

Longitudinal Test of a Social Cognitive Model of Academic and Life Satisfaction

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Abstract

The authors tested a social cognitive model of academic and overall life satisfaction in a sample of 769 university students. The predictors, drawn from Lent's unifying perspective on well-being and psychosocial adjustment, included social cognitive (academic self-efficacy, goal progress, social support) and personality (trait positive affect) variables that have previously been shown to relate to domain and life satisfaction. Participants completed all measures twice, 8 weeks apart, during an academic semester, to examine the hypothesized relations among the variables longitudinally. Structural equation modeling results supported the overall model, including the posited bidirectional paths between self-efficacy and goal progress. Contrary to expectations, however, academic domain and global life satisfaction did not yield significant bidirectional paths to one another. Implications for future research and practice are discussed.

Keywords

life satisfaction, positive psychology, social cognitive theory, longitudinal model

There has recently been an upsurge in inquiry on positive psychological functioning and strengths-based approaches to human functioning (e.g., Snyder & Lopez, 2002; Walsh, 2003). One particular focus of study has been on emotional or psychological well-being (Diener, Suh, Lucas, & Smith, 1999; Ryff & Singer, 1998). In the social and personality psychology literature, well-being has typically been conceptualized as a global, trait-like construct that is relatively static over time and context. In the counseling and vocational psychology, however, there is a long tradition of studying positive functioning in a developmental context, even where individuals are coping with relatively distressing conditions (Super, 1955). In keeping with this tradition, Lent (2004) offered a view of well-being as relatively dynamic and susceptible to counseling interventions. This view was subsequently adapted to well-being in the context of school and work domains (Lent & Brown, 2008).

Psychological models of well-being may be characterized in several ways. For instance, one useful distinction is between (a) *eudaimonic* approaches that define well-being in terms of meaning,

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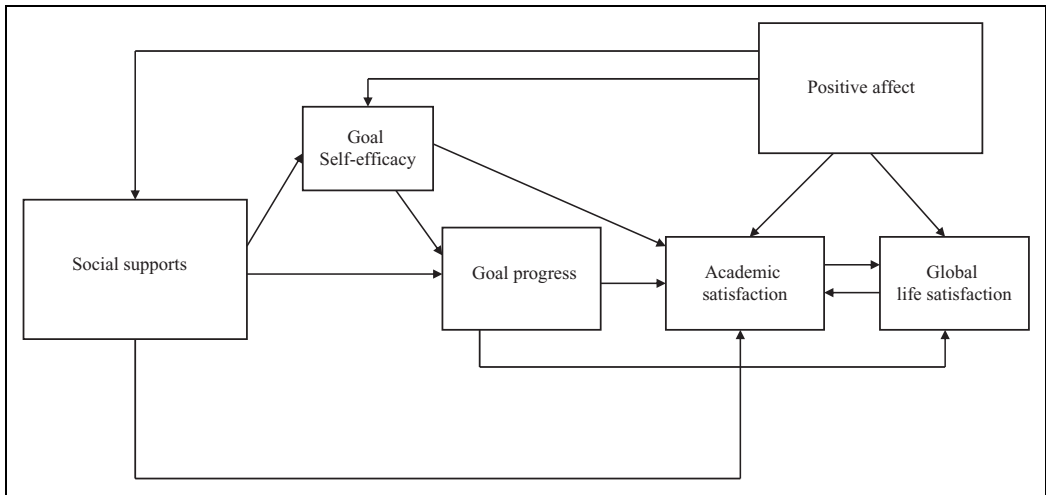


Figure 1. Social cognitive model of well-being.

purpose, and growth, and (b) *hedonic* approaches that view well-being as synonymous with happiness or feeling good (Ryan & Deci, 2001). Ryff's (1989) 6-component model of psychological well-being is a good example of the eudaimonic approach, whereas Diener's (1984) tripartite conception of subjective well-being (SWB) typifies the hedonic approach. Another useful distinction is between *top-down* and *bottom-up* approaches. Top-down approaches, which are closely aligned with the personality perspective, portray well-being as largely an outcome of heritable traits, whereas bottom-up approaches tend to focus on situational and other (especially, cognitive, behavioral, and social) determinants of well-being (Diener et al., 1999; Heller, Watson, & Ilies, 2004).

