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AUTHOR Greene, Jennifer C.
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INSTITUTION Rhode Island Univ., Kingston.
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ABSTRACT

Motivation is widely believed to be a critical component of the learning process in the elementary classroom, but educational research has failed to substantiate this belief. To investigate interrelationships among selected motivational variables, demographic, motivational and achievement characteristics of 400 elementary school students in Grades 4, 5, and 6 were measured. Results indicated that ability and effort were the dominant causal factors in classroom motivational processes, although incentive value was also important. Classroom motivational processes were rooted, in part, in the degree to which an individual's self-concept of ability was realistic. The findings suggest that motivation is a dynamic process in which perceived outcomes are evaluated and then incorporated into one's self-concept of ability. (JAC)

Toward a Linking of Motivational Theories

Jennifer C. Greene
University of Rhode Island

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Toward a Linking of Motivational Theories

Motivation is widely believed to be a critical component of the learning process in elementary classrooms. To date, however, educational research has been unable to substantiate this belief convincingly and our understanding of motivation thus remains fragmented and incomplete. This failure can be explained (at least in part) by the following three factors.

First, like all psychological phenomena, classroom motivation is a complex, multifaceted construct. Yet, most research on motivation has been conducted within one of a number of independent strands, each focused on a single motivational variable. These strands include research on achievement motivation (e.g., Atkinson & Raynor, 1978; McClelland, Atkinson, Clark, & Lowell, 1953; Fyans, 1980); on locus of control (e.g., Lefcourt, 1976; Rotter, 1966); on causal attributions (e.g., Weiner, 1974, 1979, 1980); on academic self-concept (e.g., Shavelson, Hubner, & Stanton, 1976); and on self-efficacy (e.g., Bandura, 1977; Schunk, 1981). The largely independent nature of these various research efforts leaves interrelationships or overlap among these variables undetermined, both on a conceptual level and in terms of their effects on learning. What is needed are assessments of these interrelationships towards a possible integration of discrete variables into more global constructs. As suggested by Uguroglu and Walberg (1979), "multiple or multifactorial, and hence more valid, measures of motivation, rather than more internally consistent or homogeneous single measures, are likely to improve predictions" [of the relationship between motivation and learning] (p. 237).

The second factor limiting the success of previous research on classroom motivation concerns the research setting. Substantial amounts of motivational research (especially in the area of causal attributions) have been conducted with college students in laboratory or simulated settings. The relevance of these findings to the motivation of elementary school children in their own classrooms is an empirical question. (The need for studies on this question has been recently articulated by Frieze, 1980; Marjoribanks, 1980; and Stipek & Weisz, 1981.)

The third limiting factor concerns construct definition and measurement, particularly along the generalized vs. situation-specific continuum of motivational variables. Some extant bodies of motivational research have focused on highly generalized motivational constructs (e.g., Rotter's locus of control work, Rotter, 1966), while others have addressed highly situation-specific responses. (For example, much of the causal attribution research has asked for perceptions of the causes of success and failure on a given experimental task.) Again, the relevance of these findings to motivation in elementary school classrooms is unknown. Probably most relevant to classroom motivation are construct definitions that fall in between the generalized and situation-specific poles of this continuum. That is, in studies of classroom motivation, the conceptual and measurement context for the motivational variables assessed should be restricted to school learning experiences, but not to any single experience. (This is probably closest to the ways in which these variables are experienced or perceived by the students themselves.)

The present study on classroom motivation attempted to address these three factors both in its purpose and its design. The explicit purpose

of the study was to investigate interrelationships among selected motivational variables for elementary school children vis-a-vis their classroom learning experiences. Previous research on motivational variables was used to develop a preliminary conceptual framework for a multifactorial construct called sense of efficacy and defined as a student's perceptions of personal control over and responsibility for his/her own classroom learning experiences (see Figure 1). Within this framework, all motivational variables were defined and measured within the context of general school learning experiences. An empirical test of this framework constituted the major purpose of the study.

In addition, the study was conducted with elementary school children in their own classrooms. Information on selected classroom characteristics, as perceived by students, teachers, and an external observer, was collected. This classroom level information allowed for the analysis of student characteristics, not in isolation, but in terms of their relationships to and interactions with classroom characteristics. That is, sense of efficacy was construed in this study as an interactional construct, dependent upon both person and situation variables, but even more importantly, upon their interactions.

Within this interactional framework, a complete conceptualization of the sense of efficacy construct would require the identification of both the relevant person variables and the relevant situation variables, as well as an explanation of their interactions. While the present study was designed to explore all facets of this conceptualization, it focused on the delineation of key person variables and their interrelationships. In keeping with this focus, the results presented below highlight interrelationships among motivational variables and relationships between these motivational variables and measures of school achievement.

