Chapter 9
Personal Self-regulation, Self-regulated Learning and Coping Strategies, in University Context with Stress

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Abstract Personal self-regulation is an important variable in education and research, but self-regulated learning is the construct seen most often in the educational context. Existing studies do not seek to establish relationships between personal self-regulation and other educational variables. We define conceptual characteristics and relationships of personal self-regulation (personal presage variable), self-regulated learning (meta-cognitive, process variable) and coping strategies (meta-motivational, meta-affective process variable), establishing the importance of these variables in future meta-cognition research. These relationships have been established conceptually and empirically within the 3P and DEDEPRO Models, and are confirmed in recent research: namely, the importance of personal self-regulation in determining the degree of cognitive self-regulation during the process of university learning with stress; the relationship between personal self-regulation and the type and quantity of coping strategies,

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and the relationship between self-regulated learning and coping. We conclude by discussing our experience with an online self-help system designed for university students.

Keywords 3P model · DEDEPRO model · Personal self-regulation · Self-regulated learning · Coping strategies

Abbreviations

ANOVA	Analysis of variance
BAC	Blood alcohol content
CAR	Cuestionario de autorregulacion personal
CFI	Comparative fit index
DEDEPRO	Design, development, product
ICT	Information and communication technologies
IFI	Incremental fit index
MANOVA	Multivariate analysis of variance
NFI	Normed fit index
RFI	Relative fit index
RMSEA	Root mean square error of approximation
SEM	Structural equation modeling
SRL	Self-regulated learning
SRQ	Self regulation questionnaire
TLI	Tucker Lewis index
3P	Presage, process, product

9.1 Introduction

As a psychological variable inherent to the competencies of an individual's personal development, personal self-regulation is presently the object of much interest in education and research. However, there is still a scarcity of studies that seek to establish relationships between personal self-regulation and other educational variables. The construct of self-regulation is found in educational contexts, but normally in reference to self-regulated learning [1–4] which is the name given to applying general self-regulation (or the self-regulation used by persons in their daily life) to the specific conditions of learning situations.

Self-regulation has been used with different shades of meaning in different contexts. In the field of health or substance abuse, and in educational contexts that deal with regulating the teaching-learning process, the concept of "personal self-regulation" has been used [5]. The present chapter has four aims:

(1) To delimit the conceptual characteristics of three different constructs, each with theoretical potential: personal self-regulation, self-regulated learning and coping strategies. (2) To show the importance of these variables in future research in meta-cognition, since they refer to different general aspects of self-regulation, of meta-cognition and of specific meta-motivation while learning (self-regulated learning) and to meta-affective control in situations of academic stress (coping strategies). (3) To demonstrate the relationships between these variables, as a research hypothesis based on prior evidence and empirical dates. (4) To illustrate intervention strategies for improving self-regulation and coping in university students.

9.2 The Process of Teaching-Learning as a Source of Stress

In Higher Education, teaching and learning processes form part of a single binomial for the purpose of preparing university students and ensuring their success. Currently, higher education is undergoing changes due to the need for quality education, with a view to increased employment.

This new system is based on teaching for competencies, meaning new demands for both students and teachers, and restructuring the teaching-learning process itself [6–9]. It becomes essential for students to have an active role in constructing their own learning, while the teacher becomes responsible for advising and assisting students throughout the process [10]. This context of competency-based learning means greater formative knowledge requirements, whether conceptual (knowing), procedural (knowing how), or attitudinal (wanting to do). So it is that, within this new scenario, students have a bigger workload, they must be more responsible and they must be consistently more independent in their learning process. These changes affect how they ought to approach the educational situation, taking into account affective-motivational variables, cognitive variables and strategic variables alike. This new scenario can become a stressful context for students, due to its novelty and to the demands of competency-based learning [11–13].

It is within this teaching-learning context that we study the different variables that make up the present study, working from two different heuristics: Biggs' 3P Model (Presage, Process and Product) [14] and the DEDEPRO Model [10, 15]. The combination of these two models offers a framework for analyzing teaching-learning situations and for a better understanding of the structure of existing research and the variables that are being studied. Another reason for adopting both models is their complementary nature. Recently, relationships between personal self-regulation and other educational variables have been established conceptually and empirically in the framework of the 3P Model [14] and the DEDEPRO Model [10, 16] see Fig. 9.1.

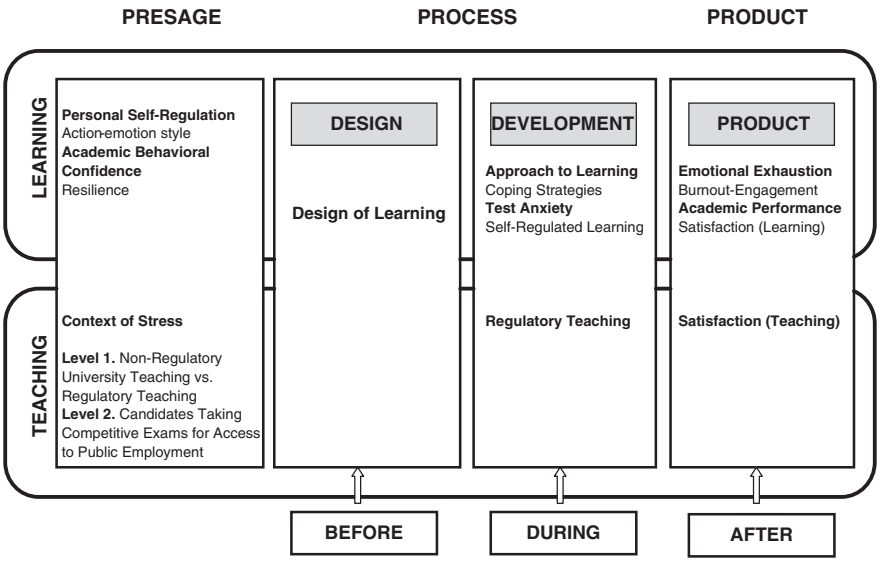

Fig. 9.1 Relationships between the variables studied [65]

9.3 Personal Self-regulation as a Student Meta-Cognitive and Meta Motivational Presage Variable

Personal self-regulation refers to the capacity or ability to control our own thoughts, emotions and actions. Through self-regulation we are able to consciously control the amount that we eat, whether to act on an impulse, our task execution, obsessive thoughts, and even the extent that we allow ourselves to listen to our own emotions.

We can therefore affirm that personal self-regulation is a vital process that allows people to behave adequately, carry out tasks properly, and abstain from activities that may be harmful to their own well-being. Self-regulation is used in a number of processes including the regulation of emotions, thoughts and actions for physical or behavioral control or restraint [17].

Different theoretical models have outlined the characteristics of this psychological construct. From a sequential approach, Kanfer [18] proposed a model within the so-called open-loop conception [19].

Self-regulation is conceived as a self-correcting procedure when faced with discrepancies, indications of imminent danger, or conflictive motivational states that activate the system of observation. The present study adopts this conception. Miller and Brown [20] modify postulates of the Kanfer [18] model, providing a better explanation for changes in addictions. Within Miller and Brown's

theoretical model for addictive behaviors [20], it is assumed that self-regulation is developed through seven successive processes:

1. Informational input (self-observation) is the first process that occurs in self-regulation, where persons obtain information about their own behavior, especially about a potentially problematic behavior. In this process, persons increase their understanding of the nature and impact of the behavior to be changed.
2. In Self-evaluation, one looks for consistency between expected performance and actual performance, and this includes becoming aware of the negative consequences of a behavior. In other words, this process is produced when a person becomes aware that a behavior may be problematic. The observed behavior is compared to some personal criterion, which may be: (1) internal, where the actual behavior is compared to the ideal; or (2) external, comparing the behavior to social norms. If one discovers that the behavior does not meet a certain standard or norm, a negative feeling may result. When these reactions (whether cognitive, affective or behavioral) are sufficiently strong, they may lead us to the next process.
3. Instigation to change is triggered by perceptions of discrepancy and dissatisfaction in the above evaluation. According to this model, this impetus from discrepancies is essential for advancement to further stages of self-regulation [21].
4. Searching for options to reduce discrepancies that have been detected above.
5. Formulating a plan where one sets down a schedule, activities to be pursued, places and any other aspects to be considered in the attainment of one's goals.
6. Implementing the plan, the stage where one executes all that was planned in the prior phase.
7. The final phase is addressed through a *comprehensive assessment*, addressing both the effectiveness of one's planning and the attainment of goals.

If there is a deficit in any of these self-regulation processes, one's behavior regulation will suffer. Within this theoretical framework, Brown [21] defines self-regulation as a person's ability to "plan, monitor and direct his or her behavior in changing situations" (p. 62). In essence, this model adopts the self-regulation postulates of Zimmerman [22], by defining moments of planning, control and thoughtful evaluation of one's action.

Hoyle [23] also speaks of these discrepancies and of the actions that we carry out in order to obtain our objectives and what we desire. He calls these actions self-regulation, actions that are natural and often are automatic responses of a healthy person in order to cope with the day-to-day discrepancies that are found between one's expectations or desires and one's reality. This self-regulation takes the qualifier "personal" in order to differentiate it from "academic", and has been studied in both adolescents [5, 24] and university students [25].

Personal self-regulation is a construct that has been used to a greater extent in the field of health [21, 26, 27]. However, after Zimmerman [22] showed the existence of processes that are common to different domains, experts have begun to show interest in analyzing the self-regulating components that are common to different spheres of life, such as education and work.

Brown et al. [28] constructed the Self-Regulation Questionnaire (SRQ) to measure self-regulation based on their theoretical model. Later, after performing further analyses, they developed an abbreviated version, the Short Self-Regulation Questionaire (SSRQ), which was validated in a Spanish sample by Pichardo et al. [29].

The data show good fit to the structure of seventeen items grouped under four factors (goal setting-planning, perseverance, decision making and learning from mistakes). These factors are adopted in the present chapter and are seen in Fig. 9.2, which establishes the moments at which each phase takes place.

This instrument has been used mainly in connection with substance abuse, and has been submitted to an examination of its psychometric characteristics on several occasions [30, 31]. Its use has also been extended beyond substance abuse to address aspects such as psychological well-being, disposition to happiness [32], depression symptoms [33] and career adaptability [34], and is in demand in other areas such as education [5]. In 2005, a monograph of *Applied Psychology: An International Review* (vol. 54, no 2) [35] presents different studies that inquired into the similarities and differences of self-regulation as used in several domains of psychology, such as education and health. This monograph represents an advance in the study of self-regulation in the main areas of applied psychology: work and organizations, health and education [35]. Karoly et al. [36] reviewed the papers published in this monograph and sought to establish the similarities and differences in self-regulation activities: academic, health-related and work-related.