Lent's (2004) theoretical framework attempts to integrate these disparate views and to derive practical implications for promoting or restoring clients' well-being. For instance, the framework disaggregates the three components of SWB (positive affect, negative affect, and life satisfaction) and considers the paths by which they may interrelate. It also combines personality, cognitive, behavioral, and social variables that have all been linked to well-being outcomes. As shown in Figure 1, satisfaction within central life domains, such as work, is seen as partly determined by factors over which individuals may assert some degree of control, for example, by setting and progressing at personal goals (Brunstein, Schultheiss, & Grassman, 1998). Domain satisfaction, in turn, can spill over into overall life satisfaction. Conversely, people who are generally satisfied with their lives tend to be satisfied within specific life domains. This bidirectional relationship, shown in Figure 1, is consistent with recent meta-analytic findings (Heller et al., 2004).

While drawing on a variety of theoretical perspectives on well-being (e.g., Cantor & Sanderson, 1999), Lent (2004) used social cognitive theory as a fulcrum for integrating cognitive-person, behavioral, and contextual determinants of domain and life satisfaction. In particular, in addition to personality and affective traits, domain satisfaction is posited to be affected by goal-directed behavior (e.g., making progress toward one's valued goals), self-efficacy, outcome expectations, and environmental supports and resources within a given life domain. However, the model also makes some predictions that do not follow directly from social cognitive theory. For example, it posits that goal-directed behavior may affect overall life satisfaction directly as well as indirectly via domain satisfaction, and that personality and affective traits, such as positive and negative affect, may relate to perceptions of self-efficacy and environmental support. Such trait/social cognitive paths, though not suggested by social cognitive theory, are consistent with certain research findings

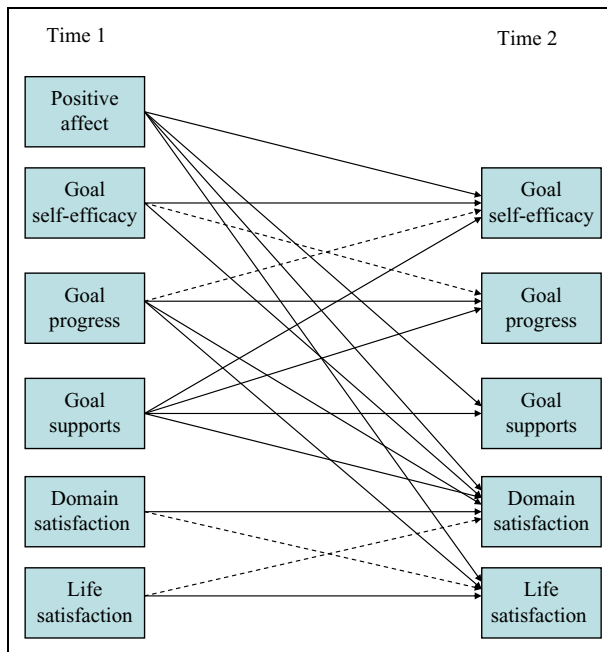


Figure 2. Hypothesized longitudinal relations among the variables in the social cognitive well-being model. Note: The direction of path arrows indicates hypothesized temporal precedence. Each outcome (Time 2) variable is autocorrelated with its corresponding Time 1 score. Hypothesized bidirectional relationships are indicated by dotted lines.

(e.g., Ilies & Judge, 2003) and were deemed necessary to integrate personality and social cognitive views on well-being.

In a pair of cross-sectional studies, Lent et al. (2005) used different measures and methodologies (nomothetic and idiographic) to test the integrative model of well-being. Results indicated that satisfaction in specific life domains (social and academic spheres) is predicted by domain-specific social cognitive variables (e.g., environmental resources, self-efficacy, goal progress). Furthermore, domain satisfaction accounted for unique variance in global life satisfaction beyond personality (trait positive affectivity, extraversion). Positive affect was significantly related to environmental supports, self-efficacy, domain satisfaction, and global life satisfaction. In a subsequent study, Lent, Singley, Sheu, Schmidt, and Schmidt (2007) found that an abbreviated version of the model accounted well for academic satisfaction in a sample of engineering students.

One limitation of these initial tests of the integrative model of well-being is that they have used cross-sectional designs. A necessary though not sufficient basis for determining causality is that presumed causal variables need to precede effects in time. To better examine this issue of temporal precedence, the current study tested the model with a longitudinal design. In particular, as shown in Figure 2, we examined the tenability of a model in which social cognitive (self-efficacy, environmental supports, goal progress) and trait (positive affect) variables serve as temporal antecedents of domain and global life satisfaction. Each of the dependent variables was assessed at two points in time, thereby allowing a test of the extent to which the predictors explain unique variance in the dependent variables, controlling for the auto-regressive paths (i.e., the relation of a variable to itself between times 1 and 2). Such a design enables a rigorous test of the prediction of change in a dependent variable (i.e., does *X* at Time 1 predict *Y* at Time 2, controlling for the effects of *Y* at Time 1?).