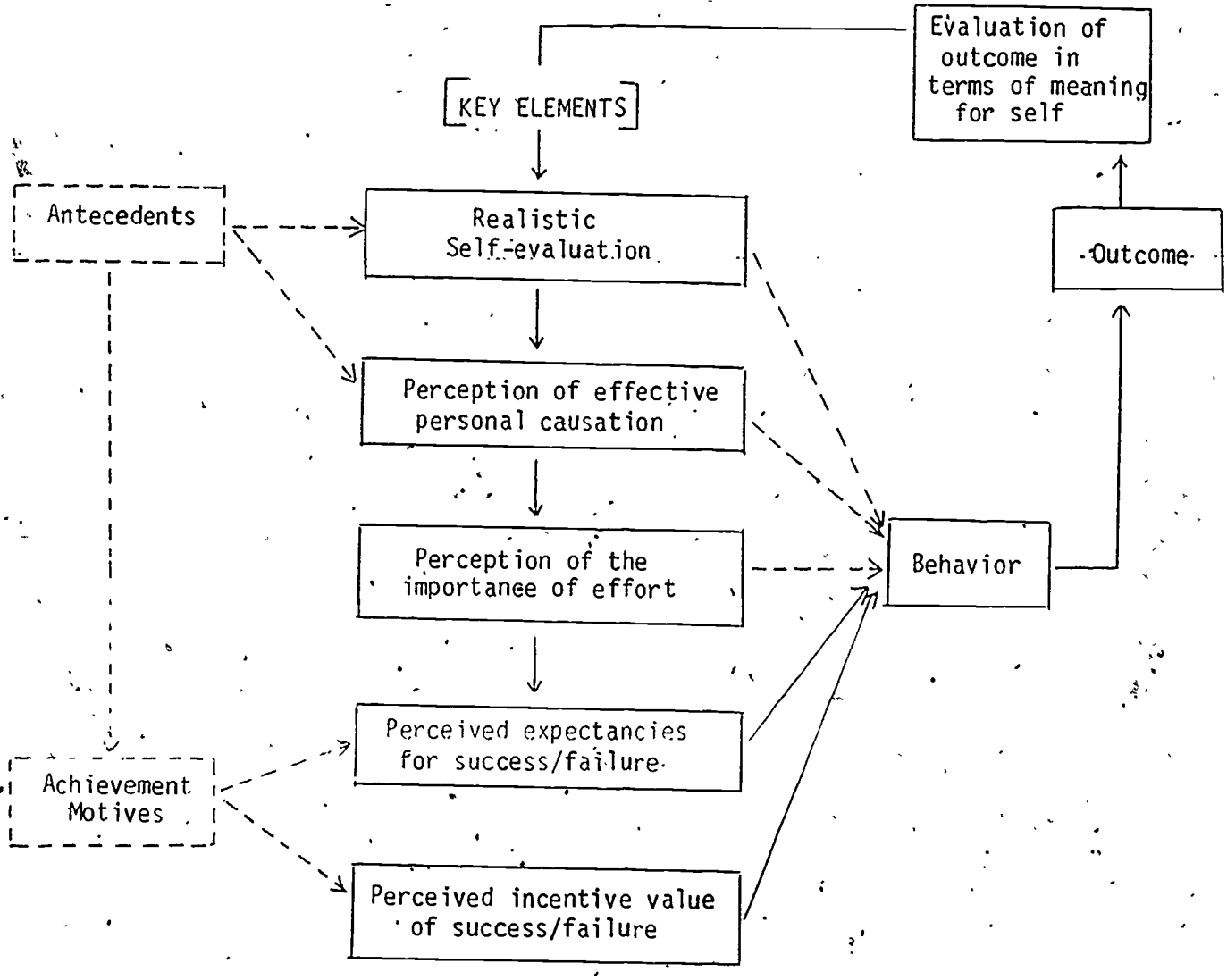

Figure 1

Preliminary Framework for Sense of Efficacy

Methodology

Sample

The research sample consisted of approximately 400 fourth-, fifth-, and sixth-grade students in 21 classrooms within three suburban-rural school districts. Participation in the study was predicated on both teacher and parental consent. Derived from student self-report, the sample can be characterized as predominantly Caucasian (92 percent), including slightly more males (52 percent) than females (48 percent), and representing a wide range of socioeconomic strata (e.g., from 15 percent in the unskilled/skilled worker categories to 21 percent in the professional category).

Variables and Instrumentation

Three sets of student characteristics were measured: demographic, motivational, and achievement. The first two sets were measured via group-administered questionnaires, while achievement information was extracted from existing school files. Whenever possible, existing instruments were used or adapted for use in this study. Table 1 presents a complete listing of all student characteristics measured, including the title of the instrument, information on previous use of the instrument, and reliability estimates where appropriate.[1]

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[1] While not unsatisfactory, many of these estimates are moderate in size, suggesting the existence of some within-person variability in responses to items on these various measures. As recently argued by Atkinson (1981), however, classical test theory, including internal consistency reliability, may be irrelevant to efforts to construct "an advanced motivational psychology." That is, within-person variability, in terms of different motivational responses to different situations, can be theoretically meaningful, though not psychometrically consistent.

Table 1

Student Characteristics Measured in the Study

Characteristic	Title of instrument	Previous use of instrument/comments	Cronbach α
DEMOGRAPHIC			
Grade level, sex, ethnicity, parent's occupation	Things About Yourself	Items previously used in RI Statewide Assessment Program for fourth graders	---
MOTIVATIONAL			
Locus of control	Why Do Things Happen To You?	Instrument is the IAR (Crandall, Katkovsky, & Preston, 1962)	I+ = .53 I- = .64 Itot = .67
Expectancy of success	How Well Do You Do Things?	Instrument used by researcher in two previous studies	Exp = .87
Incentive value of success	Which Would You Pick?	Instrument used by researcher in two previous studies	Inc = .71
Causal attributions for success and failure	Why Do Things Happen to You in School? Part I	Instrument used by researcher in one previous study	Percent agreement indices for parallel item pairs ranged from 59 to 92 percent
	Part II	Items developed from recent recommendations regarding attribution measurement	---
Academic self-concept	School Attitude Measure (SAM)	Standardized instrument (Scott, Foresman, and Co.) yielding five scores (performance self-concept, referenced self-concept, motivation, control, and mastery)	S-C, perf = .68 S-C, ref = .74 Motiv = .79 Control = .64 Mastery = .75
Achievement motivation	Story-telling #1 - #4	Leads for four TAT stories taken from McClelland et al. (1953, p. 169); questions for each story were standard TAT questions (McClelland et al., 1953)	---[a]
Teacher perceptions of student's academic self-concept	Teacher Perceptions of Students' Self-concept	Items from self-concept scales of SAM	---

