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Sources of Internal Self-Regulation with a Focus on Language Learning

Yasushi Kawai
Hokkaido University

Rebecca L. Oxford
Teachers College, Columbia University

Asghar Iran-Nejad
University of Alabama

The notion that learners have active control over their own learning has stimulated extensive research on the role of language learning strategies. Much of this research has been conducted traditionally in the context of the computer-inspired information processing theory and constructivism. These cognitive theories share the view that one and only one source of internal control regulates learning processes such as attention. The single-source theory tends to be reductionistic and favors sequential strategies for dealing with discrete knowledge structures and skills. Empirical evidence, on the other hand, indicates that the type of learning that is essential for the development of communicative competence must be holistic, contextual, and naturalistic and requires the simultaneous operation of more than one kind of internal self-regulation. This paper discusses a biofunctional theory of multisource internal self-regulation that focuses on the dynamic self-regulatory role of biofunctional subsystems of the nervous system. Dynamic self-regulation is nonexecutive, unintentional, and effort-free in nature. As such, it is viewed as the primary source of internal self-regulation in natural contexts and an essential prerequisite for active self-regulation. Active self-regulation, on the other hand, tends to occur to the extent that the context in which the individual functions ensures the involvement of dynamic self-regulation. The interaction between active and dynamic self-regulation is essential for effective language learning to take place.

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Traditional information processing and constructivist theories imply that nonnative language learning is an active process entirely under the conscious control of the individual learner. It follows that, in order to become resourceful learners, nonnative language speakers must seek and internalize a toolkit of (cognitive, metacognitive, etc.) learning strategies to use actively and intentionally for regulating their own language learning activities. This paper addresses the importance of learning strategies, but also argues that the active self-regulation hypothesis cannot by itself adequately depict nonnative language learning processes.

The first section of this paper describes active self-regulation in nonnative language learning from the perspective of information processing theory. The second section examines active self-regulation in this area from two constructivist vantage points: psychological constructivism and social–cognitive constructivism. In the final section we present an extended view of self-regulation and its application to nonnative learning from the viewpoint of biofunctional cognition.

Self-Regulation in Information Processing Theory

Information processing theory is a computer-based artificial-intelligence metaphor of human cognition (Sternberg, 1990). The cognitive system as viewed in this theory (Neisser, 1967) consists of two major components: first, a passive storage-retrieval system analogous to the computer; and second, an active, executive control component analogous to the person who sits at the computer keyboard and controls it. Gagné (1974) presents a multiple storage model of memory based on Atkinson and Shiffrin's (1968) information processing theory. According to this model, the storage-retrieval system consists of three stores for holding different amounts of information for different lengths of time. During the first stage of processing, the sensory store registers a vast amount of information for a very brief duration. Here, the to-be-learned information must receive focal attention. The individual must consciously select from this information what is important and the unselected information is lost permanently. Focal attention strategies and strategies for judging the relative importance of what is being held in the sensory register are particularly helpful here. During the next processing stage, the short-term memory store holds the selected information for a brief duration while the individual employs various strategies to learn it. Finally, the third store is long-term memory, which holds an unlimited amount of information more or less permanently. Active (conscious) control refers to the way the individual internalizes and retrieves information, and such control typically involves attention, intention, effort, and strategy use. (For a discussion of consciousness and control in nonnative

language learning, see Schmidt, 1990.) In information processing theory, active control is considered to be the one and only agent of self-regulation in the cognitive system, just as the person sitting at the computer keyboard is the one and only agent controlling the operation of the computer. This is because the learner's storage-retrieval system is as passive as the storage-retrieval system of the computer.

In information processing theory, learning is the internalization of external knowledge by means of maintenance or elaborative rehearsal. Therefore, learning can be either rote or constructive memorization. People are assumed to construct knowledge by stripping away the irrelevant and redundant information imported from the outside and by elaborating on what is selected (Prawat, 1998). In the context of nonnative language learning, this means internalization of basic language skills such as those involved in the recognition and production of sounds, word forms, word meanings, and connected discourse; it also involves internalization of sociocultural norms and the pragmatics of communication. This internalization requires actively controlled attention and rehearsal.