Previous research and theory suggest that two sets of constructs included in the model may yield reciprocal, or bidirectional, relationships. Specifically, as noted earlier, domain and global life satisfaction may relate to one another bidirectionally, with domain satisfaction serving as both a cause and an effect of overall life satisfaction. Lent's (2004) model also posits that self-efficacy and goal progress are reciprocally related. That is, higher self-efficacy may enable progress at one's central goals, and greater goal progress may, in turn, strengthen self-efficacy. Our model testing included an examination of these two sets of bidirectional relationships, which are shown as dotted paths in Figure 2. Parenthetically, we did not include outcome expectations in the current study because this variable has not been found to contribute uniquely to the prediction of domain satisfaction in prior model tests (Lent et al., 2005, 2007).

In sum, the current study was intended to test the integrative model of well-being longitudinally and in a context relevant to career development. Specifically, we reasoned that academic satisfaction and work satisfaction are likely to be predicted by conceptually similar, though domain-specific, independent variables, such as self-efficacy. Moreover, there is a long tradition of studying educational behavior as a precursor to, or analogue of, vocational behavior in the career literature (e.g., see Lent, Brown, & Hackett, 1994). Our method of operationalizing the social cognitive variables was also intended to be relevant to career assessment by examining the utility of idiographically structured measures. That is, consistent with other studies that have examined the linkage of personal goals to well-being (e.g., Elliot & Church, 2002; Lent et al., 2005), we asked participants to state their academic goal in their own words rather than using nomothetic, investigator-structured goal statements. These person-specific goals were then used to create a basic referent for our assessment of self-efficacy, goal progress, and goal support (e.g., the measure of goal progress involved an individual's perception of how much progress he or she was making toward his or her own primary academic goal).

Method

Participants

Participants were 769 students (500 women and 269 men) at a large Mid-Atlantic university who completed the measures at each of the two online assessments, 8 weeks apart. The sample was reasonably representative of the larger campus population in its proportions of freshmen (27%), sophomores (21%), juniors (20%), seniors (15%), fifth year (or longer) undergraduate students (5%), and graduate students (13%). Their mean self-reported grade point average (GPA) was 3.20, $SD = .60$. Seventy-six percent of the participants were European American, 4% were African American, 10% were Asian American, 4% were Latino/Latina, 1% were Middle Eastern, 1% were Pacific Islanders, and 4% reported "other" racial/ethnic identifications.

Measures

Participants were asked to indicate their gender, year in school, ethnicity, GPA, e-mail address, and a personal identification number (used to match participants' responses at Time 1 and Time 2) on a demographics form. They also completed a set of theory-based measures at both assessments. Each measure yielded adequate internal consistency reliability estimates (α s ranged between .83 and .93; see Table 1). At the Time 1 survey, participants were asked to type in their own self-generated academic goal statement. The Web site instructions read, "Please enter in an important academic goal that you could accomplish during the current semester (e.g., 'Make the Dean's list')." Participants' personal goal statements were then saved in a database and incorporated into each instrument that referred specifically to participants' own goals (i.e., goal self-efficacy, goal progress, goal supports). Thus, the goal-relevant measures referred to one's self-generated goal (e.g., "How confident are you

Table 1. Means, Standard Deviations, and Correlations Among Predictor and Criterion Variables

Variable	1	2	3	4	5	6	7	8	9	10	11	M	SD	α
1. T1 Self-efficacy	–											4.43	0.66	.90
2. T1 Goal progress	.45	–										3.70	0.83	.84
3. T1 Goal support	.30	.35	–									3.75	0.70	.83
4. T1 Positive affect	.26	.40	.36	–								3.44	0.71	.88
5. T1 Academic sat.	.42	.71	.42	.45	–							4.61	1.19	.83
6. T1 Life sat.	.35	.36	.39	.46	.43	–						4.73	1.32	.89
7. T2 Self-efficacy	.60	.39	.24	.26	.40	.33	–					4.33	0.79	.93
8. T2 Goal progress	.38	.62	.30	.35	.52	.31	.55	–				3.70	0.88	.86
9. T2 Goal support	.30	.39	.68	.38	.44	.41	.39	.44	–			3.78	0.75	.88
10. T2 academic sat.	.37	.58	.37	.39	.69	.37	.50	.69	.51	–		4.56	1.23	.86
11. T2 life sat.	.32	.36	.38	.43	.43	.75	.39	.43	.47	.51	–	4.80	1.31	.89

Note. All of the correlations in this table are significant, $p < .01$, two-tailed. Sat. = satisfaction; T = time.

about your goal ‘to make the Dean’s list?’”). An idiographic format was used to make students’ goal statements potentially more personally meaningful and clinically relevant compared to a generic referent (e.g., “Your academic goal”). After logging back in at Time 2, each participant’s goal statement was automatically retrieved from the database and included in his or her goal-related measures. This procedure was used to ensure that participants would respond to both assessments with the same personal goal statement in mind. The specific measures are described, below.

