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Development of a Structured Interview for Assessing Student Use of Self-Regulated Learning Strategies

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Forty male and female 10th-grade students from a high achievement track and 40 from other (lower) achievement tracks of a suburban high school were interviewed concerning their use of self-regulated learning strategies during class, homework, and study. Fourteen categories of self-regulation strategies were identified from student answers that dealt with six learning contexts. High achieving students displayed significantly greater use of 13 categories of self-regulated learning. The students' membership in their respective achievement group was predicted with 93% accuracy using their reports of self-regulated learning. When compared to students' gender and socioeconomic status indices in regression analyses, self-regulated learning measures proved to be the best predictor of standardized achievement test scores. The results were discussed in terms of a social learning view of self-regulated learning.

During the last decade, conceptualizations of learners as mentally and physically active seekers of knowledge and skill have prompted significant theorizing and research (Bandura, 1977; 1982; Coates & Thoresen, 1979; Karoly & Kanfer, 1982; Meichenbaum, 1978; Thoresen & Mahoney,

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1974). These formulations have been variously labeled "self-controlled," "self-instructed," or "self-reinforced" learning to draw attention to the importance of self-regulation processes. Such accounts are unique in that they seek to explain not only students' ability to learn on their own but also their motivation to do so. Recently, several theoretical articles have sought to relate various views of self-regulated learning to academic motivation and achievement (Corno & Mandinach, 1983; McCombs, 1984; Schunk, 1984). In the present account, the term *self-regulation* will be used to describe this general theoretical approach.

The present investigation was undertaken to develop and validate a structured interview for assessing students' use of self-regulated learning strategies in naturalistic settings. By *self-regulated learning strategy* we mean actions directed at acquiring information or skill that involve agency, purpose (goals), and instrumentality self-perceptions by a learner. On the basis of existing literature, a number of categories of self-regulated learning strategies were identified. The categories were drawn most heavily from social learning theory and research (e.g., Bandura, 1982; 1986; Schunk, 1984; Thoresen & Mahoney, 1974; Zimmerman, 1983). They included goal-setting, environmental structuring, self-consequences (self-rewarding and self-punishment), and self-evaluating. Several other categories were included on the basis of closely allied theoretical formulations—namely, the strategies of organizing and transforming (Baird, 1983; Corno & Mandinach, 1983), seeking and selecting information (Baird, 1983; Wang, 1983), and rehearsal and mnemonic strategies (McCombs, 1984; Paris, Newman, & Jacobs, 1984). Also included were the strategies of seeking social assistance and reviewing previously compiled records such as class notes and notes on text material (Wang, 1983).

The inclusion of seeking social assistance as a category of self-regulated learning may appear unusual to readers who assume that self-regulation processes are, by definition, nonsocial. More than two decades ago, however, social learning theorists demonstrated that self-reinforcement processes can be acquired and modified through observation of a model (e.g., Bandura, Grusec, & Menlove, 1967; Bandura & Kupers, 1964). It is theorized that human achievement is heavily dependent on the use of self-regulation, particularly in competitive or evaluative settings (Thoresen & Mahoney, 1974; Zimmerman, 1981). Academic achievement is one realm where self-regulated learning processes are assumed to be crucial (Bandura, 1982; 1986; Schunk, 1984; Zimmerman, 1983). In the upper grades, success in school is believed to be highly dependent on student self-regulation, especially in unstructured settings where studying often occurs.

Although extensive research has been conducted on the use of self-regulated learning processes in laboratory situations (e.g., Bandura & Schunk, 1981; Mischel & Mischel, 1983), few efforts have been made to

measure the role of self-regulated learning processes in naturalistic settings, particularly in nonclassroom contexts. In an exploratory study, Corno, Collins, and Capper (1982) adapted a questionnaire developed by Peterson, Swing, Baverman, and Buss (1982) to assess five self-regulated strategies during classroom learning to write and read. This measure displayed modest correlations with posttest achievement in writing (r = .15) and reading (r = .20).

The present study investigated student use of 14 self-regulation strategies in nonclassroom as well as classroom contexts using a structured interview procedure. A free response interview format was chosen in preference to a multiple option item format to avoid suggesting any specific self-regulation strategies to the students. This procedure also allowed the experimenter to probe students who were reticent or nonverbal. In addition to developing a structured interview measure of self-regulated learning strategies, a second goal of the study was to determine the relationship between students' reported use of these strategies and an omnibus measure of scholastic accomplishment: their achievement track in school.