Table 1 (continued)

Characteristic	Title of instrument	Previous use of instrument/comments	Cronbach α
ACHIEVEMENT			
Achievement test performance (reading, language arts, math, total)	School File Data Form	All test scores were national percentile ranks on a standardized, norm-referenced achievement test	---
IQ scores[b]	School File Data Form	All IQ scores were deviation IQs from a standardized group intelligence test	---
Academic grades (reading, language arts, math, as available)	School File Data Form	Academic grades were medians of grades available for recent school year	---
Effort grades (reading, language arts, math, as available)[c]	School File Data Form	Effort grades were medians of grades available for recent school year	---

[a] Three scorers were used to score the TAT stories. Interscorer agreement, based on the number of stories scored, ranged from 76.9 percent to 89.5 percent.

[b] Available for students in classes 3, 4, 5, 7, 8, and 9.

[c] Available for students in classes 16-21.

Three sets of information on classroom characteristics were also collected: student and teacher perceptions of selected dimensions of classroom climate and information on physical, instructional, and normative dimensions of the classroom environment as perceived by an external observer. The climate measure (entitled "Your Classroom") was composed of five of nine scales from the Classroom Environment Scale (Moos & Trickett, 1974), adapted for elementary school students. (Internal consistency reliability estimates for these five scales were .63 for involvement, .50 for task orientation, .82 for order and organization, .56 for rule clarity, and .55 for innovation.) The Classroom Observation instrument (developed for this study) measured demographic and physical characteristics of the classroom (e.g., class size, classroom space, noise level); grouping structure in the classroom (individualized, small group, large group); the audience for and content of teacher verbal behavior; and, for randomly identified students, degree of choice over and level of absorption in class tasks. (Agreement among the three observers across the various observation categories averaged about 95 percent.) This instrument also collected observers' subjective perceptions of 10 dimensions of the classroom learning environment, again derived primarily from the Classroom Environment Scale. (Across the three observers, the intraclass correlation for this part of the instrument was .91.)

Procedures

Three trained observers served as data collectors for this study. Each observer worked with the same set of classrooms throughout the data collection process (thus confounding observer effects with classroom effects, but strengthening the critical links of cooperation and rapport

between the research staff and school personnel). These observers (a) administered the student questionnaires to classroom groups in three separate one-hour sessions during March and April, 1981; (b) conducted five one-hour classroom observations using the Classroom Observation instrument, spaced from December, 1980 to June, 1981; (c) distributed and collected the teacher questionnaires; and (d) assisted with the collection of school file data in May and June, 1981.

The packaging of the student questionnaires into three separate one-hour sessions was carefully designed to minimize classroom disruptions and fatigue or boredom on the part of the students. For this reason, the same sequencing was maintained in all classrooms. Furthermore, wherever possible, absentees were administered the questionnaires at a later date.

Results

Analyses of interrelationships among the motivational variables, using students as the unit of analysis, yielded two overlapping, but nevertheless distinct clusters of variables, which are differentially related to achievement.

The first cluster, labeled "ability orientation," includes the following variables: self-concept of ability, expectancy of academic success, causal attributions for academic success experiences to ability, and causal attributions for academic failure experiences to a cause other than ability. In other words, a student with a "high" profile on this cluster would have a high self-concept of ability and a high expectancy of doing well in school and would tend to attribute school success to ability and school failure to a cause other than lack of ability.

Included in the second cluster of motivational variables, labeled "effort orientation," are perceived internal or external control of academic reinforcements (or locus of control, as measured by the Intellectual Achievement Responsibility Scale); incentive value or the perceived importance of doing well in school; and causal attributions for both academic success and failure experiences to effort. For example, a student with a "high" profile on this cluster would believe that she/he has internal control over the reinforcements of both academic success and failure situations, would believe that doing well in school is important and valuable, and would tend to attribute school successes to high effort and school failures to insufficient effort.

Supporting data for the existence of these two clusters are presented in Tables 2-4. Table 2 presents correlations within and between the two clusters of variables. Particularly for the ability orientation cluster, correlations within a cluster are stronger than correlations between the two clusters. The overlap between the two clusters is also evidenced in the correlational results. This overlap may include internal control for positive reinforcements (I+) and success and failure attributions to effort (at least as measured by part II, but not part I, of the attribution instrument).[1]

Table 3 displays the results of a principal axis factor analysis with orthogonal rotation. These results account for 96.8 percent of the common variance and clearly display the two clusters of variables. An oblique (promax) rotation yielded a similar pattern and a correlation of .34 between the two factors, again indicating some conceptual overlap between the two factors.

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[1] The different results yielded by the two parts of the attribution instrument are being investigated further, both for their measurement and for their possible psychological implications.

