MOTIVATION AND SELF-REGULATION: 
PROCESSES INVOLVED AND CONTEXT EFFECTS 
— A DISCUSSION

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As the title of this special issue denotes, there are two concepts that are being brought together: motivation and self-regulation. The special issue, however, is focusing on the relations of these concepts in the case of learning rather than in other situations. The learning situation is theoretically significant because learning pervades all human activity and demands effort and persistence over long period of time. It also requires self-determination, initiative, and ability to face failure and to overcome negative thoughts and affect. Other times it requires action on physical or social environment so that learning efforts become effective. These qualities of behavior are particularly important in the educational setting, where students most of the time have to deal with new, difficult, or personally irrelevant tasks, skills, and concepts.

What then makes some students able to successfully meet the school demands and others not? This is a very old question that received many answers up to now. Cognitive ability, cognitive processes, and skills featured as the main determinants of school achievement for decades. However, cognitive ability does not suffice to explain students’ goals, effort, persistence, or ability to control and regulate action in face of difficulties. These aspects of behavior are explained by motivational and volitional processes, that is, self-regulation.

In order to understand how motivation and self-regulation in learning are being connected and what is the contribution of the articles presented in this special issue, we shall, firstly, give a very brief overview of the current state of research on motivation and self-regulation with respect to learning. Then we shall try to show how the present articles are related to the issues raised in the field of motivation and self-regulation in learning and what the prospects for future research are.
Motivation

In the last twenty years there has been considerable development in research on motivation. The pioneering works of Nicholls (Nicholls, 1984, 1989) and Dweck (Dweck, 1986; Dweck & Elliott, 1983) along with those of Covington (1984) and Weiner (1979) have paved the way for the transfer of the concepts of achievement motivation to education and the classroom. Although these approaches emphasize different constructs – which all appear in this special issue in one form of another – they do share some common characteristics. Most importantly, they all assume that students have different reasons for their achievement-related engagement, and that different types of motivational beliefs (e.g., expectancies, values, judgments of competence) either facilitate or debilitate this engagement.

In the present special issue, mainly two different theoretical perspectives have been drawn on to examine the reasons for engagement: achievement goal theory and self-determination theory, respectively. An explicit account of goals is central to achievement goal theory, which can be considered as one of the most prominent contemporary approaches to student motivation. Here, the basic idea is that students pursue different goals, which then affect their learning through the strategies they employ. Recent discussion has focused on three distinct goals: mastery goals, performance-approach goals, and performance-avoidance goals, respectively (Elliot & Church, 1997; Urdan, 1997; see also Elliot & McGregor, 2001 and Pintrich, 2000b for extensions). Mastery goals represent striving for self-improvement, while both types of performance goals reflect ability-related concerns; performance-approach goals direct at demonstrating competence, whereas performance-avoidance goals direct at avoiding the demonstration of incompetence.

Different achievement goals are not only associated with other motivational indicators, but also influence the type and quality of behavior the students engage in. Research has shown that, in general, both mastery and performance-approach goals are associated with positive self-perceptions, such as self-efficacy and control beliefs, and other adaptive processes, such as persistence and effort expenditure. However, with respect to achievement-related outcomes, theses two goals show different patterns of relationships. While mastery goals have been found to predict interest and the use of deep processing strategies, performance-approach goals have been linked with graded performance and surface processing strategies. In contrast, performance-avoidance goals have been associated with numerous maladaptive processes and outcomes, such as anxiety, negative self-image, self-handicapping, lack of effort, and low performance (for overviews, see Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Midgley, Kaplan, & Middleton, 2001; Thrash & Elliot, 2001).

Self-determination theory claims that the reasons students have for achievement behavior vary along a continuum of extrinsic and intrinsic reasons, each linked with different self-regulatory styles (Deci & Ryan, 1985). When the reasons for engagement are fully internalized (cf. intrinsic motivation), individuals are said to be self-determined. In contrast, when being amotivated, individuals have no intent to act at all. Within these
extremes there are four other classes of reasons and regulatory styles which vary in the degree of externality. Thus, a person may engage in behavior because it symbolizes what is important to the person’s sense of self (integrated regulation); because the outcomes are valued as important to the person’s personal goals (identified regulation); because the person thinks that is what he or she ought or should do (introjected regulation); or because the person wants to satisfy an external reward or avoid punishment (external regulation). These different regulatory styles have further been associated with different types of outcomes. For example, several studies indicate that more autonomous motivations are associated with positive academic self-image, school-related experiences, effective self-regulatory effort, and academic achievement (e.g., Deci, Vallerand, Pelletier, & Ryan, 1991; Vallerand, Fortier, & Guay, 1997; Yamauchi & Tanaka, 1998).