From the vantage point of information processing theory, nonnative language *learning strategies* are the tools, behaviors, steps, or techniques that the learner consciously uses to aid in attending to and rehearsing language material, mentally manipulating it to create increasingly complex connections, embedding it in long-term memory, and retrieving it when needed (Oxford, 1990). For instance, certain metacognitive learning strategies involve focusing attention on the main idea, while others help learners attend to significant details of interest. The cognitive strategy of structured reviewing is rehearsal of to-be-learned materials in carefully spaced intervals, the purpose of which is "overlearning": to become so familiar with the information that it eventually becomes automatic. Repetitive practice is simply rehearsal without having carefully planned intervals. These strategies, according to information processing theory, typically involve the learner's conscious, active control.

Controlled processing is one of two types of processing postulated by information processing theorists (Shiffrin and Schneider, 1977). Such processing is conscious, active, mindful, and effortful. It tends to be sequential and is severely capacity-limited, particularly in short-term memory, where the maximum memory load is five to nine chunks of information at a time (Miller, 1956). Controlled processing is under the direct regulation of the individual learner and is represented internally by a central executive control process which "keeps track of what information is being processed and controls the flow of processing" (Andre and Phye, 1986, p. 9). In contrast, *automatic processing* is effortless, unconscious, and "mindless." This kind of processing requires no attention, effort, or monitoring on the part of the individual learner, and once it begins, its course is very difficult to change intentionally.

The transformation from controlled to automatic processing occurs in three stages, according to Anderson (1987): cognitive, associative, and autonomous.

The *cognitive* stage is marked by declarative knowledge, i.e., "knowledge that" something is the case or "knowledge about" something — describable knowledge of facts, events, and people (Anderson, 1987, 1990). With reference to nonnative language learning, this stage involves highly conscious knowledge of grammar points, vocabulary, specific social rules, culture-related facts, and learning strategies. Everything involves effort. In acquiring declarative knowledge, the individual uses a controlled "mental encoding process that distills the essence of the ideas represented or the language used to represent them" (O'Malley, 1990, p. 479), which results in the formation of a *proposition*. Propositions are organized into *schemata* (or knowledge structures) which are configurations of related or associated concepts bonded together by *links* and *nodes*. When one concept is evoked, others are also triggered through spreading activation and elaboration due to the associations between concepts. At the cognitive stage, therefore, learning strategies assist in the internalization of external, declarative knowledge. If the teacher teaches the learner certain learning strategies, the strategies themselves — and not just the nonnative language material — are initially in the form of declarative knowledge. Even though this knowledge can be relatively easily learned, it may just as easily be forgotten, unless learners continue to rehearse it and make further mental associations.

At the *associative* stage, rehearsal strengthens the connections between components of a still-being-learned, complex skill, such as speaking the new language or, to use a more specific example, participating in an informal conversation about nontechnical subjects in the nonnative language. The necessary mental connections are not yet fully and smoothly present at the associative stage, but progress is being made. During this stage, nonnative language errors are gradually eliminated as an understanding of the language system grows. However, the associative stage is not error-free. Sometimes errors may actually be maintained and strengthened through the learner's increasingly complex connections, particularly if the learner has not paid (or has not been able to pay) adequate attention at the cognitive stage. This is because learning follows the path of available connections. If an error enters this path and escapes the learner's conscious attention (i.e., the only source of internal self-regulation) or is beyond the learner's conscious recognition, it will be learned. One might attempt to explain in this way the learner's *interlanguage* (Selinker, 1972) — the shifting "language" that reveals the features of both the native and nonnative languages. Thus, if errors are not eliminated sufficiently by the end of the associative stage, the individual's interlanguage may persist into the third stage. By then the errors have become *fossilized* or made permanent (Omaggio Hadley, 1993).

