Metacognition and affect: What can metacognitive experiences tell us about the learning process?☆

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Abstract

This paper aims at highlighting the importance for learning of one of the facets of metacognition, namely metacognitive experiences (ME) that comprise feelings, judgments or estimates, and online task-specific knowledge. The emphasis is on the affective character of ME, which has received little attention in the past. Unlike online task-specific knowledge, which is conscious and analytic, the other ME are products of nonconscious, nonanalytic inferential processes. Because of their nature, ME can trigger either rapid, nonconscious control decisions or conscious analytic ones. However, ME can make use of both the affective and the cognitive regulatory loops, and this has a series of implications for learning. Evidence is presented regarding the relations of ME with affect and cognition, and the implications of the lack of accuracy of ME for the self-regulation of learning. Particular emphasis is given on judgment of learning, feeling of difficulty, and feeling of confidence. The challenges for future research on metacognition are underscored.
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The title of this article refers to two distinct categories of psychological phenomena, namely metacognition and affect, and their effect on the learning process. The term "metacognition" is used to denote *cognition of cognition* (Flavell, 1979), whereas "affect" is a generic term for emotions and other mental states that have the quality of pleasant-unpleasant, such as feelings, mood, motives, or aspects of the self, e.g., self-esteem (Forgas, 1994). The relation of metacognition with learning was first posited by Flavell (1979) and, since then, there is growing research evidence that qualifies this relationship. Affect is also related to learning, as extant research on emotions has shown (Efklides & Volet, 2005; Pekrun, Goetz, Titz, & Perry, 2002). However, most of the studies focus either on metacognition or on affect, independently from each other.

The emphasis of this article is different. It is on one of the facets of metacognition, namely, on *metacognitive experiences* (ME; Efklides, 2001; Flavell, 1979), which have received little attention as regards their implications for the learning process—that is, from the moment the person comes across a learning task to its end. What I shall try to show is that ME and, especially, metacognitive feelings (Koriat & Levy-Sadot, 2000), have a dual character, that is, a cognitive and an affective one. This dual character gives them access to the respective regulatory loops that involve

different processes for the self-regulation of behavior. Also, this dual character renders ME different from other facets of metacognition or from affect and, therefore, their study can lighten learning behaviors that were difficult to explain up to now.

In what follows I shall refer, first, to metacognition and its various facets; second, to metacognitive experiences and their conceptualization; third, to the relations of metacognitive experiences with affect, and fourth, to the implications of the functioning of ME for learning.

1. The facets of metacognition

Despite the fuzziness in the conceptualization of the term "metacognition" (Flavell, 1987), it is generally accepted that metacognition is a *model of cognition*, which acts at a meta-level and is related to the object-world (i.e., cognition) through the monitoring and control functions. The meta-level is informed by the object-world through the monitoring function and modifies the object-world through the control function (Nelson, 1996; Nelson & Narens, 1994). Thus, metacognition has a dual role: (a) It forms a representation of cognition based on monitoring processes; and (b) exerts control on cognition based on the representation of cognition. Yet, metacognition has many facets making difficult the distinction between monitoring and control and the setting of the line between these two functions. There are two basic manifestations of the monitoring function, namely, metacognitive knowledge and metacognitive experiences (Flavell, 1979). Metacognitive skills or use of strategies, on the other hand, are manifestations of the control function (Brown, 1978). (See Table 1 for a summary of the three facets of metacognition and their manifestations.)

Specifically, metacognitive knowledge (MK) is declarative knowledge about cognition, which we derive from long-term memory (Flavell, 1979). It comprises implicit or explicit knowledge or ideas, beliefs, and 'theories' about the *person* him/herself and the others as cognitive beings, and their relations with various cognitive tasks, goals, actions, or strategies. It also comprises knowledge of *tasks* (i.e., categories of tasks and their processing) as well as knowledge of *strategies* (i.e., general ways of task processing) (Flavell, 1979). Besides this, MK involves knowledge (i.e., beliefs, ideas, theories) about the various cognitive functions, such as memory or thinking, regarding what they are and how they operate, e.g., metamemory, metaattention, etc. (Fabricius & Schwanenflugel, 1994; Miller, 1985; Nelson, Kruglanski, & Jost, 1998; Wellman, 1983). It also comprises knowledge of the criteria of validity of knowledge, what is being called "epistemic cognition" (Kitchener, 1983). One could argue that theory of mind (see Bartsch & Wellman, 1995) is also an instance of MK, although the theorists in the field do not make this connection. The importance of MK is that it provides a framework for understanding one's as well as the others' cognition and thus guides the interpretation of situational data so that proper control decisions are made (see Nelson et al., 1998).

Table 1
The facets of metacognition and their manifestations as a function of monitoring and control

Monitoring		Control
Metacognitive knowledge	Metacognitive experiences	Metacognitive skills
Ideas, beliefs, 'theories' of	Feelings	Conscious, deliberate activities and use of strategies for
Person/self	Feeling of familiarity	Effort allocation
Task	Feeling of difficulty	Time allocation
Strategies	Feeling of knowing	Orientation/monitoring of task requirements/demands
Goals	Feeling of confidence	Planning
Cognitive functions (e.g., memory, attention, etc.)	Feeling of satisfaction	Check and regulation of cognitive processing
Validity of knowledge	Judgments/estimates	Evaluation of the processing outcome
Theory of mind	Judgment of learning	
	Source memory	
	information	
	Estimate of effort	
	Estimate of time	
	Online task-specific	
	knowledge	
	Task features	
	Procedures employed	