MOTIVATION AND PERFORMANCE IN CONTEXT: THE INFLUENCE OF GOAL ORIENTATIONS AND INSTRUCTIONAL SETTING ON SITUATIONAL APPRAISALS AND TASK PERFORMANCE

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The purpose of this study was to examine how students with different goal orientation patterns perform in a complex problem solving task under different instructional conditions. Ninth-grade students (N=143) performed a complex problem solving task after receiving either task-involving or ego-involving instructions. It was assumed that students emphasizing performance and avoidance goals (or both) would produce less positive situational appraisals than students emphasizing learning goals, and that these differences would be greater in the ego-involving condition. Consistent with the assumptions, higher levels of interest and self-efficacy were associated with the task-involving condition, while more self-handicaps were claimed in the ego-involving condition. Also as expected, the detrimental consequences of the ego-involving condition were most accentuated for performance-oriented students. In general, the results support the idea of multiple goals and multiple pathways. That is, students with different goal orientation patterns experienced task situations differently – even with no differences in their performance – and the degree and quality of these differences varied as a function of the instructional condition.

Key words: goal orientation, situational motivation, person-centered approach, instructional context

Given that personal goal orientations, that is, individuals’ preferences for certain goals and related outcomes, influence achievement behavior (e.g., Ames, 1992) and that different goals can be induced by situational manipulations (e.g., Elliott & Dweck, 1988), how do goal orientations and the instructional setting interact? Does the instructional context make a difference, and if it does, does it affect all students similarly or does the patterning of goal orientations moderate the effects? This study seeks to answer these questions by examining how ninth-grade students with different goal orientation patterns perform in a complex problem solving task under different instructional conditions. More specifically, students’ task-related situational experiences as well as the degree to which situational appraisals moderate the influence of personal dispositions on achievement outcomes are examined.

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Goal-theoretical perspectives on motivation assert that achievement-related behavior is guided by the goals individuals try to attain. In general, achievement goals are seen to reflect the purposes for which students engage in achievement behavior (Ames, 1992; Urdan, 1997). An explicit distinction, however, has to be made between goals as objects and goal orientations as individual difference factors. While goals refer to objects, events, states, or even experiences people seek to attain, goal orientations represent personal dispositions that contribute to the selection of goals. Goal orientation can thus be defined as a person’s preference for particular classes of desired end-states – a tendency to favor specific type of goals, outcomes, or consequences over some others (cf. Niemivirta, in prep.).

The seminal work by Dweck and Elliott (1983; see also Nicholls, 1984) identified two main classes of achievement goals: learning (or task) and performance (or ego) goals, respectively. The former refers to the aim of acquiring knowledge and increasing one’s competence, while the latter concerns the objective of outperforming others and demonstrating one’s competence. According to a so-called normative view, learning goals are considered more adaptive in terms of affect, self-regulation and performance outcomes, while performance goals are seen less adaptive or even maladaptive (cf. Dweck, 1986). Students pursuing learning goals are thus likely to show higher levels of task value and interest, seek out challenge, and display persistence even when facing difficulties, whereas students with performance goals are more likely to avoid challenge, display higher levels of task anxiety, and even withdraw effort to avoid indications of incompetence.

Although numerous empirical studies (for reviews, see Ames, 1992; Urdan, 1997; Pintrich, 2000b) provide support for the above assumptions, the normative view has been challenged by recent research. Studies have shown that in some cases the emphasis on performance goals can be rather adaptive (see Harackiewicz, Barron, & Elliot, 1998). The crucial point here is the distinction between performance-approach goals and performance-avoidance goals, with the former being directed toward the demonstration of normative competence and the latter directed toward avoiding the demonstration of normative incompetence (Elliot & Church, 1997; Skaalvik, 1997). When both approach and avoidance components are taken into account, avoidance performance goals tend to be associated with negative outcomes and approach performance goals with positive outcomes (Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000). Some authors have taken these results to indicate a need for a revised goal theory (e.g., Harackiewicz et al., 2000) but, as Midgley, Kaplan, and Middleton (2001) point out, in light of the mixed findings this conclusion may still be premature. Performance goals may well be adaptive, but for certain students in certain circumstances and as long as learning goals are high as well. Nevertheless, an important implication of the above research is the emphasis on multiple goals and multiple pathways in explaining achievement behavior.

Most studies employing a multiple goal perspective have either applied variable-centered methods or used cross-sectional survey data (i.e., no temporal or contextual variation was included). Some studies using regression analysis, where the interaction terms reflect goal combinations, have found support for the revised goal theory while
others have failed to do so. For example, Elliot and Church (1997) found that intrinsic interest was highest for the combination of high learning orientation and low performance orientation, while the mixture of high performance orientation and low learning orientation was associated with higher grades. In contrast, Wolters, Yu, and Pintrich (1996) observed that the combination of high learning orientation and low performance orientation was the most adaptive motivational pattern. The results obtained in studies using more person-centered methods (e.g., cluster analysis or groupings based on median splits) are no different. Meece and Holt (1993) found that students high in learning orientation and low in performance orientation had the most positive achievement profile, while Bouffard, Boisvert, Vezeau, and Larouche (1995) concluded that the most adaptive achievement profile was displayed by students with high scores on both learning and performance orientation.

