

Impact of Self-Regulatory Influences on Writing Course Attainment

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The role of self-efficacy beliefs concerning the academic attainment and regulation of writing, academic goals, and self-standards on writing course achievement was studied with college freshman using path analysis. These self-regulatory variables were measured at the beginning of a writing course and related to final course grades. Students' verbal scholastic aptitude and level of instruction were also included in the analysis. Perceptions of self-efficacy for writing influenced both perceived academic self-efficacy and personal standards for the quality of writing considered self-satisfying. High personal standards and perceived academic self-efficacy, in turn, fostered adoption of goals for mastering writing skills. Neither level of writing instruction nor verbal aptitude had any direct link to course grades. Verbal aptitude affected writing course outcomes only indirectly by its influence on personal standards. Perceived academic self-efficacy influenced writing grade attainments both directly and through its impact on personal goal setting. These paths of influence were interpreted in terms of a social cognitive theory of academic self-regulation.

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The mechanisms through which students regulate their own motivation and academic learning have been the subject of increasing research (Corno, 1989; Harris, 1990; McCombs & Marzano, 1990; Paris & Newman, 1990; Pressley & Ghatala, 1990; Zimmerman & Schunk, 1989). Much of the research on self-regulated learning has centered on task-related cognitive and metacognitive strategies, such as mnemonic encoding and self-monitoring. In the social cognitive theory of academic self-regulation, students regulate the motivational, affective, and social determinants of their intellectual functioning as well as the cognitive aspects (Zimmerman, 1986, 1990a, 1990b). The exercise of self-regulatory skills produces beneficial results. Good self-regulators do better academically than poor self-regulators even after controlling for other potentially influential factors.

Skill in formulating ideas and expressing them well in written form contributes importantly to success in all types of academic activities. However, writing presents special challenges to self-regulation (Bandura, 1986; Bereiter & Scardamalia, 1987; Wason, 1980). This is because writing activities are usually self-scheduled, performed alone, require creative effort sustained over long periods with all too frequent stretches of barren results, and what is eventually produced must be repeatedly revised to fulfill personal standards of quality. Not surprisingly, even professional writers have to resort to varied techniques of self-discipline to promote their writing activities (Barzon, 1964; Gould, 1980; Wallace & Pear, 1977). A recent national assessment of the quality of students' writing reveals major deficits in this vital skill (De Witt, 1992). The processes governing writing course attainment are, therefore, a matter of considerable import.

Instruction in writing strategies and verbal self-guidance has been shown to enhance perceived self-efficacy and to improve the schematic structure and quality of compositions (Graham & Harris, 1989a, 1989b; Schunk & Swartz, 1993). The present study sought to clarify the self-regulatory mechanisms through which instruction in strategies for creative writing fosters writing course attainment.

In social cognitive theory, self-regulation operates through a set of psychological subfunctions (Bandura, 1986, 1991b). These include self-monitoring of one's activities, applying personal standards for judging and directing one's performances, enlisting self-reactive influences to guide and motivate one's efforts, and employing appropriate strategies to achieve success (Zimmerman & Martinez-Pons, 1986, 1988, 1990). It is one thing to possess self-regulatory skills but another thing to be able to get oneself to apply them persistently in the face of difficulties, stressors, or competing attractions. Indeed, students register the highest sense of efficacy to manage the content aspects of instruction, but a low sense of efficacy to manage themselves to get their academic activities done (Zimmerman, Bandura, & Martinez-Pons, 1992). Thus, the aspect of self-regulated learning that plays a central role—the capability to mobilize, direct, and sustain one's instructional efforts—has received relatively little attention in studies of academic self-directedness.

In social cognitive theory, regulation of one's own motivation and learning is codetermined by many interacting factors that would be expected to affect the self-management of writing activities. Perceived self-efficacy is one of the influential determinants in the proposed causal structure governing writing course attainment. Two aspects of efficacious agency are examined: Belief in one's capabilities to regulate one's own writing activities and to master particular academic subjects. These two forms of efficacy are considered to be causally linked, such that a high sense of self-regulation enhances belief in one's academic efficacy (Zimmerman & Martinez-Pons, 1992). Children's beliefs in their academic efficacy have been shown to contribute to their motivation and academic attainments over and above their academic skills. Children who have a strong belief in their academic capabilities set higher goals for themselves, apply themselves more persistently to academic tasks in the face of difficulties, exert better control over their work time, are more flexible in testing problem-solving strategies, and achieve higher levels of performance on academic activities than do their counterparts who have a weaker sense of efficacy (Bandura, 1993; Bouffard-Bouchard, Parent, & Larivee, 1991; Collins, 1982; Schunk, 1984). Recent evidence confirms that perceived self-regulatory efficacy affects academic attainments, in large part, through its impact on perceived academic self-efficacy (Zimmerman, Bandura, & Martinez-Pons, 1992).

