made on the same 7-point scale). The challenge–threat score was derived by subtracting the rating of demand from the level of coping ability such that numbers larger than zero reflect the participants’ belief that coping ability is adequate (challenge situation), and numbers below zero indicate that the participants perceive demand as exceeding coping ability (threat situation).

Academic self-rating. Participants rated their recent academic performance on a 5-point scale ranging from 1 (not good) to 5 (excellent). This measure was created for the present study.

Academic evaluations. The university has a grade-optimal evaluation policy. For every class, all students receive a narrative evaluation written by the instructor. These evaluations are filed with the registrar and sent to the students approximately 3 to 5 weeks after the end of the academic quarter. Students may also request a grade in the course, and approximately 20% of the students choose that option. However, this percentage varies by major. Because grades were not available for all participants, we chose to use the narrative evaluations as the measure of classroom performance. Raters were trained to convert the narrative evaluations to a quantitative index. It is very common for narrative evaluations to follow a customary form and language. The use of common keywords (e.g., outstanding, excellent, satisfactory) makes them roughly comparable with levels of performance indicated by grades. Raters were trained to use the keywords to convert the evaluations to a quantitative score. The index ranged from 1 to 5. Interrater reliability for the evaluations averaged .85.

Academic expectations. Participants expressed their expectations for future academic performance by responding, on 5-point agreement scales (1 = strongly agree, 5 = strongly disagree), to four items concerning performance in courses, getting good evaluations, meeting academic goals, and so on. Coefficient alpha for this measure was .87 for both administrations.

Health. A 20-item scale (created for this study) asked participants to rate on a 4-point scale (1 = rarely/none, 2 = somelight, 3 = occasionally, 4 = most/all) how often they had experienced a range of physical and mental health symptoms or problems, including sleeping problems; headaches or dizziness; stomach problems; eating problems; feelings of shame, loneliness, insecurity, panic, worthlessness, and depression; drug or alcohol overdose; and so on. Coefficient alphas for this measure were .90 for both administrations.

Adjustment. Pascarella and Terenzini’s (1980) college social support scale includes subscales measuring satisfaction with academic progress (Academic and Intellectual Development) and intention to persist at the university (Institutional and Goal Commitment). Items from these subscales were combined to create a measure of satisfaction with academic progress and intention to continue at the university, which we labeled “adjustment.” The resultant scale included eight items rated on 5-point scales of agreement (1 = strongly agree, 5 = strongly disagree). Examples of specific items include “I am satisfied with the extent of my intellectual development since enrolling at the university,” “I am satisfied with my academic experience at this university,” and “It is important for me to graduate from this college.” Coefficient alphas of .78 were found for both administrations of the measure.

Results

A structural equation modeling (SEM) approach was used to test the adequacy of the hypothesized model (e.g., Bentler, 1980; Jöreskog & Sörbom, 1993). The EQS program was used for the analyses. The maximum-likelihood (ML)-based Comparative Fit Index (CFI) and the Standardized Root Mean Square Residual (SRMR) were used to evaluate the extent to which the hypothesized model fit the observed data (Hu & Bentler, 1998, 1999). In addition, the robust standard errors were used to evaluate the significance of parameter estimates (Bentler & Dudgeon, 1996; Hu, Bentler, & Kano, 1992). The quality of solution for the model reported here was excellent (i.e., there was no convergence problem and no out-of-range parameter estimate).

Table 2 presents the means, standard deviations, and zero-order correlations for all of the observed variables. Because female students were overrepresented in our sample, we analyzed for gender effects. Participant gender was dummy coded and correlated with each of the variables. There were no substantial relationships (rs ranged from .01 to .12), so gender was not included as a variable in the model, and male and female students were pooled for subsequent analyses.