One of their conclusions [36] states that there is a "meta-theoretical convergence" among the areas of psychology. They identified differences and similarities in aspects pertaining to conceptions, methodologies, assessment and intervention. Among the similarities, they found components that were common to all the areas, such as "goal selection, goal setting, feedback sensitivity, discrepancy (error) monitoring, self-evaluative judgment, self-corrective instrumental action, and the emergence of self-efficacy beliefs" [36].

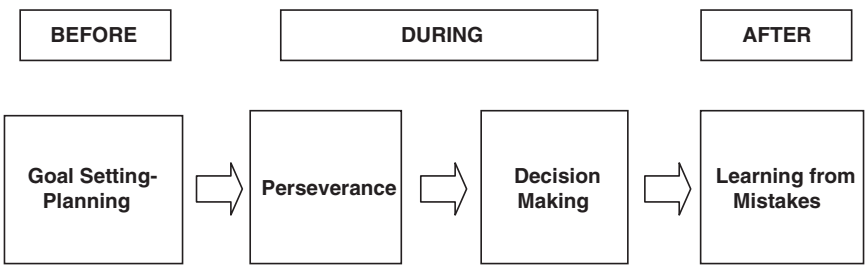

Fig. 9.2 Factors of personal self-regulation [16, p. 24]

9.3.1 Prior Evidence on Personal Self-regulation

Personal self-regulation, as a psychological variable that is closely tied to subjects' personal development competencies, has attracted interest in the sphere of educational psychology. Prior studies have shown that self-regulation has a significant role in health as well as in success, whether academic or work-related [36, 37]. We can think of the process of self-regulation as having a personal, behavioral and contextual nature [4, 19] adding goals as a key factor [38, 39].

Taking personal regulation as a *presage variable* in the sphere of educational psychology, de la Fuente and Cardelle-Elawar [40] define it as a student variable "that determines the level of effort that students will sustain in the process of active learning for the completion of a given task". It is widely recognized as the means by which students transform their mental skills into problem solving survival skills [40].

As we have stated earlier, there are many studies from the sphere of healthcare that incorporate personal self-regulation as a study variable. Within this broad field, addictions have been most often related to this variable, since they represent a highly important topic to today's society.

From these studies, we are able to affirm that personal self-regulation plays a very important role in substance abuse or abstinence [21, 26, 27]. Muraven et al. [26] discovered greater blood alcohol content (BAC) in persons with less self-regulation, and a lower BAC in persons with higher self-regulation. Muraven et al. [27] examined whether there was a relationship between alcohol consumption and distress over time in two samples of social drinkers.

They found that less self-regulation in alcohol use implied a greater alcohol intake and greater feelings of distress. Tangney et al. [41] found that higher self-regulation scores correlated with less alcohol abuse, a higher grade point average, better psychological and emotional adjustment as well as optimal responses. Ferrari et al. [42] revealed that self-regulation scores were positively related to the length of abstinence. As self-regulation increased, so did the length of abstinence. Their study examined the relations between changes in self-regulation and self-efficacy as predictors of abstaining from substances.

They found that changes in self-regulation and in self-efficacy were significantly predictive of the probability of abstinence. Furthermore, changes in self-regulation and self-efficacy were largely independent. There are few studies in the field of educational psychology that have incorporated the presage variable of personal self-regulation. However, we find a few studies that confirm its importance in the educational context, including studies from de la Fuente et al. [5], where they seek to establish the relations between personal self-regulation and perception of maladaptive school behaviors in secondary students; and from de la Fuente and Cardelle-Elawar [40], who establish the relationships between self-regulation and coping strategies in university students.

In the former study [5], a total of 888 students from compulsory secondary education participated. The questionnaire used to assess personal self-regulation

was the *Self Regulation Questionnaire*, SRQ [28], in its Spanish version, *CAR* [43]. The study showed that levels of total personal self-regulation modulate adolescents' perception of the school's social climate. Results from inferential analyses (ANOVAs) showed that the degree of personal self-regulation is interdependent with the perception of maladaptive or interpersonal problems at school. Specifically, low and high levels of total self-regulation, respectively, were accompanied by the perceived greater or lesser occurrence of maladjusted behaviors in the environment. We can thereby affirm that high self-regulation capacity is beneficial for personal and professional development, especially in preventing health-risk behaviors in adolescents, such as tobacco and alcohol use [40].

A total of 77 students from the University of Almería (Spain) participated in the second study [40]. Results revealed a statistically significant relationship between the study variables of personal self-regulation and coping strategies.

In order to assess personal self-regulation, the Spanish version of the *Self-Regulation Questionnaire* was used [28], and the *Coping with Stress Questionnaire* [44–46] was used to measure coping strategies. The results indicate that different levels of personal self-regulation determine the types of coping strategies. During a stressful situation, students with high levels of personal self-regulation manifest problem-focused coping strategies, while students with low levels of personal self-regulation have a more emotion-focused coping style.

9.4 Self-regulated Learning as a Meta-Cognitive and Meta-Motivational Process Variable of Students

The concept of self-regulated learning is emerging more from day to day, due to its great importance in the teaching-learning process. Interest in this construct began to appear in the mid-1980s, in answer to a big question: "how can students become the masters of their own learning process?" When we analyze this variable, we must not overlook its mediating role between students' mental ability and the acquisition of academic skills, such as reading or mastery of mathematics. Specifically, this construct refers to a self-directing process in the students, transforming their mental ability into academic skills.

Self-regulation is thus considered a proactive activity where the student takes the lead in helping himself, as well as developing learning strategies. For the definition of this variable, we must bear in mind the active role of students in the learning process, the feedback given to them during this process, and the role of motivation [47].

Researchers who study this variable suggest that students self-regulate when they take an active role, at the metacognitive, motivational and behavioral levels, in their teaching-learning process [48]. All the definitions that are given to self-regulated learning include these three properties, which allow students to be aware of their own learning process and of the importance of improving their academic performance. But these are not the only components in the definition of

this construct, we also find what are known as feedback loops during learning [39, 48–50].

This refers to a cyclical process by which students direct the effectiveness of their learning methods or strategies to respond to feedback, with non-visible changes in self-perception as well as visible changes in behavior. The concept of self-regulated learning is a description of how and why students choose to use a self-regulated process in particular, a strategy or a response.

The vast majority of researchers are in agreement that motivation has a role in prompting these results. Many authors have shown interest in studying this variable [2, 7, 9, 51–56] in different educational contexts, mainly: Secondary Education [3] and University [9, 52, 56–59].

These studies have taken into account different variables such as: performance and academic success [9]; implementation of training programs in self-regulated learning [52]; motivation [60]; regulatory teaching [61]; attribution styles [62]; critical thinking [63]; acquisition of self-regulation competencies [58]; effects of self-assessment scripts in self-regulation [64]; action control and dispositional hope [56]; metacognitive knowledge [57]; and learning approaches [65].

Studies from Spain on self-regulated learning in higher education came later than for other stages of education, finally appearing at the end of the last century. The Spanish studies are characterized by use of theoretical models and methodologies created in other countries and originating from the sociocognitive perspective. A very important aspect when studying self-regulated learning is to know and identify the differences between competent/expert learners and beginners. After an exhaustive review of the different publications, Torrano and González [4] summarized six characteristics that distinguish self-regulating students from others (Fig. 9.3).

Specifically, the authors identify self-regulating learners as students who use learning strategies, have personal initiative, and are aware that academic success depends mainly on their involvement, on their engagement in the competencies exhibited, and on their perseverance on task [19, 50, 66, 67]. Research studies call attention to a gap between the self-regulation observed in university students and what is actually required in Higher Education [68]. However, Cabanach et al. [69] obtained a greater percentage for students that were high in self-regulated learning; they explain these results based on the composition of the higher self-regulation group, "almost half of them are enrolled in 3rd, 4th or 5th year" of their degree program [69]. It should also be noted that the groups were established without attention to the students' academic performance. It is possible that including this variable would further limit the conditions for belonging to the high self-regulation group and would ensure more real percentages.

Several researchers have taken action to address the need for improved self-regulated learning and for regulation in teaching in Higher Education. de la Fuente et al. used the DEDEPRO model to build two online tools for this purpose. Effects from an intervention with a sample of 728 students showed significant improvement in perceptions of the teaching-learning process, in components of both self-regulated learning and of regulation of teaching.

1) They know how to plan, monitor and direct their mental processes toward achieving personal goals (*metacognition*).
2) They know and can use a number of *cognitive strategies* (repetition, organization and elaboration) that help them attend to, transform, organize, elaborate and recover the information.
3) They show a set of *motivational beliefs* and *adaptive emotions,* such as a high sense of academic self-efficacy, the adoption of learning goals, development of positive emotions toward the tasks (e.g., joy, satisfaction, enthusiasm), as well as the ability to control and modify them, adjusting them to task requirements and the specific learning situations.
4) They *plan and monitor* the time and effort they are going to use on their tasks, and know how to create and structure favorable learning environments, such as finding a suitable place to study and seeking academic help from teachers and classmates when they have difficulties.
5) If the context allows, they show greater attempts to *participate in the control and regulation* of academic tasks, classroom climate and structure (e.g., how they will be evaluated, task requirements, the design of class assignments, organization of work groups).
6) They are able to implement a number of *volitional strategies,* oriented toward avoiding external and internal distractions, in order to maintain their concentration, effort and motivation while carrying out academic tasks.

Fig. 9.3 Characteristics of expert self-regulators [4, p. 3]

The study of learning as an active process of the learner has challenged traditional educational practices. Different theoretical perspectives and models have been investigating this emerging type of learning for decades, giving it different names: autonomous learning, self-directed learning, independent learning or self-learning. During these decades, educational psychologists have put emphasis on both the cognitive sphere (cognitive processes and strategies and metacognitive mechanisms) and the affective-motivational sphere of learners. Research and educational practices have tried to get closer to self-regulated learning and develop ways to encourage it, and so respond to one of the basic pillars of education: learning to learn [69].

Self-regulated learning is very much connected with motivation. These two constructs can be confused, but we find differences between the two. Namely, students may be motivated even when they are not able to make a personal choice, or because they perceive the need for something, or, they may even be motivated implicitly or unconsciously.

However, self-regulation requires a certain degree of choice or intentional selection of strategies or behaviors, which are planned in order to help achieve a goal. Motivational theories focus on how motivation may increase or decrease,

as a function of personal and contextual factors, but they seldom look at how to intentionally monitor or regulate one's own motivation. By contrast, self-regulation models often deal with aspects related to how the individual may control his or her motivation, cognition and behavior [70]. Zimmerman [48] takes into account the relationship between motivation and self-regulation, defining self-regulated learning as the process by which students activate and sustain cognitions, behaviors and effects that are systematically oriented toward achievement of goals.