The self-regulation of academic activities also operates partly through internal standards and evaluative reactions to one's own performances (Bandura, 1991a). Adaption of standards of merit creates self-evaluative involvement in the activity that serves motivational functions. The anticipated self-satisfaction gained from fulfilling valued standards provides one source of incentive motivation for personal accomplishments. Self-dissatisfaction with substandard performances serves as another incentive motivator for enhanced effort. Thus, students who are self-satisfied only with superior attainments exert greater effort in revising written compositions than those who are content with lesser attainments (Simon, 1979). Even in the face of attractive incentives to sacrifice quality for quantity, those who subscribe to standards of excellence continue to strive for quality in their written productions, even though they reduce their prospects of material benefits.

The capacity to exercise self-influence by cognized aspirational goals provides a major cognitive mechanism of motivation. The findings of diverse lines of research, involving both laboratory and field studies, show that explicit challenging goals enhance motivation and performance attainments (Locke & Latham, 1990). Goals operate largely through self-processes, rather than regulate motivation and behavioral attainments directly. Both perceived self-efficacy and self-evaluative standards affect aspirational goal setting. The higher the sense of personal efficacy, the higher the goals people set for themselves, and the firmer their commitment to them is (Bandura, 1991a; Locke & Latham, 1990). High self-evaluative standards similarly promote high goal setting.

Personal efficacy and self-evaluative standards influence not only the level at which goals are set but also the response to performances that fall short of adopted goals (Bandura & Cervone, 1983, 1986). People who harbor self-doubts about their capabilities are easily dissuaded by obstacles or failures. Those who are assured of their capabilities intensify their efforts when they fail to achieve what they seek, and they persist until they succeed. Similarly, people are motivated by self-satisfactions from fulfilling valued standards and are prompted to intensify their efforts by discontent with deficient performances.

In the present study, college students received instruction in English composition in either a regular or an advanced course. The self-regulatory determinants reviewed above were measured at the beginning of the academic quarter and evaluated for their predictive contribution to writing course grades assessed at the end of the quarter. This research was designed as a field study, and no effort was made to change the criteria the teachers normally used for assigning grades in writing, such as substituting formal research analyses of a written project. Rather, we selected the regular course grades as outcome measures because (a) they are the basis on which the students set their writing goals for the course, (b) they take into account a broader range of course activities than a project, and (c) they are the actual standard of academic success in writing courses. Figure 1 presents the paths of influence in the proposed causal structure governing writing attainments.

For reasons given earlier, it was predicted that perceived self-regulatory efficacy influences both self-evaluative standards and perceived academic self-efficacy. Personal standards of excellence and perceived academic efficacy, in turn, affect writing attainments both directly and indirectly through

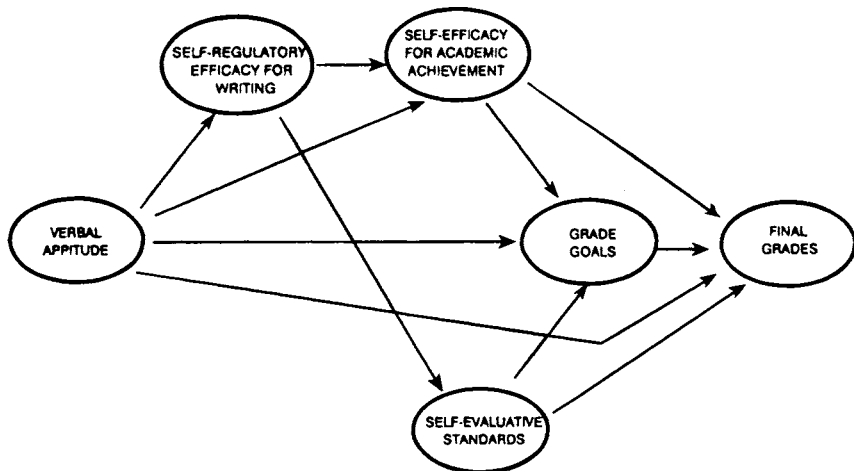


Figure 1. A causal model of student self-regulation of writing achievement

their impact on aspirational goal setting. High goals foster writing course attainment. Because self-beliefs of efficacy for writing activities, standards of excellence, and aspirational goals might be influenced by verbal aptitude, it was entered as an antecedent for each of the self-regulatory factors in the causal model. This ordering of variables permits evaluation of the contribution of self-regulatory factors to writing attainment beyond the prediction provided by verbal aptitude.