For the hypothesized model, the SEM technique was used to assess (a) the direct effect of self-efficacy on challenge–threat evaluations, academic expectations, and academic performance (measured by two indicators: self-rated academic performance and faculty ratings of academic performance); (b) the direct effect of optimism on self-efficacy, challenge–threat evaluations, and academic expectations; (c) the direct effect of challenge–threat evaluations on academic expectations and stress; (d) the direct effect of academic expectations on academic performance; (e) the direct effect of stress on health and adjustment; (f) the mediated effect of self-efficacy on academic expectations, academic performance, stress, health, and adjustment; and (g) the mediated effect of optimism on challenge–threat evaluations, academic expectations, academic performance, stress, health, and adjustment. The direct
effect of high school GPA on self-efficacy and academic performance and the direct effect of academic performance on levels of stress and adjustment were also examined. Note that the inclusion of GPA allowed us to examine the effects of self-efficacy and optimism on various outcome variables after partialing out the effect of GPA. (Ideally, we would want to use latent variables in our structural equation model. This was not possible in the present study because of sample size limitations and the lack of multiple indicators for some of our variables. Therefore, some of the relationships reported may be slightly inflated or deflated.)

Figure 2 displays the path diagram and the standardized parameter estimates for the hypothesized model. The ML-based CFI was .97, and the ML-based SRMR was .057. These fit measures reveal that there was a relatively good fit between the hypothesized model and the observed data.

The factor loading of faculty ratings of academic performance on the construct of academic performance (standardized factor loading = .65) was substantial in magnitude and was significant at \( p < .001 \). Note that the unstandardized factor loading for self-rated academic performance was fixed to 1 for identification purposes (see Figure 2).

There were significant and substantial direct effects of self-efficacy on challenge-threat evaluations (standardized coefficient = .27, \( p < .001 \)), academic expectations (standardized coefficient = .28, \( p < .001 \)), and academic performance (standardized coefficient = .34, \( p < .001 \)). Highly efficacious students had higher challenge-threat evaluations (i.e., they perceived academic work demand to be more of a challenge than a threat), greater academic expectations, and better academic performance.

(An analysis of the zero-order correlations between academic self-efficacy and challenge-threat reveals that efficacy affected evaluations of coping resources \( r = .39, p < .001 \) rather than evaluations of demands \( r = -.01, ns \).) Optimism had a moderate effect on self-efficacy (standardized coefficient = .31, \( p < .001 \)) and a small effect on challenge-threat evaluations (standardized coefficient = .16, \( p < .01 \)) and academic expectation (standardized coefficient = .15, \( p < .01 \)). Highly optimistic students tended to be more efficacious. They had more positive challenge-threat evaluations and higher academic expectations. (Again, the effects of optimism on challenge-threat evaluations, similar to academic efficacy effects, were on perceptions of resources \( r = .28, p < .001 \) rather than on perceptions of demands \( r = -.08, ns \).)

There were significant mediated effects of self-efficacy on academic expectations (standardized coefficient = .30, \( p < .001 \)) and stress (standardized coefficient = -.26, \( p < .001 \)) were significant, indicating that students with higher challenge-threat evaluations had higher academic expectations and experienced less stress. The significant standardized path coefficient (.22, \( p < .001 \)) between academic expectation and academic performance indicates that students with higher academic expectations had better academic performance.

Students who experienced more stress tended to have greater health problems (standardized coefficient = .68, \( p < .001 \)) and worse adjustment (standardized coefficient = -.20, \( p < .001 \)). Students with higher high school GPA were more efficacious (standardized coefficient = .23, \( p < .001 \)) and had higher academic performance (standardized coefficient = .45, \( p < .001 \)). The direct effects of academic performance on stress (standardized coefficient = -.19, \( p < .001 \)) and adjustment (standardized coefficient = .19, \( p < .01 \)) were significant but small in magnitude. These results suggest that students with better academic performance experienced less stress and were better adjusted.

There were significant mediated effects of self-efficacy on academic expectations (standardized coefficient = .08, \( p < .001 \)), academic performance (standardized coefficient = .08, \( p < .001 \)), stress (standardized coefficient = -.16, \( p < .001 \)), health (standardized coefficient = -.15, \( p < .001 \)), and adjustment (standardized coefficient = .11, \( p < .001 \)). Highly efficacious students had higher challenge-threat evaluations, which in turn resulted in greater academic expectations, which led to better academic performance. Higher levels of self-efficacy also resulted in (through challenge-threat evaluations) less stress, which in turn resulted in less health problems and better adjustment.