Optimally, according to Anderson's (1987) information processing theory, practice during the cognitive and associative stages leads to the *autonomous* stage. This final phase brings forth procedural knowledge (i.e., knowledge of "how to do something") that supports the demonstrable ability to perform various procedures or skills effortlessly. Procedural knowledge is mentally represented by automatic, control-free *production systems*, "a series of condition–action sequences, or IF–THEN connections, that determine the direction and flow of thought and behavior" (O'Malley, 1990, p. 480). For example, "IF the goal is to generate a plural of a noun, and the noun ends in a hard consonant, THEN generate the noun + /s/" (Anderson, 1980, cited in O'Malley, 1990, p. 480). Thus, this nonnative language knowledge has moved all the way from being an isolated fact to being an automatically, habitually, effortlessly employed skill. Learning strategies may evolve similarly. In fact, by this stage a particular learning strategy, such as finding the main idea, has become so automatic that it should no longer be called a *strategy*. That term implies intentional, active, effortful, controlled movement toward a goal (Oxford, 1990). At the autonomous stage, learning strategies — like other forms of knowledge — are procedures or skills that no longer demand learner control.

Information processing theory suggests that automatic storage–retrieval should be the goal of learning and that knowing things "by heart" is the ultimate in knowing. In this regard, nonnative language learning from the perspective of information processing theory is a matter of speeding up the response time in nonnative language learning activities and increasing the number of automatic responses. The repetition of the information items in controlled processing, which is the prerequisite for the achievement of automaticity, makes nonnative language learning from the information processing viewpoint necessarily attentive, intentional, and effort-taking in nature. Information processing theory implies that nonnative language learners should practice subskills such as pronunciation and word formation indefinitely until they become automatic (McLaughlin, 1987, 1990; Omaggio Hadley, 1993). This view is the theoretical basis for the revival of repetitive drills with error corrections advocated by some proponents and rejected by others (Higgs and Clifford, 1982; McLaughlin, 1987, 1990; Valette, 1991).

Dreyfus and Dreyfus (1986) and Berliner (1987) propose the *novice-to-expert paradigm*, a version of information processing theory in which experts have deeper, more richly connected schemata to draw upon automatically, while novices have shallower, less developed schemata that they use with significant effort, presumably due to lack of practice. Well-developed schemata allow the expert first to determine (consciously) what merits attention. The relevant schema, then, fills the gaps (unconsciously or by default) between the explicit input and what is needed to decide (again consciously) on an

appropriate response (Carter, Cushing, Sabers, Stein, and Berliner, 1988). In this fashion, expertise is characterized by a smoothly flowing, automatic performance without the need for controlled retrieval of the amount of detail required for making complex decisions (Dreyfus and Dreyfus, 1986). Of course, these features match the characteristics of automatic processing found in Anderson's (1983, 1987, 1990) autonomous stage. (The novice-to-expert paradigm involves five stages as compared to Anderson's three-stage model.) Novices and experts do not necessarily exhibit significant differences in information content. Rather, novices' schemata tend to lack (a) easy access from one level of abstraction to the next, and (b) important relations between surface features and scientific principles (Champagne, Gunstone, and Klopfer, 1985). Novices and experts differ in another significant way: their use of learning strategies. Inherent in the novice-to-expert paradigm is the belief that it is the quality and quantity of learning strategies that divides good (expert) learners from poor (novice) learners (Anderson, 1980, 1981; Brown, Campione, and Day, 1980; Larkin, 1980).

Because information processing theory views learning as the internalization of external knowledge, the source of all knowledge is external. In the classroom, the teacher is the knowledge provider and the major external source of input. In repetitive practice to achieve automaticity, the teacher's role is to divide subskills into reasonable chunks and arrange the order so learning occurs efficiently. As a result, information processing theory suggests that the ultimate decisions about what to learn as well as how to learn strategies tend to be made externally by more competent others. It is the job of the learner to internalize, store, and apply.

A somewhat different version of information processing theory has been proposed by Rumelhart and Norman (1977), who argue against a uniform system involving a continuous series of learning stages for moving from consciousness to automaticity. Instead, these theorists assert that there are three different kinds of learning (a) *accretion*, the gradual accumulation of new facts through schema assimilation; (b) *tuning*, the refinement or modification of available schemas through accommodation; and (c) *restructuring*, the construction of new schemas through conscious reinterpretation of existing ones.