In an attempt to synthesize these confusing findings, Pintrich (2000b) suggested that there may be multiple pathways that are fostered by different goal orientations (see also Boekaerts & Niemivirta, 2000). Thus, students with different goal orientations or combinations of goal orientations might achieve equally well in the long-run, but their personal experiences (e.g., feelings of anxiety, levels of interest, self-efficacy) might considerably vary in the course of time. In a longitudinal study testing this assumption, Pintrich (2000a) found that the decline in 8th and 9th grade students’ motivation was indeed moderated by different patterns of goal orientations. Students low in learning orientation and high in performance orientation as well as students low in both orientations displayed steeper negative changes in their motivational profiles than did either students high in learning orientation and low in performance orientation or students high in both orientations. The results also showed that students preoccupied solely with outperforming others (i.e., students with low learning orientation and high performance orientation) had a more maladaptive developmental trend than did students high in both orientations.

Since the above results provide partial support for both the normative and the revised goal theory, they do not fully explain the mixed findings obtained in earlier studies. However, it may be that the design of the study was not sensitive enough to tease out the potential disparities. This may be due to a number of reasons. First, the study included rather global measures of students’ self-perceptions thus somewhat overlooking the dynamic and situation-specific nature of some of the constructs included (e.g., anxiety, self-efficacy, and self-handicapping). Second, all self-report measures incorporated a reference to one common context (e.g., “In this [math] class...”), which, on one hand, was likely to influence students’ judgments, but, on the other hand, did not allow for any differentiating effects (e.g., reference to one context vs. another). Third, students were grouped based on median splits – a method that is grounded on fixed variable parameters (variable medians) and results in a predetermined number of groups. This type of classification may represent a rather artificial categorization instead of a “natural” taxonomy (see Meehl, 1992). Finally, the timeline of the study spanned over one school year. Thus, the three measurement points included might have not been enough to capture the detailed variation in students’ experiences over time. As Pintrich (2000b) himself
notes, there is a need for “more microgenetic designs that allow for examination of the... processes as they unfold over time, on a more dynamic ‘on-line’ basis, not in terms of longitudinal designs where the intervals are months” (p. 553). This exactly is what the present study seeks to do.

THE PRESENT STUDY

As the general aim of the present study was to examine the extent to which different instructional contexts influence situational appraisals and task performance in students with different goal orientation patterns, the first task was to identify appropriate ways of inducing different types of motivational states.

As stated earlier, goal orientations contribute to individuals’ preferences for and selection of goals in achievement settings. However, the actual setting and especially the way the setting is perceived influence goal adoption and achievement behavior as well (Ames, 1984; Church, Elliot, & Gable, 2001; Roeser, Midgley, & Urdan, 1996). In fact, early research on achievement goals relied on a paradigm where the students’ motivational states were experimentally induced. Nicholls (1984) used the term task-involvement to refer to states where individuals seek to gain ability and master the task at hand and the term ego-involvement to states where individuals are more concerned with social comparison and seek to demonstrate relative ability. Empirical studies have shown that task-involved individuals spend more time on task, persist in the face of difficulty, use more adaptive mental strategies, show higher levels of interest, seek different type of feedback, and even perform better than do ego-involved individuals (e.g., Butler, 1993; Duda & Nicholls, 1992; Graham & Golan, 1991).

Another line of research has sought to influence students’ motivation and achievement behavior by experimentally assigning different types of goals. Using this type of manipulation, Elliot and Harackiewicz (1996) found that a performance-avoidance goal condition undermined students’ intrinsic motivation, but no marked differences were found between mastery and performance-approach goal conditions. Barron and Harackiewicz (2001; Study 2) found that the effects of single goal conditions on intrinsic motivation were moderated by students’ achievement orientation, but a multiple goal condition (i.e., combined mastery and performance goals) led to moderate levels of intrinsic motivation irrespective of the level of achievement orientation. However, as in the Elliot and Harackiewicz (1996) study, no goal condition effects were found in relation to participants’ performance.

Based on the above findings, it appears that the mere experimental (verbal) assignment of achievement goals may not be very effective in influencing individuals’ achievement behavior (however, see Schunk, 1996). It rather seems that the potential effect of goal manipulation is moderated by individuals’ generalized motivational tendencies. Thus, it is argued that in order to examine how students’ personal goals transform into action as a function of the student’s interaction with the context, the experimental manipulation should cover a broader set of situational cues than the mere
verbal assignment of specific goals.