Method

Sample

A total of 95 freshmen students from a highly selective university participated in this study. Forty-three of the students were males, and fifty-two were females. The students ranged in age from 17 to 20 years with a median age of 18 years. They were enrolled in a quarterly course on writing with 47 students attending regular classes and 48 attending advanced classes. Approximately 25% of the students were minorities (Black, Hispanic, and Asian). Enrollment in the advanced class was based on a score of 4 or 5 on the SAT advanced placement test in English Language and Composition or English Literature and Composition. Both of these advanced tests included a section on essay writing under timed conditions. The instruction provided in the advanced classes was similar to that in regular classes except that former students were given the same material during one quarter that the latter students completed in two quarters. The present study was conducted during the second quarter in the curriculum sequence for the regular students but during the first and only quarter for the advanced students. Students in both regular and advanced classes were required to write a formal research paper during the quarter of this study. Four male instructors and four female instructors were contacted, and each agreed to include a randomly selected class in the study. They had not previously taught the students who were enrolled in their class.

Self-Efficacy Scales

Two scales were developed to measure perceived self-efficacy. They include beliefs about personal efficacy to regulate writing activities and perceived efficacy for academic attainment in the writing course. The Writing Self-Regulatory Efficacy Scale contained 25 items that assessed students' perceived capability (a) to execute strategic aspects of the writing process such as planning, organizing, and revising compositions; (b) to realize the creative aspects of writing such as generating good topics, writing interesting introductions and overviews; and (c) to execute behavioral self-management of time, motivation, and competing alternative activities. These items, as shown in Table 1, were developed from formal analyses of the writing process (Murray, 1990), consultation with faculty in the writing program, and knowledge of self-regulation of motivation. Students rated the strength of their perceived efficacy for each item on a 7-point scale ranging from belief that they could

Table 1
**Means and Standard Deviations for Individual Items in the Scale
 Measuring Perceived Self-Regulatory Efficacy for Writing**

Items	<i>M</i>	<i>SD</i>
1. When given a specific writing assignment, I can come up with a suitable topic in a short time.	4.40	1.21
2. I can start writing with no difficulty.	3.74	1.31
3. I can construct a good opening sentence quickly.	3.71	1.30
4. I can come up with an unusual opening paragraph to capture readers' interest.	3.99	1.48
5. I can write a brief but informative overview that will prepare readers well for the main thesis of my paper.	4.51	1.22
6. I can use my first attempts at writing to refine my ideas on a topic.	4.72	1.09
7. I can adjust my style of writing to suit the needs of any audience.	4.19	1.27
8. I can find a way to concentrate on my writing even when there are many distractions around me.	3.48	1.59
9. When I have a pressing deadline on a paper, I can manage my time efficiently.	4.63	1.50
10. I can meet the writing standards of an evaluator who is very demanding.	4.13	1.24
11. I can come up with memorable examples quickly to illustrate an important point.	4.30	1.25
12. I can rewrite my wordy or confusing sentences clearly.	4.48	1.28
13. When I need to make a subtle or an abstract idea more imaginable, I can use words to create a vivid picture.	4.31	1.27
14. I can locate and use appropriate reference sources when I need to document an important point.	4.98	1.45
15. I can write very effective transitional sentences from one idea to another.	4.56	1.29
16. I can refocus my concentration on writing when I find myself thinking about other things.	3.82	1.41
17. When I write on a lengthy topic, I can create a variety of good outlines for the main sections of my paper.	3.78	1.41
18. When I want to persuade a skeptical reader about a point, I can come up with a convincing quote from an authority.	4.48	1.43
19. When I get stuck writing a paper, I can find ways to overcome the problem.	4.34	1.22
20. I can find ways to motivate myself to write a paper even when the topic holds little interest for me.	3.78	1.41
21. When I have written a long or complex paper, I can find and correct all my grammatical errors.	4.44	1.35
22. I can revise a first draft of any paper so that it is shorter and better organized.	4.50	1.33
23. When I edit a complex paper, I can find and correct all my grammatical errors.	4.72	1.54
24. I can find other people who will give critical feedback on early drafts of my paper.	4.81	1.63
25. When my paper is written on a complicated topic, I can come up with a short informative title.	4.63	1.38

not perform the designated activities (score of 1) to the belief that they could perform them very well (score of 7). The scores ranged between 1.68 and 5.80, with a mean of 4.30. The Cronbach alpha reliability test yielded a coefficient of + .91.