To be sure, some kind of knowledge restructuring is essential and different from skill acquisition. Without extensive practice, knowledge restructuring can "lead to sudden bursts of progress for the learner" (Lightbown and Spada, 1993, p. 25) or "sudden moments of insight or 'clicks of comprehension'" (McLaughlin, 1987, p. 138). However, O'Malley and Chamot (1990) postulate that restructuring, as described by Rumelhart and Norman, is active and can only be part of the controlled processing of declarative knowledge. Therefore, it cannot account for those sudden bursts of learning that require extensive restructuring without conscious attention (Iran-Nejad, 1980,

1987). Moreover, Rumelhart and Norman's theory of knowledge restructuring is too dependent on the internalization of the immediate input to be able to account for the incubation period that is often necessary for development of insights. Whether language learning is comprised of continuously flowing stages or discontinuous types of learning, strategies facilitate the process by giving greater control to the learner. Academic power strategies help make learners more attentive to the language, more aware of their own needs, and more able to plan and evaluate their learning. Learning strategies enable learners to become more adept in creating and refining existing schemas and more competent to create entirely new ones.

In sum, information processing theory asserts that external input is the one and only source of new learning. A teacher or textbook typically represents this external source. Making and automatizing connections is the only basic learning process; and executive (or active) control, represented by a learner's attention and effort, is the one and only source of self-regulation in the process of learning. Whether or not, or how well, external information is learned depends entirely on the goodness of the strategies provided by the expert teacher and resourcefulness of the learner to use them to overcome the limitations of the passive storage-retrieval system. Training resourceful learners has the central focus of helping them overcome such limitations by consciously using appropriate, effective, controlled learning strategies, which, with sufficient practice, eventually become automatic. Thus, information processing theory suggests that in optimal nonnative language learning, automaticity is a feature not only of language items but also of learning strategies, both of which are eventually stored as production systems (O'Malley and Chamot, 1990). In actuality, the term *learning strategy* is no longer appropriate at this stage because of the controlled goal-seeking connotation inherent in the concept of strategy. The label *procedure* (as in procedural knowledge) would be more accurate when a strategy has become automatic.

Self-Regulation in Constructivism

Iran-Nejad (1995) distinguishes between constructivism as an educational movement and constructivism as a psychological or social–cognitive theory of human development and learning. Constructivism as an educational movement is trend-driven and eclectic. Mixed with buzzwords that happen to enjoy popularity at the time, it spreads to include them. In classrooms, this type of constructivism tends to emphasize learner-initiation, less reliance on textbook-driven memorization, learner reflection, problem solving, and the notion of teacher as facilitator of learning (as opposed to information-provider). With regard to self-regulation, the main significance of construc-

tivism as an educational movement is the shift in control over learning from the teacher (other-regulation of learning activities) to the learner (self-regulation of learning processes).

This type of constructivism tends to lack theoretical and practical depth. In some instances, it amounts to nothing more than memorization through constructive internalization of external knowledge. In other instances, it is more subtle than memorization, per se, as in the case of the "discovery method," suggesting that knowledge can be induced by looking outward. Although constructivism as an educational movement is leavened by a bit of learner reflection, it is nevertheless very similar to active, elaborative rehearsal in information processing theory (Schmeck, 1983). In this shallow form of constructivism, active learning strategies other than rehearsal tend to be somewhat prescriptive techniques for the storage and retrieval of information.

By contrast, in constructivism as a psychological or social–cognitive theory, learning "is constructivist because it implies the process of building, creating, or making mental structures instead of merely absorbing or reproducing products" (Iran-Nejad, 1995, p. 9). Learners develop their unique knowledge structures by restructuring them through interaction with their environment (Piaget, 1952, 1954, 1970) or through social interaction with "more capable others" who might be parents, teachers, or highly competent peers (Vygotsky, 1978, 1986). It is this aspect — restructuring of knowledge structures through interaction — that makes psychological constructivism, represented by Piaget, or social–cognitive constructivism, represented by Vygotsky, fundamentally different from learning as reproductive internalization of external knowledge, the centerpiece of both information processing theory and, to a great extent, constructivism as an educational movement. The educational system of today would be dramatically different if the psychological theory or the social–cognitive theory of constructivism were to replace constructivism as a mere educational movement.