9.4.1 Dimensions of Self-regulation Learning

Zimmerman [22] developed a conceptual framework to address what self-regulation consists of, proposing six dimensions. Each dimension of self-regulated learning requires an action (task conditions) that will result in certain attributes and processes that favor or do not favor self-regulation.

This framework can be characterized according to six key questions, along with the corresponding self-regulation processes. An essential element of self-regulation is that students have some possible choice at least in some aspect or perhaps in more than one. This means that, inasmuch as not all aspects of the task are externally controlled, we may speak of self-regulation. When everything is controlled, it can be said that the behavior is externally controlled, or regulated by others. This type of situation occurs when teachers leave no margin for students in considering the why, how, when, what, where and with whom to complete the task.

Possibilities for self-regulation vary from low to high, depending on how many choices the learner has. For this reason, it is preferable to speak of self-regulation in terms of degree rather than in absolute terms (i.e., that one self-regulates or does not self-regulate).

9.4.2 Self-regulated Learning as a Socio-Cognitive Process

Sociocognitive theory considers that self-regulation contains three processes: self-observation, self-assessment and self-reactions [18, 19, 22]. *Self-observation* (monitoring) refers to deliberate attention given to aspects of one's own behavior. It is usually accompanied by a record of the frequency, intensity or quality of the behavior. Self-observation is essential for determining progress on an activity. Without it, selective memory of successes and failures would be at risk, because our beliefs about the results of an activity do not faithfully reflect what was actually obtained. The personal log can provide very good results in students with difficulties studying, since a log of their activity will tell them whether they actually take advantage of the time or if they use more than half the study time in non-academic tasks. It can also reinforce motivation, because students can realize

what they are doing, and can react to this knowledge by modifying their behavior. However, the latter also requires self-assessment and self-reaction. We will therefore specify what these other two processes consist of.

First, when we speak of *self-assessment,* we refer to a comparison of our actual level of execution with the goal that we wish to reach. It depends on the type of self-assessment standards used, on the properties of the goal, on the importance of goal achievement and on attributions. The goal properties (specificity, proximity and difficulty) affect self-regulation and motivation. These properties increase the progress comparisons, so that students may maintain or modify their self-regulating strategies depending on their progress assessment. Self-assessments may also reflect the importance of achieving the goal. When persons are unconcerned with how they carry out the tasks, they may not assess its execution or increase their effort to try and improve [19]. People evaluate the progress of their learning when they are pursuing goals that they value.

Finally, *self-reaction* is defined as the behavioral, cognitive and affective response to the self-assessments. These self-corrections have the ability to motivate and to increase one's self-efficacy, stemming from the belief that one is making acceptable progress and from the anticipated satisfaction of achieving one's goal.

9.4.3 Cyclical Nature of Self-regulation Learning

Sociocognitive theory emphasizes the interaction of personal, behavioral and environmental factors [19, 50]. These factors normally change during learning and must be monitored, hence self-regulation is considered to be a cyclical process. Such monitoring leads to changes in the student's strategies, cognition, affect and behavior. This cyclical nature is stated in Zimmerman's three-phase self-regulation model [22]:

1. *Forethought phase*: A prior phase that precedes execution and refers to processes that prepare the scenario for action, giving thought to processes that occur during learning and that affect attention and action. During this initial phase, there are two different areas: task analysis processes and self-motivation beliefs. Task analysis involves a learner's efforts to break down a learning task into its key components. Students' task analyses influence their goal setting and planning.
2. *Performance control phase*: Two major classes of self-regulation processes are postulated during this phase: self-control and self-observation. The first of these processes refers to the actual use of different strategies to guide learning, such as task, cognitive, and behavioral strategies. The second process refers to specific methods to track one's performance; metacognitive monitoring deals with informal mental tracking of one's performance phase processes

and outcomes, whereas self-recording indicates creating formal records of the learning process and/or outcomes.

3. *Self-reflection phase*: This phase takes place after execution; students respond to the efforts they have made, where greater effort compensates for fewer self-regulation processes throughout the different phases. Students come to learning situations with different goals and different levels of self-efficacy for attaining them. While monitoring execution, they implement learning strategies, which then affect motivation and learning. Two types of processes occur during the self-reflection phase: self-judgments and self-reaction. Self-judgments refer to self-evaluations of the effectiveness of one's learning performance and causal attributions regarding one's outcomes. Learners' self-judgments are linked to two key forms of self-reactions: self-satisfaction and adaptive inferences. Self-satisfaction reactions refer to perceptions of satisfaction or dissatisfaction, and associated affect, with regard to one's performance. These emotions can range from elation to depression. A closely associated type of self-reaction involves adaptive or defensive inferences, which refer to conclusions about whether and how a learner needs to alter his or her approach during subsequent efforts to learn. These self-reactions influence forethought processes for further solution efforts, thus completing the self-regulatory cycle [47].

The cognitive, metacognitive, and motivational processes that underlie each of the phases are depicted in Fig. 9.4. This process makes clear that in order to carry on effective self-regulation, there must be goals and motivation [18, 19, 48, 70]. Students must regulate both their actions and their underlying cognitions with respect to their achievement, behavior, intentions and affect (including responses to stress, one focus of the present investigation). In order to attain this effective self-regulation, students must develop a sense of self-efficacy for self-regulating their learning and for properly executing the task. Processes of self-evaluating one's capacities and progress in acquiring skills are crucially important, for this reason students should self-evaluate regularly. In this way they draw attention to their improvements in execution, increasing their self-efficacy and sustaining self-regulation by promoting the learning of skills that are involved in the task [9].

Another model to keep in mind when studying self-regulated learning is the Pintrich model [70]. In this model, self-regulated learning is conceived as an active, constructive process, where learners set goals that guide their learning, direct, regulate and control their cognition, motivation and behavior—as well as contextual characteristics—toward the attainment of their goals.

The Pintrich [70] and Zimmerman [50] models have similarities: both are social cognitive models of motivation and cognition, for the purpose of constructing an integrated model of academic learning. One difference with respect to the Zimmerman [50] model is Pintrich's [70] characterization of the phases as non-sequential and recurring; the different phases, processes and components may be simultaneous and interactive. This model has become a powerful heuristic for conceptualizing and understanding self-regulated learning [10].

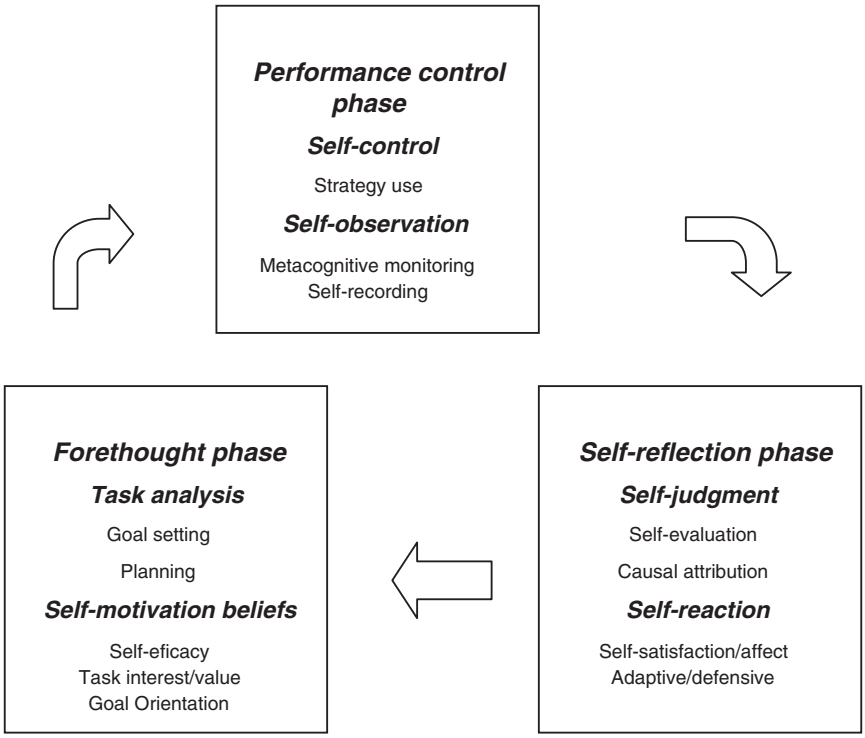

Fig. 9.4 Phases and processes of self-regulation [47, p. 402]

9.5 Strategies for Coping with Stress as a Meta-Affective Variable of Learning and Buffer of Academic Stress

We find ourselves at a very complex time socially, when the word stress plays a leading role in everyday life, and has become a familiar concept. It is an increasingly important phenomenon in modern society, and practically all population groups are experiencing increased stress. When a person's capacities do not match the demands placed on him or her, there is dissatisfaction and feelings of stress.

Despite being one of the most common and familiar life experiences, the term itself is difficult to precisely define. Many authors try to do so, Long [71] and Lazarus and Folkman [68] are among them. Long [71] defines it as the relationship between a person and his/her environment, where the environment is looked on as something that exceeds one's capacities and resources and puts one's well-being in danger. Stress is considered to be a physical and psychological reaction to a perceived or actual demand for change. The demand itself is called a stressor and the steps people take to resolve or avoid the stressor are referred to as coping. Lazarus and Folkman [68] suggest that psychological stress is "the result of a

particular relationship between the individual and the environment, where the latter is assessed as threatening or surpassing one's resources, and endangering one's well-being" (p. 19). They focus on the relationship between the person and his or her environment, and an appraisal that the latter is too demanding, surpasses one's resources and is harmful to one's well-being. Therefore, it is the person's appraisal of the situation that determines a perception of stress. It must be kept in mind that individual differences play a very important role in stress processes. Whether or not the stress response is triggered depends primarily on aspects of perception. Lazarus and Folkman [68] determined that the physiological activation is triggered by one's assessment of the situation (primary assessment) and of one's ability to address it (secondary assessment). This will be dealt with later under Lazarus and Folkman's Transactional Model [68].

Human beings may experience stress from three main sources: the surroundings (noise, crowds, rigid schedules, etc.); one's own body or physiological urges, often reacting to threats in the environment that are in themselves stressful, producing observable physical changes (dilated pupils, heightened sight and hearing, tensed muscles, blood pumping more quickly to the brain in order to increase oxygen and favor mental processes, increased cardiac and respiratory frequency, etc.); and/or one's own thoughts, since the way that we interpret and label our experiences and the way we see the future can provoke stress.

We are aware of the importance of how we face stressful situations over the course of our lifetime. For this reason, *coping strategies* have been included as a process variable in the research. We hope to come to a better understanding of this concept. For this purpose, we define the concept of coping and we inquire into coping strategies. For delimitation of concepts, we mention recent researchers and the most important models in the field: *Transactional theory,* by Lazarus and Folkman [68] and the *Multiaxial Model of Coping*, proposed and studied by Dunahoo et al. [66]. We describe two of the most frequently used instruments for assessing coping strategies: the *Coping Strategies Scale* [44] and the *Coping Estimation Inventory* [72].