Table 2

Correlations Within and Between the Two Clusters of Motivational Variables

	Ability orientation							Effort orientation							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ability orientation															
1 Self-concept (performance-based)		.73**	.50**	.48**	.47**	-.41**	-.50**	.22**	-.02	.14**	.39**	-.05	.25**	.08	-.23**
2 Self-concept (reference-based)			.50**	.39**	.47**	-.40**	-.41**	.27**	.03	.10*	.38**	-.03	.24**	.11*	-.26**
3 Expectancy of success				.40**	.44**	-.41**	-.38**	.25**	-.08	.19**	.25**	-.06	.35**	-.04	-.26**
4 Success attributions to ability (I)[a]					.37**	-.32**	-.33**	.15**	-.08	.04	.06	-.27**	.15**	.00	-.15**
5 Success attributions to ability (II)						-.32**	-.36**	.21**	-.09	.07	.14**	.01	.33**	.05	-.21**
6 Failure attributions to ability (I)							.35**	-.09	.12*	-.02	-.06	.08	-.10*	-.04	.19**
7 Failure attributions to ability (II)								-.14**	.05	-.03	-.14**	.06	-.15**	-.07	.15**
Effort orientation															
8 I+ (LOC for success)									.25**	.26**	.26**	.31**	.27**	.28**	-.17**
9 I- (LOC for failure)										.20**	.23**	.23**	.02	.43**	-.01
10 Incentive value (I)											.40**	.20**	.19**	.22**	-.13*
11 Incentive value/motivation (II)												.18**	.28**	.28**	-.15**
12 Success attributions to effort (I)													.18**	.32**	-.08
13 Success attributions to effort (II)														.09	-.37**
14 Failure attributions to effort (I)															.03
15 Failure attributions to effort[b] (II)															

* $p < .05$
** $p < .01$

[a] Roman numerals refer to alternative measures of the same variable in this and all subsequent tables.

[b] Correlations with this variable have the opposite sign from that expected by the rest of the data. This is likely a measurement problem related to the use of a double negative on the questionnaire.

Table 3

Factor Analytic Support for the Two Clusters of Motivational Variables[a]

	Factor loadings		
	Factor 1 (Ability orientation)	Factor 2 (Effort orientation)	h^2
Self-concept of ability (performance-based)	.81	.16	.69
Self-concept of ability (reference-based)	.76	.22	.63
Expectancy of success	.66	.04	.44
Success attributions to ability (I)	.58	-.12	.35
Success attributions to ability (II)	.60	.00	.36
Failure attributions to ability (I)	-.54	.06	.30
Failure attributions to ability (II)	-.56	.03	.31
I+ (LOC for success)	.23	.45	.26
I- (LOC for failure)	-.14	.51	.28
Incentive value (I)	.10	.45	.21
Incentive value/motivation (II)	.33	.64	.51
Success attributions to effort (I)	-.13	.50	.26
Success attributions to effort (II)	.39	.22	.20
Failure attributions to effort (I)	-.04	.56	.32
Failure attributions to effort (II)	-.36	-.11	.14
Control	.56	.48	.54
Mastery	.55	.57	.63

[a] Principal factors, with communality estimates in diagonal, varimax rotation.

These two motivational factors and supporting data highlight the distinction between causal attributions to ability vs. effort. While the importance of this distinction has received considerable empirical and theoretical support, its importance in this study was derived empirically. In addition to ability and effort, the attribution measure in this study assessed students' causal perceptions of task difficulty, luck, task interest, and teacher bias. None of these other causal perceptions showed consistent or strong relationships with the other motivational variables in the study. Similarly, the projective measure of achievement motivation failed to show consistent relationships with other variables (probably in large part due to restricted variance).

Finally, the correlations between the motivational variables in the two clusters and the cognitive variables in the study are shown in Table 4. While the magnitude of these correlations is small to moderate, the pattern is extremely clear. All of the ability orientation variables are significantly related to various measures of aptitude and achievement, compared to the substantially fewer and smaller relationships shown between effort orientation variables and cognitive measures. In addition, a composite ability orientation variable[1] was significantly related to a composite achievement variable ($r = .57$, $p < .01$), while the relationship between an effort orientation composite and achievement was substantially weaker ($r = .11$, $p < .05$). The two motivational composites were also weakly related ($r = .14$, $p < .01$), again indicating some overlap between the two constructs.

[1] The ability orientation composite was derived by reversing appropriate scales, standardizing, and then summing the seven "ability" variables shown in Table 4. The effort orientation composite represents the sum of the following standardized variables: I+, I-, incentive value (I and II), success-effort (I), and failure-effort (I). The achievement composite is the sum of standardized variables representing academic grades and achievement test scores.

Table 4

Correlations of Motivational Variables in the Two Clusters with Cognitive Variables

Motivational variables	Cognitive variables										
		Grades			Ach test NCEs				Effort grades		
	IQ	Rdg	LA	Math	Rdg	LA	Math	Tot	Rdg	LA	Math
Ability orientation											
Self-concept (perf)	.39**	.33**	.31	.4**	.32**	.34**	.32**	.38**	.19	.19	.19
Self-concept (ref)	.46**	.36**	.36**	.36**	.40**	.42**	.39**	.4**	.17	.23*	.21*
Expectancy	.30**	.34**	.31**	.37**	.32**	.32**	.36**	.38**	.36**	.25*	.37**
Success - ability (I)	.33**	.35**	.29**	.38**	.30**	.31**	.31**	.35**	.26**	.30**	.28**
Success - ability (II)	.41**	.33**	.29**	.25**	.34**	.35**	.33**	.37**	.21*	.12	.09
Failure - ability (I)	-.25*	-.37**	-.33**	-.33**	-.34**	-.38**	-.33**	-.38**	-.30**	-.26*	-.23*
Failure - ability (II)	-.29**	-.25**	-.20**	-.24**	-.24**	-.25**	-.22**	-.28**	-.09	-.04	-.11
Effort orientation											
I+ (LOC for success)	-.10	.13**	.15**	.14	.12*	.17**	.14**	.16**	.23*	.21*	.23*
I- (LOC for failure)	-.15	-.00	.02	.04	.02	.01	.01	.01	.07	.05	.12
Itot (LOC total)	-.16	.07	.10	.10*	.08	.10	.08	.09	.19	.16	.22*
Incentive value (I)	-.20*	.09	.04	.01	.05	.03	.03	.01	.01	-.04	-.07
Incentive value (II)	.09	.07	.07	.09	.08	.10*	.11*	.11*	-.07	-.01	.08
Success - effort (I)	-.00	-.04	-.03	-.06	-.06	-.02	-.10	-.09	.16	.12	.05
Success - effort (II)	.14	.17**	.12*	.11*	.13*	.12*	.08	.13*	.25*	.07	.13
Failure - effort (I)	.03	.11*	.09	.09	.10*	.12*	.09	.11*	.30**	.29**	.35**
Failure - effort (II)	-.10	-.15**	-.16**	-.13**	-.13**	-.13*	-.09	-.12*	-.13	-.04	-.12
Control	.18	.27**	.28**	.29**	.23**	.33**	.29**	.31**	.28**	.24*	.39**
Mastery	.31**	.26**	.23**	.25**	.26**	.29**	.25**	.29**	.14	.15	.24**

