

Do motivational self-regulation strategies vary based on the motivational challenge?

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Abstract

Motivational self-regulation (MSR) is recognized as a situated process, yet most research examines it independently of the motivational challenge that triggers it. Grounded in Situated Expectancy–Value Theory, this mixed-methods study examined how 60 university students reported self-regulating motivation across three scenarios: low subjective task value, low success expectancy, and high perceived opportunity cost. Written responses were coded using deductive and inductive categorical content analysis and compared using Friedman tests. Strategy mobilization varied significantly across scenarios: *Environmental control* predominated under low subjective task value, *Cognitive strategies* and *Disengagement*

predominated under low success expectancy, and *Need satisfaction* was more salient under high opportunity cost. Inductive coding also identified three underrecognized strategies—*Active procrastination*, *Need satisfaction*, and *Situational goal adjustment*—extending existing MSR taxonomies. Under low success expectancy, few strategies directly targeted the underlying motivational problem, with students favoring self-protective coping, suggesting a narrow repertoire for regulating motivation when success appears unlikely.

Keywords: *Motivational self-regulation, Self-regulated learning, Situational specificity, Situated Expectancy–Value Theory, Higher education*

1. Introduction

Successful self-regulated learning (SRL) depends on learners' ability to regulate cognitive, metacognitive, and motivational processes to achieve academic goals (Zimmerman, 2000, 2002). Learners set goals, monitor progress, and adapt strategies across phases of learning, and these processes function as an interdependent system rather than as isolated components. Motivation plays a central role within this system: it both supports and is subject to regulation. Metamotivational monitoring can detect declines in engagement and trigger self-regulated responses, while motivational beliefs shape strategy selection, persistence, and effort allocation (Efklides et al. 2026; Elliot et al., 1999; Garcia & Pintrich, 1994; Pintrich, 2004; Schunk & Zimmerman, 2008). Research has historically emphasized cognitive and metacognitive regulation, often treating motivation as a relatively stable background condition. However, learners frequently encounter situations in which engagement must be actively restored or sustained despite low interest, anticipated failure, or competing demands.

Motivational self-regulation (MSR) refers to the processes through which learners attempt to influence or manage their motivation (Wolters, 2003, 2011). Motivational self-regulation strategies (MSRs) are purposeful behaviors and thought processes used to initiate, maintain, or restore willingness to engage in academic activities when motivation is insufficient (Wolters, 2003). Rather than being a passive prerequisite for learning, motivation becomes an explicit self-regulated target. A growing body of empirical evidence points out the necessity of MSRs. A recent meta-analysis reported positive associations between the use of MSRs and academic achievement, persistence, and effort investment (Fong et al., 2024). However, the magnitude of these relationships varied substantially across studies, suggesting that the effectiveness of MSRs may depend on situational factors rather than simply on how frequently and how many

MSRs are used. Recent theoretical developments emphasize that MSR is fundamentally contextual and situational. Learners monitor their motivational state, identify the source of motivational challenge, and select MSRs accordingly (Miele & Scholer, 2018). From this perspective, MSR does not merely require a fixed repertoire of MSRs, but rather the capacity to adapt strategy selection to the specific learning contexts and motivational challenges that learners encounter (Engelschalk et al., 2016; Fong et al., 2024; Schwinger & Otterpohl, 2017).

However, empirical research has only partially captured this adaptive nature of MSR. Most studies assess MSR through general self-report questionnaires that measure typical or frequent use of MSRs. While such approaches describe the SRL and MSRs that students use, they provide limited insight into when and why they are used. As a result, MSR is often studied as a stable individual tendency rather than as a context-dependent self-regulated response.

2. Motivational self-regulation strategies

MSR operates within the broader self-regulation of learning. Cognitive and metacognitive strategies may indirectly support motivation by reducing perceived task difficulty, enhancing perceived competence, or sustaining engagement (Schwinger et al., 2009; Schwinger & Stiensmeier-Pelster, 2012; Wolters, 2003). For example, planning or elaboration can increase feelings of control, while monitoring can trigger MSR when engagement declines. Empirical work shows that the use of MSRs co-occurs with the use of cognitive and metacognitive strategies (Schwinger et al., 2007; Wolters, 1999), suggesting that MSR is intertwined with task execution rather than separate from it. Nevertheless, the mechanisms linking MSR to specific learning situations remain insufficiently understood (Panadero, 2017; Wolters & Benzon, 2013). In particular, students may self-regulate their motivation in different ways depending on the nature of the difficulty they encounter (i.e., the motivational challenge). Recent syntheses support this interpretation: Trautner et al. (2025) and Villar et al (2024) showed that the effectiveness of MSRs varies across contexts, with MSRs that are adaptive in some situations proving neutral or maladaptive in others. This finding suggests that examining MSR without considering the nature of the motivational challenge may obscure how learners actually regulate engagement.