9.5.1 Concept of Coping

When we speak about coping we refer to cognitive and behavioral efforts to manage stress. However, most healthcare psychologists who study stress and coping would define coping broadly to include thought and behaviors that occur in response to stressful experience, whether the person is handling the situation well or poorly [73].

The concept of stress has been studied at length, and there are many authors who examine and seek to define it. These efforts have produced a variety of definitions that we present below. Schuler [74] defines coping as a "process of analysis and evaluation to decide how to protect oneself again adverse effects of any stressor and its associated negative outcomes yet to take advantage of its

positive outcomes" (p. 351). Holroyd and Lazarus [75] define coping as "cognitive and behavioral efforts to master, reduce, or tolerate the internal and/or external demands that are created by the stressful transaction" (p. 843). Lazarus [76] defines coping as "cognitive and behavioral efforts to manage specific external or internal demands (and conflict between them) that are appraised as taxing or exceeding the resources of a person". Coping is regarded as a dynamic process that changes over time in response to objective demands and subjective appraisals of the situation (p. 648).

There are a variety of coping strategies that have been proposed by researchers in order to understand the discrepancies in how individuals act when dealing with stressful situations. We proceed now to discuss different coping strategies and the theories that study them [68, 77].

9.5.2 Coping Strategies

There are diverse definitions of *strategies for coping with stress,* but in general terms, we can say that this concept refers to behavioral and cognitive efforts that a person makes in order to deal with stress. In other words, these are strategies that one turns to in order to deal with either the external or internal demands that generate stress, as well as with the psychology discomfort that usually accompanies them [46].

Coping strategies have been studied in different age ranges: children [78]; adolescents [1, 79–81]; youth-adults [82]; and during the aging process [83]. They have mainly been investigated in healthcare contexts, since the way that the individual faces stress can act as an important mediator between stressful situations and health [84, 85]. For this reason, we find most of the studies in the area of Clinical Psychology. Different studies have established a relationship between coping strategies and other variables such as: anxiety [85, 86]; control of emotions or emotional intelligence [87]; sensitivity to pain [63]; professional stress [88]; chronic illness [89]; aging [83]; psychological well-being in students [82], and so on.

Coping strategies in the context of Educational Psychology are more related to academic stress and specifically to one of its main stressors, tests [90].

We consider it of vital importance to inquire into coping strategies, since all university students must face the external stressor of tests, as well as others. We must also keep in mind that university students are a very specific population, as are the ways that they deal with stress.

Hence the importance of introducing this variable in the present research study, as mentioned above. Fewer studies have been carried out in this field, but relationships have been found between coping strategies and academic performance [91] and student gender [92]. In addition, students' levels of stress have been studied in conjunction with the coping strategies they use [93].

Cohen et al. [91], in their study on academic performance and coping strategies, found that greater use of problem-focused and avoidance strategies predict better performance, confirming results from other previous studies [94, 95].

de la Fuente et al. [92] used a sample of 273 students from 2nd and 4th year Psychology at the University of Almería, in order to study the relationship between gender and coping strategies. Strategies were measured using the Spanish version of the Coping with Stress Questionnaire by Lazarus and Folkman [44, 46, 68] and yielded no general gender differences, although the girls made more use of problem-focused coping strategies than the boys.

These results are in the same direction as those of previous studies [82]. Ticona et al. [93] studied the level of stress and coping strategies present in nursing students. A total of 234 students from first to fourth year participated in the study, which used the Coping Estimation Inventory (COPE) by Carver, Scheier and Weintraub [72]. In this case, males were found to have a greater tendency toward managing emotions, and a lesser tendency toward managing the problem. First-year students presented the highest stress levels.

As we can observe, not many studies have been carried out in the Educational Psychology context, there are many unanswered questions, and the present study seeks to address a few of these.

After this empirical review, we now approach the distinction between *coping styles* and *coping responses* [94]. The former refers to the predisposition of one's personality to use different coping strategies depending on the situational context and the moment in time, in other words, it emphasizes stable ways of coping in different situations. The latter is understood as the particular thoughts and behaviors that are realized in response to stressful situations, and may change over time.

Fernández-Abascal [95] describes these responses as concrete processes that are used in each context and can be highly changeable depending on the triggering conditions. There is evidence of different patterns or styles of coping, but it is also evident that the specific situational factors play a role of utmost importance in coping reactions [94]. Based on the transactional model [68], there has been substantial consensus in classifying a large variety of possible coping strategies [96], [92] using the following categories:

1. Problem-focused strategies, directed toward solving the problem in order to eliminate stress.
2. Emotion-focused strategies, aimed at regulating, reducing or eliminating the emotional stress relative to a stressful situation.
3. And in some cases, we can find a category of *avoidance-focused coping strategies*. This refers to the use of evasive strategies that seek to avoid the stressful situation. These strategies are often included under the emotion-focused strategies [92, 97].

9.5.3 Transactional Model

Lazarus and Folkman [68] developed the *Transactional Model,* or *cognitive-mediational approach* [46], which focuses its attention on the concept of appraisal in order to address stress and coping.

Cognitive appraisal is considered to be a universal mental process, by which the significance of what is occurring is being constantly assessed and related to one's well-being and to the available resources for responding to the situation. Therefore, it is not the stressful agent itself that defines stress, but a particular person's perception makes of a stressful situation.

Lazarus and Folkman [68] distinguish three types of appraisal: *primary*, in which the person assesses the meaning of what is taking place, and the result is what determines whether the situation is considered unimportant or stressful; *secondary*, referring to the assessment of one's own resources for dealing with the situation, implying a cognitive search for available coping options and a prognosis of whether each option will be successful or not in dealing with the stressor, and; *reappraisal,* involving feedback processes that are developed during the person's interaction with external or internal demands and bring about corrections to previous appraisals during the coping process itself, and so refers to the change made to a previous appraisal, based on new information received from the environment.

This model allows us to conceptually delimit coping to comprise constantly changing cognitive and behavioral processes that are developed in order to manage specific external and/or internal demands that are perceived as excessive or surpassing the individual's resources.

It is characterized by a set of responses that come into play in order to reduce the adverse qualities of a stressful situation, as an attempt to manage stressors. Brannon and Feist [98] underscores three aspects to be considered with respect to coping: (1) it is a process that changes depending on whether the subject has experienced successful results when dealing with the stressful situation; (2) it is not only an automatic or physiological response, but is also learned by experience; (3) it requires an effort to manage the situation and reestablish homeostasis or adapt to the situation.

In order to define coping, three concepts are key: (1) it is not necessarily a behavior that has been completely executed; the attempt or effort to carry it out may also be considered coping; (2) the effort may not necessarily be expressed in visible behaviors, it may also be cognitions; (3) the cognitive appraisal of the situation as challenging or threatening is a prerequisite to making attempts to cope.

The Transactional Model also includes the context in its definition of coping, that is, coping is seen as a process inserted within a context. Another important contribution from this model is the idea that strategies should not be judged as adaptive or maladaptive; the question is rather, for whom and under what circumstances a particular way of coping has adaptive consequences, instead of an indiscriminate categorization of adaptive vs. maladaptive strategies.

Navarro [99] determined that coping depends on a person's internal or external capacities for facing the demands of the potentially stressful event or situation, called coping resources.

These play an important role within the coping process, because they can influence the choice of coping strategies to be used. They can be differentiated as: (1) Physical and biological: including environmental elements and a person's organic resources such as climate, diet, the house where he or she lives, immune problems, etc.; (2) Psychological or psychosocial: encompassing everything from intellectual

capacity to level of dependence or autonomy, beliefs, values and problem-solving skills; (3) Social resources: ranging from social skills to social support.

The concept of coping strategies has been studied at length in the field of mental health and psychopathology, principally in relation to stress, emotions and problem solving. In relation to stress, we can define them as a set of resources and efforts, both cognitive and behavioral, which are directed toward solving a problem, reducing or eliminating the emotional response or modifying the initial appraisal of the situation [68]. Whether one strategy or another is used will depend on the situation itself, the cognitive appraisal and perceived control, emotions and/or physiological activation.

But there is a tendency to generalize their use and this is what we call coping style, that is, characteristic, relatively stable ways that people use to face stressful situations. Lazarus and Folkman [68] consider one distinction to be extremely important: the difference between coping that is directed toward handling or altering the problem, and coping aimed at regulating the emotional response that the problem brings about.

The first is referred to as *problem-focused coping* and the second as *emotion-focused coping* [66]. In general, the former is more likely to appear when the harmful or stressful conditions are appraised as subject to change. Emotion-focused strategies are more likely to appear when the appraisal indicates that nothing can be done to modify the threatening conditions of the environment. The two types of strategies are specified and analyzed in more detail below [68]:

1. *Emotion-focused* ways of coping: The literature mentions a large number of such ways of coping, but we can divide them into two large groups: (a) Cognitive processes dedicated to decreasing the degree of emotional discomfort, including strategies such as avoidance, minimization, distancing oneself, selective attention, positive comparisons and finding positive value in negative events; (b) Cognitive strategies that are directed toward increasing the degree of emotional discomfort; some persons need to feel really bad before they can come to feel better; in order to find comfort they need to first experience intense discomfort, from which they can then move on to some kind of self-punishment. In other cases, they deliberately increase their degree of emotional discomfort in order to push themselves to action, such as when athletes challenge themselves in order to compete.
2. *Problem-focused* ways of coping: These strategies are similar to those used for solving the problem; they are directed at the definition of the problem, the search for alternative solutions, consideration of these alternatives based on cost and benefit, and the selection and application of alternative(s). An objective is also involved, an analytical process directed mainly at the environment. However, these ways of coping also include strategies internal to the person. We can therefore speak of two main groups of problem-focused strategies: those that refer to the environment and seek to modify environmental pressures, obstacles, resources, procedures, etc.; and those that refer to the subject, including strategies dedicated to motivational or cognitive changes, changing

one's level of aspirations, reducing involvement of the ego, seeking different channels for gratification, developing new behavior patterns, or learning new resources and procedures.

Different factors make up these two broad dimensions: the quantity of factors and their names have evolved over time and through the different investigations [45, 68, 76].

9.6 Initial Assessment

9.6.1 Prediction Between Personal Self-regulation, Self-regulated Learning and Coping Strategies

Based on SEM analysis, a consistent structural linear model appeared [Chi-square = 58.842, degrees of freedom = 9, $p < 0.001$], showing relationships between the factors that make up personal self-regulation (goals, perseverance, decision process, and learning errors), and self-regulated learning and coping strategies (emotion- and problem-focused strategies), as it is shown in Fig. 9.5. The indices reveal this model's adequacy (NFI = 0.965; RFI = 0.902; IFI = 0.970; TLI = 0.907; CFI = 0.970, and RMSEA = 0.06), offering evidence that goals, perseverance, and learning from mistakes are predictors of self-regulated learning (SRL), and SRL is predictive of the combined use of emotion- and problem-focused coping strategies.