Some of the papers of this special issue deal with yet another conceptual framework that could be said to reflect the different reasons students have for their engagement: namely, the work on interest (e.g., Krapp, 1999). However, the studies included here have not considered interest as a springboard for action (e.g., I do this, because I find it interesting), but rather as an experiential state that either reflects the influence of the context on students’ engagement or mediates the influence of students’ strivings on their performance. This form of situational interest (Schraw & Lehman, 2001) can be distinguished from personal interest (Renninger, 2000), which refers to a relatively stable tendency to occupy oneself with certain objects (e.g., I find math interesting). Prior research suggests that the experience of “being interested” may facilitate learning because it usually entails focused attention, increased awareness, persistence, and affective involvement (e.g., Hidi, 2001).

Interest resembles, just as does intrinsic motivation in the self-determination theory, the intrinsic value component of modern expectancy-value theories (cf. Eccles & Wigfield, 2002). While intrinsic value refers to the enjoyment the individual gets from engaging in specific activity, utility value reflects how well the outcomes of the activity relate to the person’s goals. This perceived utility might further involve either immediate or delayed concerns (cf. instrumentality and future time perspective). Accordingly, Husman and Lens (1999) argued that linking students’ future goals and educational aspirations with their current goals would significantly add to the understanding of how different levels of goals influence students’ engagement. In an empirical test of this claim, Simons, Dewitte and Lens (2000) found that stressing the personal future consequences of tasks, even when these were extrinsic, enhanced task orientation and decreased performance orientation.

It is important to note that the reasons students have for their engagement, are not independent of the beliefs students hold about, say, achievement, standards of performance, the role of ability and effort, and, most importantly, themselves (Pintrich, 2000a; Urdan, 1997; Wigfield & Karpathian, 1991). Within the framework of achievement goals, it has long been argued that perceptions of competence may moderate the influence of goals on subsequent behavior (Dweck & Elliott, 1983; Nicholls, 1984). More specifically, it has been suggested that the potentially negative effects of performance goals on achievement, such as effort withdrawal, anxiety, and task-irrelevant
behavior, are most likely to realize in students low in perceived competence (see Butler, 1992; Elliott & Dweck, 1988). This view echoes Covington’s (1992) contention, which emphasizes the strategic link between motivational beliefs and achievement behavior. According to his self-worth theory, the goals students adopt in school settings reflect a struggle to establish and maintain a sense of self-worth. Thus, the key factor by which self-esteem protective strategies, such as self-handicapping and defensive pessimism, operate to affect achievement is the way students define success (e.g., relative ability vs. self-improvement).

Judgments of competence also play a crucial role in Bandura’s (1986, 1997) socio-cognitive theory of human agency and effective functioning. The key concept of his theory, self-efficacy, refers to individuals’ judgments about their capability to produce certain actions in certain situations. It is argued that the facilitative influence of self-efficacy beliefs on action takes place through the mediating role of some key self-regulative mechanisms, such as perseverance, resilience, and sustained effort. Feelings of competence are also an integral part of the cognitive evaluation theory, a subcomponent of the self-determination theory (Deci & Ryan, 1985). In this theory, it is argued that feelings of competence may maintain or enhance intrinsic motivation because they allow the satisfying of the basic psychological need for competence. However, this will only happen if the feelings of competence are accompanied with a sense of autonomy. Thus, individuals must not only feel self-efficacious but also self-determined in order to maintain intrinsic motivation and to effectively pursue the goals they have set.