Goal self-efficacy. Academic goal self-efficacy was measured with a 4-item subscale of the Goal Systems Assessment Battery (Karoly, 1995). Items such as, “I have the ability to reach this goal,” are scored on a 5-point Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). The referent for the items was the participant’s own individual goal statement, as described above. Item responses are summed and then divided by four, yielding a possible score range of 1–5. This form of goal self-efficacy scale has been found to yield adequate internal consistency (Lent et al., 2005, Study 2), 3-week test–retest reliability (Singley, Sheu, & Liang, 2007), and theory-consistent correlations with measures of goal progress, domain satisfaction, and global life satisfaction (Lent et al., 2005, Study 2; Singley et al., 2007). In the current study, this scale yielded an 8-week test–retest correlation of .60.

Goal progress. This 5-item scale, developed by Lent et al. (2005, Study 2), was used to assess participants’ perceived progress in pursuing their personal academic goals (e.g., “I am making good progress on this goal”). Responses were made along a 1–5 Likert-type scale (1 = *strongly disagree*, 5 = *strongly agree*). Item responses were summed and divided by 5, resulting in a possible score of 1–5. The scale has produced adequate internal consistency (Lent et al., 2005, Study 2) and 3-week test–retest reliability (Singley et al., 2007) in prior research. It has also been found to relate, as expected, to measures of goal-specific self-efficacy, domain satisfaction, and life satisfaction (Lent et al., 2005, Study 2; Singley et al., 2007). The scale produced an 8-week test–retest correlation of .62 in the current study.

Goal supports. Social–environmental support relative to the pursuit of one’s academic goal was assessed with a scale adapted from Lent et al. (2001). In the original instrument, participants indicated how likely they would be to experience nine supportive conditions contingent on pursuing a particular academic major (e.g., “get encouragement from your friends for pursuing this major”). We modified the measure by linking support to participants’ pursuit of their specific academic goal

rather than to choice of a particular major. Students responded by indicating their agreement with each support statement along a 5-point Likert-type scale, with higher scores reflecting more favorable support expectations. Item scores were summed and divided by 9. Singley et al. (2007) found that the modified goal support scale yielded adequate coefficient α and 3-week test-retest reliability estimates. They also found that it produced theory-consistent relationships with goal self-efficacy and goal progress. The 8-week test-retest correlation of this scale was .68 in this study.

Positive affect. The positive affect (PA) scale of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess the characteristic tendency to experience positive emotions. Participants were asked to rate the extent to which they generally feel 10 positive emotions (e.g., enthusiastic, interested) along a 5-point Likert-type scale (1 = *very slightly or not at all*, 5 = *extremely*). Scores were calculated by summing the responses to the 10 items and dividing by 10. The PA scale has been found to yield adequate internal consistency and test-retest reliability estimates and to correlate as expected with measures of emotional distress and extraversion (Watson & Clark, 1992; Watson et al., 1988) and with alternative measures of positive affect (Lucas, Diener, & Suh, 1996).

Academic satisfaction. This measure, developed by Singley (2003), consists of a 6-item scale asking participants to indicate their level of agreement with such statements as “In general, I feel satisfied with this aspect of my life.” The response format is a 7-point Likert-type scale with anchors of 1 = *strongly disagree* to 7 = *strongly agree*. Item responses were totaled and then divided by 6. The measure has been found to yield adequate estimates of internal consistency and 3-week test-retest reliability, as well as theory-consistent relations with global life satisfaction and domain-specific goal progress and self-efficacy (Lent et al., 2005, Study 2; Singley et al., 2007). This scale produced an 8-week test-retest correlation of .69 in the current study.

Life satisfaction. Overall life satisfaction was measured with the Satisfaction with life scale (SWLS; Diener, Emmons, Larsen, & Griffin, 1985). The SWLS is a 5-item instrument (e.g., “In most ways, my life is close to my ideal”). Participants respond by indicating their level of agreement with each statement on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). Responses are totaled and divided by 5. The SWLS has been found to yield adequate estimates of internal and 2-month test-retest reliability and to relate, as expected, with alternative measures of life satisfaction (Diener et al., 1985) and with positive and negative affect (Watson et al., 1988). In the current study, the scale yielded an 8-week test-retest correlation of .75.