Ames and Archer (1988) identified dimensions that distinguish settings likely to induce different goals. They suggested that learning-focused and performance-focused contexts – or classroom goal structures, as they labeled them – differ in how success is defined, where the value is placed, what the reasons for satisfaction are, how errors and mistakes are viewed, where the focus of attention is, what the reasons for effort are, and what the evaluation criteria are. Since it appears that the presence of these contextual features are likely to make different goals salient (see also Linnenbrink & Pintrich, 2001), the core characteristics of these parameters (e.g., challenge and learning vs. normative success and evaluation) were used in designing the instructional manipulation of the present study.

The next task was to identify the types of situational appraisals that were both sensitive to different types of situational cues and likely to influence task performance. Converging research findings suggest two constructs that (in optimal case) are likely to facilitate learning and task performance: self-efficacy and situational interest, respectively. Self-efficacy beliefs refer to personal beliefs about how well one can carry out certain actions in given situations (Bandura, 1977, see also Pajares & Valiante, this issue). Extensive research shows that students with high self-efficacy spend more time on tasks, work harder, persist and use more effort especially in demanding situations than do students with low self-efficacy (Pajares, 1996; Schunk, 1991). Furthermore, students displaying higher self-efficacy are more likely to endorse learning goals, choose more difficult tasks, and set higher goals than students low in self-efficacy (e.g., Pajares, 1997).

Situational interest, as opposed to individual interest, which refers to a relatively enduring relation of a person to a specific object or subject content, represents a momentary reaction to an object, generated by particular conditions in the context or by features of the activity or task (Krapp, Hidi, & Renninger, 1992). Although these features (e.g., novelty, challenge, emotional tone, ease of comprehension, vividness) vary depending on the situation (e.g., type of task, form of delivery, group work vs. individual work) and the given object (e.g., topic, text, subject domain), high situational interest can be characterized as an optimal experiential state that includes both positive affective qualities, such as instant enjoyment, and positive cognitive qualities, such as meaningful goal-striving (e.g., Hidi, 2001). Although higher situational interest is commonly associated with better attention, deeper processing, the use of effortful strategies, feelings of enjoyment, and learning (for a review, see Schraw & Lehman, 2001), studies failing to show these performance facilitating effects (Niemivirta, 1999; Vollmeyer, Rollett, & Rheinberg, 1997) suggest that the relationship between situational interest and performance is dependent on the characteristics of the task and the type of outcome used. Evidence also exists demonstrating how the impeding influence of low situational interest may be compensated with the effective use of volitional or motivational strategies, thus deflating the direct relationship between interest and performance (e.g., Sansone, Wiebe, & Morgan, 1999).

The above two constructs are considered as facilitators of learning and performance. In contrast, text anxiety is an important individual factor that (in most cases) acts as an
impediment (e.g., Sarason, 1984). It is commonly viewed as comprising of two components: emotionality and worry, respectively (Morris, Davis, & Hutchings, 1981). Emotionality refers to one’s awareness of the physiological reactions experienced during an evaluative situation (e.g., feelings of nausea, increased heart rate), whereas worry represents an individual’s concern about performance, consequences of failing, and own competence relative to that of others. It is the latter that has consistently been associated with declines in performance (Hembree, 1988; Seipp, 1991). Although various models have been introduced to explain the debilitating effects of test anxiety on performance (Birenbaum & Pinku, 1997; Deffenbacher, 1978; Naveh-Benjamin, McKeachie, & Lin, 1987), one crucial factor appears to be the degree to which task situations are evaluative. Based on the early work on test anxiety, Dweck and Elliott (1983) suggested that, in evaluative situations, experiences of test anxiety reflect a “focus on avoidance of negative judgments along with low expectancies of avoiding those judgments through task performance” (p. 666). This view is in agreement with current research on goal orientations demonstrating a positive relationship between performance-avoidance goals and test anxiety (e.g., Elliot & McGregor, 1999; Middleton & Midgley, 1997).

In addition to experiences of anxiety, low expectations and preoccupation with possible failure may also give rise to proactive strategic behavior. A specific class of such behavior is self-handicapping (see Higgins, 1990, for an overview). In contrast to the retrospective application of causal attributions, self-handicapping refers to the anticipatory use of self-protective strategies in purpose of defending against threats to self-esteem. In case of behavioral self-handicapping, people actually engage in activities that augment nonability attributions for possible failure (e.g., not trying). In contrast, claimed (self-reported) handicapping refers to the use of anticipatory excuses (e.g., verbal claims of being ill or in a bad mood) when confronted with an ego-involving situation (Leary & Shepperd, 1986). An important difference between these two is that claimed self-handicaps do not need to be true and therefore true impediments are not necessarily present (Hirt, Deppe, & Gordon, 1991).