As this brief and selective description illustrates, there exists an inseparable link between the directing and instigating functions of motivational forces and the self-regulative efforts that serve these functions. Consequently, the recent developments in motivation research have not only led to the refinement of the motivational constructs used, but also emphasized the linkage of motivation with self-regulation (for an interesting debate on these issues, see Murphy & Alexander, 2000; Pintrich, 2000a; Schunk, 2000). More specifically, the identification of factors and conditions—personal (e.g., an individual’s developmental history; cf. Vauras, Salonen, Lehtinen, & Lepola, 2001) as well as social and cultural (e.g., classroom environments, cultural imperatives; cf. Linnenbrink & Pintrich, 2001; Niemivirta, Rijavec, & Yamauchi, 2001)—that influence the adoption of the different goals as well as the processes that underlie and affect people’s self-regulatory behavior has been of key interest. All these developments are reflected in the papers included in this present special issue. However, before turning to individual articles, we will briefly describe some special aspects of self-regulation that are focused on in this special issue.

**Self-regulation**

level of functioning by adopting new or higher goals than their existing ones and by defining standards of action. This view presupposes that the person can act based on expectations for future situations, can evaluate their own performance, can judge their self-efficacy in attaining their goals, and reflect on the accuracy of their self-efficacy judgments and the adequacy of the standards posed. Thus, a self-regulated person in order to be effective needs to be able to have goals, standards, expectations, and at the same time to be aware of his/her capability (self-efficacy) to achieve the goals set. Furthermore, needs to be able to act on their physical and social environment and on their own activity so that it is effective. This is achieved with the use of strategies. According to Zimmerman (1998), self-regulation in learning occurs in three main phases (a) forethought that precedes efforts to learn and involves the goals, expectancies, standards, and self-efficacy judgments; (b) performance or volitional control that occurs during learning and involves planning, self-monitoring, and use of strategies; (c) self-reflection that follows learning efforts and involves self-evaluation, attributions, and self-reactions. Self-reflection influences the learner’s reactions to the learning efforts and the forethought that precedes the next learning efforts.

According to action control theory (Kuhl, 1984), self-regulation is a volitional process that ensures the completion of action in face of obstacles. To do this the person uses strategies that allow the control of one’s self as well as of one’s environment so that goal enactment is secured. Thus both theoretical perspectives stress the role of goals, that is, motivation, and strategy use for self-regulation. What socio-cognitive theory also emphasizes is self-efficacy and self-reflection. The role of self is also acknowledged by Kuhl in his personality systems interaction theory, where the emphasis is not on self-reflection but on mood and affect as moderators of the ways the person controls goal-directed action (Kuhl, 2001). However, the implications of this theory for learning are not so clear yet. On the contrary, the implications of self-regulation for learning in the context of the socio-cognitive theory were immediately recognized, as became evident in the studies of Zimmerman and Schunk (1989; Schunk & Zimmerman, 1994, 1998). Pintrich (Pintrich & De Groot, 1990) was also among the first to combine motivation with self-regulation and, particularly with learning strategies, both cognitive and metacognitive (Pintrich, Smith, Garcia, & McKeachie, 1991; see also Weinstein & Mayer, 1986).

Thus, historically research on self-regulated learning tried to answer questions pertaining to the motivation that is relevant to self-regulation, the factors that affect self-efficacy, the strategies students use to attain their academic goals, the effects of social and physical environment, and the acquisition and development of self-regulation in learning (see Schunk & Zimmerman, 1998). These issues are still open although it has become evident that extrinsic and intrinsic context is as important to motivation and learning as to self-regulation (Dermitzaki & Efklides, 2001; Volet & Järvelä, 2001; for recent developments in self-regulated learning see, also, Boekaerts, Pintrich, & Zeidner, 2000).

The emphasis on context, from the broad socio-cultural to the very specific task context helps us see the persons, and students in particular, as ‘acting-in-settings’ (see Lave, 1993; Turner, 2001). The tasks they are involved with are situated in the context of other tasks, other people, in specific space and time. Therefore, it is the interaction of the
DISCUSSION: MOTIVATION & SELF-REGULATION

person with the situation that determines self-regulation and performance rather than the person him/herself alone. This situative perspective of learning stresses the interpersonal, interactive nature of learning and understanding, as well as the self-related processes that go hand-in-hand with the social ones. What seems to be important is the subjective meaning of the situation, that is, the product of the interaction of the person with the situation (Efklides, 2001; Järvelä & Niemivirta, 2001). This situative perspective is present in the articles included in this special issue with some of them focusing more on the self-processes (Pajares & Valiante, Article 1; Efklides & Tsiora, Article 2) and others on the interaction of the person with the learning environment and the others such as peers, parents, and teachers (Rheinberg, Vollmeyer, & Rollett, Article 3; Niemivirta, Article 4; Yamauchi & Miki, Article 5; Vauras, Iiskala, Kajamies, Kinnunen, & Lehtinen, Article 6).