2.1 Situated Expectancy–Value Theory and motivational challenges

Situated Expectancy–Value Theory (SEVT; Eccles & Wigfield, 2020) provides a framework for conceptualizing such variability. SEVT posits that task choice, persistence, and effort are proximally determined by two appraisals, namely students' expectancies for success and the

subjective value they attach to the task. Subjective task value comprises attainment value, intrinsic value, utility value, and cost, the latter capturing the anticipated negative consequences of engagement, including the effort required by the task, the effort demanded by competing activities, the opportunity cost (loss of valued alternatives), and the emotional strain involved (Flake et al., 2015). Because cost has often been neglected in empirical applications, the Expectancy-Value-Cost (EVC) model treats it as a construct distinct from value, alongside self-efficacy and subjective task value (Barron & Hulleman, 2015). SEVT encompasses a wide range of motivational beliefs, which can be organized around three qualitatively distinct motivational barriers to engagement: low subjective task value, low perceived self-efficacy, and high perceived cost linked to the learning task. Accordingly, a student may disengage because a task appears uninteresting (low subjective task value), because success seems unlikely (low expectancy), or because engagement conflicts with other valued activities (high perceived opportunity cost).

The present study, therefore, focused on three motivational challenges: low subjective task value, low success expectancy, and high perceived opportunity cost. The aim was not to represent the full complexity of SEVT, but to capture its central structural dimensions within the EVC and SEVT frameworks. From this perspective, MSR should be contingent on the nature of the motivational challenge encountered (Miele & Scholer, 2018), raising the question of whether students adapt their strategies to specific motivational challenges.

2.2 MSRs taxonomies and the question of situational fit

Existing MSRs taxonomies have progressively expanded (Cosnefroy, 2010; Miele & Scholer, 2018; Schwinger et al., 2009; Wolters, 1998, 2003), but they still converge only partially, and the strategies students actually report often exceed the categories these taxonomies provide (Cosnefroy & Berger, 2024; Villar et al., 2024; Wolters & Benzon, 2013). Although such divergence may stem from methodological differences across studies, it may also indicate that MSRs use is inherently situated. On this account, learners do not draw on a fixed repertoire but select strategies in response to the particular motivational problem at hand.

Accumulating research has begun to foreground this situated dimension of MSR, moving from an emphasis on the frequency of strategy use toward a more differentiated understanding of when and for whom a given strategy is effective. Across two diary studies, Bäumle et al. (2021) showed that motivational regulation fluctuates at the state level according to the demands of the immediate academic situation. The finding underlines the limits of purely trait-based

accounts of MSR and supports the assumption of a considerable situational specificity in motivational regulation. Building on this logic, von der Mülbe et al. (2024) proposed a three-component approach that distinguishes frequency of strategy use from situation-specific fit and application quality. They showed that the fit between a strategy and the demands of a situation predicts perceived regulatory effectiveness above and beyond mere frequency of use. Convergent evidence comes from Kim et al. (2025), who found that although undergraduate students readily adjust their cognitive strategies to contextual demands when planning for an upcoming test, this conditional adjustment is markedly less pronounced for motivational strategies, suggesting that situational sensitivity is not yet a well-established feature of MSR strategy selection. Most recently, using intensive longitudinal data collected across successive weeks, Kim et al. (2026) demonstrated that students' planned use of MSRs evolves dynamically over time and interacts with the concurrent use of other strategies. This finding reinforces the view that MSRs selection unfolds as a temporally and contextually embedded process rather than as a stable disposition. Taken together, these contributions converge on the idea that MSR cannot be adequately captured by frequency indicators alone and call for designs that can document strategy selection as it occurs within specific motivational situations.

Moreover, prior research has largely examined how frequently MSRs are used rather than their appropriateness relative to specific motivational challenges (Panadero, 2017; von der Mülbe et al. 2024; Zhang & Dong, 2022). Consequently, whether different motivational challenges elicit distinct self-regulated responses and MSR strategy selection remains unclear.

2.3 Aims and research questions

To address these limitations, this study adopted a mixed-methods scenario-based approach grounded in SEVT. Students were presented with three motivational challenges: low subjective task value, low success expectancy, and high perceived opportunity cost. This design allowed the researchers to examine how learners adapt their repertoire of MSRs across qualitatively different motivational barriers and to identify MSRs not captured by existing taxonomies. By examining strategy selection across motivational contexts, this study aimed to clarify the situated nature of MSR and refine theoretical models of MSR within SRL. The study addressed two research questions (RQs):

RQ1: Which MSRs do students report using in response to each of three motivational challenges (low subjective task value, low success expectancy, high perceived opportunity cost), and do these MSRs selection differ across challenges?

RQ2: Are there MSRs that students report using in practice but that are underrecognized (i.e., absent or underrepresented) in existing taxonomies?