It was hypothesized that students selected from a high achievement track in a public high school would display greater use of self-regulation strategies than students chosen from other (lower) achievement tracks. Greater use of a non-self-regulated strategy was expected by students from the lower achievement tracks. An issue of particular interest was the identification of those self-regulation strategies that were most extensively used by high achieving students.

METHOD

Sample

From a high school serving a middle-class suburban community of a large metropolitan area, 40 sophomores (25 boys and 15 girls) from the advanced achievement tract and 40 sophomores (19 boys and 12 girls) from other (lower) tracks were randomly selected. Students were assigned to achievement tracks according to their entrance test scores, grade point average prior to entering high school, and teachers' and counselors' recommendations. In addition, students could be transferred to another achievement track according to their performance during high school. In the study, students were assigned to a high or low achievement group on the basis of their academic track in school because track was derived from multiple sources of information, several of which summarized the students' performance over extensive periods of time. As a check on the achievement differences of the two groups of students, their Metropolitan Achievement Test (MAT) scores were compared. The mean level of achievement for the high group was 82.3 in English and 88.6 in mathematics and the means for the low group were 71.83 and 60.93, respectively. The effect size for

these differences was 1.75 standard deviation units in English and 2.63 units in mathematics. The students ranged in age from 14 to 16, with a mean age of 15.

Self-Regulated Learning Interview Schedule

On the basis of prior research and theory, 14 classes of self-regulated behavior were identified. In addition, a single category of non-self-regulated behavior (labeled "other") was included. Definitions and examples of each category derived from students' protocols are presented in Table I.

Based on pilot interviews with high school students from a different community, six different learning contexts were identified: in classroom situations, at home, when completing writing assignments outside class, when completing mathematics assignments outside class, when preparing for and taking tests, and when poorly motivated. For each learning context, students were asked to indicate the methods they used to participate in class, to study, and to complete their assignments. To make each context as meaningful as possible, a concrete example was provided. The following example was given for the testing context:

> Most teachers give tests at the end of marking periods, and these tests greatly determine report card grades. Do you have any particular method for preparing for this type of test in English or history?

If the student failed to give an answer, the following probe was given: "What if you are having difficulty? Is there any particular method you use?" If the student failed to suggest any self-regulating learning strategies, questioning was discontinued for that learning context. If the student mentioned one or more strategies, the interviewer asked him or her to rate the consistency with which each strategy mentioned was used on the basis of a visually presented, four-point scale with categories ranging from "seldom" to "most of the time." An example of answers to the writing context questions by a high achievement track and a low achievement track student is presented in Table II.

Procedure

Parental consent was obtained for students who participated in the study. The parents and students were informed that the youngsters would be interviewed about their study practices. The students were interviewed in a separate room in their school at a time scheduled by a teacher who helped coordinate the interviews. The interview was conducted by a graduate student who was unaware of the students' achievement levels. Answers were recorded verbatim during an interview that lasted approximately 15 minutes. Information concerning student achievement track was recorded by the teacher coordinator.

Students' responses were scored separately for each learning context.

TABLE I

Self-Regulated Learning Strategies

Categories of strategies	Definitions
1. Self-evaluation	Statements indicating student-initiated evaluations of the quality or progress of their work, e.g., "I check over my work to make sure I did it right."
2. Organizing and transforming	Statements indicating student-initiated overt or covert rearrangement of instructional materials to improve learning, e.g., "I make an outline before I write my paper."
3. Goal-setting and planning	Statements indicating student setting of educational goals or subgoals and planning for sequencing, timing, and completing activities related to those goals, e.g., "First, I start studying two weeks before exams, and I pace myself."
4. Seeking information	Statements indicating student-initiated efforts to secure further task information from nonsocial sources when undertaking an assignment, e.g., "Before beginning to write the paper, I go to the library to get as much information as possible concerning the topic."
5. Keeping records and monitoring	Statements indicating student-initiated efforts to record events or results, e.g., "I took notes of the class discussion." "I kept a list of the words I got wrong."
6. Enviromental structuring	Statements indicating student-initiated efforts to select or arrange the physical setting to make learning easier, e.g., "I isolate myself from anything that distracts me." "I turned off the radio so I can concentrate on what I am doing."
7. Self-consequences	Statements indicating student arrangement or imagination of rewards or punishment for success or failure, e.g., "If I do well on a test, I treat myself to a movie."
8. Rehearsing and memorizing	Statements indicating student-initiated efforts to memorize material by overt or covert practice, e.g., "In preparing for a math test, I keep writing the formula down until I remember it."
9–11. Seeking social assistance	Statements indicating student-initiated efforts to solicit help from *peers* (9), *teachers* (10), and *adults* (11), e.g., "If I have problems with math assignments, I ask a friend to help."
12–14. Reviewing records	Statements indicating student-initiated efforts to reread *tests* (12) *notes* (13), or *textbooks* (14) to prepare for class or further testing, e.g., "When preparing for a test, I review my notes."
15. Other	Statements indicating learning behavior that is initiated by other persons such as teachers or parents, and all unclear verbal responses, e.g., "I just do what the teacher says."