The findings concerning the influence of self-handicapping on actual performance are somewhat ambiguous. Some studies show negative effects (Rhodewalt, Morf, Hazlett, & Fairfield, 1991) and some show no effects at all (Greenberg, Paisley, & Pyszczynski, 1984). Some studies even suggest that self-handicapping may act as a buffer against anxiety and ability attributions thus leading to performance benefits (Deppe & Harackiewicz, 1996). Most studies focusing on habitual self-handicapping (i.e., self-reported preference for self-handicapping behavior) have found evidence linking self-handicapping with maladaptive outcomes. A tendency to self-handicap has been shown to be associated with low self-worth, approval-seeking tendencies, personal performance-avoidance goals, and low achievement (for a review, see Urdan & Midgley, 2001). It appears that the short-term benefits situational self-handicapping may provide (e.g., transient sense of control, protected public image) are nevertheless likely to transform into long-term loss (Zuckerman, Kieffer, & Knee, 1998).

Based on the above brief review of relevant constructs, it was assumed that the instructional context will indeed matter and that most effects are moderated by different
goal orientation preferences. Accordingly, the following main hypotheses were made:

H1a: Students in the ego-involving condition will display lower levels of interest and higher levels of test anxiety than do students in the task-involving condition.

H1b: The ego-involving condition will also lead to lower self-efficacy and promote more claimed self-handicapping, but these effects will be accentuated for students emphasizing performance and/or avoidance goals.

H2a: Students in the task-involving instruction will perform better than those in the ego-involving condition.

H2b: Differences in task performance will be moderated by the patterning of goal orientations in that especially students emphasizing performance and/or avoidance goals will do relatively worse in the ego-involving condition than in the task-involving condition.

H3: Of the situational appraisals, self-efficacy and test anxiety will be the strongest predictors of task performance in both conditions.

**METHOD**

Participants:
The participants in this study were 143 ninth-graders (75 girls and 68 boys; 15-16-years old) from four junior high schools in southern Finland.

Procedure:
The design of the study included two sessions. In the first session, carried out two to three weeks before the second one, students completed a questionnaire focusing on their goal orientations and motivational beliefs. The second session consisted of the actual test situation. The first session was carried out for each class at a time (with the number of students ranging from 15 to 27), while the actual testing procedure was conducted in small-group sessions (with the number of students ranging from 9 to 14) during ordinary math and ICT (information and communication technologies) classes.

The first version of the task turned out to be too difficult. Therefore, the task was made slightly easier and the students who took the difficult version were excluded from further analyses. Another class was also excluded due to unfortunate computer problems. Thus, the valid number of students participating in the experimental part was 100 (53 girls and 47 boys).

One half of the students were given task-focused instructions (i.e., the task-involving condition), while the other half received performance-focused instructions (i.e., the ego-involving condition). In the task-involving condition, the instructor explained the students that a new problem solving task is being developed and the students’ help was needed to evaluate the functionality of the current version. The students were encouraged to work on the task as if it had been “real” (e.g., “try to do the task as well as you can”), but it was emphasized they were not tested and evaluated in terms of relative success. In contrast, the instruction for the ego-involving condition stressed that the task was a test that measures students’ reasoning ability. It was also stated that the level of performance in the task was a good predictor of future success at school. To further highlight the evaluative function of the task, the students were told that the results would be announced in few days by their own teacher.

After the general instructions, the actual task was described in detail with illustrative examples. Before starting to work on the task, the students completed a short pre-task questionnaire focusing on their situational appraisals.

Measures:

*Goal orientations and motivational beliefs.* The questionnaire completed in the first session included scales for five types of goal orientations (see Appendix for example items). Besides the now common scales
for learning orientation, performance-approach orientation, and performance-avoidance orientation, two additional scales were included. One scale consisted of items assessing avoidance orientation (i.e., the goal of trying to get away with studying with as little effort as possible), and the other was designed to tap achievement orientation (i.e., the goal of trying to get good grades and succeed in school). The important difference between achievement orientation and performance-approach orientation is the criteria used to define success. In performance-approach orientation the focus is on relative success (It doesn’t matter what grades I get as long as I outperform the others), while in achievement orientation the focus is on absolute success (It doesn’t matter how well the others do as long as I get good grades). It is also likely that these orientations serve somewhat different purposes (i.e., self-enhancement vs. instrumentality, see Niemivirta, in prep., for further discussion). For validation purposes, the questionnaire also included scales for academic withdrawal (i.e., students’ generalized tendency to give up in demanding learning or performance situations), fear of failure (i.e., students’ preoccupation with possible failures), and control motivation (i.e., students’ desire to know about the causes of failures and successes at school). It was assumed that these variables would obtain different patterns of correlations with the three performance-related goal orientations. Achievement orientation was expected to correlate positively with control motivation and negatively with academic withdrawal, while both performance-approach and performance-avoidance orientations were assumed to be positively associated with fear of failure. All items were assessed using a 7-point Likert-scale ranging from 1 (I totally disagree) to 7 (I totally agree).