9.6.2 Interdependence Between Personal Self-regulation, Self-regulated Learning and Coping Strategies: Transactional Model

MANOVAs were carried out on a sample of university students in order to establish any interdependence relationships, with the result that different levels of *personal self-regulation* (low-medium-high) were accompanied by corresponding levels

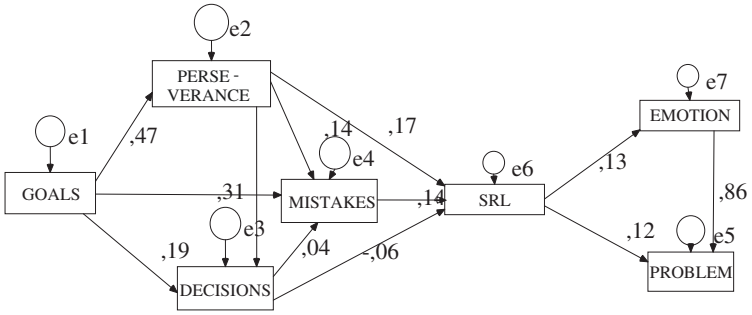

Fig. 9.5 Linear relations between components of personal regulation, self-regulated learning and coping strategies

Table 9.1 Interdependence between personal self-regulation and self-regulated learning

Self-regulated learning	Levels of personal self-regulation			Post
	1. Low	2. Medium	3. High	
	(n = 115)	(n = 179)	(n = 63)	
Planned learning	3.72 (0.48)	3.82 (0.70)	4.12 (0.55)	3 > 1, 2***
Meaningful learning	3.70 (0.64)	3.72 (0.72)	4.00 (0.62)	3 > 1, 2,*
Study techniques	3.95 (0.71)	4.05 (0.73)	4.36 (0.57)	3 > 1, 2,*

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 9.2 Interdependence between levels of personal self-regulation and coping strategies

Coping strategies	Levels of personal self-regulation			Post
	1. Low	2. Medium	3. High	
	(n = 115)	(n = 179)	(n = 63)	
Help-seeking	3.72 (0.68)	3.81 (0.70)	4.12 (0.55)	3 > 1, 2***
Reduce anxiety/avoidance	3.70 (0.64)	3.72 (0.72)	4.00 (0.62)	3 > 2,*
Emot. venting/isolation	4.36 (0.73)	4.05 (0.64)	4.05 (0.57)	1 > 3,*

of self-regulated learning $F(6,582) = 3.03$ (Pillai test), $p < 0.01$, $eta^2 = 0.30$, see Table 9.1. Similarly, levels of personal self-regulation showed a significant main effect on some coping strategies, $F(6,582) = 3.03$ (Pillai test), $p < 0.01$, $eta^2 = 0.30$, see Table 9.2.

9.7 Applications: e-Assessment and e-Intervention Based on ICTs

Based on the well-established conceptual and empirical relationship, it is possible to carry out experiences for assisting university students through self-assessment and self-improvement, with a view to promoting proper levels of personal self-regulation, self-regulated learning, and better use of strategies for coping with academic stress. With this purpose in mind, an online utility has been created for e-assessment and self-help, under the name *e-Coping: Stress Management Tool for University* [100]. University students can log on and carry out a self-assessment of these variables through different standardized inventories. The utility provides immediate improvement feedback as a means of assisting the university students. Several examples of feedback are shown below in Tables 9.3, 9.4 and 9.5. The tables show a sequence of messages addressed to the user, followed by different kinds of feedback. These responses are given when students receive a low score on the variables discussed in this chapter.

Table 9.3 Feedback for students who are low in personal self-regulation [100]

Your score indicates that you should give some thought to this personal characteristic. Be aware you can train yourself and improve in this area. Recent research suggests that this personal characteristic contributes decisively to your accomplishments, whether personal, social or academic. Self-regulation is not a single behavior, but a combination of different groups of behaviors. We suggest that you analyze each of the aspects that make up self-regulation. This way you can improve on those specific aspects where you are most lacking
Feedback: Planning of goals. If you are low in planning, you should set out seriously to improve this aspect in your academic and personal life. Recent research has shown the importance of planning tasks well, since this is a predictor of optimal task execution afterward. This dimension refers to the ability to analyze the task you are about to do, and plan specific objectives for it, before performing the task itself
You can improve your planning by taking different steps:
• Analyze and break up the task into parts, defining their sequence
• List your reasons or motivations for doing it well
• Assign a number to represent how much you value this task, then decide how you can increase that value
• Establish specific objectives (goals) and the time needed for their execution
Feedback: Perseverance. If you are low in perseverance, it will be worth your while to work on this area and improve. Perseverance is defined as the ability to control yourself with willpower and keep up your motivation when executing a task. This is the skill that helps us to not give up on tasks when they require effort and sacrifice. Research has shown that perseverance is an essential characteristic of self-regulated people. It involves keeping up one's motivation and effort in order to carry out the task at hand. The following activities can help you to improve in perseverance:
• Keep up your motivation by cheering yourself on: "it's worth it to do a good job"
• While working, reinforce yourself by giving yourself positive messages: "very good!!!"
• Whenever you meet the timeframes or objectives you have set for yourself
• Don't give up on the task, even if it is difficult or complicated. Fight for your accomplishments
• Observe yourself while you work (keep a log of your behavior, if necessary)
Feedback: Decision making. If decision making is where you have a low score, resolve to improve in these behaviors. Decision making processes are fundamental while you are executing a task, in order to do a good job. These processes help you constantly evaluate and monitor your execution of a task. This way you can detect what is right, correct what is wrong, and ensure that you will meet the objectives you have set. Not making proper decisions while executing a task can mean mistakes or inadequate execution. The following activities can help you to improve:
• Observe how you go about performing the task
• Evaluate yourself and reflect on your progress: notice what you are getting right or wrong
• Make decisions about what you are doing well and what you ought to change
• Learn to give yourself instructions while you are executing a task
Feedback: Learning from mistakes. Perhaps learning from mistakes is where you have a low score. This set of behaviors refers to the ability to reflect after an experience or a completed task, to notice what you got right or wrong and learn from that. Learning from mistakes is very important and is characteristic of thoughtful persons. This skill increasing your likelihood of learning from experience and not making the same mistakes again
The following activities can help you improve this skill:
• Take pleasure in looking back over your behavior and analyzing it
• Take time each day to evaluate what you are getting right or wrong in your daily life
• After an experience, make a list of your accomplishments and mistakes
• Write up a resolution for improving your behavior in the future. Specific objectives for personal improvement are best

Table 9.4 Feedback for students who are low in self-regulated learning [100]

Your score should prompt you to reflect on *your perception of the teaching-learning process.* However, be aware that this score is specific to the teaching-learning process that you have just evaluated. It may vary according to the subject you are evaluating. This score can also be improved. Recent research suggests that academic achievement depends on contextual variables (the *teaching process*) and personal variables of how you go about learning (the *learning process*). On this questionnaire, the scores show: (1) your perception of how the teaching process is going; (2) your perception of how the learning process is going; (3) your satisfaction with the learning process; (4) your perception about having an achievement focus in learning
Perception of the teaching-learning process does not refer to a single behavior, but to a set of perceptions about the way your teacher teaches and the way you as a student are learning. Thus, this psychological construct refers to the specific way your teacher teaches this particular subject, plus how you yourself go about learning in this class subject
Perception of the teaching process refers to the extent that you feel your teacher's teaching activity is helpful and encourages proper learning of this subject. In other words, if he or she uses activities that prepare you for learning, if a specific syllabus is established and followed through, so that students can organize themselves, if the teaching method contributes toward students' self-regulation of the proposed learning activities, if the assessment system helps students identify the strong and weak points of their learning. In short, this represents your level of satisfaction with how your teacher teaches. As you can imagine, this information is important for *teachers*: if they know the overall view of their students (average ratings given by the class group, never by an individual), they can make improvements in how they teach and how students learn. In addition, your score can also help you as a *student* to become aware of your perception of your teacher. Research shows, for example, that a negative perception of the teaching produces demotivation toward learning in the student
Perception of a self-regulated learning process refers to your view of how you learn. Basically, this can help you understand how you usually go about learning, that is, whether you prepare yourself for learning, whether you use self-regulation strategies while learning and whether you use learning strategies. You can become aware of which aspects you use more and which you use less. Research has shown that a high level of self-regulation in the learning process is associated with a high level of performance, and the contrary also holds true
Satisfaction with the learning process refers to your perceived satisfaction with the way you have been learning, with the results of your learning, and with your performance in this subject. This aspect reflects your general satisfaction with how the subject is going and with your own learning behavior in that subject
Research has shown that students who receive poorer grades have less satisfaction with their learning process, and the contrary also holds true
Perception of an *achievement-focused learning process* refers to the extent that you perform learning behaviors for the exclusive purpose of achievement (grades), and not as much to learn well. This is called achievement-oriented learning. With this information you can make changes and improvements in the teaching-learning process
Feedback: Perception of the teaching process. If you have a low score in *perception of the teaching process*, this means that you are not satisfied with it. This may be due to different factors of how the teacher teaches. While this variable is not under your direct control, it can help you make suggestions to the teacher for making improvements, if he or she is open to that. However, it may also be that you have a tendency to look negatively on this type of teaching process, because of your own learning history
This negative perception may have led to a rather unsuccessful academic record in the recent past, because of the interference of stressful emotions that it causes. Perhaps you should learn to cope with this situation differently:

(continued)

Table 9.4 (continued)