Procedure

Data were collected online from students at two points in time, 8 weeks apart. This interval was chosen because it was deemed a sufficient amount of time to allow for some change in students' academic goal-related perceptions and behavior as they, for example, receive ongoing feedback on their academic performance. Participants were asked to fill out an online survey containing the self-report measures described above. In exchange for their participation, participants were entered into a drawing to win one of two cash prizes for \$25 and \$50 each. Before taking the surveys, participants indicated their informed consent by clicking on a button on the screen. After submitting their second survey, participants viewed a debriefing statement explaining the study. The positive affect measure was only assessed at Time 1 because it was modeled as a predictor and not as a dependent variable at Time 2.

Participants were recruited via a randomly selected group of 9,000 e-mail addresses obtained from the university registrar, of which 632 were nonfunctioning (i.e., solicitation messages were returned as undeliverable). E-mail solicitation yielded 1,198 useable surveys at Time 1 (a 14%

response rate). Of the initial respondents, 769 (64%) completed the surveys at Time 2. The latter showed minimal differences from those who participated only at the first assessment on the Time 1 theoretical variables. Although they did report more goal progress and life satisfaction (respectively, $t(1196) = 2.80$ and 2.64 , $p < .01$), these mean differences were small in practical terms (Cohen's d values under $.20$). The final sample of 769 was deemed to be of sufficient size for model-testing purposes, exceeding the recommended ratio of 10:1 for sample size in relation to free parameters (Bentler & Wu, 2005). All students on the initial recruitment list received a single follow-up reminder e-mail to participate at Time 1, and those who participated at Time 1 were sent two e-mails reminding them to take the survey at Time 2.

Results

Table 1 presents the correlations, means, standard deviations, and internal consistency reliability estimates for the scales at Time 1 (T1) and Time 2 (T2). The test-retest values, ranging from $.60$ to $.75$, indicated that participants' responses to the measures were moderately stable over the 8-week interval. Correlations among the variables within time periods were consistent with prior findings in cross-sectional studies (e.g., Lent et al., 2005, Study 2; Singley et al., 2007).

All path models were tested using EQS 6.1 (Bentler & Wu, 2005) with covariance matrices of the measured variables and robust maximum likelihood estimation. Goodness of fit was determined by two primary fit indices (comparative fit index [CFI] and root mean square error of approximation [RMSEA]). CFI values of $.95$ or above (Hu & Bentler, 1999) and RMSEA values of less than $.10$ (Quintana & Maxwell, 1999) indicate good fit of the model to the data. We also used Satorra-Bentler (S-B) scaled χ^2 values as the basis for comparing the fit of nested models (the S-B index was used in place of the standard χ^2 because of indications of multivariate nonnormality in the data; Satorra & Bentler, 2001).

To test the tenability of the full model as well as assumptions about reciprocal relations among particular pairs of variables, we tested several model variations. In particular, the full model (Model 1) included all the theoretically derived cross-lagged paths, along with autoregressive paths, and covariances among the variables at T1 and T2. We next compared a series of nested models in a hierarchical manner to test the bidirectional effects between self-efficacy and goal progress, and between academic satisfaction and life satisfaction. In Model 2, we removed both sets of cross-lagged paths between self-efficacy and goal progress (i.e., from T1 self-efficacy to T2 goal progress and vice versa). In Model 3 (self-efficacy as an antecedent of goal progress), we removed only the cross-lagged path from T1 self-efficacy to T2 goal progress. In Model 4 (goal progress as an antecedent of self-efficacy), we removed only the cross-lagged path from T1 goal progress to T2 self-efficacy.

The rationale for comparing the full model against the three model variations was as follows: If the removal of particular paths of interest does not adversely affect model fit, then it would be parsimonious to conclude that they do not add unique value to the model. If, however, the removal of these paths were to yield significantly poorer fit than the full model, then these key paths should be retained to enhance the comprehensiveness of the model. This same hierarchical strategy was used in testing the reciprocal effects of academic satisfaction and global life satisfaction.