3. Method

3.1 Sample

Participants were 60 students enrolled at the University of [anonymized for review] and recruited using convenience sampling. Inclusion criteria required current enrolment at the university, and recruitment aimed to include students from multiple faculties to ensure disciplinary diversity. The majority of participants were aged between 23 and 27 (18–22: $n = 15$; 23–27: $n = 43$; >27: $n = 2$), with 38 identifying as female and 22 as male. Students were primarily enrolled in the Faculty of Humanities ($n = 41$), with additional participants from Law ($n = 6$); Science and Medicine ($n = 10$); Management, Economics and Social Sciences ($n = 2$); and Theology ($n = 1$). The sample included 32 Master's students and 28 Bachelor's students.

3.2 Procedure and ethical considerations

Following standardized written instructions, participants completed a paper-and-pencil survey in French individually. They were asked to report at least three strategies for each motivational challenge scenario using short written responses. Administration was standardized across participants, and researchers provided no additional explanations beyond written instructions. Participation was voluntary, and informed consent was obtained prior to data collection. No identifying information was collected, and participants could withdraw at any time.

3.3 Measure

The survey included two sections. The first contained demographic questions and four willpower items (e.g., “I push myself to keep working even when a reading is really dull”) from the Brief Regulation of Motivation Scale (Kim et al., 2018), rated on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). The items were translated into French using a forward–backward procedure. Internal consistency in the present sample was satisfactory ($\alpha = .79$). The second section consisted of three open-ended scenarios representing distinct motivational challenges derived from SEVT: low subjective task value, low success expectancy, and high perceived opportunity cost (see the online supplemental materials for further details). In each situation, participants described strategies they considered effective for sustaining motivation. Scenario order was counterbalanced.

3.4 Data analysis

Data analysis combined qualitative and quantitative approaches. Participants' responses were coded using categorical content analysis using deductive and inductive procedures (Braun & Clarke, 2013). Deductive coding was based on established MSRs taxonomies (Miele & Scholer, 2018; Schwinger et al., 2009; Wolters, 1998, 2003), while inductive coding captured strategies not represented in existing frameworks. Many responses including cognitive and metacognitive strategies were retained given the interdependence of SRL components. Coding proceeded iteratively. After developing the coding scheme, two independent coders analyzed 30% of the dataset, achieving moderate agreement ($\kappa = .52$; Landis & Koch, 1977; McHugh, 2012). Following refinement of category definitions, a second reliability check on another 20% subset yielded substantial agreement ($\kappa = .84$). The remaining responses were coded using the finalized scheme (see the online supplemental materials for further details). Quantitative analyses, conducted using Jamovi, examined the frequency of each strategy category across scenarios. Descriptive statistics were computed, followed by Friedman tests to compare strategy use across categories and across motivational challenges. Additional within-scenario Friedman tests examined differences in the relative predominance of strategies within each motivational context.

4. Results

4.1 Preliminary results

Preliminary analyses examined whether MSRs use varied as a function of sociodemographic or individual characteristics (age, faculty, gender, educational attainment, and willpower). No significant associations emerged between MSRs use and these variables in either the quantity or category of strategies reported (all $r_s = -.106$ to $.113$, ns). An exploratory pattern suggested that higher willpower was associated with more *Disengagement* strategy use in the low success expectancy scenario, whereas lower willpower was associated with more *Disengagement* strategy use in the high perceived opportunity cost scenario. Given the exploratory nature of these tests, this pattern is reported as tentative.

For clarity, the results are presented out of RQ order. As RQ1 draws on the strategy categories derived from RQ2, the findings for RQ2 are reported first.

4.2 RQ2 – Strategy categories and newly identified strategies

4.2.1 General strategy categories

To address whether students reported underrecognized MSRs, researchers coded the responses using inductive–deductive categorical content analysis. Strategies were grouped into broader conceptual categories based on their primary self-regulation target, resulting in 10 overarching categories (see the online supplemental materials for further details). The initial coding framework drew on established MSRs taxonomies (Miele & Scholer, 2018; Schwinger et al., 2009; Wolters, 1998, 2003). Five categories corresponded directly to previously documented MSRs: *Goal-based strategies*, *Self-efficacy enhancement*, *Value enhancement*, *Environmental control*, and *Emotion regulation*. Two categories, *Metacognitive strategies* and *Cognitive strategies*, were retained because participants frequently reported them and because SRL components are dynamically interdependent and can indirectly support motivation. Three categories emerged inductively from the data: *Active procrastination*, *Need satisfaction*, and *Disengagement*.

4.2.2 Previously undertheorized self-regulatory processes and category refinements

Inductive coding of the students’ responses extended the existing framework by revealing several MSRs that were either underrecognized in prior MSRs taxonomies or require more nuanced categorization.