• Analyze what aspects of the teaching process you notice that you perceive as negative, and the emotion that they produce (tension, nervousness, the urge to leave, anxiety, etc.)
• If the teacher gives you the opportunity, make constructive suggestions for improvement
• If you are unable to make any change in the teaching process, use self-talk to block out negative emotions
• Write down your self-instructions, put them in order and rate each one from 1 to 10, then begin to use them consistently
• Evaluate whether your level of stress has diminished. Be careful about avoidance strategies that may be harmful to you. Not all strategies are equally adequate
• If you cannot meet your objectives, seek professional help
Feedback: Perception of a self-regulated learning process. If you score low in *perception of a self-regulated learning process*, this means that you make little use of the learning behaviors you have just evaluated in yourself. These learning behaviors are important because they help you to learn well and to obtain good academic outcomes. Research has suggested that practicing self-regulated learning is essential to building a good knowledge base, being effective and properly managing the teacher's demands for learning
Therefore, you should take note that your learning process is less than adequate, and this can be a stress factor in itself. It is also likely that you have had only low to moderate levels of success in your recent learning history. It is appropriate for you to think about improving your learning process as a way to help you manage high-level learning situations, typical of university studies
The following activities can help you improve your learning process:
• Recall and analyze the learning behaviors that you use the least (activities to prepare you for learning, strategies for learning and study, self-assessment, study techniques, etc.)
• Analyze why you do not usually make good use of these behaviors. It is probably because you have not understood the importance of these types of learning behaviors
• Make a list of the learning behaviors that you are going to improve, and use self-talk to carry them out
• After trying these behaviors, put them in order and score them from 1 to 10 in how important and effective they are for you
• Check whether your stress level has diminished. For each person there are certain learning strategies that work best. Find which ones are best for you
• If you do not meet your objectives, seek professional help
Feedback: Satisfaction with the learning process. If you score low on *satisfaction with the learning process,* this means that you are not satisfied with how you are learning or with your achievement in this subject. The problem with lack of satisfaction is that it leads to demotivation in future teaching-learning processes related to the same teacher or the same subject matter. Research has suggested that being satisfied is a *positive emotion* that appears either during or after completing a task, and provides motivation for the next steps in learning. Therefore, you should be aware that this *lack of satisfaction with learning* (or lack of positive emotionality) can be a stress factor in itself. It is also likely that you have had only low to moderate levels of success in your recent learning history. It is appropriate for you to think about improving your satisfaction with the learning process, as you work to improve your manner of learning and your level of achievement, while the teacher is improving his or her manner of teaching. However, since the latter is not under your control, you should focus on satisfaction with the learning process, which is up to you

(continued)

Table 9.4 (continued)

The following activities can help you improve your learning process:
• Recall and analyze the aspects of satisfaction where you score the lowest (way of learning, meaningful learning, usefulness of what has been learned, achievements gained, enjoyment of learning, etc.)
• Analyze why you are dissatisfied with these aspects. You have probably not realized how important these aspects are for your learning process
• Make a list of the behaviors that are likely to help you improve your satisfaction with learning (way of learning, meaningful learning, usefulness of what has been learned, achievements gained, enjoyment of learning, etc.), and use self-talk to help you carry them out
• After trying these behaviors, put them in order and rate them from 1 to 10 in how important and effective they are for you
• Check whether your stress level has diminished. For each person there are certain learning strategies that work best. Find which ones are best for you
• If you do not meet your objectives, seek professional help
Feedback: Perception of an achievement focus in learning. If you are low in *perception of an achievement focus in learning*, this means that you seldom use learning behaviors aimed only at obtaining good academic outcomes (grades). Such learning behaviors, which you have just evaluated in yourself, are important in that they can trigger unproductive stress. Research has suggested that staying away from *exclusively achievement-focused learning* can help students have better *self-regulated learning*, and not be primarily worried about grades when learning. For this reason, your low score on this factor is adequate in helping you to experience less stress while learning
An appropriate response would be to try to maintain this level, while you seek to increase your self-regulated learning (D2)
This will help you enjoy the learning process, without the pressure of grades as your priority goal in learning
The following steps can help you take this approach:
• Recall and analyze in what situations you may adopt achievement-focused behaviors (thinking about grades while you are studying, evaluating yourself based on the test situation, starting off with a grade target from the beginning, etc.)
• Analyze why you adopt an achievement focus in these cases. You probably have not realized that these behaviors can produce unnecessary stress
• Make a list of the self-regulated learning behaviors that you are going to improve, and use self-talk to help you carry them out
• After trying these behaviors, put them in order and score them from 1 to 10 in how important and effective they are for you
• Check whether your stress level continues to be low. For each person there are certain learning strategies that work best. Find which ones are best for you
• If you do not meet your objectives, seek professional help

Table 9.5 Feedback for students who are low in coping strategies [100]

Your score should prompt you to reflect on how you cope with learning. Be aware that you can work on this and change. You should aim to increase certain coping behaviors. Recent research suggests that coping strategies contribute to academic achievement. Coping strategies refer to behaviors that people practice in order to manage and face stressful situations, in this case, academic stress. Coping strategies are not a single behavior, but a group of different types of behaviors. This psychological construct refers to how a person usually faces stressful situations. There are two main types of coping:
Emotion-focused coping refers to behaviors used for managing negative emotions produced by the stressful situation (anxiety, tension, irritability, etc.). This type of behavior, in turn, can take different shapes, such as *fantasy distraction, help-seeking for taking action, religious support, reducing anxiety and avoidance, preparing oneself for the worst, emotional venting and isolation* and *resignation.* These types of coping strategies help the person to minimize negative emotions; however, they do not help to solve the problem itself
Problem-focused coping is used to solve the problem that created the stress, or to minimize it if it cannot be solved. Different types of behaviors are included here: *seeking help and counsel, actions directed at the cause, self-instructions, positive reassessment and firmness, seeking support in others,* and *seeking alternative reinforcement.* Problem-focused coping helps solve the problem, but it does not help manage negative emotionality, at least not directly
Depending on the situation and the person, the two types of strategies can be used together. We suggest that you analyze the types of behaviors that you use, in order to make improvements. You can begin by working to improve the specific aspects where you are weakest
Feedback: Emotion-focused coping. If you are low in *emotion-focused coping*, be aware that you may have problems in managing negative emotions. Your low score can mean different things: (1) you make more use of problem-focused strategies; (2) you are not accustomed to managing your emotions; (3) you have little stress and do not need to manage negative emotions
This personal characteristic may have led to a rather unsuccessful academic record in the recent past, due to interference from stress-related emotions. You can improve by taking different steps:
• Analyze whether you have negative, stress-related emotions in academic situations (tension, nervousness, the urge to leave, anxiety, etc.)
• Analyze what you usually do and why you do not practice managing your emotions. It is probably because you have not realized the importance of these types of emotion-focused coping behaviors
• Make a list of emotion-focused coping strategies and use self-talk to start using them
• After trying these behaviors, put them in order and rate each one on a scale of 1–10, and begin to use them in priority
• Check whether your stress level has diminished. Be careful with emotion-focused strategies that may be harmful to your health. Not all strategies are equally adequate
• If you do not meet your objectives, seek professional help
Feedback: Problem-focused coping. If you are low in *problem-focused strategies,* you should know that remaining inactive in the face of problems does not help them be solved. It is appropriate to think about increasing your use of these types of strategies, which are adaptive and will help you manage situations that cause stress in the academic context
The following activities can help you increase your use of problem-focused strategies:
• Analyze the problems that cause stress in your academic context (work overload, excessive demands, pressures for grades, tight schedules, sustained effort, etc.)
• Analyze what you usually do to face these situations and why you do little to manage problems. It is probably because you have not realized the importance of these types of problem-focused coping behaviors
• Make a list of problem-focused coping strategies and use self-talk to start using them

(continued)

Table 9.5 (continued)

• After trying these behaviors, put them in order and rate each one on a scale of 1–10, and begin to use them in priority
• Check whether your stress level has diminished. For each person there are certain learning strategies that work best. Find which ones are best for you
• If you do not meet your objectives, seek professional help

9.8 Conclusions

Recent research has found linear associations and non-linear interdependence relationships between self-regulation (as a personal presage variable), self-regulated learning (as a meta-cognitive, process variable) and coping strategies (as a meta-motivational, meta-affective process variable) in university students experiencing academic stress [16]. However, these results should be confirmed with new studies that offer further consistency in establishing: (1) The importance of *personal self-regulation*, as an individual variable that determines the degree of *cognitive self-regulation* during the process of university learning. (2) The relationship between *personal self-regulation* and the type and quantity of *coping strategies*, where prior evidence has shown a significant positive relationship with problem-centered strategies, and a significant negative relationship with emotion-centered strategies. (3) The relationship between *self-regulated learning* and *coping strategies;* consistently with this evidence, some of the results found here show a stronger relationship with problem-centered strategies.

Zimmerman and Labuhn [47] have proposed the following directions for future work with regard to self-regulated learning. First, a clear difference should be established between self-regulated learning and self-regulation in performance, especially in adverse situations. The second problem would be to define the relationship between automated and meta-cognitive processes when learning, especially in expert individuals; in other words, how relatively automated cognitive processes relate to meta-cognitive processes needs to be clarified. Third, the dichotomy between objective and subjective measurements of self-regulated learning needs to be resolved, through an increase in online, real-time assessment processes.

In addition to these measurements, the role of meta-motivational and meta-affective variables (personal self-regulation) should be incorporated into the study of meta-cognitive processes. The present chapter seeks to address this relationship.

In addition, this chapter has shown how it is possible to work with university students using online tools for self-assessment and self-improvement in these psychological variables. This improvement refers to students explicitly improving their meta-motivational and meta-affective processes, as part of their meta-cognition.

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References

1. de la Fuente, J., Zapata, L., Martínez-Vicente, J.M., Cardelle-Elawar, M., Sander, P., Justicia, F., Pichardo, M.C., García-Berbén, A.C.: Regulatory teaching and self-regulated learning in college students: confirmatory validation study of the IATLP scale. Electron. J. Res. Educ. Psychol. **10**(2), 839–866 (2012)
2. Rosário, P., Lourenço, A., Paiva, M.O., Núñez, J.C., González-Piedra, J., Valle, A.: Autoeficacia y utilidad percibida como condiciones necesarias para un aprendizaje académico autorregulado. (Self-efficacy and perceived utility as necessary conditions for self-regulated academic learning.) Anales de Psicología **28**(1), 37–44 (2012)
3. Elvira-Valdés, M.A., Pujol, L.: Autorregulación y rendimiento académico en la transición secundaria–universidad. (Self-regulation and academic performance in the secondary-to-university transition.) Revista Latinoamericana de Ciencias Sociales, Niñez y Juventud **10**(1), 367–378 (2012)
4. Torrano, F., González, M.C.: Self-regulated learning: current and future directions. Electron. J. Res. Educ. Psychol. **2**(1), 1–34 (2004)
5. de la Fuente, J., Peralta, F.J., Sánchez, M.D.: Autorregulación personal y la percepción de los comportamientos escolares desadaptativos. (Personal self-regulation and the perception of disadaptive school behaviors.). Psicothema **21**(4), 548–554 (2009)
6. Elliot, A.J., Dweck, C.S.: Handbook of Competence and Motivation. Guilford University Press, New York (2007)
7. Entwistle, N.J., Peterson, E.R.: Conceptions of learning and knowledge in higher education: relationships with study behavior and influences of learning environments. Int. J. Educ. Res. **41**(3), 516–623 (2004)
8. Pekrun, R., Goetz, T., Frenzel, A.C., Barchfeld, P., Perry, P.R.: Measuring emotions in students' learning and performance: The Achievement Emotional Questionarie (AER). Contemp. Educ. Psychol. **36**, 36–48 (2011)
9. Salmerón, H., Gutiérrez, C., Salmerón, P., Rodríguez, S.: Metas de logro, estrategias de regulación y rendimiento académico en diferentes estudios universitarios. (Achievement goals, regulation strategies and academic performance in different university studies.) Revista de Investigación Educativa **29**(2), 467–486 (2011)
10. de la Fuente, J., Justicia, F.: The DEDEPRO model for regulating teaching and learning: recent advances. Electron. J. Res. Educ. Psychol. **13**(5), 535–564 (2007)
11. Buff, A., Reuser, K., Rakoczy, K., Pauli, C.: Activation positive affective experiences in the classroom: "Nice to have" or something more? Learn. Instr. **21**, 452–466 (2011)
12. de la Fuente, J., Justicia, F., Casanova, P., Trianes, M.V.: Perception about construction of academic and professional competences in psychologists. Electron. J. Res. Educ. Psychol. **3**(1), 33–34 (2004)
13. DurlaK, J.A., Weissberg, R.P., Dymnicki, A.B., Taylor, R.D., Schellinger, K.B.: The impact of enhancing students´ social and emotional learning: a meta-analysis of school-based universal intervention. Child Dev. **82**, 405–432 (2011)
14. Biggs, J.: Calidad del aprendizaje universitario. (Quality of University Learning). Narcea, Madrid (2005)
15. de la Fuente, J.: Implications for the DEDEPRO model for interactive analysis of the teaching-learning process in higher education. In: Teixeira, R. (ed.) Higher Education in a State of Crisis, pp. 205–222. Nova Science Publisher, New York (2011)
16. Zapata, L.: Personal Self-Regulation, Learning Approach and Coping Strategies in university teaching learning process with stress. Doctoral Dissertation unpublisher. University of Almería, Almería (2013)
17. Vohs, K.D., Baumeister, R.F.: Handbook of Self-Regulation: Research. Theory and Applications. The Guilford Publications Inc., New York (2011)
18. Kanfer, F.J.: Implications of a self-regulation model therapy for treatment of addictive behaviours. In: Miller, W.R., Heather, N. (eds.) Treating Addictive Behaviors: Process of Change, pp. 121–138. Plenum Press, New York (1986)