TABLE II

Examples of Protocols of High and Low Achievement Group Students for the Writing Context Questions

Interviewer's question	Student's response	
	High achievement group	Low achievement group
1. Teachers often assign their class the task of writing a short paper outside class on a topic such a one's family history. They frequently use one's scores as a major part of one's grade. In such cases, do you have any particular methods to help you plan and write the paper?	a. I use clues given by the teacher to plan the content and form of the paper. b. I ask my brother and sister for ideas on how they did it. c. I get information from my parents about our family history. d. I set the material in order and I write the paper.	a. I get information from my parents and then write the paper.
2. What if you are having difficulty? Is there any particular method you use?	a. That's all I do.	a. I don't do anything else.
3. You have mentioned that there are (number of methods) things that you do. Now I would like you to look at this scale and tell me how often you do each of the things you mentioned. [The interviewer recalls each method and the student indicates his rating.]	a. Most of the time. b. Seldom. c. Most of the time. d. Most of the time.	a. Most of the time.

Note. For question 1, methods reported correspond to the categories of strategy presented in Table I. The categorizations of the high achievement group responses are a. 3, b. 9, c. 11, d. 2. The categorization of the single method mentioned by the low achievement group student was 11.

Individual strategies were identified for classification by category but not by appropriateness. Usually each strategy was described in one or two sentences; however, periodically several sentences were used—particularly if the interviewer requested a better description. The number of strategies that the students mentioned for each of the six learning contexts varied greatly—some students failed to mention a single strategy despite probing by the experimenter, whereas other children offered as many as eight strategies.

The protocols were coded by two graduate students. Each of the strategies was assigned by a primary judge to one of the 15 categories listed in Table I. To assess reliability, the second graduate student independently coded

approximately 25% of the protocols. Both coders were trained previously to reach an 80% level of agreement using the protocols of subjects who had been interviewed during pilot testing. Reliability was assessed using a procedure recommended by Withall (1949) for use by a judge and a reliability coder. Identical categorical judgments by the judge and coder were divided by the total number of strategies initially identified. The agreement level for the subjects in the study was 86%.

Three different procedures were used to summarize these categorical data. Each procedure differed in the level of emphasis placed on the frequency with which each category of self-regulation was mentioned. At the most elemental level, each self-regulation strategy was scored dichotomously as having occurred or not during any of the six learning contexts. This measure was called *strategy use* (SU). A second, more comprehensive measure was termed *strategy frequency* (SF). This measure consisted of the number of times that a particular strategy was mentioned. As it turned out, no category of self-regulated learning was mentioned more than once for a single context, and thus, this measure indicated the number of contexts in which each strategy occurred. At the most comprehensive level, the students' consistency of strategy use was scored. Each method (i.e., self-regulation or other strategy) was weighted by the student's estimate of its freqency of use, a measure termed *strategy consistency* (SC). For each mention of a strategy, the following weights were given on the basis of the rated consistency: seldom = 1, occasionally = 2, frequently = 3, and most of the time = 4. No hypotheses were offered about which level of scoring would prove optimal; it was planned to resolve this issue empirically.