The present special issue, however, goes one step further in this direction: it shows how this person by task/situation interaction unfolds, as the students deal with specific problems, it shows the micro-processes that determine students’ behavior or performance and how motivation, affect, and cognition interact to form what is the unique subjective experience of the person.

THE PRESENT SPECIAL ISSUE

Trying to understand the richness, multiplicity, and at the same time uniqueness of human experience as well as what is normative in learning situations researchers use two types of measures: questionnaires that capture individual differences at a dispositional level, on the one hand, and on the other, online, task-specific self-reports or observations of what the person does, says, or feels. One may also focus at the intermediate level that addresses a relatively broad class of tasks or situations than just a specific task; in this case one can identify the subjective meaning or the person’s perception of a situation that expands in time or in place. In this special issue, all three types of methodology are used, either each of them alone or in combination. This leads to significant insights into the relations of motivation with self-regulation.

Specifically, Pajares and Valiante (Article 1) study self-efficacy in self-regulation, its change as students move from elementary to high school, and the effect of gender on it. They found that although self-efficacy in self-regulation is related to students’ self-perceptions of academic competence, their self-efficacy in self-regulation drops in high school more sharply than their self-perceptions do. What, however, seems to counteract this drop of self-efficacy in self-regulation is the stereotypical beliefs students hold about gender, and especially a feminine orientation. These interesting data show the same pattern of changes as other studies have found in intrinsic motivation and task orientation for students in transition from elementary to secondary school (Eccles, Wigfield, Midgley, Reuman, Mac Iver, & Feldlaufer, 1993). This might be related to the changing of school environment and the higher demand of school subjects. However, it is not clear why the reported use of self-regulatory strategies is affected by an individual difference factor such
as gender or gender orientation.

There are many possible answers to the above gender issue ranging from stereotypical beliefs that relate gender to different goals and self-regulatory practices to issues relating to gender and self-confidence in learning. It may be the case that girls monitor their performance as well as others’ response to it more closely than boys, who rely more on their own self-esteem and self-perception; this makes girls more aware of the need or use of learning strategies (see Dermitzaki & Efklides, 2001). Such an interpretation is based on data that combined measures of self-concept at a domain or school-subject level with measures of online, task-specific appraisals or reports of metacognitive experiences, that is, feelings, judgments or estimations, and ideas pertaining to the processing of the task at hand (Efklides, 2001). This approach showed that stereotypical beliefs about gender are becoming part of one’s self-concept and affect the way the person feels and reacts when dealing with specific tasks, often irrespectively of the level of performance on the task.

As Efklides and Tsiora (Article 2) showed, metacognitive experiences are monitoring the task and its processing but through the lens of one’s own self. Thus, metacognitive experiences are influenced by self-concept. They also feed back on it and thus update the subjective sense of one’s competence or self-efficacy as well as the already existing self-concept. This finding is in agreement with the socio-cognitive theory that postulates the importance of self-monitoring and self-reflection for self-regulation. What Efklides (2001) and her collaborators, however, showed is the process through which self-monitoring works. Firstly as Dermitzaki and Efklides (2001) argued, metacognitive experiences form an intrinsic context, mainly affective, that influences the perception of learning outcomes (performance attributions; see also Metallidou & Efklides, 2001) and future motivation and self-regulation in a domain. Secondly, metacognitive experiences trigger control decisions such as effort expenditure and cognitive strategies to be used at the task level (Efklides, Samara, & Petropoulou, 1999). Thirdly, they influence one’s self-concept and self-efficacy even without explicit self-evaluative processes (Efklides & Tsiora, Article 2).