19. Bandura, A.: Social cognitive theory: a genetic perspective. Am. Rev. Psychol. **52**, 1–26 (2001)
20. Miller, W.R., Brown, J.M.: Self-regulation as a conceptual basis for the prevention and treatment of addictive behaviours. In: Heather, N., Miller, W.R., Greely, J. (eds.) Self-control and the addictive behaviours, pp. 3–79. Maxwell Macmillan, Sydney (1991)
21. Brown, J.M.: Self-regulation and the addictive behaviours. In: Miller, W.R., Heather, N. (eds.) Treating Addictive Behaviors, 2nd edn, pp. 61–73. Plenum Press, New York (1998)
22. Zimmerman, B.J.: Developing self-fulfilling cycles of academic regulation: An analysis of exemplary instructional model. In: Schunk, D.H., Zimmerman, B.J. (eds.) Self-Regulated Learning: From Teaching to Self-Reflective Practice, pp. 1–19. Guilford, New York (1998)
23. Hoyle, R.H.: Handbook of Personality and Self-Regulations. Wiley, Oxford (2010)
24. de la Fuente, J., Trianes, M.V., Peralta, F.J., Sánchez, M.D.: Autorregulación personal y comportamientos de inadaptación sociopersonal y escolar. (Personal self-regulation and disadaptive socio-personal and school behaviors). I Congreso Internacional de Violencia Escolar (Bullying). University of Almería, Almería (2007)
25. de la Fuente, J., Berbén, A.B.G., Martínez, J.M.: La autorregulación personal de los estudiantes universitarios. (Personal self-regulation of university students.) In: Benítez, J.L., Berbén, A.B.G., Justicia, F., de la Fuente, J. (eds.) La Universidad ante el Reto del Espacio Europeo de Educación Superior: Investigaciones Recientes, pp. 68–88, EOS, Madrid (2006)
26. Muraven, M., Collins, R.L., Morsheimer, E.T., Shiffman, S., Paty, J.A.: The morning after: limit violations and the self-regulation of alcohol consumption. Psychol. Addict. Behav. **19**(3), 253–262 (2005)
27. Muraven, M., Collins, R.L., Nienhaus, K.: Self-control and alcohol restraint: an initial application of the self-control strength model. Psychol. Addict. Behav. **16**, 113–120 (2002)
28. Brown, J.M., Miller, W.R., Lawendowski, L.A. The self-regulation questionnaire. In: VandeCreek, L, Jackson, T.L., (eds.) Innovations in clinical practice: A sourcebook, vol. 17, pp. 281–292. Professional Resource Press/Professional Resource Exchange, Sarasota (1999)
29. Pichardo, M.C., Justicia, F., García-Berbén, A.B., de la Fuente, J., Martínez-Vicente, J.M.: Psychometric analysis of the self-regulation questionnarie (SRQ) at spanish universities. Span. J. Psychol. **17**, e62, 1–8 (2014)
30. Carey, K.B., Neal, D.J., Collins, S.E.: A psychometric analysis of self-regulation questionnaire. Addict. Behav. **29**, 253–260 (2004)
31. Neal, D.J., Carey, K.B.: A follow-up psychometric analysis of the self-regulation questionnaire. Psychol. Addict. Behav. **19**(4), 414–422 (2005)
32. Okun, M.A., Levy, R., Karoly, P., Ruehlman, L.: Dispositional happiness and college student GPA: unpacking a null relation. J. Res. Pers. **43**, 711–715 (2009)
33. Kogan, S.M., Bordy, G.H.: Linking parenting and informal mentor processes to depressive symptoms among rural african american young adult men. Cult. Divers. Ethn. Minor. Psychol. **16**(3), 299–306 (2009)
34. Creed, P.A., Fallon, T., Hood, M.: The relationship between career adaptability, person and situation variables, and career concerns in young adults. J. Vocat. Behav. **74**, 219–229 (2009)
35. Boekaerts, M., Maes, S., Karoly, P.: Self-regulation across domains of applied psychology: Is there an emerging consensus? Appl. Psychol. Int. Rev. **54**(2), 149–154 (2005)
36. Karoly, P., Boekaerts, M., Maes, S.: Toward consensus in the psychology of self-regulation: how far have we come? How far do we have yet to travel? Appl. Psychol. Int. Rev. **54**(2), 300–311 (2005)
37. Vancouver, J.B., Scherbaum, C.A.: Do we self-regulate actions or perceptions? A test of two computational models. Comput. Math. Organ. Theor. **14**, 1–20 (2008)
38. Latham, G.P., Locke, E.A.: New developments in and directions for goal-setting research. Eur. Psychol. **12**(4), 290–300 (2007)
39. Winne, P.H.: Comments on motivation in real-life, dynamic and interactive learning environments. Eur. Psychol. **9**(4), 257–264 (2004)
40. de la Fuente, J., Cardelle-Elawar, M: Personal self-regulation and coping style in university students. In: L.B., Nichelson, R.A. (eds.) Psychology of Individual Differences, pp. 171–182, Nova Science Publishers Inc., New York (2011)

41. Tangney, J.P., Baumeitser, R.F., Boone, A.L.: High self-control predicts good judgment, less pathology, better grades, and interpersonal success. J. Pers. **72**, 271–322 (2004)
42. Ferrari, J.R., Stevens, E.B., Jason, L.A.: The role of self-regulation in abstinence maintenance: effects of communal living on self-regulation. J. Groups Addict. Recovery **4**, 32–41 (2009)
43. de la Fuente, J.: Cuestionario de Autorregulación personal (CAR). [Personal self-regulation questionnaire (SRQ)]. Unpublished manuscript (2003)
44. Chorot, P., Sandín, B.: Escalas de Estrategias de Coping. (Scales of Coping strategies). UNED, Madrid (1987)
45. Chorot, P., Sandín, B.: Escalas de Estrategias de Coping revisado (EEC-R). (Scales of revised Coping strategies). UNED, Madrid (1993)
46. Sandín, B., Chorot, P.: Cuestionario de Afrontamiento del Estrés (CAE): desarrollo y validación preliminar. (Questionnaire on Coping with Stress: Preliminary development and validation.) Revista de Psicopatología y Psicología Clínica, **8**(1), 39–54 (2003)
47. Zimmerman, B.J., Labuhn, A.S.: Self-regulation of learning: process approaches to personal development. In: Harris, K.R., Graham, S., Urdan, T. (eds.) The Educational Psychology Handbook, Volume 1: Theories, Constructs, and Critical Issues, pp. 399–425. American Psychological Association, Washington (2012)
48. Zimmerman, B.J.: Models of self-regulated learning and academic achievement. In: Zimmerman, B.J., Schunk, D.H. (eds.) Self-Regulated Learning and Academic Achievement: Theory, Research and Practice, pp. 1–25. Springer, New York (1989)
49. Carver, C.S., Scheier, M.F.: On the structure of behavioral self-regulation. In: Boekaerts, M., Pintrich, P.R., Zeidner, M. (eds.) Handbook of Self-Regulation, pp. 41–84. Academic Press, New York (2000)
50. Zimmerman, B.J.: Becoming a self-regulated learner: an overview. Theory Pract. **41**(2), 64–70 (2002)
51. Abar, B., Loken, E.: Self-regulated learning and self-directed study in a pre-college sample. Learn. Individ. Differ. **20**, 25–29 (2010)
52. Cerezo, R., Núñez, J.C., Rosário, P., Valle, A., Rodríguez, S., Bernardo, A.B.: New media for the promotion of self-regulated learning in higher education. Psicothema **22**(2), 306–315 (2010)
53. Cleary, T.J.: Emergence of self-regulated learning microanalysis: Historical overview, essential features, and implications for research and practice. In: Zimmerman, B.J., Schunk, D.H. (eds.) Handbook of Self-Regulation of Learning and Performance, pp. 329–345. Routledge, New York (2011)
54. de la Fuente, J., Lozano, A.: Design of the SEAI self-regulation assessment for young children and ethical considerations of psychological testing. In: Dettori, G., Persico, D. (eds.) Fostering Self-Regulated Learning through ICT, pp. 39–53. IGI Global, Hershey (2011)
55. Järvelä, S., Hadwin, A.F.: New frontiers: regulating learning in CSCL. Educ. Psychol. **48**, 25–39 (2013)
56. Papantoniou, G., Moraitou, D., Katsadima, E., Dinou, M.: Control de la acción y disposición a la esperanza: Un estudio de su incidencia en la autorregulación del aprendizaje. (Action control and dispositional hope: a study of their effect on self-regulated learning.). Electron. J. Res. Educ. Psychol. **8**(1), 5–32 (2010)
57. Escorcia, D.: Conocimientos metacognitivos y autorregulación: una lectura cualitativa del funcionamiento de los estudiantes universitarios en la producción de textos. (Metacognitive Knowledge and self-regulation: A qualitative lecture of students functioning in writing). Avances en Psicología Latinoamericana, **28**(2), 265–277 (2010)
58. Mauri, T., Colomina, R., Martínez, C., Rieradevall, M.: La adquisición de las competencias de autorregulación. Análisis de su concepción y aprendizaje en diferentes estudios universitarios. (Acquisition of self-regulation competencies. Analysis of their conception and learning in different university studies.) Revista d' Innovacio' i Recerca en Educació, **2**, 33–60 (2009)
59. Mullen, C.A.: Facilitating self-regulated learning using mentoring approaches with doctoral students. In: Zimmerman, B.J., Schunk, D.H. (eds.) Handbook of Self-Regulation of Learning and Performance, pp. 137–152. Routledge, New York (2011)