In the scale measuring self-efficacy for academic achievement, students rated the strength of their belief that they could achieve each of 12 academic grades ranging from A to F including + and - gradations. They rated the strength of their efficacy belief on a 7-point scale with high uncertainty (1) anchoring one end of the scale and high certainty (7) anchoring the other end. It was assumed that this scale would yield a negative, monotonic curve in which strength of perceived self-efficacy would decrease systematically for progressively higher grade attainments (from F to A). Inspection of the ratings revealed that the patterns of efficacy strength were, in fact, negatively monotonic for all students. Of particular interest is the highest grade that each student felt somewhat certain of achieving (Rating 5). This score represented the change point on the monotonic curve where each student began to report positive efficacy.¹ As shown in Figure 2, the students, as a group, were somewhat certain of attaining at least a B in the writing course. They

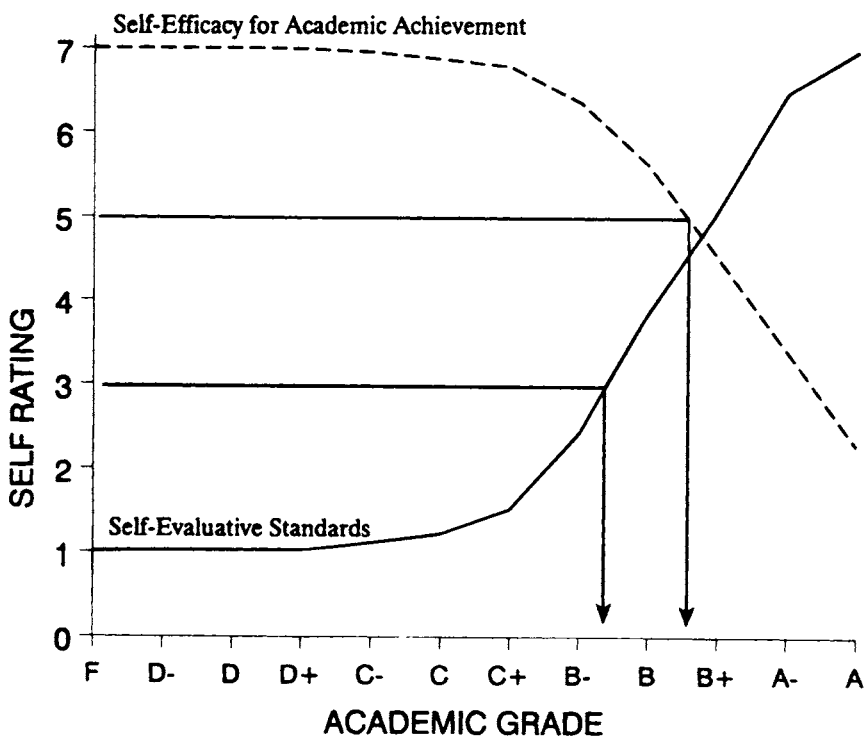


Figure 2. Self-efficacy for academic achievement and self-evaluative standards for course grades

reported grade scores that ranged between C- and an A. These grade levels were transformed to a 12-point numerical scale (A = 12, A- = 11, B+ = 10, B = 9, . . . , F = 1). The corresponding numerical scores are presented in Table 2. The Cronbach reliability coefficient for this scale is .87.

Grade Goals Scale

The students' grade goals for their writing course were assessed using a 12-point scale. They were asked, "What academic grade are you striving for in this course?" They were instructed to check one of 12 grades that ranged from an A to a F. The students' grade goals ranged between A and B- with a mean of an A-.

Table 2
Principal Components Analysis of Self-Regulatory Efficacy for Writing Items, Verbal Ability, and Final Course Grades