It would be interesting to find out if metacognitive experiences also influence volitional strategies as the ones studied by Pajares and Valiante (Article 1). It may be the case that volitional strategy use requires more explicit self-evaluative and self-reflective processes than self-monitoring based on metacognitive experiences. The above approach to metacognitive experiences suggests that metacognition contributes to self-regulation in many different ways: through the monitoring of cognitive processing and its outcome, as well as of the self’s immediate affective response to it; through the awareness of one’s repertory of cognitive strategies and of the conditions that allow their application, that is, through one’s metacognitive knowledge about persons, goals, tasks, and strategies (see Flavell, 1979); through the conscious planning, monitoring, and regulation of the steps needed for the implementation of complex or difficult action and the evaluation of its outcome, that is, through metacognitive skills; and, finally, through self-reflection and self-evaluation as a person living and interacting with others within a sociocultural and physical environment and dealing with specific situations.
The role of situational appraisals regarding one’s motivational and functional state, that is, awareness of the intrinsic context in problem solving, is investigated in the Rheinberg et al. (Article 3) and Niemivirta (Article 4) studies. These two studies use a similar experimental paradigm, namely a computer simulation representing a dynamic learning situation in order to study the interaction of cognitive, motivational, and metacognitive factors in self-regulated learning. The advantage of such an approach is that it allows observation of the actual cognitive processes or strategies used in a learning situation and not only the learning outcome of performance. It also provides the missing link, that is, cognition, in the self-regulated learning models that emphasize only motivation and volitional strategies.

According to the Vollmeyer and Rheinberg (1998) model of cognitive-motivational processes, the effects of motivation on performance are mediated by three variables: (a) frequency and duration of the learning activity; (b) quality of the learning activity, i.e., cognitive strategies used; (c) motivational and functional state, i.e., concentration without effort, flow, and activation. Thus, as they show in their article, one can identify 5 types of learners depending on their initial motivation and cognitive ability, their mediating state, and their final performance. This kind of research overcomes the dichotomies often used in our thinking and which simplify the picture of individual students as having or not having a specific quality, e.g., motivation or cognitive ability. Thus, as Rheinberg et al. show (Article 3), a group of students start with high motivation and then change as task processing goes on, whereas another keep their concentration and flow during problem solving, thus achieving their goal contrary to the first group of students. The same may happen with students starting the task with moderate motivation and then change into high or low concentration and flow during the task processing. Finally, there is the group of students who start low and remain so throughout the task.

The question here is why we get this pattern of learners. One assumption is that the initial motivation measured, namely probability of success, anxiety, interest, and challenge, was very task/situation-specific and does not reflect the more general dispositional person characteristics such as goal orientations that may influence the affect and functional state during problem solving. This means that if the initial interest or challenge is more in accordance with one’s goal orientations, then concentration, effort, and flow – i.e., the mediating motivational/functional state – is sustained during task processing despite difficulties in cognitive processing. In the case initial interest is purely situational (see Krapp, Hidi, & Renninger, 1992) it may dissolve very quickly as the students face difficulties in cognitive processing. Future research is needed to clarify these issues, as well as the role of cognitive interruption, that is, difficulty experienced during cognitive processing, which affects the effort and sense of flow.

Niemivirta in his study (Article 4) used the same computer simulation as the previous authors, but in a different context and with a different aim. Instead of using individualized lab sessions, he used group sessions in real classrooms. Thus, the aim was to investigate the relationship between students’ goal orientation and the instructional goals in a simulated learning situation. For this reason he experimentally controlled the instructional conditions (task- or ego-involving) and measured students’ goal orientations.
and other motivational beliefs, as well as situational appraisals, such as anticipated anxiety, interest, self-efficacy, and self-handicapping, in relation to the task. These appraisals were measured before the solution of the problem and correspond to the initial task motivation of Rheinberg et al. (Article 3). He also measured prior performance in a related domain (math). With this design he was able to identify the interactions of instructional condition with students’ motivation, domain ability, and situational appraisals. The study led to a plethora of data. What is interesting is that students did not seem to emphasize just one single goal, but diverse goals related to achievement and avoidance of work to differing degrees. Thus, he was able to identify four different types of students depending on the constellation of goals they reported.