Due to a small sample size, separate confirmatory factor analyses (CFA) were performed on the goal orientation items and on items reflecting academic withdrawal, fear of failure, and control motivation. For both analyses, a model was specified in which all items for each scale were allowed to load on the corresponding factor only. Since the items were measured with a 7-point-scale, they were treated as categorical. Thus, using the Mplus software (Muthén & Muthén, 1998), weighted least square parameter estimates (WLSM) were used for the CFAs. For goal orientations, a model with minor modifications (i.e., free error covariances between three pairs of similarly worded items) fit the data well (Comparative Fit Index [CFI; Bentler, 1990]=.92; Tucker-Lewis Index [TFI; Tucker & Lewis, 1973]=.91) thus supporting the assumption of five distinct dimensions. Also, the final CFA for academic withdrawal, fear of failure, and control motivation (CFI=.94; TFI=.94) included a minor modification: one item for academic withdrawal had a secondary loading on control motivation. The analysis nevertheless supported the assumption of three separate dimensions. Composite scores were computed for each scale by averaging the scale sum scores. The corresponding reliability coefficients (Cronbach’s alpha) were .82, .89, .77, .81, and .80 for learning orientation, achievement orientation, performance-approach orientation, performance-avoidance orientation, and avoidance orientation respectively. The reliabilities for fear of failure, academic withdrawal, and control motivation were .75, .76, and .73, respectively.

Situational appraisals. The short questionnaire given after the instruction but before the task comprised of 14 items assessing students’ anticipated interest, claimed self-handicapping, task anxiety, and task specific self-efficacy (see Appendix for example items). All items were assessed using a 7-point Likert-scale ranging from 1 (I totally disagree) to 7 (I totally agree). A strict CFA model (see above) with WLSM estimates fit the data well (CFI=.93; TLI=.91) thus permitting the construction of four distinct composite scales. The reliability coefficients (alpha) were .86, .83, .82, and .90 for anticipated interest, claimed self-handicapping, task anxiety, and task specific self-efficacy, respectively.

Prior math achievement and gender. Since it was assumed that neither students’ situational appraisals nor their performance in the experimental task (see below) would be totally independent of their general mathematical ability, students’ prior grades in mathematics ($M=7.96$, $SD=1.24$; theoretical range from 4 to 10) were included for controlling purposes. Prior studies have also revealed gender differences in most constructs considered here (Dietrich, 1995; Pajares & Valiante, 2001; Patrick, Ryan, & Pintrich, 1999; Renninger, 2000), so it was included as an additional independent variable in the comparative analyses.

The task

A dynamic computer simulation task, “The MED-LAB”, was used as the actual experimental task (see Rheinberg, Vollmeyer, & Rollett, this issue, for another application of the same approach). The task is intended to induce complex problem solving, which is defined as the activity that occurs to overcome barriers between a given state and a desired goal state by means of behavioral or cognitive multi-step activities (Freusch & Funke, 1995). In the present context, the participants were first required to explore a dynamic
system of structural equations, then to construct knowledge based on their exploration, and finally, to use that knowledge in order to work out a series of application tasks. For the sake of simplicity, the present study will focus on the exploration part only.

In a cover story, the participants were told that they were in a medical laboratory and that they were supposed to take part in a study that investigated the impact of drugs on certain chemicals in human body. Accordingly, the students were supposed to explore how the variation in drug intake (with drugs A, B, and C) influenced the quantity of three chemicals (thyroxin, histamine, and serotonin) in human body. The underlying (fictional) structural model is presented in Fig 1.

The exploration phase consisted of three rounds with six trials in each. For each trial, the students were asked to enter quantities for each drug (input) after which they were supposed to observe the changes in all chemicals (output). The changes in the outputs should have been used to figure out which input affected which output and how strong the impact was. After going through the six trials, the participants were asked to specify what they had learned about the relationships between inputs and outputs. This was done by drawing arrows and entering weights into a structured diagram.

As a task outcome, a structure score was calculated based on students’ drawings. The total score composed of the number of correct links between inputs and outputs, correct directions (positive or negative effect), correct weights, and correct markings. Only the total score, theoretically ranging from 0 to 16, was used for the present purposes. Two independent reviewers scored the drawings with an inter-rater agreement of 93%. The score mean was 11.77 ($SD=4.52$).