RESULTS

The frequencies of each type of self-regulation are presented in Table III. The data for each of the three different measures of strategy use are presented separately for the high and low achievement groups. It will be noted that means for the SU measure varied between zero and one because each category was scored dichotomously (as having occurred or not at any time during the interview). The SF measures ranged from the SU (minimum) level to the total number of times that the strategy was mentioned during the interview. The SC scores could range from the SF level (when each mentioned strategy was rated as "seldom") to four times that value (when each report of a strategy was rated as "most of the time"). Perusal of Table III indicates that SC means ranged between .17 and 2.48 for low achievers and between .97 and 4.65 for high achievers. However, these means reflected the fact that some students did not mention certain strategies. The rated consistency of strategies that were *actually* mentioned can be derived from the ratio of SC/SF measures. The ratio was 2.48 for the low achievement group and 2.68 for the high group. These ratios

TABLE III

Self-Regulated Learning Strategy Means for Each Frequency Measure

Strategies	Achievement group					
	Low			High		
	SU	SF	SC	SU	SF	SC
Self-evaluation	.35	.35	.78	.30	.33	.97
Organizing and transforming	.40	.45	1.18	.65	1.28	3.86
Goal-setting and planning	.53	.60	1.55	.48	.93	3.03
Seeking information	.45	.58	1.41	.78	1.83	4.40
Keeping records and monitoring	.60	.68	1.65	.85	1.43	3.98
Environmental structuring	.38	.38	.97	.40	.60	1.90
Self-consequences	.13	.13	.30	.43	.53	1.70
Rehearsing and memorizing	.30	.35	.98	.50	.95	2.27
Seeking peer assistance	.23	.23	.57	.50	.80	1.75
Seeking teacher assistance	.30	.33	.67	.70	1.20	2.25
Seeking adult assistance	.08	.08	.17	.35	.43	1.10
Reviewing tests	.18	.20	.40	.30	.35	1.05
Reviewing notes	.65	.90	2.48	.88	1.70	4.65
Reviewing text	.43	.45	1.05	.68	.98	2.85
TOTAL	5.01	5.71	14.16	7.80	13.34	35.77
Other	.55	.70	2.21	.34	.43	1.17

indicated consistency ratings of self-regulation between "occasionally" and "frequently."

To determine which of the three measures of strategy use was optimal in distinguishing between the two achievement groups, a discriminant function analysis (Tatsuoka, 1971) was performed using the total self-regulation scores for each of the usage measures. This analysis indicated the contribution of each measure to the conjoint prediction of differences in student achievement. The measures revealed substantial differences between the high and low achievement groups, χ^2 (3) = 81.49, $p < .001$.[1] It was found that 91% of the students in the sample could be correctly classified into the high and low achievement groups on the basis of their self-regulated learning measures. The standardized discriminant function coefficient was −.66 for the SU measure, .41 for the SF measure, and 1.12 for the SC measure. These statistical results indicate that the SC measure was the most effective, although all three disciminant function coefficients were significant: SU = $F(1, 78) = 37.18$, $p < .001$; SF = $F(1, 78) = 95.94$, $p < .001$; and SC = $F(1, 78) = 118.30$, $p < .001$. On the basis of these outcomes, the SC measure was selected for use in subsequent analyses.

The second major question proposed for study concerned which of the categories of self-regulation discriminated optimally between the high and low achievement groups. To determine the relative importance of each

[1] This test was based on Wilk's Lambda multivariate criterion.

TABLE IV

Standardized Discriminant Function Coefficients, Within-Group Canonical Correlations, and Univariate t-tests for Self-Regulated Learning Strategies

Strategies	Statistical measures		
	Discrimination	Correlation	*t*-tests[a]
Self-evaluation	.17	.03	NS
Organizing and transforming	.42	.31	.01
Goal-setting and planning	.41	.14	.05
Seeking information	.58	.37	.01
Keeping records and monitoring	.43	.33	.01
Environmental structuring	.29	.13	.05
Self-consequences	.13	.26	.01
Rehearsing and memorizing	.41	.18	.01
Seeking peer assistance	.00	.22	.01
Seeking teacher assistance	.36	.27	.01
Seeking adult assistance	.31	.22	.01
Reviewing tests	−.11	.13	.01
Reviewing notes	.15	.25	.01
Reviewing text	.31	.25	.01
Other	−.09	−.15	.05

[a] Level of statistical significance, one-tailed.

category of self-regulation, a discriminant function analysis was computed between the two achievement groups. The groups were found to differ significantly, $\chi^2(16) = 87.32$, $p < .001$. The discriminant function coefficients are presented in column one of Table IV. Ninety-three percent of the students could be correctly classified into their respective achievement group on the basis of their use of these 15 categories of self-regulated learning.