There were also significant mediated effects of optimism on challenge-threat evaluations (standardized coefficient = .08, \( p < .001 \)), academic expectations (standardized coefficient = .16, \( p < .001 \)),
SELF-EFFICACY IN UNIVERSITY ADJUSTMENT

Figure 2. The path diagram and the standardized parameter estimates for the hypothesized model. Squares are used to represent measured variables, large circles are used to represent latent factors, and small circles with numbers are residual variances. GPA = high school grade-point average; ACAPERM = academic performance; ASR = self-rated academic performance; ACAEXP = academic expectations; EVAL = faculty ratings of academic performance; ASE = academic self-efficacy; CHALL = challenge-threat evaluations; OPT = optimism; HEALTH = health problems; ADJUST = adjustment.

.001), academic performance (standardized coefficient = .17, \( p < .01 \)), stress (standardized coefficient = \(-.10, p < .001\)), health (standardized coefficient = \(-.06, p < .001\)), and adjustment (standardized coefficient = \(.05, p < .001\)). Highly optimistic students showed a positive effect (through self-efficacy) on challenge-threat evaluations, which in turn had a positive effect on academic expectations, which led to better academic performance. Optimism led (through challenge-threat evaluations) to less stress, which in turn led to less health problems and better adjustment.

Discussion

There was compelling support for the role of self-efficacy and optimism in 1st-year college students' success and adjustment. Self-efficacy directly and indirectly showed powerful relationships to academic performance and personal adjustment of these 1st-year college students. Optimism, through its effects on challenge-threat evaluations, was related to academic performance and adjustment. These results are especially meaningful given that the SEM analysis was performed on a clearly specified, a priori theoretical model and because the longitudinal design allowed for the use of variables measured early in the academic year to predict outcomes at the end of the year.

As predicted, academic self-efficacy was significantly and directly related to academic expectations and academic performance. Also as predicted, academic expectations were related to performance. Students who enter college with confidence in their ability to perform well academically do perform significantly better than do less confident students. Likewise, students who have higher expectations for academic success show higher performance. Some of these effects may be caused by superior academic ability, which could be related to both confidence and performance. However, after we have accounted for the effect of high school GPA, which might be regarded as another reasonable measure of academic ability, confidence (i.e., self-efficacy) still plays a significant role in both performance and expectations for performance. In other words, academic self-efficacy has predictive power above and beyond more objective measures such as past performance on academic tasks.

It must be acknowledged that high school GPA is itself related to academic self-efficacy and that high school performance is...
likely to have been affected by the levels of academic self-efficacy that existed at the time. For this reason, our approach provides a conservative test, because current levels of self-efficacy are probably correlated with academic self-efficacy during high school. Removing the effects of GPA greatly strengthens the implications for the role of contemporaneous self-efficacy to university 1st-year performance. The level of self-efficacy that the students reported during the 1st year of university life is a powerful predictor of performance. The level of self-efficacy that the students reported during the 1st year of university life is a powerful predictor of performance. The level of self-efficacy that the students reported during the 1st year of university life is a powerful predictor of performance.

In addition to the direct effects of self-efficacy on performance, the indirect pathways are also informative. Self-efficacy was strongly related to students' perceptions of their capacities for responding to the demands of college life, and optimism also had a significant, although weaker, relationship. Confident and optimistic students were more likely to see the university experience as a challenge rather than a threat. As Blascovich, Mendes, Lickel, & Hunter (in press) would predict, the impact of self-efficacy and optimism were on the perceptions of available resources. Challenged students exhibited higher expectations, which were in turn related to better performance. A challenge orientation also reduced the students' experience of stress, with concomitant reductions in reports of illness and more positive ratings of personal adjustment to, and satisfaction with, college life. The fact that the effects of self-efficacy and optimism on stress, health, and adjustment were totally mediated by challenge threat (i.e., self-efficacy and optimism had no direct relationships to those variables) reveals the powerful impact of challenge-threat evaluations.