In spite of this fundamental difference, constructivism as an educational movement and constructivism as a psychological or social–cognitive perspective share the same view when it comes to sources of self-regulation of learning processes. All of these see the individual learner as an active agent. In Piaget's psychological constructivism, for instance, hypothesis testing is the active process that regulates *assimilation* and *accommodation*, which are two different forms of knowledge restructuring. Children are thus viewed as naive scientists. These active agents of learning become more sophisticated learners as they gain more and better hypothesis-testing strategies for adaptation in new environments. In Vygotsky's social–cognitive constructivism, the active learner engages with the teacher (or another capable person), who provides *scaffolding*, i.e., various kinds of assistance, to help the learner until it is no longer necessary. To Vygotsky, the learner actively traverses the zone of proximal development with the assistance of a more knowledgeable person.

In constructivism as an educational movement and in psychological and social–cognitive forms of constructivism, learning is categorization of knowledge into schemata that can be restructured and made richer and more complex. In constructivism of any type, cognitive learning strategies are techniques by which learners categorize and restructure knowledge efficiently so that maximum understanding and retention can be attained. For example, Oxford's (1990) taxonomy of second language learning strategies includes learner techniques for classifying nonnative language materials to be learned into meaningful units. This taxonomy also encompasses the strategy of semantic mapping, in which learners arrange words into a diagram with a key concept at the center or at the top with which related words are linked with lines. The purpose of these strategies is to make and strengthen connections between concept-structures (schemata) in the learner's network of knowledge. Such cognitive strategies promote what Oxford and Ehrman (1995) call "deep processing" and are instrumental in developing nonnative language proficiency (Chamot, Barnhardt, El-Dinary, and Robbins, 1996; Oxford, 1996).

Oxford's taxonomy, like others in the nonnative language field (e.g., O'Malley and Chamot, 1990), includes metacognitive learning strategies that help the learner plan, organize, evaluate, and monitor the cognitive process. The use of metacognitive strategies is significantly associated with nonnative language proficiency (Chamot et al., 1996; Oxford, 1996; Wenden, 1991). The taxonomy also encompasses affective and social learning strategies, additional self-regulatory tools that can bolster cognition and metacognition (Oxford, 1990).

Thus, constructivism as an educational movement, constructivism as a psychological or social–cognitive perspective, and information processing theory all share the assumption that learning is under the direct control of the active learner as the sole regulator of learning processes. As a result, many nonnative language learning strategies are mentioned in various texts (e.g., Cohen, 1990; O'Malley and Chamot, 1990; Wenden and Rubin, 1987) as a means to enhance the learner's active control over learning processes. They are the techniques for the learner's conscious construction of language rules, vocabulary, pronunciation, discourse, and sociocultural understanding. These strategies represent the learner's toolkit for active, purposeful, and attentive self-regulation of mental processes.

Iran-Nejad (1990), however, demonstrates that intentional learning is not always necessary for (language) learning to occur. The suggestion is that a great deal of language learning and other types of learning can and does occur, for very young children in particular, outside the realm of the individual learner's conscious intention or when the individual's conscious intention is not explicitly aimed at language learning. Going to movies in nonnative language for entertainment is a good example. Understanding

often comes to the learner in the form of incidental insights or inspirations that do not necessarily result directly from the learner's active and intentional hypothesis-testing efforts. Therefore, a broader perspective on self-regulation is needed to account for the kind of internal self-regulation that is different from the mindful, attention demanding, and effortful control described so far.