Test of the Full Model

Table 2 contains a summary of the fit indices for the models tested. The full model produced adequate fit to the data: CFI = $.97$, RMSEA = $.098$ (90% confidence interval = $.08-.11$), S-B $\chi^2(13, N = 769) = 109.06$, and $p < .001$. The path coefficients for the full model are shown in Table 3. All autoregressive paths were significant and substantial in size, reflecting the relative stability of each dependent variable over time. However, each T2 variable was also predicted by theoretically

Table 2. Fit Indices for the Model Variations

Model	df	CFI	RMSEA	S-B χ^2	Δ S-B χ^2
1. Full model	13	.97	.098	109.1	—
2. Removal of both SE-goal progress reciprocal paths	15	.97	.097	123.2	14.6
3. Removal of SE to goal progress path only	14	.97	.097	115.1	6.3
4. Removal of goal progress to SE path only	14	.97	.097	114.9	6.4
5. Removal of both academic sat.–life sat. reciprocal paths	15	.97	.092	112.4	2.9

Note. CFI = comparative fit index; RMSEA = root-mean-square error of approximation; Sat. = satisfaction; S-B χ^2 = Satorra-Bentler chi-square; SE = self-efficacy.

Table 3. Path Coefficients in the Full Model

Time 2 Dependent Variable	Time 1 Predictors	Path Coefficient from T1 Predictor to T2 Dependent Variable
Life satisfaction	Life satisfaction	.68*
	Academic Satisfaction	.06
	Goal progress	.06*
	Positive affect	.06*
Academic satisfaction	Academic satisfaction	.46*
	Life satisfaction	.02
	Goal progress	.18*
	Self-efficacy	.05
	Goal support	.07*
Goal supports	Goal supports	.63*
	Positive affect	.13*
Goal progress	Goal progress	.54*
	Self-efficacy	.09*
	Goal supports	.08*
Self-efficacy	Self-efficacy	.52*
	Goal progress	.10*
	Goal supports	.04
	Positive affect	.04

relevant paths beyond the autoregressive paths. In particular, T2 life satisfaction was predicted by T1 goal progress and positive affect, but not by academic domain satisfaction. T2 academic satisfaction was predicted by T1 goal progress and support, though not by self-efficacy, positive affect, or global life satisfaction. T2 goal progress was predicted by both T1 self-efficacy and support. T2 self-efficacy was predicted by T1 goal progress but not by positive affect or support. Finally, goal support at T2 was predicted by T1 positive affect. Each of the significant path coefficients were small, indicating that they accounted for a modest amount of incremental variance above and beyond the autoregressive paths and the presence of other predictors. On balance, these findings support the tenability of the full longitudinal model, although not all T1 predictors were useful predictors of T2 outcomes.

Test of the Reciprocal Path Models

Model 2 (the same as Model 1, except for the removal of the two cross-lagged paths between self-efficacy and goal progress) also produced adequate fit to the data: CFI = .97, RMSEA = .097 (90%

confidence interval = .08 to .11), S-B $\chi^2(27, N = 769) = 123.2$, and $p < .05$. However, this model did not fit the data as well as the full model (Δ S-B $\chi^2(2) = 14.6, p < .05$), suggesting that the two cross-lagged paths should be retained in the model.

To further clarify the temporal predominance of the relationship between self-efficacy and goal progress, we removed one of the two cross-lagged paths at a time, and then compared the relative fit of the resulting models against the full model. In each case, the unidirectional models did not fit the data as well as the full model (for Model 3, Δ S-B $\chi^2(1) = 6.3, p < .05$; for Model 4, Δ S-B $\chi^2(1) = 6.4, p < .05$). Thus, the results of these model comparisons provide support for a reciprocal, or bidirectional, relationship between self-efficacy and goal progress.

Finally, we replicated the hierarchical model-testing strategy to examine the hypothesized reciprocity of academic satisfaction–life satisfaction relations. Model 5, which removed both cross-lagged paths (from academic satisfaction to life satisfaction and vice versa), did not yield diminished fit relative to the full model, Δ S-B $\chi^2(2) = 2.9, p > .05$. Moreover, we observed that neither unidirectional path was significant within the full model. We, therefore, did not conduct further tests of temporal predominance between academic satisfaction and life satisfaction. These findings suggest that neither directional path (academic satisfaction to life satisfaction or life satisfaction to academic satisfaction) is necessary to achieve adequate model fit.

Discussion

The findings indicate that the integrative well-being model generally offered good fit to the data. These results are in keeping with previous research and theory on the utility of social cognitive variables (e.g., goal progress, self-efficacy, social supports) as predictors of satisfaction (Brunstein et al., 1998; Lent et al., 2005; Sheldon & Kasser, 1998; Singley et al., 2007). The current findings extend previous cross-sectional research by testing a longitudinal model to address (a) relationships among the social cognitive variables, and (b) how personality and social cognitive variables operate in concert as predictors of academic and global life satisfaction over time. The assumption that personality, goal and self-percepts, and contextual support jointly contribute to the prediction of satisfaction outcomes was supported.