* $p < .05$
** $p < .01$

Scores on these composite variables for various demographic subgroups are presented in Table 5. These data indicate that mean scores on ability orientation did not differ for males and females, while females had significantly higher mean effort orientation and achievement scores than males. Similarly, ability orientation mean scores did not differ by grade level, while fourth graders had a significantly higher effort orientation mean score than students in grades 5 and 6. Further, mean ability orientation scores increased with socioeconomic status, and students in the lowest socioeconomic stratum had the highest mean effort orientation score.

Discussion

This discussion highlights the results of an effort to interpret the findings of the present study within the boundaries of existing theory and research. Consistent with the focus of the study, this interpretive effort explicitly sought to integrate major theories and constructs within the extant body of motivational research and theory and within the context of classroom motivation. The first part of this discussion notes the degree to which the present results are consistent with previous research. In the second part, theoretical perspectives are used to suggest some integrative psychological interpretations of these results. The discussion then concludes with some preliminary modifications to the proposed conceptual framework for students' sense of efficacy and with some suggested directions for future research.

Consistency with Previous Research

Ability orientation. The clustering of variables included in the ability orientation composite is generally supported by existing theory

Table 5

Results on Composite Variables by Demographic Subgroup

Subgroup	Variable: Ability orientation n	$\bar{x}$	sd	Sig test[a]	Effort orientation n	$\bar{x}$	sd	Sig test	Achievement n	$\bar{x}$	sd	Sig test
Males	213	0.0	5.0	t = 0.03	221	-0.7	4.0	t = 3.88**	213	-1.0	6.9	t = 3.39**
Females	189	-0.0	5.1		195	0.7	3.3		192	1.2	6.2	
Grade 4	118	-0.1	5.1		121	1.0	3.7		119	0.8	6.5	
Grade 5	181	0.2	4.8	F = 0.18	191	-0.5	3.8	F = 5.97**[b]	184	-0.4	6.7	F = 1.14
Grade 6	103	-0.2	5.5		104	-0.2	3.5		102	0.2	6.8	
SES:												
Unsk/Skilled	57	-1.3	4.7		60	0.7	3.6		57	-3.1	6.2	
Crafts/Clerk	134	-0.6	5.3		138	-0.4	4.0		130	-0.3	6.2	
Manager, owner	91	0.5	4.9	F = 3.63**[c]	95	0.5	3.9	F = 1.39	92	2.1	5.8	F = 10.00**[d]
Professional	80	1.4	5.0		84	-0.1	3.1		82	1.9	6.5	
Stays at home/ Don't know	25	-1.2	4.8		25	-0.5	4.8		24	-3.8	8.2	

** $p < .01$

a Sex differences were tested by independent t-tests, grade level and SES differences were tested by the Duncan Multiple Range Test.

b Grade 4 > Grade 5, Grade 6.

c Professional > Unsk/Skilled, Crafts/Clerk, and Stays at home/Don't know.

d Professional, Manager or owner > Crafts/Clerk > Unsk/Skilled, Stays at home/Don't know.

with one significant exception, namely, the absence of failure attributions to insufficient effort. In brief, current theory hypothesizes that causal attributions for performance affect future expectancies in ways that serve to maintain existing self-perceptions of ability. Further, the effects of attributions on expectancies are mediated primarily along the stability dimension of causal perceptions. From this theory come the following kinds of predictions. Individuals with a high self-concept of ability tend to have high expectations of success and to attribute success to ability (which is a stable factor, thus reaffirming their positive self-concept) and failure to insufficient effort (which is unstable and modifiable, thus not impacting on perceived self-concept or expectancies). On the other hand, individuals with a low self-concept of ability tend to have low expectations of success and to attribute success to such external factors as luck or task ease (which are unstable and changeable, thus not impacting on or modifying their low self-concept) and failure to lack of ability (which is stable, thus reaffirming their low self-concept). Such are the motivational profiles developed from attribution theory (e.g., Bar-Tal, 1978; Weiner, 1974, 1979; Weiner & Kukla, 1970; Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971). Such also is the underlying rationale for recent intervention efforts aimed at changing children's perceptions of the causes of failure from insufficient ability to insufficient effort (e.g., Andrews & Debus, 1978; Dweck, 1975; Fowler & Peterson, 1981; Reiher & Dembo, Note 1; Schunk, 1981).