Self-Regulation in Biofunctional Cognition

What is needed, therefore, is a more comprehensive theory of internal self-regulation and its role in nonnative language learning. In information processing theory, the focus of the strategic resourcefulness of the active learner is on the string of input, starting with what is in the sensory register under the direct control of the learner and moving on to the short-term memory for active rehearsal. According to this theory, learners are active insofar as they select what is important (worthy of learning) and ignore what is unimportant. For the most part, it is the perspective of the teacher that determines what is important. The classroom learner must actively attend not only to the string of information coming from the teacher but also to the teacher's signals as to what is important. Constructivism as an educational movement recommends a shift from teacher control to learner control. However, since trend-driven recommendations are not accompanied by clear alternatives to information processing theory, they fail to offer clues as to how a constructive, facilitative teacher ought to be different from the teacher-as-information-transmitter or how the constructive, alert learner should be different from the receiver–internalizer of teacher-organized knowledge. Constructivism as a psychological or social–cognitive theory is different in that learning from its perspective involves creation, structuring, and restructuring of new knowledge. However, conscious control is still the only source of internal self-regulation.

The biofunctional model maintains that what is called disequilibration in Piaget's constructivism has its origin in a very important source of internal self-regulation, one that is independent of active self-regulation in that it requires no conscious control to occur, even though the two sources of self-regulation interact intimately. Thus, the biofunctional model proposes two different sources of internal self-regulation: dynamic (or subsystem-regulated) and active (or person-regulated). Therefore, unique to the biofunctional model is the distinction between active control and dynamic sources of internal control, which rely heavily on learning resources that are available outside the spotlight of active attention (Iran-Nejad, 1990; Iran-Nejad and Chissom, 1992; Iran-Nejad, McKeachie, and Berliner, 1990). Another way of thinking about the two sources of control and their relative independence is to think of dynamic self-regulation as being directly brain-regulated and active control as

being directly mind-regulated (Iran-Nejad, Marsh, Ellis, Rountree, Casareno, Gregg, Schlichter, Larkin, and Colvert, 1995).

In natural contexts, dynamic internal self-regulation operates so readily, so flexibly, and on so many internal fronts simultaneously that highly complex activities appear seductively straightforward to perform. It is only when the conditions for dynamic self-regulation become problematic that we become mindfully aware of its workings. To illustrate, let us suppose that from a standing position, we want to pick up an object, such as a pencil that is on the floor in front of us. Normally, this task should present no problem. All one has to do is to decide, lean forward, and pick up. However, upon reflection, we may note that there is more to this straightforward activity than "meets the mind," so to speak. For example, does the body follow the mind in leaning forward? Let us do the same task but this time from a slightly different position: standing with our back immediately against a wall. We soon discover that picking up the object is not so straightforward anymore. The difference is that the wall behind prevents the body from moving backward, something that the mind did not knowingly tell the body to do, but that is necessary to be done if we are to complete the task. In fact, the body must do a large number of other things that the forward-aiming mind fails to intend or notice. In reaching the object, the body also bounces; the lungs hold the breath; and one hand goes down to rest on the knee, as the other moves out to reach for the object. As Bartlett (1932) pointed out, "every day, many times over, we make accurate motor adjustments . . . without any awareness at all so far as the measure of changing posture is concerned" (p. 200). In biofunctional cognition, it is dynamic (or subsystem-regulated), as opposed to active (or person-regulated), internal control that regulates these fine-tuned adjustments (Iran-Nejad and Chissom, 1988). We do not become focally aware of everything that happens in the nervous system because mindful control tends to focus on one thing at a time. Dynamic self-regulation, on the other hand, obeys no such one-thing-at-a-time limitation because its locus of control is distributed within individual subsystems, many of which can work simultaneously (Iran-Nejad, 1990).

This example illustrates that natural contexts require a different kind of internal self-regulation, one that operates beyond the realm of active mind regulation. This source of control works intimately with active mind regulation but has a qualitatively and dramatically different origin. Neither does it consist of mind-regulated procedures that have become automatic with practice. Pre-structured automaticity fails to do justice to the ever-present situational uniquenesses of the real world. What makes the above example interesting is that once active self-regulation decides to engage in the task, the role of dynamic self-regulation becomes vital. It is not hard to imagine what might happen to a forward aiming individual if dynamic self-regulation were to fail to

pull the body backward to adjust the center of gravity, as might happen when someone is intoxicated. In education, not taking into account the role of dynamic self-regulation is tantamount to forcing learners to function with their backs tightly held against the wall. The more focused active individuals become toward an academic goal, the more serious the resulting injury is likely to be if dynamic self-regulation is not there to perform its vital role.