General analytical approach:

Despite the fact that in studies on achievement goals the theoretical discussion is often conducted in individual terms (e.g., “students with performance-approach goals...”; “learning-oriented students are likely to...”), much of the empirical work is done from a variable-centered perspective. That is, relationships between goals and other variables are mainly examined in terms of correlations or regression equations. Only recently have the more person-centered approaches gained explicit interest (Niemivirta, 1998, 2001; Pintrich, 2000a). In contrast to variable-centered studies where the relations among variables within a sample are examined, studies following a person-centered perspective seek to reveal groups of similar individuals across the variables (Bergman, 1998; Magnusson, 1998). Thus, the focus is on individual value profiles across the variables, not just the variables as such. Accordingly, since the main goal of the present study was to examine how students with different types of goal orientation patterns approach and act in a test situation, the emphasis was on the use of a person-centered approach and corresponding methods.
RESULTS

To examine the convergent and discriminant validity of the goal orientations, zero-order correlations were computed for all variables reflecting generalized motivational beliefs. These results along with descriptive statistics are presented in Table 1. The correlational relationships among goal orientations were as expected. All performance-focused goal orientations were correlated with each other, but only achievement orientation had a positive association with learning orientation. In contrast, performance-avoidance orientation correlated positively with avoidance orientation. Learning orientation was related to avoidance orientation as well, but negatively. Prior math grades correlated positively with learning orientation, achievement orientation, and performance-approach orientation, and negatively with fear of failure and academic withdrawal. Gender was moderately associated with learning orientation indicating that girls endorsed learning goals slightly more than boys did.

The patterning of correlations between goal orientations and the other generalized motivational beliefs were also very much as anticipated. Achievement and performance-approach orientations correlated with control motivation, while performance-avoidance orientation did not. Each form of performance-focused orientation correlated with fear of failure, but the association was strongest for performance-avoidance orientation. Finally, achievement orientation was negatively linked to academic withdrawal, while for performance-avoidance orientation the correlation was positive. Performance-approach orientation was unrelated to academic withdrawal.

The first step in the comparative analysis was the formation of groups of students with similar goal orientation profiles. In order to avoid the shortcomings of the median

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**Table 1. Means, Standard Deviations and Zero-Order Correlations for Motivational Variables, Gender, and Prior Math Grades**

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<td>3. Perf.-approach orientation</td>
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<td>5. Avoidance orientation</td>
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<td>6. Control motivation</td>
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<td>7. Fear of Failure</td>
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<td>8. Academic withdrawal</td>
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<td>.04</td>
<td>.02</td>
<td>.04</td>
<td>–.01</td>
<td>.02</td>
<td>–.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Math grades</td>
<td>7.96</td>
<td>1.24</td>
<td>.18*</td>
<td>.35**</td>
<td>.19*</td>
<td>.00</td>
<td>–.05</td>
<td>.16†</td>
<td>–.27**</td>
<td>–.40**</td>
<td>–.14</td>
<td></td>
</tr>
</tbody>
</table>

†p<.10, *p<.05, **p<.01. 1girls=1, boys=2
split method and conventional cluster analyses (e.g., Meehl, 1992), a model-based latent class cluster analysis (LCCA) was used (Vermunt & Magidson, in press). In LCCA, both simple and complicated distributional forms can be used for the observed variables within clusters. Restrictions can also be imposed on the parameters to obtain more parsimony and formal tests can be used to check their validity.

Two types of LCCA models, a class dependent and a class independent, respectively, were specified for continuous variables. In the former, error variances and covariances across the classes were estimated freely, while in the latter, they were assumed to be equal. Bayesian Information Criterion (BIC) and Consistent Akaike’s Information Criterion (CAIC) were used as the statistical criteria for choosing the best fitting model (lower values indicate better fit, see Lin & Dayton, 1997). The Latent Gold software (Vermunt & Magidson, 2000) was used for these analyses. As shown in Table 2, the four-class solution with equal error variances and covariances fit the data best.

As Fig. 2 illustrates, the students in group 1 (n=55) had relatively high scores on learning and achievement orientations and low scores on avoidance orientation (see Table 3 for pairwise comparisons). In contrast, students in group 2 (n=18) had very low scores on all performance-focused orientations, and relatively highest scores on avoidance orientation. Students in group 3 (n=12) had clearly the highest scores on all performance-focused orientations as well as on avoidance orientation. The fourth group included only two students, who paradoxically had high scores on achievement orientation and on avoidance orientation. For the present purposes, these students were excluded from further analyses. Based on these results, the remaining groups were labeled as learning-oriented (group 1), avoidance-oriented (group 2), and performance-oriented (group 3), respectively.

To find out whether students’ situational appraisals and task performance varied as a function of gender, instructional condition, and goal orientation patterns, a series of analysis of covariance (ANCOVA) was performed with prior math grade as a covariate. Goal orientation group, gender, instructional condition, and their interactions were included as independent variables and all situational appraisals (i.e., anticipated interest, Table 2. Information Criteria Values for Different Cluster Solutions

<table>
<thead>
<tr>
<th>Class independent solutions</th>
<th>Class dependent solutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIC</td>
<td>CAIC</td>
</tr>
<tr>
<td>1 class</td>
<td>1364.72</td>
</tr>
<tr>
<td>2 classes</td>
<td>1356.38</td>
</tr>
<tr>
<td>3 classes</td>
<td>1350.24</td>
</tr>
<tr>
<td>4 classes</td>
<td>1343.67</td>
</tr>
<tr>
<td>5 classes</td>
<td>1347.09</td>
</tr>
</tbody>
</table>

Note. BIC=Bayesian information criterion, CAIC=Consistent Akaike’s information criterion. Values in italics indicate the best fitting model.
claimed self-handicapping, test anxiety, and self-efficacy) and task performance as dependent variables. Due to low cell frequencies, only main effects and two-way interactions were examined. The results are summarized in Table 4.