Items	Factors							<i>b</i> ²
	1	2	3	4	5	6	7	
1	.46	-.44	-.41	.15	-.38	.15	.06	.77
2	.33	-.37	.22	.51	-.09	.25	-.21	.76
3	.65	.18	-.22	.31	-.25	-.24	.15	.76
4	.72	.34	.28	-.17	-.19	.07	.03	.79
5	.66	.20	-.05	-.25	.29	-.01	-.12	.66
6	.73	-.05	.04	-.38	.10	.12	-.03	.71
7	.41	.75	.24	-.02	.10	-.25	.07	.87
8	.50	-.22	.44	-.23	.51	-.02	-.09	.82
9	.24	-.14	.28	.43	.39	.30	.37	.74
10	.65	.56	.12	.07	.06	.28	.00	.84
11	.61	-.01	.19	.26	-.30	.37	.00	.72
12	.61	-.02	-.08	-.15	-.20	-.07	-.36	.69
13	.70	.47	.13	.00	-.09	.28	-.17	.87
14	.59	-.49	.23	-.23	-.32	.04	.20	.84
15	.68	.19	-.23	.07	-.17	.14	.34	.73
16	.46	-.53	.49	.09	.24	-.05	.12	.83
17	.48	.19	-.53	.13	.42	-.28	.14	.84
18	.62	-.16	-.25	-.19	.11	-.25	.40	.75
19	.77	-.17	.03	.35	-.20	-.16	-.22	.86
20	.25	.23	.12	.71	.04	-.52	.10	.92
21	.69	.06	-.50	-.01	.14	.25	.07	.83
22	.66	-.35	-.23	-.35	-.18	-.20	-.25	.88
23	.30	-.37	.09	-.19	-.52	.00	.47	.77
24	.60	-.02	.42	.22	-.13	-.32	-.26	.78
25	.70	-.20	-.34	-.11	.26	-.03	-.25	.80
Verbal aptitude	-.12	.07	-.47	.79	.39	.30	-.18	.79
Course grades	-.01	.79	.17	-.21	-.11	.12	.10	.73

Self-Evaluative Standards Scale

The students' standards for self-satisfaction and self-dissatisfaction for quality of writing were assessed in relation to the graduation of grade attainments used in the assessment of perceived academic self-efficacy. Students rated how satisfied they would be for each of the 12 grade levels spanning grades A through F. They rated their level of satisfaction on a 7-point scale ranging from very dissatisfied (1) to very satisfied (7). It was expected that this scale would yield a positive, monotonic curve in which self-satisfaction ratings would increase systematically with progressively higher levels. Inspection of the ratings revealed that the self-satisfaction ratings were, in fact, positively monotonic in form. Of particular conceptual interest was the highest grade level at which each student displayed some dissatisfaction (Rating 3). This grade represented the change point on the monotonic curve where students began to report some dissatisfaction.² As revealed in Figure 2, the students as a group were somewhat dissatisfied if they attained less than a grade of B ($M = 8.27$ on the 12-point scale). The Cronbach reliability coefficient for the scale is .84.

Procedure

Students were administered the measures of the different self-regulatory factors at the beginning of the academic quarter. They were asked to provide demographic information (sex and age), their SAT verbal aptitude score, and their student identification number but not their name. Students were assured of anonymity and assured that only the investigators would have access to the data. The students' verbal aptitude scores ranged between 450 and 780 with a mean of 633. The accuracy of these self-reported SAT scores was compared with those in their school records for 20 randomly selected students from the sample. A Spearman correlation of .97 was obtained indicating a high level of accuracy in recall. The instructors provided the final grades at the end of the academic quarter as the measure of the students' writing attainment.

Results

The means and standard deviations for items in the self-efficacy scale for writing are presented in Table 1. Students rated their efficacy lowest for concentrating on their writing when there are many distractions around ($M = 3.48$) and highest for locating and using appropriate reference sources to document important points ($M = 4.98$). The former finding corroborates previous evidence that a major facet of academic self-regulation is the ability to withstand competing attractions (Zimmerman, Bandura, & Martinez-Pons, 1992). Students also expressed a low sense of efficacy to get themselves to start a writing project and to generate suitable outlines and engaging introductions.

The factor structure of the Self-Regulatory Efficacy for Writing Scale was studied using principal components procedures. The results are presented

in Table 2. The final course grades and SAT verbal scores were included as marker variables in the analysis along with the 25 items of the scale. Seven factors were found that accounted for 79% of the total variance. The first and major factor, which accounted for 32% of the variance, was labeled self-regulatory efficacy for writing. All self-efficacy items loaded above .40 on this factor except for Items 2, 9, 20, and 23. Items 2, 9, and 20 loaded primarily on the fourth factor, which was labeled verbal aptitude because the SAT total score loaded most heavily on it, whereas Item 23 loaded mainly on Factor 5. Factor 4 accounted for 8.4% of the total variance. Factor 2, which accounted for 13% of the variance, was labeled writing skill because the final course grades loaded heavily on it. The third factor (which accounted for 8.7% of the variance) dealt with concentration and self-evaluation during writing. Factors 5 through 7 (which accounted for between 4.7% and 7% of the variance) were not easily labeled. It should be noted that Items 2 and 23 did load above .30 on the first factor and thus did contribute to its measurement as well other factors. In summary, the principal components analysis indicated that the self-regulatory efficacy for writing items (except for 9 and 20) comprised a single and factorially distinct scale.