Discriminant function coefficients represent the conjoint weighting of the self-regulation strategies for optimally predicting student membership in each achievement group. These coefficients do not, however, indicate the contribution of each strategy when considered individually to the canonical discriminant function. Discriminant function coefficients also take into account colinearity among the strategies. The relative contribution of each strategy is indicated instead by their pooled within-group correlations with the canonical discriminant function (Tabachnick & Fidell, 1983). These within-group canonical correlations are presented in the second column of Table IV. The multivariate distinction between discriminant function coefficients and within-group canonical correlations is similar to the univariate distinction between regression and partial correlation coefficients.

These canonical correlation coefficients indicated that the two achievement groups of students were differentiated most by their mention of the self-regulation strategies of "seeking information," "keeping records and

TABLE V

Correlation and Regression Coefficients for Predicting Student Achievement Test Scores Based on Gender, Socioeconomic Status, and Use of Self-Regulated Learning Strategies

Predictor variables[a]	Coefficients			
	English		Mathematics	
	Regression	Multiple correlation	Regression	Multiple correlation
Sequential Order 1				
SRL	.44*	.56**	.41*	.55**
SES	.19	.59	.31*	.61
Gender	−.17	.61	.03	.61
Sequential Order 2				
Gender		.28**		.08
SES		.47**		.49**
SRL		.61**		.61**

[a] Predictor variables were entered into a cumulative multiple correlation in descending order. This regression analysis was not affected by order of entry of predictor variables.

* $p < .05$ for size of coefficient.

** $p < .05$ for sequential increase in size of coefficient.

monitoring," and "organizing and transforming." The fourth largest correlation was for "seeking teacher assistance," which was followed by slightly lower coefficients for "seeking peer assistance" and "seeking adult assistance." Self-consequences produced the fifth largest canonical correlation coefficient. "Reviewing notes" and "reviewing text" produced identical correlations that were sixth largest in size. The lowest correlation emerged for "self-evaluation."

Univariate *t*-tests were also used to compare the use of the two achievement groups of each self-regulated learning strategy. These results are also presented in Table IV. The high achievement group displayed significantly greater use of all self-regulation strategies except for self-evaluation, and it displayed significantly less use of "other" responses (denoted by the negative canonical correlation coefficient).

To determine the implications of the higher reports of "other" responses by the low achieving children, an additional analysis was performed on various responses within this category. Three subclasses of response were identified: unscorable responses, "reactive" statements, and "will power" statements. Reactive statements indicated a lack of personal initiative by the student in the given instructional context. For example, when asked how he prepared for a test, one student responded, "I just do what the teacher tells me." Will power statements were composed of simple statements of resolve such as "If I'm having difficulty motivating myself to complete my homework, I just work harder." No strategies were specified

despite probing; instead, the student proposed to mobilize unspecified pyschic forces to "try harder" (see Thoresen & Mahoney, 1974, p. 8).

No unscorable responses were recorded for any student; however, a number of reactive and will power statements were recorded. Statistical comparisons revealed a significant difference in will power statements between the two achievement groups, $t(78) = -2.60$, $p < .01$, with low achieving students making nearly twice as many such statements (M = 3.35) as high achieving students (M = 1.77). Achievement group differences in reactive statements did not reach statistical significance, although the mean of the low achievers was substantially larger (1.08) than that of high achievers (.57).

An additional question of interest concerns the usefulness of students' self-regulation strategy reports in predicting their MAT scores. Although such achievement measures are less broadly based, they have the advantage of being metric in nature. The predictive utility of self-regulated learning strategy total scores was compared to two common demographic indices: gender and socioeconomic status (SES). The SES level of the students was derived from information about their parents' level of education (Blau & Duncan, 1967). These variables were entered into a series of equations to predict English and mathematics subsections of the MAT. A conventional regression analysis was performed in addition to two sequential multiple correlation analyses, with self-regulated learning strategy measures entered first in one analysis and last in the other. The results are presented in Table V. The results indicated that self-regulated learning total score was the best predictor for both subsections of MAT achievement. The correlation of self-regulated learning scores with English achievement was .56 and with mathematics achievement was .55. When this measure was entered first in the prediction equation, it accounted for 84% and 81% of the predicted English and mathematics outcomes, respectively. When entered last in the equation, it improved prediction of English achievement 41% and mathematics achievement 36% over the variables of gender and SES. When considering the three variables simultaneously in regression analyses, only the self-regulation learning strategy scores yielded significant weights for both English and mathematics achievement.