In a departure from these theoretical predictions, this study indicated that failure attributions to insufficient effort were not part of the ability orientation cluster, but rather part of the effort orientation cluster. Similar results, specifically the lack of

relationships between failure attributions to effort and measures of expectancy of success, have been shown for college students' perceptions of final exam performance (Simon & Feather, 1973) and for elementary school students' perceptions of experimental task performance (Stipek & Hoffman, 1980), of school reading achievement (Nicholls, 1979), and of general school achievement (Greene, Note 2). So, the discrepancy between current theory and the findings of this study, in terms of the variables that constitute an ability orientation composite or construct, has also been noted in several other empirical studies. Not insignificantly, three out of four of these studies were conducted with elementary school children in naturalistic settings.

Effort orientation. The clustering of variables included in the effort orientation composite does not have strong theoretical support, probably in part because these variables cut across two major strands of motivational theory and research: the social learning theorists' investigations of the locus of control construct and the cognitively-based research on causal attributions. For the same reason, empirical studies of the relationships among these variables are rare and their findings provide only partial support for this cluster. (See Crandall, Katkovsky, & Preston, 1962; Greene, Note 2; Johnson, 1981; and Jordan, 1981.)

Relationships to achievement. Beyond the patterns of interrelationships, the two motivational clusters found in this study were also distinguished by their differential relationships to achievement measures. Ability orientation variables showed consistent, moderate relationships with achievement, a result highly consistent with previous research. (Considerable research has demonstrated a positive link between self-concept of ability and achievement, e.g., Shavelson et

al., 1976. Positive links between expectancy of success and measures of achievement have been shown by Butkowsky & Willows, 1980; Crandall et al., 1962; Crandall & McGhee, 1968; Greene, Note 2; Nicholls, 1979; Schunk, 1981, and Simon & Feather, 1973. Significant relationships between causal attributions to ability factors and achievement have also been shown by Aponik & Dembo, Note 3; Bar-Tal, 1978, Butkowsky & Willows, 1980; Greene, Note 2; Singer & McCaughan, 1978; Stipek & Hoffman, 1980; and Weiner, 1979.)

Not as consistent with previous research are the generally nonsignificant relationships revealed in this study between the effort orientation variables, particularly locus of control, and the achievement measures. A fairly substantial body of research has demonstrated a positive link between locus of control and a wide array of learning performance and achievement measures. (See reviews by Greene, Note 2; Lefcourt, 1976; and Stipek & Weisz, 1981.) Within this context, the absence of a significant locus of control-achievement relationship in this study may simply be a type II error. However, very little of the previous research included the large number of motivational variables that were investigated in this study. In addition, the theoretical perspectives presented in the next section provide some intriguing contexts within which to interpret the findings of this study.

Theoretical Perspectives

Ability vs. effort causal factors. The two clusters of motivational variables found in this study are differentiated by the dominance of ability factors in one cluster vs. the salience of effort factors in the other. The significance of ability vs. effort factors in academic motivation has received broad support from a number of theoretical

perspectives, including attribution theory (Frieze, 1980; Frieze & Snyder, 1980; Weiner, 1979); learned helplessness theory (Butkowsky & Willows, 1980; Dweck, 1975; Seligman, 1975); self-worth perspectives on achievement motivation (Covington & Omelich, 1981; Covington, Spratt, & Omelich, 1980; Harari & Covington, 1981); self-efficacy theory (Schunk, 1981, Note 4); and perceived control (Stipek & Weisz, 1981).

Developmental perspectives. Developmental perspectives on causal perceptions also emphasize important distinctions between ability vs. effort factors in classroom motivation. Several recent developmental studies (Cauley & Murray, Note 5; Eshel & Klein, 1981; Harari & Covington, 1981; Nicholls, 1979; Stipek, 1981) yielded highly consistent results regarding these distinctions:

1. Children's perceptions of the determinants of their learning performance are dominated by ability factors, except for the youngest school-age children (or students in grades K-1 and perhaps also in grades 2-3).

2. For these young children, causal perceptions of learning performance are dominated by the covariation of effort and outcome, as well as effort and ability. High effort equals success and high ability, while low effort equals failure and low ability.

3. The effort valuation evident among young school children is supported (and/or created?) by a widespread societal belief in the importance of the "work ethic."

4. The effort orientation of young school-age children may also explain their generally inflated self-perceptions of ability. If they equate ability with effort and if they perceive themselves as hard workers (with considerable reinforcement from teachers and parents), then they are likely to overestimate their actual ability.

The relevance of these developmental findings to the results of the present study is threefold. First, the fourth-, fifth-, and sixth-grade participants in the present study could be expected to rely primarily on ability factors, but also to incorporate the value or importance of effort in their causal perceptions of their classroom peformance. And

consistent with these developmental findings, the youngest participants had the highest effort orientation scores. Secondly, following from Nicholls (1979), variations in accuracy of ability self-perceptions for these students should parallel variations in ability vs. effort orientations. That is, the more accurate a student's self-concept of ability, the more dominant is his/her ability orientation. Conversely, the less accurate (or less sure or known) a student's self-concept of ability, the more dominant is his/her effort orientation. Thirdly, the idea that effort orientation is associated with a valuing of the "work ethic" might provide a context within which to interpret the linking of effort attributions with incentive value in the present study.

Perceived control. The diverse theories within the broad domain of perceived personal control offer perhaps the richest substantive context within which to reflect on the psychological meaning of ability vs. effort motivational orientations. In a concluding chapter to a book entitled Choice and Perceived Control (Perlmuter & Monty, 1979), Seligman and Miller distinguish between agenda control and outcome control. Agenda control refers to control over the situation, while outcome control refers to control exercised within a fixed situation. (For example, a college professor's choice of whether or not to teach during a given semester and of what to teach if he/she decides to do so is agenda control. The same professor's choice of a time slot for Education 100 is outcome control.) Seligman and Miller note that most research is concerned with outcome control, yet they argue (along with Lacey, 1979) that the more fundamental meaning of control is agenda control.