Few statistically significant effects emerged, with the effect sizes ($\eta^2$) ranging from .04 to .22. The covariate (prior math grades) was significantly related to anticipated interest, claimed self-handicapping, self-efficacy, and task performance. With respect to anticipated interest, the only significant effect was found for instructional condition. Students in the task-involving condition expected the task to be more interesting ($M_{LS}=3.48, SE=.38$) than did students in the ego-involving condition ($M_{LS}=2.35, SE=.37$). For self-handicapping, the main effect of condition was significant as well. More handicaps were claimed in the ego-involving condition ($M_{LS}=3.35, SE=.31$) than in the
task-involving condition \((M_{LS}=2.50, SE=.28)\). Also two interactions emerged. A gender by goal orientation group interaction (see Fig. 3) revealed that among girls, performance-oriented students handicapped the most, while among boys, avoidance-oriented students handicapped the most.
The condition by goal orientation group interaction suggested a clear context-bound trend in self-handicapping (Fig. 4); in the ego-involved condition, the highest self-handicappers were performance-oriented students followed by avoidance-oriented students, no marked differences among the groups were found in the task-involving condition.

With respect to test anxiety, only two marginally significant effects were obtained. The adjusted means showed that the overall anxiety level was highest among the avoidance-oriented students. Additionally, boys seemed to experience anxiety more in the ego-involving condition than in the task-involving condition, while the opposite was true for girls.

For self-efficacy, a significant gender difference favoring boys was found ($M_{LS}=3.81, SE=.30$ for boys vs. $M_{LS}=2.89, SE=.26$ for girls). Also, a main effect for instructional condition was detected; students felt more confident in the task-involving condition ($M_{LS}=3.90, SE=.27$) than in the ego-involving condition ($M_{LS}=2.89, SE=.29$). A marginal effect for goal orientation grouping suggested that performance-oriented students had lower self-efficacy ($M_{LS}=2.63, SE=.45$) compared to that of the others ($M_{LS}=3.71, SE=.18$ and $M_{LS}=3.71, SE=.35$ for learning-oriented and avoidance-oriented students, respectively). In addition to the main effects, a significant condition by goal orientation group interaction emerged. As illustrated in Fig. 5, both avoidance- and performance-oriented students had higher self-efficacy in the task-involved condition than in the ego-involved condition, whereas learning-oriented students showed no context-bound variation.

With respect to actual performance, only one marginally significant effect was found. The results showed (see Fig. 6) that girls performed slightly better than boys in the
task-involving condition ($M_{LS}=13.11, SE=1.43$ vs. $M_{LS}=10.45, SE=.96$), while boys did somewhat better than girls in the ego-involving condition ($M_{LS}=13.31, SE=1.54$ vs. $M_{LS}=11.22, SE=.86$).

The final issue in the present context was to examine whether any of the situational appraisals really influenced task performance (when averaged out across the students), and whether the possible effects varied as function of instructional context. This analysis
was carried out by conducting separate multiple regression analyses for both conditions. All situational appraisal variables as well as gender and prior math performance were included as predictors. For the task-involved condition, no significant predictions were found except for the effect of prior math achievement on performance ($\beta = .52, p < .01$). The adjusted $R^2$ for this model was .22. In the ego-involving condition, in contrast, anticipated interest ($\beta = .34, p < .01$) and test anxiety ($\beta = -.33, p < .05$) together with gender ($\beta = .34, p < .05$) and prior math achievement ($\beta = .50, p < .001$) emerged as significant predictors. The adjusted $R^2$ for the model was .34

**Discussion**

The main purpose of this study was to examine the influence of students’ goal orientations on their situational appraisals and task performance under two different types of instructional conditions. Three sets of hypotheses were given. First, it was assumed that students emphasizing learning goals would be less influenced by the different conditions, while both performance-oriented and avoidance-oriented students were assumed to produce more negative and performance-inhibiting appraisals under the ego-involved condition. Second, it was also hypothesized that the ego-involving condition would lead to decrements in task performance, and especially in students emphasizing performance goals and avoidance tendencies. Third, situational appraisals were presumed to significantly influence task performance regardless of the instructional context.