The means and standard deviations for each of the variables in the causal model are presented in Table 3. The intercorrelations among the variables are provided in Table 4. Students' verbal aptitude correlated significantly with their self-evaluative standards, grade goals, and their writing achievement as reflected in the final grade in the writing course. Perceived self-regulatory efficacy for writing was significantly related to perceived self-efficacy for academic achievement, self-evaluative standards, and grade goals. Students' perceived self-efficacy for academic achievement was similarly positively related to grade goals, self-evaluative standards, and final grades. Self-evaluative standards were correlated with their grade goals and final grades. Grade goals were also correlated with final course grades.

Before testing the causal structure of the proposed model of self-regulation of writing activities, two background factors—namely, the students' gender and enrollment in the advanced writing class—were related to each

Table 3
Ranges, Means, and Standard Deviations for Verbal Aptitude, Self-Regulation Factors, and Final Course Grade for Writing (N = 95)

Variables	Range	<i>M</i>	<i>SD</i>
1. Verbal aptitude	450–780	633.26	74.47
2. Self-regulatory efficacy for writing	1.7–5.8	4.30	.78
3. Self-efficacy for academic ach.	5–12	9.64	1.26
4. Grade goals	8–12	11.17	.90
5. Self-evaluative standards	6–10	8.27	.99
6. Final course grade	5–12	10.54	1.28

Table 4
**Correlations Among Measures of Verbal Aptitude, Self-Regulation,
 and Course Grades**

Variables	1	2	3	4	5
1. Verbal aptitude					
2. Self-regulatory efficacy for writing	.17				
3. Self-efficacy for acad. ach.	.08	.36***			
4. Grade goals	.22*	.36***	.50***		
5. Self-evaluative standards	.26*	.39***	.42***	.57***	
6. Final grades	.25*	.14	.46***	.53***	.39***

Note. $N = 95$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

of the variables in the model. Only two correlations proved to be significant. Class membership was correlated with SAT scores, $r = .37$, $p < .01$, and students' self-regulatory efficacy for writing, $r = .19$, $p < .05$. Students in the advanced section had higher verbal aptitude ($M = 660$) than those in the regular section ($M = 605$), and students in the advanced section had a higher sense of efficacy for managing writing activities ($M = 4.42$) than students in the regular section ($M = 4.15$). Neither class membership nor gender was related to any other variables in the model. Only class membership was retained in the path analysis because of its significant relationship to verbal aptitude and perceived self-efficacy.

A multivariate test for the fit of the model revealed no significant divergence: chi-square (10) = 11.07, not significant (ns). To simplify the presentation of these relations, nonsignificant causal paths were deleted from Figure 3.

As shown in Figure 3, students' class membership was linked to their verbal aptitude scores and their perceived self-regulatory efficacy for writing. Students' verbal aptitude influenced their self-evaluative standards. Interestingly, no direct path emerged between verbal aptitude and writing course grades. Rather, verbal aptitude influenced writing grade achievement indirectly through its effects on self-evaluative standards.

Perceived self-regulatory efficacy for writing influenced both perceived self-efficacy for academic achievement and self-evaluative standards which, in turn, were linked to grade goals. Perceived academic self-efficacy affected writing grade achievement both directly and through its impact on personal goal setting. The combined direct and indirect effects of perceived academic self-efficacy on final grades were $P = .38$, $p < .05$. The full set of predictive variables accounted for 35% of the variance in writing course grades.

Discussion

The present study examined the predictiveness of the social cognitive theory of self-regulation for academic achievement in the field context of college

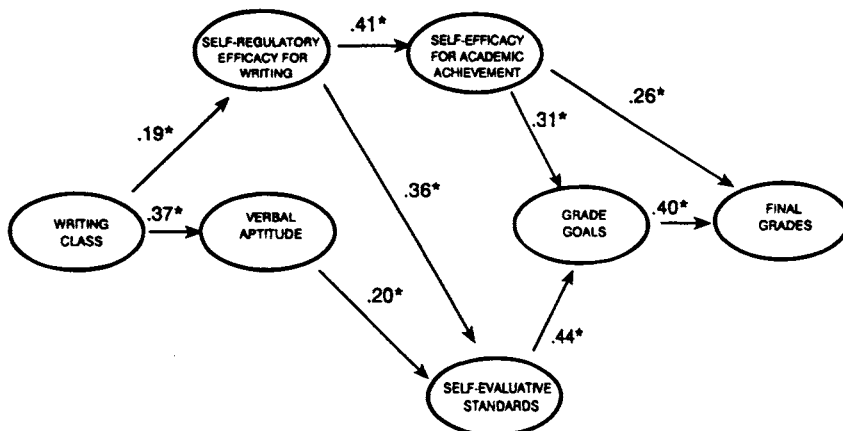


Figure 3. Path coefficients for the significant paths of influence between variables in the model of self-regulation and final academic grades (* $ps < .05$)

courses in writing. In this empirical test, the model of self-regulation was expanded to include measures of verbal aptitude and self-evaluative standards.