With some exceptions, the variables in the full model related to each other in theory-consistent ways. In particular, consistent with social cognitive theory (Bandura, 1986), goal self-efficacy and goal progress (which can be viewed as an indicator of personal performance) were found to relate to one another reciprocally over time, comprising a feedback loop that can either promote or diminish performance. Also in keeping with previous research (e.g., Brunstein et al., 1998), goal progress predicted subsequent domain and life satisfaction, suggesting that the perception that one is making adequate progress with personal goals promotes the experience of well-being. As hypothesized, goal-related social supports also predicted change in domain satisfaction.

Contrary to expectations, domain-specific and global satisfaction did not yield reciprocal relations to one another. Previous findings have suggested a bidirectional link between these variables, though this issue has often been studied within cross-sectional designs (e.g., Heller et al., 2004; Lent et al., 2005) or in the absence of other variables (e.g., goal progress) that may affect the nature of the interrelations among domain and life satisfaction. We also found that positive affect contributed uniquely to the prediction of life, but not academic, satisfaction. Positive affect has been reliably linked to life satisfaction in prior research (DeNeve & Cooper, 1998; Diener et al., 1999; Emmons, 1986; Judge, Heller, & Mount, 2002), though this linkage has also been mostly studied cross-sectionally and in the absence of other, nonpersonality predictors.

Examining the relations among the social cognitive variables, we observed that goal-related social supports did not predict subsequent goal self-efficacy. Social cognitive theory suggests that perceived social support is an important source of self-efficacy (Bandura, 1986). It may have been that, in the current study, goal progress was simply a more compelling source of self-efficacy

information than was availability of social support. Theory and research suggest that personal performance accomplishments (indexed by goal progress in the current study) tend to serve as a more potent source of efficacy information than do less direct sources, like social support (e.g., Bandura, 1986; Lent et al., 1994). The observed pattern of relations is also consistent with the possibility that goal progress fully mediated the relationship between social support and self-efficacy.

In sum, the results of this study generally support the utility of the integrative model that combines features of the bottom-up and top-down views of well-being. The model produced good overall fit to the data, and particular social cognitive variables were predictive of academic and global life satisfaction, supporting the bottom-up view. The linkage of positive affect to global life satisfaction was also supportive of the top-down (personality) view of well-being. The weak longitudinal relationships observed between academic and global life satisfaction were somewhat surprising. There were, in fact, medium sized (.37–.43) zero-order correlations of T1 academic satisfaction to T2 life satisfaction and T1 life satisfaction to T2 academic satisfaction. However, the path coefficients between these variables were small and nonsignificant, owing to the relative stability of both satisfaction variables over time (i.e., autocorrelations of .69 to .75) and the presence of other significant predictors. For instance, goal progress was found to be a significant predictor of both academic and global satisfaction, which is consistent with the notion that eudaimonic (goal) mechanisms can serve as a vehicle to hedonic well-being (Lent, 2004).

Counseling Implications

These findings offer potentially useful implications for efforts to enhance overall life satisfaction as well as satisfaction within particular life domains, such as academics and work. Participants' perceptions that they were making progress with meaningful personal goals were predictive of both academic and global life satisfaction. One potential approach to working with students who are dissatisfied with their academic lives would, therefore, be to attend to aspects of their academic goal-setting. For instance, it may be useful to consider whether aspects of the goal-setting process may need attention (e.g., are the student's academic goals clear, attainable, or broken into proximal sub-goals? Are reasonable standards being used to assess progress?). It may also be useful to consider how students' goal pursuit can be facilitated (e.g., does the student have adequate access to social support or other necessary resources, like tutoring or study groups? Do study skills need improvement?). This focus on assisting students to set and make progress toward meaningful life goals may help them to enhance their sense of academic as well as global life satisfaction.

It may also be valuable to attend to variables that are temporal precursors of goal progress. For instance, the relation of social supports to subsequent goal progress and domain satisfaction in this study suggests the utility of academic support-building strategies. For students who lack academic supports and who are not progressing adequately toward their academic goals, these results suggest that developing a support network may be an important resource to achieve one's academic goals and experience satisfaction with academics. The finding that self-efficacy may also serve as a source of goal progress suggests that self-efficacy beliefs represent another viable point of intervention. Social cognitive theory points to a variety of activities that can build self-efficacy (e.g., skill development activities, management of anxiety). These practice implications are offered tentatively given the nascent stage of research on the integrative well-being model and the fact that the longitudinal design we used cannot be used alone to infer causality.