Other researchers have made similar distinctions in the meaning of control:

1. Arnkoff and Mahoney (1979) distinguish between control as skill or control over internal choices and control as power or control over external choices, resources, or reinforcements provided by the environment.

2. Savage, Perlmuter, and Monty (1979) distinguish between the act or experience of choosing and the perception of control. Perceived control is not dependent on the act of choosing, but rather is established by providing an opportunity to choose. Further, the locus of perceived control resides not in the act of choosing, but in the anticipation of the opportunity for choice and control.

3. Similarly, deCharms (1972, 1976, 1979) distinguishes between personal causation and perceived control. The latter is a visual inference, while personal causation is the experience of causing something yourself, of originating your own actions and controlling elements in the environment. He further maintains that personal causation and LOC are both related to achievement, but their effects are independent because they are different constructs. Personal causation is the experience of control while LOC is the perception of control.

4. Bandura (1977) distinguishes between efficacy and outcome expectations. Efficacy expectations relate to self-appraisals and judgments of one's capacity to initiate and perform a given task. Outcome expectations relate to perceived contingencies between actions and consequences. Within this framework, Wilson (1979) suggests that self-efficacy requires self-attributions of personal mastery and is thus closer to actual than to perceived control.

5. Deci (discussed in Stipek and Weisz, 1981) suggests that the theoretical construct of self-determination focuses on perceptions of control over the achievement context or situation (agenda control). This is in contrast to attribution theory, which focuses on perceptions of control over factors affecting achievement outcomes (outcome control).

These various but parallel distinctions in the meaning of control are tentatively offered as the critical psychological distinction between the two motivational clusters found in this study. Ability orientation, which is dominated by self-perceptions of and attributions to ability, is psychologically linked to agenda control, control as skill, control derived from the act of choosing, personal causation, self-efficacy and efficacy expectations, and self-determination. It is also related to sense of agency (Thomas, 1980) and to competence or effectance motivation (Harter, 1978; White, 1959, 1960), which "aims for the feeling of

efficacy, not the vitally important learnings that come as its consequence" (White, 1959, p. 323) and in which a feeling of efficacy requires perceptions of self-responsibility for successful performance (Harter, 1978). On the other hand, effort orientation, which includes locus of control, causal attributions to effort, and incentive value, is psychologically linked to outcome control, control as power, perceived control, and outcome expectations.

Further, integrating the developmental findings with these theoretical perspectives, it is suggested that ability orientation is the dominant influence on motivational behavior in classroom learning situations. Students' self-perceptions of ability and their causal reasoning regarding their ability to perform classroom tasks are the major "determinants" of their task expectancies, approach-avoidance behavior, task orientation and attention, information seeking, persistence, etc. Effort orientation may become prominent in situations where students' self-perceptions of ability are inaccurate or uncertain or where students do not have enough information to assess their probability of success. Examples of such situations include novel learning tasks and tasks on which a student's past performance has been uneven. Effort orientation thus dominates the motivational thinking of young school-age children precisely because most of the learning is new for them and their self-concepts of ability have not yet become stable.

To insert a minor caveat, this line of reasoning evokes a red flag of caution regarding recent interventions designed to change students' causal perceptions for failure from ability to effort (e.g., Andrews & deBus, 1978; Dweck, 1975; Fowler & Peterson, 1981). These interventions are based on the following tenet of attribution theory:

> It is primarily the attribution of achievement outcomes, particularly failure outcomes, to effort that contributes

> to the development and maintenance of positive achievement orientation and a belief in personal control (Ames & Ames, 1981, p. 411).

Yet, if effort attributions are unrelated to feelings of efficacy, mastery, or personal control (as suggested by the present study), interventions designed to enhance effort attributions may have little impact on these feelings. This caution echos similar recent warnings, e.g.,

> [These findings suggest] that attempts to develop educational environments that focus attention on effort may not achieve the goal of maintaining positive perceptions of ability (Stipek, 1981, p. 409-410),

Implications for the Proposed Conceptual Framework for Sense of Efficacy

The findings and interpretations discussed above provide some support for, as well as suggest a number of versions to the initial conceptual framework developed for the students' sense of efficacy construct. (See Figure 2.) Most important of the revisions is the separation of ability and effort orientations within this hypothesized structure of classroom motivational processes. In this separation, ability orientation is evoked or becomes dominant when students have a realistic, accurate, and/or certain self-concept of ability and is psychologically linked to personal causation or the experience of control and self-determination. These factors, in turn, are sufficient to determine expectancies. (E.g., "I know I'm not very good at math word problems, but here's a set I have to do. I can't decide not to do them nor even how or when to do them. So, I'm pretty sure I'm going to fail at this task.") In contrast, effort orientation is evoked or becomes dominant when students' self-concept of ability is unrealistic, inaccurate, and/or uncertain and is psychologically linked to perceived control or outcome control. Effort orientation further includes (or elicits) attention to the causal