Active procrastination: Defined as intentional delay coupled with timely completion and satisfaction (Choi & Moran, 2009; Chu & Choi, 2005), this strategy is also referred to as *delaying for pressure* (Trautner, 2026). Students described intentionally delaying engagement while relying on time pressure to initiate action (e.g., “I wait until the last minute to do it, and then I have no choice but to work; the pressure forces me to get it done” [S24.V70]; “Knowing myself, I realize that when I get to the last minute to accomplish what is required, I’m efficient and work well” [S34.V96]).

Need satisfaction: Another recurrent MSR strategy involved engaging in physiological or social activities to restore readiness to study (e.g., “It’s important that he get enough sleep, eat, and drink properly” [S50.C96]; “You have to take care of your health first” [S51.C97]; “Get some fresh air, have a coffee or an energy drink” [S9.V29]). These responses imply that students view *Need satisfaction* as a prerequisite for sustained task engagement.

Situational goal adjustment. This strategy emerged within the broader dimension of *Goal-based strategies*. Students described calibrating their performance standards or reducing task scope in response to situational constraints while still intending to submit an assignment. Illustrative responses included: “[I] also think about the relevance of the writing plan, whether it requires

too much work and if it could be reduced to allow for some flexibility” (S19.C46) and “I would submit something that is below the level of quality I am capable of, just to meet the deadline” (S24.C54).

Breaks and functional differentiation. Many participants reported taking short or extended breaks. Consistent with prior work, breaks were differentiated by function (Biwer et al., 2023; Webster & Hadwin, 2015). Intentionally scheduled breaks with a clear beginning and end aimed at restoring focus (e.g., Pomodoro-type regulation) were coded as *Metacognitive regulation strategies*, as they externalize regulation and support re-engagement (Biwer et al., 2023; Smits et al., 2025). Breaks taken primarily to manage emotional strain were coded as *Emotion regulation*, consistent with Gross’s framework (2007; Gross & John, 2003). Breaks involving avoidance without a plan to re-engage were coded as *Disengagement*. This distinction was particularly salient in the low success expectancy scenario (e.g., “I would try to postpone the exam” [S60.D161]) versus temporary shifts of focus with an intention to return (e.g., “I review something else and come back to it the next day” [S20.D58]).

4.3 RQ1 – Relationship between reported strategies and motivational challenges

Across the three scenarios, students reported 455 strategy instances (Table 1). *Cognitive strategies* were most frequent ($n = 121$), followed by *Metacognitive strategies* ($n = 83$), *Environmental control* ($n = 58$), *Value enhancement* ($n = 56$), *Disengagement* ($n = 35$), *Need satisfaction* ($n = 30$), *Self-efficacy enhancement* ($n = 29$), *Goal-based strategies* ($n = 16$), *Emotional regulation* ($n = 15$), and *Active procrastination* ($n = 12$). When all MSRs were aggregated, MSRs-related categories collectively represented the most frequently reported group of strategies ($N = 216$). Students reported more strategies in the low subjective task value ($N = 160$) and low success expectancy ($N = 158$) scenarios than in the high perceived opportunity cost scenario ($N = 132$).

Table 1
Frequencies of Motivational Self-Regulation Strategy Categories by Scenario

Strategy category	Scenarios			Total
	Opportunity cost	Subjective task value	Success expectancy	
<i>Motivational self-regulation strategies (N = 216)</i>				
Goal-based strategies	5	9	2	16
Value enhancement	25	26	5	56
Self-efficacy enhancement	14	10	5	29
Environmental control	9	46	3	58
Emotional regulation	9	3	3	15
Active procrastination	0	11	1	12
Need satisfaction	23	2	5	30
<i>Other strategies (N = 239)</i>				
Metacognitive strategies	39	35	9	83
Cognitive strategies	4	12	105	121
Disengagement	9	6	20	35
Total	137	160	158	455

Note. Frequencies are derived from the analysis dataset.

A Friedman test indicated that strategy categories were not mobilized equally across the scenarios, $\chi^2(9) = 164.13$, $p < .001$, $W = .30$. Mean ranks (MR) showed a predominance of *Cognitive strategies* (MR = 8.35) and *Metacognitive strategies* (MR = 7.13), followed by *Environmental control* (MR = 6.34) and *Value enhancement* (MR = 6.18).

4.3.1 Variation across motivational challenges

Friedman tests were conducted for each category to determine whether strategy use varied across motivational challenges. Several categories showed significant contextual variation (Table 2).

Table 2*Cross-Scenario Comparisons of Strategy Mobilization (Friedman Test, $N = 60$)*

Strategy category	χ^2	W	p
Goal-based strategies	4.93	.04	.05
Value enhancement	16.63	.14	.001
Self-efficacy enhancement	4.16	.04	.05
Environmental control	40.71	.34	.001
Emotional regulation	5.14	.04	.05
Active procrastination	18.20	.15	.001
Need satisfaction	22.32	.19	.001
Metacognitive strategies	23.35	.20	.001
Cognitive strategies	98.06	.82	.001
Disengagement	7.28	.06	.05

Note. Degrees of freedom for all tests equal 2. Effect sizes are Kendall's W , interpreted following conventional benchmarks as small ($W = .10$), moderate ($W = .30$), and large ($W = .50$) effects (Tomczak & Tomczak-Lukaszewska, 2014).