Another interesting finding in Niemivirta’s study is that domain ability was the major predictor of task performance; it was the only predictor in the task-involved condition whereas in the ego-involved condition situational interest and test anxiety were also significant predictors. Furthermore, domain ability influenced the situational appraisals, such as interest, self-efficacy, and self-handicapping. These findings confirm the critical role of domain ability for task performance, but also show that this effect may be enhanced or constrained depending on the instructional condition and students’ motivational orientation and gender. Thus, the task-involving condition promoted task interest, self-efficacy, and less self-handicapping even for students with avoidance- and performance-orientation. Girls also performed best under this condition. On the contrary, the ego-involving condition led to more self-handicapping, particularly among students with avoidance- and performance-orientation. Yet, boys performed better than girls in this instructional condition.

Thus, Niemivirta’s study showed the complexity of the factors that interact in a learning situation. Particularly important is the finding that students’ goal orientation appear to moderate the influence of instructional condition on students’ situational appraisals. Furthermore, important is also the observation that self-regulatory strategies such as self-handicapping are not only related to students’ goal orientation but also to the instructional condition. Considering that this is a simulation study with a task that was not related to school subjects, the question is what would happen if students were repeatedly exposed to new tasks, as it happens in school, under the two instructional conditions. Would there be a cumulative effect on self-efficacy and on the self-regulatory strategies used? Would cognitive ability and students’ subjective experiences act as a buffer to the context effect, as Efklides and Tsiora (Article 2) suggest? Would students develop strategies to counteract the effects of the instructional context? What would be the role of peers and family? Some of these questions were pursued in the studies of Yamauchi and Miki (Article 5) and Vauras et al. (Article 6).

Yamauchi and Miki (Article 5) investigated the interaction of students’ goal orientations with the learning environment, only that it was not the actual instructional conditions, as in Niemivirta’s study, but students’ perception of it. This approach is significant because it is not, usually, the actual instructional condition of the classroom environment that matters, as it is the perception of it. Thus, Yamauchi and Miki measured the perceived learning environment, as defined by the learning goals of parents and
teachers, whether they are mastery or performance focused. They also measured (a) students’ goal orientations, e.g., mastery, performance, and work avoidance; (b) learning strategies, e.g., deep, surface, self-handicapping; and (c) the more general self-regulatory style, e.g., intrinsic, identified, introjected, and external, which captures the self-determination of students. Another advantage of this study was its longitudinal character, which allows the testing of the stability of students’ motivation and self-regulation. The authors tested the students in 7th and 8th grade.

Yamauchi and Miki’s study confirmed the effects of learning environment on students’ goal orientations. It also showed that this effect is mediated by the self-regulatory style of the students. This implies that parental or teachers’ goals lead to specific practices or regulatory behaviors at home and at school, and these practices shape the self-determination of students in learning as well as their achievement goals. Goal orientation then influences the learning strategies used, either deep, or surface, or self-handicapping. The results also revealed relative stability of students’ perceived learning environment, self-regulatory style, and goal orientations as they moved from 7th to 8th grade. However, learning strategies in the 8th grade were not significantly predicted from variables in the 7th grade. This implies that students adapt their learning strategies to the demands of the subject-matter taught and the grading system of the school more than their overall motivational orientation. It would be interesting to follow these students in 9th grade when demands for the transition to the senior high school are particularly strong.

It would also be interesting to further investigate how work-avoidance orientation develops. The present data suggest that work-avoidance orientation is not related to performance focused learning environment, as perhaps one would assume, and as Niemivirta’s data suggest, but to mastery focused and to intrinsic and identified regulation. The relationship is negative and substantial even at grade 7. This finding suggests that these students probably developed this orientation in reaction to a highly mastery focused learning environment; or it could be the case that there was conflict between parents’ and teachers’ goals or between perceived learning environment and regulatory practices of parents and teachers. This is an issue that is worth pursuing, because this is a group of students who risk academic failure. It would also be interesting to look at other motivational, cognitive, and metacognitive characteristics of these students as compared to those who develop mastery orientation.

This close observation of actual self- and activity-regulation in the presence of others was the aim of Vauras et al. study (Article 6). They are studying a different learning environment than the traditional in school, that is, a computer application that has the form of a game and requires mathematical reasoning. What is also specific to this learning situation is the transaction and collaboration among the participant students. Collaboration means persons who are working together and are roughly at the same level and have a common goal. Thus, the regulation of the joint activity as it unfolds takes three forms: self-regulation, other-regulation, and shared-regulation. Shared-regulation, as the authors explain, presupposes social and communication skills, self-awareness, as well as awareness and sensitivity to the other person’s cognition and feelings, and mutual appropriation of knowledge. Moreover, presupposes ability to inhibit one’s own actions
and to provide support, guidance, and scaffolding to the other when needed. Thus, shared-regulation means high motivation and engagement of two, or more, persons in a joint activity along with control in the service of a common goal.