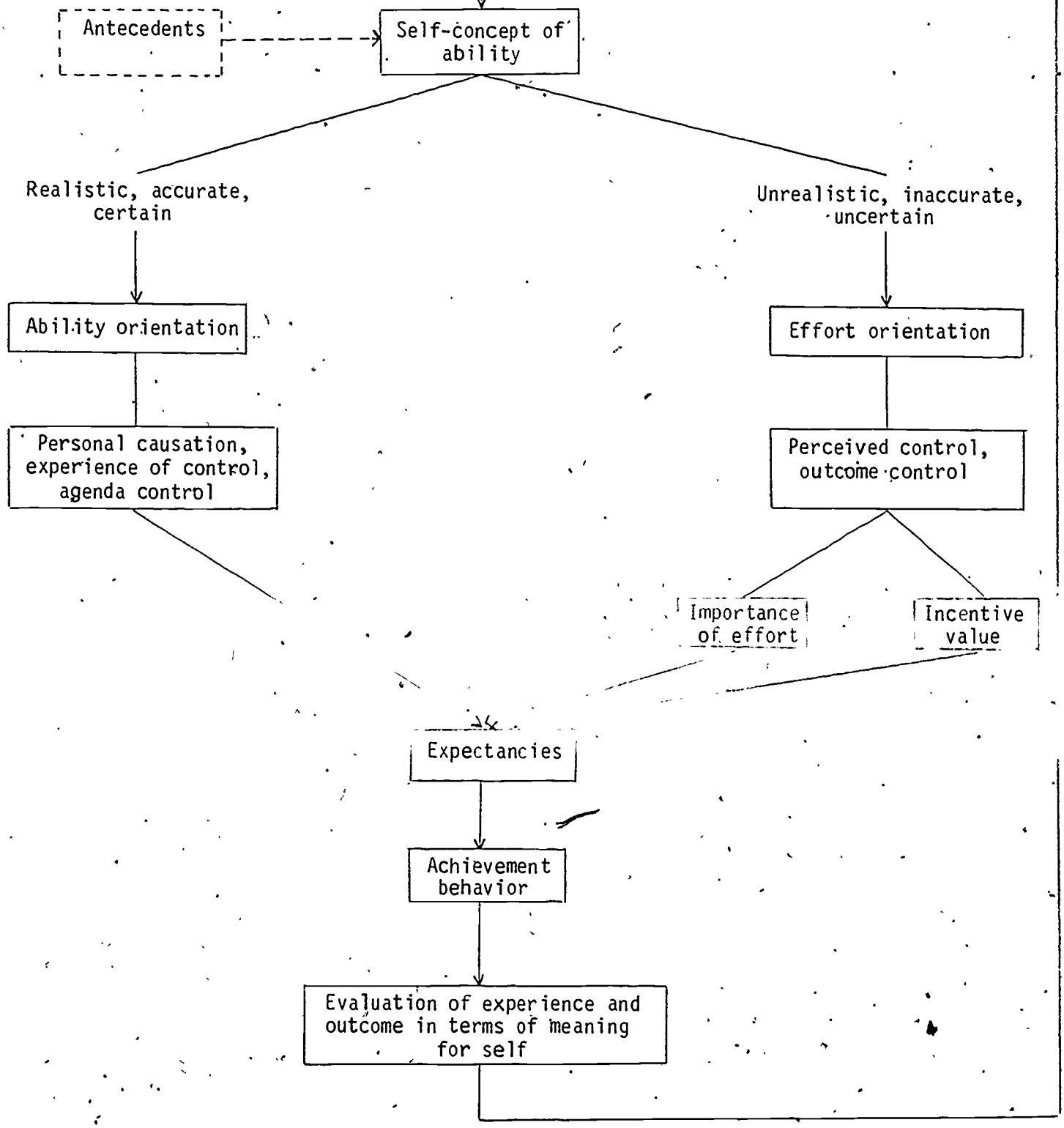

Figure 2

Revised Preliminary Framework for Sense of Efficacy

importance of effort and to the incentive value of the outcome. These factors (probably in combination with such others as achievement motives), in turn, influence expectancies. (E.g., "Since I can't estimate my ability to solve these math word problems, I'd better think about the consequences of doing well or poorly on them. If I try hard enough, I might be able to do them, but I don't really care how well I do, so I don't think I'll try very hard. So, I'll probably get some of them right and some of them wrong.")

The motivational results of this study also provided support for the initial sense of efficacy framework along the following dimensions:

1. Ability and effort are the dominant causal factors in classroom motivational processes.

2. Incentive value is also an important factor in classroom motivation.

3. Classroom motivational processes are rooted (at least in part) in the degree to which an individual's self-concept of ability is realistic or known.

4. A realistic self-concept of ability underlies an individual's experience of personal causation or self-efficacy. That is, one cannot experience him/herself as the determiner or origin of his/her own goals, actions, and attainments in the absence of an accurate appraisal of personal capabilities.

5. Classroom motivation is a cyclical, dynamic process in which perceived outcomes are evaluated in comparison with desired or expected outcomes, specifically in terms of meaning for self. The results of this evaluation are then incorporated back into one's self-evaluation or self-concept of ability.

Finally, it should be emphasized that this revised conceptual framework is offered, not as a finished product, but rather as a representation of this author's current theoretical thinking and as a vehicle for generating future questions and hypotheses. Refinements to this framework may result from further analyses of the present data set (including the classroom level data). Foremost among the important future questions are the following:

1. Can the motivational results of this study be replicated with a different sample of students?

2. How valid are the psychological interpretations developed for the ability and effort motivational orientations? Is ability orientation linked to the experience of agenda control or personal causation, and effort orientation linked to the perception of outcome control?

3. How valid are the developmental perspectives generated for ability and effort orientations within classroom motivation? Is an ability orientation dominant, except for the youngest school-age children for whom an effort orientation predominates?

The next stage of this research effort would logically address one or more of the above questions.

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