Descriptively, the direction of these differences was consistent with the frequency patterns (see Table 1 for detailed frequencies). Specifically, the most frequent strategies were *Cognitive strategies* and *Disengagement* in the low success expectancy scenario; *Environmental control*, *Active procrastination*, and *Metacognitive strategies* in the low subjective task value scenario; and *Need satisfaction* and *Metacognitive strategies* in the high perceived opportunity cost scenario. These results indicate that motivational challenges were associated not only with differences in frequency but also with qualitatively distinct self-regulated patterns, a point that will be examined further in the Discussion section. Among all strategy categories, *Cognitive strategies* showed the largest effect size ($W = .82$), followed by *Environmental control* ($W = .34$) and *Metacognitive strategies* ($W = .20$). By contrast, *Goal-based strategies*, *Self-efficacy enhancement*, and *Emotional regulation* did not vary significantly across scenarios, suggesting that they may function as more general SRL resources.

To further interpret the cross-scenario differences reported above, strategy co-occurrence patterns were examined separately within each motivational context.

4.3.2 Strategy distribution within the high perceived opportunity cost scenario

A total of 132 strategy instances were identified in the high perceived opportunity cost scenario. The distribution of strategy categories was significantly uneven, $\chi^2(9) = 85.38$, $p < .001$, $W = .16$, indicating that students did not mobilize strategies with equal frequency.

Participants reporting *Metacognitive strategies* (MR = 7.13; $n = 39$) frequently referred to planning and scheduling behaviors, such as “I would try to create a very well-organized schedule” (S37.C83). Statements coded as *Value enhancement* (MR = 6.33; $n = 25$) MSRs included references to long-term importance and future consequences, such as “Realize the importance for me of obtaining this Master’s degree (professional future, financial risks, consequences...)” (S14.C30) and “Tell myself that this is a temporary discomfort and try to think long-term” (S19.C44). Responses categorized as *Need satisfaction* (MR = 6.21; $n = 23$) MSRs often mentioned balancing academic work with personal life. Participants wrote, for instance, “I would advise alternating social life and academic work. It is important to clear one’s mind to work better” (S34.C80), “Enjoy the small moments of private and social life during this period to gain the energy to finish the thesis” (S33.C79), and “Relationships are important to maintain a good level of work; I would therefore spend time with family and friends to increase my efficiency” (S41.C74). Some responses explicitly referred to health and burnout prevention, including “Not neglecting personal life to avoid burnout” (S56.C110) and “First take care of one’s health” (S51.C97).

4.3.3 Strategy distribution within the low subjective task value scenario

A total of 160 strategy instances were identified in participants’ responses to the low subjective task value scenario. The distribution of strategy categories differed significantly across categories, $\chi^2(9) = 127.58, p < .001, W = .19$.

Participants reporting *Environmental control* (MR = 7.24; $n = 46$) MSRs frequently described modifying their study setting or minimizing distractions. For example, one participant noted, “Going to the library and being in a studious environment help me get into the task” (S2.V1), while another reported, “I move away from sources of distraction, such as my phone” (S12.V35). Responses coded as *Metacognitive strategies* (MR = 6.87; $n = 35$) often involved structuring work periods and organizing breaks. Typical statements included, “I study at regular intervals: 1 hour of work and 15 minutes of break” (S37.V102), “Take many breaks every 45 minutes to 1 hour” (S47.V123), and “If it is a task I don’t want to do, I spread it across several study sessions” (S27.V81). *Value enhancement* (MR = 6.23; $n = 26$) was also reported, primarily in the form of attempts to increase situational interest. For instance, one student wrote, “I try to find an immediate interest. For example, if I have to read a philosopher I don’t particularly like, I tell myself it is still interesting from a historical perspective” (S10.V32).

4.3.4 Strategy distribution within the low success expectancy scenario

A total of 158 strategy instances were identified across participants' responses in the low success expectancy scenario. The analysis revealed statistically significant differences in mean ranks across strategy categories, $\chi^2(9) = 287.24, p < .001, W = .53$.

Responses coded as *Cognitive strategies* (MR = 9.43; $n = 105$) described attempts to obtain solutions, clarifications, or answers from external sources. One participant stated, "I would ask ChatGPT for the answer" (S25.D94). Others referred to reviewing or reprocessing the task, such as "I would review the problem from the beginning" (S8.D30). Additional responses involved consulting others or searching for information: "I would ask classmates, or even the professor/assistant, to re-explain it to me" (S2.D5) and "I would try to look for the solution on the Internet or in my course materials" (S4.D12). Some responses were coded as *Disengagement* (MR = 5.98; $n = 20$), for example: "I would try to postpone the exam" (S60.D161).