These abilities are present even among children and, as the authors of this article showed, can lead to successful learning of new and difficult mathematical concepts. However, the demonstration of the positive results of a collaborative learning environment was not the main goal of the authors. What they wanted to show was the understanding of how shared-regulation works and what the conditions that enhance or inhibit it are. Obviously, the pair of students they studied had all the prerequisites for effective collaboration, that is, “task-orientation, social, and cognitive competencies” (Article 6, p. 35). They could also monitor their own thinking, the thinking of their partner as well as the progress towards their joint goal. Finally, they were able and willing to exert and accept control without becoming defensive or offensive. The implications of this kind of research are highly significant, not only for the breakthrough they are making in the motivation and self-regulation theory. They are also critical for understanding how and which parental and teaching practices cultivate or foster the abilities required for successful shared-regulation, when children start to be able to engage in this kind of regulation, what are the effects of shared-regulation on self-concept and self-efficacy, what is the relation of goal orientations with shared-regulation, what strategies are used, etc.

**CONCLUSION**

What, then, is the contribution of this special issue to motivation and self-regulation? This special issue, first of all, showed that the initial simplified conceptualization of the phenomenon of self-regulation in the 1980s that stressed only specific aspects of motivation, metacognition, and strategies used needs to be expanded. There are multiple goals in a learning situation that students pursue and social goals are often as important as the achievement goal orientations. The same may apply to parents and teachers or broader socio-cultural environment in which learning takes place and what multiple goals coexist.

A second contribution of this special issue is that it brought into the picture again the role of cognition, in the form of cognitive ability and conceptual or domain-specific knowledge and skills. Cognitive ability is closely related to performance, to cognitive strategies used and the metacognitive experiences of the students. Thus, it is a critical factor for the formation of one’s sense of competence, which interacts with the response of others towards the person, the evaluation of his/her performance, and the social comparison that affects students’ self-concept and possibly their motivational and regulatory efforts.

This special issue also showed that metacognition is broader than just awareness and use of strategies; it is also metacognitive experiences and awareness of the self, of one’s feelings and affective response to others, to tasks, to situations.

It also showed that action control and regulation of behavior and activity is not only a
property of the self. It is a property of the self and of others as well, as they interact for the achievement of specific goals. The others may be physically present and agents of particular actions and practices that influence the person’s perception of the situation and the motivational and regulatory processes used, or they may be physically absent, but symbolically present in the construction of the meaning of the situation by the person or of the perception of the environment in which action takes place. In general, the other person(s) and the social environment affect self-regulation through the role models they provide, the guidance, the knowledge of results, the informational feedback, the instruction, the collaborative work, the expectations (see Zimmerman, 1998), the goals they promote and the autonomy they afford to individuals (Ryan & Deci, 2000). Of course, the social context may also be responsible for the gender differences found in self-regulation.

Finally, another critical factor for the successful self-regulatory behavior that was not explicitly stated, but plays a significant role in most of the studies of this special issue, is the task itself. For example, a very easy or automatically performed task hardly requires conscious monitoring and control of action whereas very difficult tasks make impossible the exercise of self-regulatory skills because task demands are beyond the control of the person. Thus, the task and the task context (temporal, spatial, or conceptual) may provide cues that facilitate self-regulation or not. For example, availability of verbal cues or explanations, pacing or structuring of tasks, test format, instructions, etc. are all factors that interfere with the perception of the task and the person’s self-efficacy to self-regulation.

In conclusion, the present special issue offers a good basis for further research and insights into the relations of motivation with self-regulation in learning but also in more general settings.

REFERENCES


under what circumstances, and at what cost? *Journal of Educational Psychology, 93*, 77–86.


(Manuscript received August 30, 2002; Manuscript accepted August 30, 2002)

**ERRATUM**

The name Liskala that appeared in the “Introduction: Some issues on self-regulation to consider”, Vol. 45, No. 4, page 208, line 24 from the top was incorrect. The correct name is Liskala.