The relationships among variables observed in this rather extensive data were quite consistent with our hypotheses in terms of the direct and mediated effects of academic efficacy, optimism, and challenge-threat evaluations. The variables chosen for the analysis were designed to allow for as clear conclusions as possible. The use of high school GPA as a covariate, for example, helps to make less tenable the possibility that the academic self-efficacy and generalized optimism effects are merely a correlational by-product of objective scholarly ability (i.e., that it is the ability beliefs rather than the efficacy beliefs that are the major causal influence on performance and adjustment). Also, the prospective use of the predictor variables (i.e., self-efficacy, optimism, challenge-threat) from the first administration of the survey to predict the outcome variables (i.e., performance, stress, health, and adjustment) taken from the later administration of the survey reduces concerns about halo effects or method variance. One caveat is in order, however. Although our sample size was quite satisfactory, the response rate was only about 25% of the overall population for the first administration and even less after the second. We have no reason to believe that these rates are unusual for this population or that they are a serious threat to generalizability, but subsequent replications would be helpful to establish the validity of our findings.

We see that the psychological orientations that students bring to the transition to university life are critical to their success in the new setting. Confident and optimistic students view their worlds in ways that are more likely to result in successful adjustment. Such students hold higher expectations for themselves in part because they trust in their capabilities and in part because they see the world, and their ability to respond to it, as less threatening. Because they are energized by the challenges of life rather than frightened and immobilized by the threats, they are calmer, less stressed, healthier, happier, and better adjusted.

We did not directly measure the specific attitudes and behaviors that might mediate the more general relationships observed in our study. For example, we do not know the nature of the direct effects of academic self-efficacy on academic performance, but we do know that confident students work harder, persist longer, and use better learning and problem-solving strategies (e.g., Bouffard-Bouchard, 1990; Bouffard-Bouchard et al., 1991; Cervone & Peake, 1986) and that efficacious students manage the learning environment more efficiently (e.g., Pintrich & Schrauben, 1992; Zimmerman & Martinez-Pons, 1988). Future research might usefully examine the specific study habits, test-taking strategies, and related behaviors of highly efficacious college students to test their relationship to academic success. Similarly, our measures of academic expectations were more general and global than they were measures of specific goals in specific courses or settings. By measuring specific goals, future studies could elucidate the pathway for the effects of high expectations.

Most intriguing and deserving of future study is the powerful role of challenge-threat evaluation in the moderation of self-efficacy and optimism effects. Challenge-threat played a role in affecting positive academic expectations as well as the central role in forming perceptions of the stressfulness of college life. Most of the work by Blascovich and his associates has been accomplished in careful laboratory experiments that have revealed that challenge judgments are associated with self-reports of lower stress and physiological measures of more beneficent cardiovascular reactions. The present longitudinal study indicated that challenge judgments in a long-term, real-world setting were also associated with lower self-reports of stress and with less frequent reports of adverse health symptoms. The implied connection between less beneficial reactions to potentially stress-inducing demands on moment-to-moment bases and long-term measures of health and adjustment calls for further validation. Physiological measures of cardiovascular reactivity that could be related to long-term health would be excellent additions to future studies.

The results of our study are strong and consistent with our theoretical predictions, but a few caveats are in order regarding the potential generalizability of our findings. The Santa Cruz campus of the University of California differs from a typical university in some respects. The campus has a reputation for a nontraditional and experimental approach to education (as evidenced by the evaluation system) and may attract somewhat less conventional students. Furthermore, our sample, although large in absolute numbers, included only about a quarter of the population surveyed and overrepresented female students. There were no obvious differences found between the participants in our study and the general student population or between the male and female participants. Also, constraints of sample size and measures chosen reduced our ability to use latent variables in our model, adding some error. Given the strength and clarity of our findings, the problems with our study do not seem serious enough to drastically reduce its meaningfulness. Nonetheless, some caution might be exercised in drawing conclusions, and future research and replication are strongly warranted.

In fact, the validation of the role of confidence and optimism in successful college adjustment is only the first step in addressing an
important phenomenon. Researchers need to establish the factors that encourage the development and maintenance of positive self-perceptions and beliefs, particularly academic self-efficacy, from the early years of preschool, elementary school, and secondary school right through to postsecondary education. In particular, the factors that influence the development of such efficacy beliefs for educationally at-risk populations are worthy of careful study. The results of the present research give us confidence that such research is likely to yield important, meaningful, and useful information.

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