5. Discussion

This study aimed to examine how students self-regulate their motivation when facing different categories of motivational challenges, drawing on the theoretical framework of the SEVT (Eccles & Wigfield, 2020) and the taxonomy of MSRs (Cosnefroy, 2010; Miele & Scholer, 2018; Schwinger et al., 2009; Wolters, 1998). RQ1 asked how strategy mobilization varies with the nature of the challenge, and RQ2 asked whether students report underrecognized strategies.

5.1 RQ1 - Contextual adaptation of MSRs

In line with SEVT assumptions (Eccles & Wigfield, 2020), the mobilization of MSRs varied significantly according to the nature of motivational challenge. The overall picture supports a situated account in which students select MSRs based on context-specific constraints.

5.1.1 High perceived opportunity cost: regulating the conditions of engagement

When participants reasoned about a high perceived opportunity cost, their responses rarely corresponded to the *Environmental control* MSRs that Miele and Scholer (2018) described as fit for this challenge. A more parsimonious reading of the present data is that, rather than regulating willingness itself, these participants reported regulating the conditions under which engagement could take place. This interpretation is advanced as a hypothesis grounded in self-reported strategies, not as a generalizable claim about how students manage high perceived opportunity cost.

Two patterns are consistent with that reading. First, several responses referred to what could be arranged upstream, in particular *Metacognitive strategies* such as planning study time. Although planning is typically described as an SRL process (Zimmerman, 2002), it may have also served a motivational function in the present research by coordinating academic work with other valued domains, aligning with the argument that some SRL strategies can operate as MSRs (Wolters & Benzoni, 2013). On this account, planning would act less on immediate willingness than on the feasibility of engagement. This raises, without resolving, the question of whether some participants were able to recognize MSRs appropriate for handling high perceived opportunity cost scenarios and whether they could deploy these strategies in the moment rather than only in anticipation. Second, when participants reasoned about acting in the moment, they more often reported enhancing the personal significance of the task (Schwinger et al., 2009), described by Miele and Scholer (2018) as self-relevant value enhancement and linked to the utility component of subjective task value (Barron & Hulleman, 2015; Eccles & Wigfield, 2020). One plausible interpretation is that, faced with a conflict between a more attractive activity and an academically necessary one, the participants attempted to enhance the relative value of the academic task by tying it to longer-term goals.

Finally, a third category concerns the strategies of *Need satisfaction*. In this scenario, students frequently referred to their needs, predominantly social ones, and described addressing them even at the cost of temporarily prioritizing the competing activity. As one participant put it: “I would advise them to prioritize their social life that evening. In my opinion, it’s not good to force yourself to work when the motivation isn’t there. It’s better to clear your head for a night and get back to it fully the next day with a refreshed mind” (S13.C29). These MSRs suggest that academic engagement is conceived as dependent on one’s personal resources, such as attentional resources. Persistence is therefore indirectly supported, not by modifying the task itself, but by making engagement viable within the student’s resources.

5.1.2 Low subjective task value: regulation of engagement costs

A distinct MSR pattern emerged when students faced a task perceived as lacking value. The most salient feature of this scenario was the predominance of *Environmental control* MSRs. Compared with the other scenarios, participants more frequently reported modifying their studying environment to facilitate engagement. Typical responses involved relocating to a suitable study place and minimizing distractions mostly linked to smartphones (Wolters, 2003). Rather than attempting to increase their situational interest (Sansone et al., 1992, 1999), they

reported regulating the conditions of engagement so as to sustain attention on the task. By limiting access to competing stimuli, such arrangements may make avoidance more effortful and thereby support external engagement, an interpretation consistent with the idea of behavior scaffolded by the environment.

Metacognitive strategies were also relatively frequently reported but differed qualitatively from those observed in the high perceived opportunity cost condition. Instead of long-term planning, students described breaking the task into subtasks and scheduling frequent breaks between them. The reported strategies differed from what is typically described in the literature as environmental structuring (Pintrich, 2000; Purdie & Hattie, 1996). These strategies did not aim to optimize performance or enhance self-efficacy (Cosnefroy & Berger, 2024; Miele & Scholer, 2018) but to make sustained effort tolerable. Therefore, MSRs targeted the aversiveness of engagement by limiting the duration of continuous effort, consistent with perspectives conceptualizing MSR as effort management (Inzlicht et al., 2018). A similar logic appeared in *Value enhancement* MSRs. Participants reported *Self-consequating* more frequently than attempts to reinterpret the inherent meaning of the task (Miele & Scholer, 2018), suggesting that they attached external incentives to engagement rather than transforming intrinsic interest. Additionally, *Active procrastination* was more frequent in this scenario than in the other two. Students described delaying engagement until time pressure forced action, using urgency as a means to increase their extrinsic motivation.