In a previous study of academic achievement, two of the main factors—namely, perceived academic self-efficacy and personal goal setting—accounted for 31% of the variance in level of academic attainment in social studies (Zimmerman, Bandura, & Martinez-Pons, 1992). In the present study, these same two factors accounted for 35% of the variance in writing grades. This replication of the pattern of causal relations among the self-regulatory factors and the size of their contribution to academic achievement is especially noteworthy in view of the major differences between the two studies. They varied in the educational level of the students, the ethnic composition of the samples, academic subject matter, and the measures of self-efficacy and goal-setting, which were tailored to the different subject matters and populations. The replication of the magnitude of the predictive contribution to academic achievement adds confidence to the validity of the self-regulation model. The relatively weak and indirect role of verbal aptitude in attainment of writing course grades was unanticipated. Verbal aptitude is widely assumed to provide the basis for learning academic subjects that depend heavily on language writing skills. Verbal aptitude was, therefore, expected to contribute substantially and directly to the attainment of writing course grades as well as indirectly through its effects on perceived self-efficacy. However, when self-regulatory factors were included, no direct effect was found. Rather, the influence of verbal aptitude was mediated through self-evaluative standards and personal goal setting. These findings suggest that verbal aptitude may primarily contribute to enhancement of writing by raising students' standards of quality of writing and their academic aspirations.

The self-regulatory factors in the path model not only mediated the influence of verbal aptitude but added substantially to the attainment of writing course grades. Verbal aptitude correlated $r = .25$ with grades, whereas perceived academic self-efficacy and goal setting combined to produce a multiple correlation of $R = .59$. This represents an incremental contribution of 29% in the final grades in writing.

Two factors may have diminished the size of the correlation between verbal aptitude and final grades in writing. They include restrictions in the ranges of verbal aptitude and course grades. The SAT scores averaged 633, well above the national mean of 500, with a standard deviation of 75, which is smaller than the national norm of 100. The final grades ranged from a B- to an A. However, it should be noted that the self-regulatory factors achieved notable predictiveness with the existing level of variability in the dependent measure. The self-regulation model accounted for more than one third of the variance in writing grade attainment in a field study, using a range-restricted measure of writing skill with a highly selective group of college students. Greater variability in writing attainments might have yielded even higher predictability for the self-regulatory factors. In future research, it is important to include multiple, componential measures of writing skill with diverse populations of students to understand better the predictiveness of these self-regulatory factors.

It is interesting that class membership predicted perceived self-regulatory efficacy for writing, whereas verbal aptitude did not. Assignment to the advanced section of the course was based on a timed test of writing. Writing performances correlated, $r = .37$, with verbal SAT scores. Writing attainments would be expected to correlate more highly with perceived self-regulatory efficacy than with general verbal aptitude. An aptitude that students cannot get themselves to apply efficiently, persistently, and creatively will have limited impact on performances, regardless of how good it might be. Moreover, the instruction in both the advanced and regular class sections transmitted a great deal of information on strategies and styles of writing. Such knowledge might be more salient for judging one's writing efficacy than one's general verbal aptitude.

The path analysis provided support for the social cognitive theory of academic self-regulation. As hypothesized, students' perceived self-efficacy to manage their writing activities predicted their self-efficacy for academic achievement. The more assured students are in their capabilities to structure and communicate ideas and to overrule competing impediments, the more reason they have to believe in their capability for academic achievement. Perceived self-efficacy was especially low to initiate the first steps in writing a composition. In a previous study (Zimmerman, Bandura, & Martinez-Pons, 1992), perceived self-efficacy to regulate one's own learning activities similarly predicted perceived self-efficacy for academic achievement. In accord with the hypothesized causal structure, perceived self-regulatory efficacy for writing predicted self-evaluative standards. Students who had a high sense of efficacy to manage their writing not only set high writing aspirations for

themselves but were discontent with substandard performances. These forms of self-influence serve to enhance and sustain motivation (Bandura, 1991a; Locke & Latham, 1990). It is important in future research on the self-regulation of writing to determine whether these path findings for college students extend to a younger sample as well.