Study Limitations

One limitation of this study is that the online recruitment procedures yielded a relatively low response rate, raising questions about the generalizability of the findings. It is noteworthy that, in

a recent meta-analytic study, Manfreda, Bosnjak, Berzelak, and Vehovar (2008) found that online studies tend to yield lower response rates than do more traditional means of recruiting participants (e.g., phone calls, postal mail). They also indicated that online response rates comparable to that of the current study are not uncommon. Manfreda et al. noted several reasons why Web surveys tend to have lower response rates, such as the relative immaturity of Web survey methodology, a disappearing novelty effect, oversurveyed users, and spam blocking.

Another limitation is that the goal support, progress, and self-efficacy measures were based on a single, personal goal statement. This idiographic assessment approach (i.e., tying participants' responses to person-specific vs. common, investigator-generated item content) has been used in several other studies of well-being (e.g., Lent et al., 2005). Such a practice seems relevant to counseling in that clients' sense of well-being may be affected by their perceived progress (or lack thereof) toward their own current primary goals. It is also consistent with the emphasis that goal and social cognitive theories place on personal goals (e.g., Bandura, 1986). However, differences in the properties of participants' specific goals (e.g., goal clarity, difficulty, or level of commitment) could have affected the results.

A third limitation involves monomethod bias in that only self-report survey measures were used in the study (although it may also be argued that self-report is the preferred way to assess such subjective constructs as personal satisfaction and self-efficacy). Fourth, the model was tested at only two points in time 8 weeks apart, thus limiting our ability to address how the relationships among the various constructs might have varied over differing time intervals. Fifth, only the academic domain was assessed. It is possible that the findings might not generalize to other domains such as work, marriage, or social life. Sixth, positive affect was treated only as a predictor (Time 1) variable due to the assumption that, as a personality variable, it would be relatively static over 2 months as well as resistant to social cognitive influences. As a result, the model tested in this study did not examine the possibility that changes in positive affect could be stimulated, reciprocally, by social cognitive factors, such as self-efficacy and social support (Lent, 2004; Lent, Taveira, Sheu, & Singley, 2009).

Finally, though a number of the cross-lagged (i.e., T1 to T2) paths were significant, it should be noted that their effect sizes were, for the most part, quite modest in magnitude. This may simply reflect the considerable stability of the study's variables over the 8-week assessment interval. In other words, there may have been relatively little additional variance in the T2 variables to be explained, taking into account both autocorrelation (i.e., relations among the same variables at the two testing periods) and substantial covariation among the variables within each testing period. Given these measurement considerations, the small cross-lagged paths may still be noteworthy, pointing to dynamic processes (e.g., goal-setting, efficacy-building) that can be targeted via educational and counseling interventions.

Future Research

These limitations suggest several directions for future research. To gain a finer-grained understanding of how personality, social cognitive variables, and satisfaction relate over time, future studies should assess participants at more than two points in time and over varying time intervals. Second, future research on this model might be conducted with different measurement approaches, such as experience sampling assessments using cell phone technology. Such methods may better capture fluctuations in domain satisfaction and illuminate participants' experiences while they are actually engaged in goal-relevant activities (or shortly thereafter), rather than asking them to sum over large chunks of experience retrospectively, which introduces memorial and other biases into well-being studies (Lent, 2004).

A third area for future research would be to address how goal characteristics affect the relationships among the variables. Goals vary along a number of dimensions, such as personal salience (Brunstein et al., 1998), level of specificity (Burns & Vollmeyer, 2002), mastery versus learning (Kristof-Brown & Stevens, 2001), and approach versus avoidance (Midgley, Kaplan, & Middleton, 2001). It may be that setting and progressing toward different types of goals is more or less likely to stimulate domain satisfaction or life satisfaction. More research is needed to clarify this issue and also to assess the degree to which the fit of the social cognitive model to the data is affected by the use of idiographic versus nomothetic goal assessment methods.

Fourth, it would be useful to extend study of the social cognitive model of career and life satisfaction to more diverse populations with respect to age, race/ethnicity, and culture. Lent et al. (2009) recently tested an adaptation of the well-being model in Portugal, examining the prediction of college adjustment (indexed by academic satisfaction, stress, and perceived role functioning). Examining the invariance of model fit across gender would also be useful given that the model has thus far been tested only in mixed gender samples. Fifth, more research is needed extending the model of work satisfaction to samples of employed adults (e.g., Duffy & Lent, 2009).

Finally, intervention studies in which the hypothesized precursors of domain-specific and global satisfaction are addressed as treatment elements could provide valuable insight into which of the predictors in this model are most amenable to intervention. Using such a design with appropriate control groups would also strengthen the basis for making causal inferences regarding the relationships among the variables in the model.

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