Taken together, the findings indicate that when subjective task value was low, students did not primarily attempt to act on their motivational challenge according to their motivational beliefs. Instead, they regulated the experiential cost of engagement. *Environmental control*, effort segmentation (*Metacognitive strategies*), external rewards (*Self-consequating*), and time pressure (*Active procrastination*) all functioned to reduce the perceived effort required to begin or sustain the unpleasant academic task. In other words, those MSRs did not operate directly by increasing or sustaining motivation but by lowering engagement costs: learners made the task more bearable rather than more meaningful.

5.1.3 Low success expectancy: self-protection regulation

In situations of low success expectancy, SRL no longer aims to sustain MSR but rather to manage or protect one's perceived competence. Students primarily relied on *Cognitive strategies* to reduce perceived task difficulty, often by requesting answers directly from external sources (e.g., peers, instructors, the Internet, or AI tools), which corresponds to *Executive help-*

seeking (Karabenick & Berger, 2013; Nelson-Le Gall, 1981; Newman, 2002). These results differ from those of Wolters (1998), who coded responses also describing *Cognitive strategies* but with an information-processing function. By contrast, in the current study, *Cognitive strategies* were not oriented toward information processing but toward making task completion possible despite low success expectancy. This behavior thus targets the task's demands rather than the learner's motivational state or beliefs.

Disengagement was also more frequent in this scenario. Rather than a failure of self-regulation, it can also be interpreted as a coping response to a competence threat: low success expectancy undermines self-efficacy beliefs, and when perceived competence is low, persistence tends to decrease while avoidance becomes more likely (Bandura, 1997; Schunk & DiBenedetto, 2021). Regulating one's motivation may then appear irrational if success seems unlikely, which may explain why so few strategies directly targeted motivational beliefs (e.g., low self-efficacy or anxiety about failure). This narrow repertoire suggests that low success expectancy affects control beliefs (Eccles & Wigfield, 2002) and reduces perceived control over the learning situation (Skinner, 1995): when improvement appears impossible, MSR may cease to be perceived as useful. Low success expectancy may therefore constitute a boundary condition for MSR, whose logic presupposes that effort can influence outcomes. When this assumption collapses, regulation no longer aims at engagement but at self-protection against anticipated failure, so that the observed behaviors resemble defensive coping strategies (e.g., *Executive help-seeking* and *Disengagement*) more than genuine MSR. It is also possible to draw a connection with the body of work on goal progress evaluation, the affective experiences that result from it, and the disengagement from initial goals (Klinger, 1975; Kunzmann et al., 2014; Moors et al., 2017). This body of work demonstrates that when detected progress falls below previously expected criteria, the discrepancy can give rise to negative emotions. Regulating this discrepancy appears to vary according to the situation and the individual's perceived competence. In a situation characterized by low self-efficacy, low perceived control, or a lack of resources relative to the motivational challenge, the individual may come to disengage, either from the initial goal or from the task itself.

5.1.4 Theoretical situation fit of MSRs

Across all scenarios, only a small proportion of MSRs could be considered situationally fit according to Miele and Scholer (2018); that is, MSRs that directly targeted the specific motivational challenge. In particular, for scenarios involving high perceived opportunity cost, *Environmental control* was identified as a situationally appropriate strategy (n = 9 out of 132

strategies); for scenarios related to low subjective task value, *Value enhancement* was theoretically appropriate (n = 26 out of 160); and for scenarios characterized by low success expectancy, *Self-efficacy enhancement* and *Proximal goal setting* were considered situationally fit strategies (n = 14 out of 58). Overall, strategies that were theoretically situationally appropriate were not those most frequently selected by students. Instead, participants relied predominantly on *Cognitive* and *Metacognitive strategies*, as well as on strategies aimed at regulating external conditions, such as *Environmental control*, *Planification* (coded in *Metacognitive strategies*), *Self-consequating*, and *Active procrastination*, rather than on MSRs aimed at modifying their motivational beliefs. This pattern suggests that students mostly regulate their motivation externally by altering task conditions or engagement structures, rather than internally by changing their motivational belief appraisals, a tendency also noted by Villar et al. (2024). Taken together, these findings point to a limited repertoire of MSRs and to insufficient conditional knowledge regarding when and why specific MSRs should be deployed.

5.2 RQ2 - Previously undertheorized self-regulatory processes and MSRs

The inductive analysis identified several strategies that extend current MSRs taxonomies and provide a more ecologically grounded understanding of how students self-regulate motivation *in situ*.