60. Gaeta, M.T., Tervel, M.P., Orejudo, S.: Aspectos motivacionales, volitivos y metacognitivos del aprendizaje autorregulado. (Aspects of motivational, volitional and Metacognitive of self-regulated learning). Electron. J. Res. Educ. Psychol. **10**(1), 73–94 (2012)
61. de la Fuente, J., Martínez-Vicente, J.M., Peralta, F.J., García-Berbén, A.B.: Percepción del proceso de enseñanza-aprendizaje y rendimiento académico, en diferentes contextos instruccionales de la Educación Superior. (Perception of the teaching-learning process and academic performance in different instructional contexts of Higher Education.). Psicothema **22**(4), 806–812 (2010)
62. Tavakolizadeh, J., Qavam, S.E.: Effect of teaching of self-regulated learning strategies on attribution styles in students. Electron. J. Res. Educ. Psychol. **9**(3), 1087–1102 (2011)
63. Phan, H.P.: Critical thinking as a self-regulatory process component in teaching and learning. Psicothema **22**(2), 284–292 (2010)
64. Alonso-Tapia, J., Panadero, E.: Effects of self-assessment scripts on self-regulation and learning. Infancia y Aprendizaje **33**(3), 385–397 (2010)
65. de la Fuente, J. (Coord.): Motivational-affective strategies for personal self-regulation and coping with stress, in the teaching-learning process at university. R & D Project ref. EDU2011-24805 (2012–2014). MICINN (Spain) and FEDER Found (Europe). (2012–2014) http://www.estres.investigacion-psicopedagogica.com/english/seccion.php?idseccion=1
66. Dunahoo, C.L., Hobfoll, S.E., Monnier, J., Hulsizer, M.R., Johnson, R.: There's more than rugged individualism in coping. Part 1: Even the lone ranger had tonto. Anxiety Stress Coping **11**, 137–165 (1998)
67. Núñez, J., Solano, P., González-Piedra, J., Rosário, P.: Evaluación de los procesos de autorregulación mediante autoinformes. (Assessing self-regulation processes through self-reports.). Psicothema **18**(3), 353–358 (2006)
68. Lazarus, R.S., Folkman, S.: Estrés y Procesos Cognitivos. (Stress and Cognitive Process). Ediciones Martínez Roca, S.A., Barcelona (1986)
69. Cabanach, R.G., Valle, A., Suárez, J.M., Fernández, A.: Diferencias en los componentes cognitivo y afectivo-motivacional entre distintos niveles de aprendizaje autorregulado en estudiantes universitarios. (Differences in cognitive and afectivo-motivacional components between different levels of learning self-regulated in university students). Bordón, **52**(4), 537–552 (2000)
70. Pintrich, P.R.: The role of goal orientation in self-regulated learning. In: Boekaerts, M., Pintrich, P.R., Zeidner, M. (eds.) Handbook of Self-Regulation, pp. 451–502. Academic Press, San Diego (2000)
71. Long, B.: Stress management for school personnel: stress-innoculation. Training and exercise. Psychol. Sch. **25**, 314–324 (1998)
72. Carver, C.S., Scheider, M.F., Weintraub, J.K.: Assessing coping strategies: a theoretically based approach. J. Pers. Soc. Psychol. **56**, 267–283 (1989)
73. DeLongis, A., Holtzman, S., Puterman, E., Lam, M.: Dyadic coping: support from the spouse in times of stress. In: Davila, J., Sullivan, K. (eds.) Social Support Processes in Intimate Relationships, pp. 151–174. Oxford Press, New York (2010)
74. Schuler, R.: Integrative transactional process model of coping with stress in organizations. In: T.A.B.R.S. Beehr (ed.) Human Stress and Cognition in Organizations: An integrated Perspective, pp. 211–224. Wiley, New York (1985)
75. Holroyd, K.A., Lazarus, R.S.: Stress, coping, and somatic adaptation. In: Goldberger, L., Breznitz, S. (eds.) Handbook of Stress: Theoretical and Clinical Aspect, pp. 124–140. Free Press, New York (1982)
76. Lazarus, R.S.: Emotion and Adaptation. Oxford University Press, New York (1991)
77. Hobfoll, S.E., Schröeder, K.E.E.: Distinguishing between passive and active prosocial coping: Bridging inner-city women's mental health and AIDS risk behavior. J. Soc. Person. Relat. **18**, 201–217 (2001)
78. Hampa, P., Petermann, F.: Age and gender effects on coping in children and adolescents. J. Youth Adolesc. **34**(2), 73–83 (2005)

79. Ader, E., Erktin, E.: Coping as self-regulation of anxiety: A model for math achievement in high stakes tests. Cogn. Brain Behav. Interdiscip. J. **14**(4), 311–332 (2010)
80. de la Fuente, J., Zapata, L., Martínez-Vicente J.M., Sander, P., Cardelle-Elawar, M.: Relationship between personal self-regulation, resilience and strategies for coping with stress at university. In: CIEAE 2013, Institute of Education, July, 15–18, Lisboa (2013)
81. Kirchner, T., Forns, M., Amador, J.A., Muñoz, D.: Stability and consistence of coping in adolescence: a longitudinal study. Psicothema **22**(3), 382–388 (2010)
82. El-Ghoroury, N.H., Galper, D.I., Sawaqdeh, A., Bufka, L.F.: Stress, coping and barriers to wellness among psychology graduate students. Training Educ. Prof. Psychol. **6**(2), 122–134 (2012)
83. Krzemien, D., Monchietti, A., Sebastian, U.: Afrontamiento activo y adaptación al envejecimiento en mujeres de ciudad de Mar de Plata: Una revisión de la estrategia de autodistracción. (Activing coping and adapting to aging in women from the city of Mar de Plata: a review of the self-distraction strategy.) Interdisciplinaria **22**(2), 183–210 (2005)
84. Boujut, E.: Development and validation of an exploratory measure to assess student coping: The student coping scale. Coll. Student J. **47**(1), 12–23 (2013)
85. Gantiva, C.A., Viveros, A.L., Dávila, A.M., Salgado, M. J.: Estrategias de afrontamiento en personas con ansiedad. (Coping strategies in persons with anxiety.) Psychologia: Avances de la Disciplina **4**(1), 63–70 (2010)
86. Castellanos, M.T., Guarnizo, C.A., Salamanca, Y.: Relación entre niveles de ansiedad y estrategias de afrontamiento en practicantes de psicología de una universidad colombiana. (Relationship between levels of anxiety and coping strategies in a Colombian university psychology practitioners). Int. J. Psychol. Res. **4**(1), 50–57 (2011)
87. Gaviria, A.M., Vinaccia, S., Riveros, M.F., Quiceno, J.M.: Calidad de vida relacionada con la salud, afrontamiento del estrés y emociones negativas en pacientes con cáncer en tratamiento quimioterapéutico. (Quality of life related to health, coping with stress and negative emotions in cancer patients undergoing chemotherapy treatment.). Psicología desde el Caribe. Universidad del Norte **20**, 50–75 (2007)
88. Marqués, A., Lima, M.L., Lopes da Silva, A.: Fuentes de estrés, burnout y estrategias de coping en profesores portugueses (Stress sources, burnout and coping among portuguese teachers). Revista de Psicología del Trabajo y de las Organizaciones **21**(1–2), 125–143 (2005)
89. Revenson, T.A., DeLongis, A.: Couples coping with chronic illness. In: Folkman, S. (ed.) Oxford Handbook of Coping and Health, pp. 101–123. Oxford Press, New York (2010)
90. Piemontesi, S.E., Heredia, D.E.: Afrontamiento ante exámenes: Desarrollo de los principales modelos teóricos para su definición y medición. (Coping with exams: development of the main theoretical models for its definition and measurement.) Anales de Psicología **25**(1), 102–111 (2009)
91. Cohen, M., Ben-Zur, H., Rosenfeld, M.J.: Sense of coherence, coping strategies, and test anxiety as predictor of test performance among college students. Int. J. Stress Manage. **15**(3), 289–303 (2008)
92. de la Fuente, J., Cardelle-Elawar, M., Martínez-Vicente, J.M., Zapata, L., Peralta, F.J.: Gender as a determining factor in the coping strategies and resilience of university students. In: Haumann, R., Zimmer, G. (eds.) Handbook of Academic Performance, pp. 205–217. Nova Science Publishers Inc, New York (2013)
93. Ticona, S.B., Paucar, G., Llerena, G.: Stress level and coping strategies in nursing students at the UNSA Faculty. Revista Electrónica Cuatrimestral de Enfermería **9**(2), 1–8 (2010)
94. Endler, N.S., Kantor, L., Parker, D.A.: State-trait coping, state-trait anxiety and academic performance. Person. Individ. Differ. **16**, 663–670 (1994)
95. Fernández-Abascal, E.G.: Estilos y estrategias de afrontamiento (Styles and coping strategies.) In: Fernández-Abascal, E.G., Palmero, F., Chóliz, M., Martínez, F. (eds.) Cuaderno de Prácticas de Motivación y Emoción (Practice Notebook Motivation and Emotion.) Pirámide, Madrid (1997)

96. Zeidner, M.: Adaptive coping with test situations: a review of literature. Educ. Psychol. **30**, 123–133 (1995)
97. Berjot, S., Gilt, N.: Stress and coping with discrimination and stigmatization. Front. Psychol. **2**, 1–13 (2011)
98. Brannon, L., Feist, J.: Comprensión del estrés y la enfermedad (Understanding stress and illness.). In: Brannon, L., Feist, J. (eds.) Psicología de la Salud, pp. 177–211. Paraninfo Thomson Learning, Madrid (2001)
99. Navarro, M.: Acercamiento al estrés en una muestra de estudiantes de medicina. (Versión electrónica) Revista del Instituto Superior de Ciencias Médicas de la Habana, **15**, 25–32 (2000)
100. de la Fuente, J.: e-Coping Stress Management Tool for University™. Almería (Spain): University of Almería. Land Registry AL-288635 (2014) (http://www.estres.investigacion-psicopedagogica.com/english/seccion.php?idseccion=7)