DISCUSSION

The present results indicate that a structured interview procedure designed to measure student use of self-regulated learning strategies in nonclassroom as well as classroom contexts displayed substantial correlation with academic achievement. Of the 14 categories of self-regulated learning strategies that were studied, the high achievement group of students reported significantly greater use than a low achievement group for 13 of these categories. High achievers also reported significantly less use of a single category of non-self-regulated response than low achievers. Perhaps

the most impressive evidence of the size of this relationship was the finding that 93% of the students could be correctly classified into their appropriate achievement track group through knowledge of their self-regulation practices. Other analyses revealed that student use of self-regulated learning strategies yielded a substantial increase in prediction of standardized achievement test scores after the effects of gender and socioeconomic status were removed. When considering the three variables together, only self-regulated learning strategy measures produced a significant regression coefficient. To date, relatively little attention has been devoted to student use of learning strategies in naturalistic contexts, particularly outside the classroom. The present data suggest that futher study of these issues is worthwhile.

It was found that an interview procedure could provide reliable evidence concerning students' self-regulation reports. Substantial inter-coder agreement was achieved through the use of a structured procedure for soliciting information from students about their study methods and through systematic training of coders in the use of the Self-Regulated Learning Interview Schedule. Although further studies using this instrument are necessary—particularly with students who differ in age and academic milieu—it would appear to have potential for describing individual differences in student self-regulated learning practices. It is hoped that the instrument will prove useful eventually in identifying particular students who could profit from specific training in self-regulation.

The data indicate that the SC measure was superior to the other two measures in distinguishing between the two achievement groups of students. The greater effectiveness of this measure in comparison to the SU measure indicates the importance of the students' use of each strategy in different learning contexts. The SC measure proved to be more highly related to student achievement than the SF measure as well. This finding indicates the importance of the students' ratings of their consistency in using each self-regulation strategy. If one considers each rating interval to extend for a half-scale value below a particular value to a half-scale value above, the total self-regulated learning ratings of the high achieving students fell into the interval of "frequently." In contrast, the total self-regulated learning ratings for the low achieving students fell into the interval of "occasionally."

The finding that high achieving students relied more heavily on social sources of assistance (categories 9–11) than lower achieving youngsters is concordant with social learning emphases. High achievers were distinguished particularly by their use of teachers and peers as sources of social support. They also reported seeking assistance from adults (usually parents) significantly more often. Although 50% of the high achievers asked for assistance from peers and 35% requested help from adults, only 23% of

the students in the low achievement group sought assistance from peers, and just 8% solicited help from adults. Clearly, self-regulated students relied extensively on social sources of assistance to accomplish academic tasks.

The one category of self-regulation that failed to relate to student achievement was self-evaluation. We continue to believe that this is an important self-regulated learning strategy. Although it is possible to further refine our definition of self-evaluation strategies (e.g., distinguishing between statements that indicate comparisons with an expressed criterion from those that do not), we plan to focus future research on improving descriptions of learning contexts where self-evaluation might occur and on improving procedures for questioning students concerning their use of self-evaluation.

Evidence that low achieving students reported significantly more non-self-regulated other responses (particularly will power statements) than high achievers indicates that the Self-Regulated Learning Interview in fact assessed individual differences in use of learning strategies, not merely in verbalness. Although it was anticipated that high achievers would be more verbal, the probe procedure was designed to accommodate students who felt reticent about discussing these matters, and the procedure appeared informally to work. Furthermore, the SC measure, which proved to be most effective in differentiating the two achievement groups of students, did not rely simply on verbal description. It differed from the SF measure in its dependence on data from a nonverbal rating scale. Clearly, the results cannot be attributed simply to student verbal fluency.

In conclusion, the Self-Regulated Learning Interview Schedule appears to have promise for describing students' use of these strategies in naturalistic settings. Like all instruments based on a posteriori self-descriptions of performance and reasoning, it needs to be validated ultimately against students' actual performance on academic tasks in naturalistic settings. There is, however, reason to be optimistic about the present results because previous research on student learning in laboratory settings (Bandura, 1982; Mischel & Mischel, 1983; Schunk, 1984) has revealed substantial evidence that human achievement is heavily dependent on the use of many of the same strategies that were included in the Self-Regulated Learning Interview Schedule. The present results suggest that theoretical conceptions of students as initiators, planners, and observers of their own instructional experiences have empirical and practical merit.

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