The results supported the first set of assumptions in many ways. First of all, it was found that the mere condition influenced students’ expectations of success and task interestingness. The ego-involving context with a high evaluative function led to inferior task-involvement and relatively low expectations of success. Apparently, the pronounced emphasis on relative ability elicited distracting thoughts about a possible failure, which in turn lead to self-doubt and discomfort. This clearly points at the controlling function contexts focusing on normative outcomes often have (cf. Deci & Ryan, 1985). Note, however, that the lower levels of anticipated interest and self-efficacy in the ego-involving condition could also be understood as indications of strategic self-protective behavior. That is, attributions to a dull task and low expectations of success could be used as face saving excuses in case of a failure. Engagement in such protective behavior was clearly signaled in students’ higher levels of claimed self-handicapping under the ego-involved task condition.

Irrespective of the condition, avoidance-oriented students displayed slightly higher levels of test anxiety, while performance-oriented students showed slightly lower self-efficacy than the others did. Other than that, no marked overall differences were found between students with different goal orientation patterns. However, when the instructional condition was taken into account, intriguing differences emerged. As expected, the ego-involving condition resulted in lower self-efficacy and more self-handicapping in students emphasizing performance goals, whereas for learning-oriented students, the consequences were virtually non-existent (cf. Figs. 4 and 5).
The second set of assumptions was not fully supported. That is, no direct contextual differences in task performance as such were found. However, marginal differences were observed in relation to gender, which suggests that the condition did influence task engagement – the opposite effects for boys and girls just leveled off the overall differences. The reasons for this outcome are nevertheless unclear. Since males have stereotypically been considered more competitive than females, one might suspect that in the present context boys became more committed to the task when there was “more at stake”. However, the study provides no direct empirical support for this interpretation.

The third hypothesis was not fully supported either. Of the four types of situation-specific variables, only anticipated interest and test anxiety directly influenced task performance, and only in the ego-involving condition. Contrary to prior studies, self-efficacy did not influence task performance beyond the effects of gender and prior math achievement. The predictive effects found for the ego-involving condition indicate that students who experienced the situation as less boring and less stressful were able to produce slightly better results. Apparently, those students were more able to overcome the externally imposed demands and pressure. With respect to the task-involving situation, it may be that the lack of explicit consequences (either positive or negative) regarding the task outcome allowed the students to disengage from the task whenever they felt so, thus leading to unsystematic variation in their performance. This context-related difference is clearly an important issue to be examined in future research.

CONCLUDING REMARKS

The results of this study cast light on the current debate on the nature of performance goals. In essence, the findings testify against the revised goal theory (e.g., Harackiewicz et al., 1998). Contrary to the view that the endorsement of performance goals, and especially in a matching context (e.g., in a competitive situation), could promote task engagement and motivation, the ego-involving condition resulted in a rather negative pattern of self-appraisals in students emphasizing performance goals. Although this deviating finding might be due to a number of issues (e.g., the type of methodological approach adopted, the type of manipulation used, or the type of task employed) the results nevertheless provide support for the normative goal theory.

More importantly, though, the key findings of this study support the idea of multiple goals and multiple pathways presented by Pintrich (2000a). In line with his reasoning, the results demonstrated how students with different goal orientation patterns experienced task situations differently, even when no differences in their actual performance were found. Additionally, this study also showed how those group-level differences varied further as a function of the instructional condition. Future work could extend the present approach by alternating contextual manipulations and using different types of tasks. This would help to better identify conditions that appear either beneficial or detrimental for students with different patterns of goal orientation. Future studies should also focus on the specific conditions under which various types of situational appraisals operate most effectively.
REFERENCES


Wolters, C. A., Yu, S. L., & Pintrich, P. R. 1996. The relation between goal orientation and students’

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### Appendix

Example items for each scale

<table>
<thead>
<tr>
<th>Scale</th>
<th>Example item</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning orientation</td>
<td>To acquire new knowledge is an important goal for me at school.</td>
</tr>
<tr>
<td>Achievement orientation</td>
<td>My goal is to succeed at school.</td>
</tr>
<tr>
<td>Performance-approach orientation</td>
<td>An important goal for me at school is to do better than other students.</td>
</tr>
<tr>
<td>Performance-avoidance orientation</td>
<td>I try to avoid situations in which I may fail or make mistakes.</td>
</tr>
<tr>
<td>Avoidance orientation</td>
<td>I try to get off with my schoolwork with as little effort as possible.</td>
</tr>
<tr>
<td>Control motivation</td>
<td>If I fail in something I always want to find out what the reason was.</td>
</tr>
<tr>
<td>Fear of Failure</td>
<td>During classes or exams I often worry that I do worse than the other students.</td>
</tr>
<tr>
<td>Academic withdrawal</td>
<td>If I face a problem I can’t solve immediately, I don’t even bother trying.</td>
</tr>
<tr>
<td>Anticipated interest</td>
<td>This task appears to be very interesting.</td>
</tr>
<tr>
<td>Claimed self-handicapping</td>
<td>I don’t feel very well right now, which most probably will affect my performance.</td>
</tr>
<tr>
<td>Test anxiety</td>
<td>This situation makes me feel very anxious.</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>I believe I will do well in this task.</td>
</tr>
</tbody>
</table>