Perceived academic self-efficacy affected writing course grades both directly and indirectly through its effects on personal goal setting. The combined direct and indirect impact on writing grade achievement was a path coefficient of .38. Self-evaluative standards influenced writing grades only indirectly through personal goal setting. These findings are in accord with those of other studies showing that aspirational goals bear a more direct relation to performance attainments than do self-evaluative reactions (Bandura & Jourden, 1991).

As previously noted, it is one thing to possess self-regulatory skills for academic learning; it is another thing to be able to adhere to them when other activities hold greater interest. A high sense of self-regulatory efficacy is needed to override distracting influences. In both the present research with college students and in previous research with high school youth (Zimmerman, Bandura, & Martinez-Pons, 1992), students registered their weakest sense of efficacy to stick to academic activities when there were other interesting things to do. These findings suggest that, in promoting self-directed learning, students need to be taught skills and strategies for managing not only the cognitive aspects of managing learning but also methods in which to motivate themselves for academic pursuits in the face of difficulties or attractive alternatives (see also Corno, 1989). The aspect of self-regulated learning that plays a crucial role in academic achievement—the capability to mobilize, direct, and sustain one's efforts—has received much less attention in research on academic self-directedness (Zimmerman, Bandura, & Martinez-Pons, 1992).

The present results have important pedagogical implications for collegiate writing instructors. Because students' self-regulatory efficacy for writing beliefs are linked directly to their perceived efficacy to succeed in their writing courses and indirectly to their final grades, teachers should consider making diagnostic assessments of students' self-regulatory efficacy for writing at the outset of courses. This information can reveal specific areas where each student feels incapable as well as the areas where the class as a whole feels inefficacious. Strategies for self-regulating the deficient component of writing can be modeled by the teacher, and specific training exercises can be prescribed. For example, students who report having problems managing their writing time could be shown time planning and self-recording strategies (Zimmerman, Greenspan, & Weinstein, 1994) and given opportunities to control their writing time—first under structured conditions and later under more dynamic conditions. Detailed descriptions of a social, cognitive, mastery approach to instruction have been provided elsewhere (Bandura, 1986; Schunk, 1989; Zimmerman, in press).

The results also provide support for other theories of motivation. The prediction that self-efficacy affects achievement performance both directly and indirectly through goal setting has been made by goal theorists (Locke & Latham, 1990). Volition theorists (Corno, 1989; Kuhl, 1992) have suggested also that self-regulative strategies that sustain intentions through self-enhanced concentration, task management, and completion are critical to academic success. In addition, evidence that self-efficacy for writing predicts self-efficacy for academic achievement coheres with predictions by self-system theorists, such as McCombs and Marzano (1990), who have also emphasized the influence of self-perceptions of academic competence on achievement expectancies.

To summarize, the different facets of perceived self-efficacy played a key role in writing course attainment. They raised the goals students set for themselves and the quality of writing with which they would be self-satisfied. Through their direct and indirect influence, beliefs of personal efficacy had substantial impact on level of writing attainments. Although the contribution of the full set of self-regulatory factors makes a substantial predictive contribution, a fair amount of variance in writing grade attainment remains to be explained. Other self-regulatory factors that have been shown to contribute to cognitive performance—such as, perceived self-efficacy for self-directed learning and analytic strategies—were not included in the present study (Schunk & Hanson, 1989; Wood & Bandura, 1989; Zimmerman, Bandura, & Martinez-Pons, 1992). The types of positive outcomes expected for writing literacy would also be relevant. The inclusion of these additional sociocognitive factors would provide a more complete picture of the magnitude of the contribution of self-processes to academic achievement.

Notes

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¹The decision to use the change point or leading edge of the positive self-efficacy interval in Figure 2 to represent this scale instead of some other feature of this curve was based on the assumption that the highest grade students felt some certainty of achieving would be their key reference point for setting optimal grade goals and motivating themselves. This appears to have been the case: The students' average grade goal of A- was closer to the leading edge grade (B) than any other part of the positive efficacy interval.

²The decision to use the change point or leading edge of the self-dissatisfaction interval in Figure 2 to represent this scale instead of some other feature of this curve was based on the assumption that the highest grade for which students felt some dissatisfaction would be their key minimum evaluative standard for setting grade goals and motivating themselves. This appears to have been the case: The students' average grade goal of A- was closer to the leading edge grade (B-) than any other part of the dissatisfaction interval.

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