One particularly salient strategy reported by participants was *Active procrastination*, defined as the intentional delaying of task engagement while remaining confident in one's ability to complete the task under time pressure (Choi & Moran, 2009; Chu & Choi, 2005). Although considered an ambivalent form of MSRs (Cao, 2012), recent meta-analytic evidence indicates that *Active procrastination* is positively associated with academic performance (Kooren et al., 2024). In the present study, this strategy was most frequently reported when subjective task value was low. The delay did not reflect a failure of MSR but rather functioned as a deliberate attempt to generate sufficient activation to initiate engagement. By postponing engagement, students created self-imposed urgency, which they believe helps them focus and sustain effort on an otherwise unattractive learning task. Motivationally, this MSRs reflects a form of controlled motivation, with temporal pressure compensating for low intrinsic interest. *Active procrastination* therefore appears less as avoidance than as an adaptive MSRs that enables students to initiate action when a motivational challenge stems from a low task value.

Need satisfaction emerged as a second novel strategy, particularly through its social dimension. Students reported attending to social needs, such as spending time with others, to regain the resources required for studying. This MSR reflects a homeostatic logic in which satisfying the need for relatedness is treated as a prerequisite for re-engagement, a logic consistent with self-determination theory, which posits relatedness as a basic psychological need underlying autonomous motivation (Ryan & Deci, 2000). Rather than indicating disengagement, such strategic behavior may represent an adaptive recalibration of motivational and affective resources through social and physiological means.

Situational goal adjustment illustrates students' capacity to reduce performance standards in response to constraints while maintaining engagement. Participants described accepting an imperfect outcome or redefining success when time or energy was limited. Unlike *Disengagement*, *Self-handicapping* (Midgley et al., 1996; Urdan et al., 1998), or *Work-avoidance orientations* (Duda & Nicholls, 1992), MSRs did not involve withdrawing effort. It is conceptually close to the notion of *limited disengagement* (Carver & Scheier, 1998), in which learners lower a performance standard while pursuing a still-attainable form of success. It also resonates with the adaptive self-regulation of unattainable goals described by Wrosch et al. (2003). Participants reported deliberately submitting lower-quality work despite believing they were capable of a better performance, suggesting that the adjustment did not stem solely from low perceived competence but functioned as a pragmatic compromise between performance and persistence.

6. Perspective and limitations

Several limitations should be considered when interpreting the present findings. First, the study relied on scenario-based written responses rather than on observed learning behavior. Although this approach allowed systematic comparison across differentiated motivational contexts, it primarily captured students' declarative and conditional knowledge about regulation rather than their enacted SRL processes. Responses may therefore partly reflect normative beliefs about what students think they should do, rather than what they would actually apply in real learning situations. At the same time, scenario-based designs offer a certain degree of ecological structuring by embedding motivational challenges in realistic academic dilemmas, thereby enhancing contextualized reasoning while maintaining experimental control. Future research could use micro-analytic methods and experimental manipulations to help determine whether similar SRL/MSR patterns emerge during real-time task engagement.

Second, the formulation and framing of the scenarios may have influenced the participants' strategy selection. Research on scenario methodology suggests that subtle variations in wording, salience of cues, or contextual information can shape participants' interpretations and responses (Aguinis & Bradley, 2014; Hughes & Huby, 2004). For instance, the opportunity cost vignette emphasized an academic–social trade-off, which may have primed externally oriented MSRs. Future studies could manipulate scenario characteristics more systematically to examine how perceived controllability, task framing, or phase specificity influences MSRs deployment.

Third, the absence of a task-specific self-efficacy measure limits interpretability. Given that self-efficacy is task-dependent and strongly predicts effort, persistence, and strategy use (Bandura, 1997; Zimmerman, 2000), reported strategies may partly reflect perceived competence rather than purely motivational regulation. Future research might disentangle MSR from competence-related coping by assessing scenario-specific efficacy beliefs and perceived controllability.

Despite these limitations, the findings carry theoretical and practical implications. Theoretically, identifying distinct patterns of MSR across different motivational challenges advances a situated understanding of MSR (Engelschalk et al., 2016; Miele & Scholer, 2018). Uncovering such patterned responses contributes to refining MSR models by highlighting how specific motivational beliefs may cue qualitatively different MSR pathways. From a practical perspective, the findings encourage a shift in how support for SRL, particularly MSR, is conceptualized. Rather than teaching decontextualized MSRs, educational interventions could foster students' diagnostic skills, helping them identify the source of their motivational difficulty and select strategies accordingly. Developing students' conditional knowledge about when and why specific MSRs are appropriate (Engelschalk et al., 2016) may enhance the effectiveness and transferability of MSR.

Finally, the results raise the possibility that MSR operates only under conditions of perceived controllability. When success expectancy is low, students appeared to shift from regulation aimed at goal attainment toward strategies protecting the self from anticipated failure. Future research might investigate whether low success expectancy constitutes a boundary condition of MSR and explore instructional supports that may restore perceived control and re-enable adaptive MSR. Overall, understanding when and why students deploy particular SRL strategies can inform the design of more targeted and context-sensitive interventions that promote sustained, meaningful academic engagement

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