The Interaction of Active and Dynamic Forms of Self-Regulation

What does all this imply for the practice of nonnative language instruction? The critical difference between dynamic self-regulation and traditional automaticity, as conceived by information processing and constructivist theories, is that traditional automaticity is based on the strength of the unit-to-unit connections (e.g., phoneme to phoneme, letter to letter, word to word, and so on), while dynamic self-regulation is based entirely on unit-to-context relationships (Iran-Nejad, Marsh, and Clements, 1992). The subsystems of the nervous system regulate themselves dynamically in the internal context of the functioning of the nervous system as a whole. This suggests that context and self-regulation are much more intimately and inherently related than previously imagined and that the contextualization of nonnative language learning requires a different kind of focus on the mutual relationship between context and self-regulation, one that is much more critical than suggested in common methods of contextualization or ever possible in the drill-and-practice methodology aimed at unit-to-unit automization.

To be sure, context is something that has received extensive support in recent years. This has led to the general agreement that no authentic communication takes place without context and that nonnative language teaching must no longer involve purely isolated grammar points or vocabulary items (Omaggio Hadley, 1993). Meaning in communication requires more than the sum of syntax and lexical meanings, and our daily communication is heavily dependent on extralinguistic, contextual information (Bernstein, 1961, 1971; Tanaka, 1990). The focus on context and communication is a common trend in contemporary nonnative language instruction, regardless of the particular approach or method (Ito, 1984).

The term *contextual richness* refers to the wealth of linguistic and extralinguistic clues available in a context that approximates real-life situations in which native and nonnative language speakers use their language and in which the learner can (and must) use the nonnative language as well. A contextually rich classroom offers activities such as role play and problem-solving that require nonnative language interaction in authentic situations, guided dialogues and discussions aided by realia (real objects), interviews in the language based on personal information, games or simulations that call for learners to communicate in the language, and meaningful nonnative lan-

guage readings on real-life topics (Crookall and Oxford, 1990; Danesi, 1987; Krashen and Terrell, 1983; Omaggio Hadley, 1993). Such context-rich tasks promote active and dynamic forms of self-regulation.

In classrooms that approximate or simulate authentic-communication situations, speakers often utilize "communication strategies" (compensatory learning strategies needed to compensate for a knowledge gap), such as (a) making intelligent guesses based on the context, and (b) gesturing, drawing pictures, employing circumlocution, or using synonyms to get the message across and maintain communication. Because the context is so rich, the use of these strategies involves the support of both sources of self-regulation, active and dynamic. Other learning strategies that encourage naturalistically practicing the nonnative language, especially while learning about the culture — strategies such as finding a native speaker to be a conversation partner, watching movies in the target language, reading newspapers and magazines, and writing letters or e-mail messages to a friend — call upon both active and dynamic self-regulation. The co-origination and co-functioning of the two kinds of self-regulation does not emerge with learning strategies used to accomplish tasks involving decontextualized, isolated bits of language material, such as memorizing a list of new words and their meanings. Only effortful, mindful, active self-regulation will do in such an instance.

Conclusion

The last section of this article has emphasized the significance of dynamic self-regulation, not just active self-regulation, for nonnative language learning. One attitudinal barrier is the fear of admitting that something beyond intentional, effortful, person-regulated control governs the nonnative language learning process, and that in fact much learning occurs incidentally and effortlessly. This does not mean, however, that educators should give up trying to help learners develop appropriate and effective learning strategies, that are typically a hallmark of active self-regulation. The model of self-regulation promoted in this paper does not deny the utility of active self-regulation but instead emphasizes the power created when dynamic self-regulation occurs along with active self-regulation in a rich context. In the biofunctional perspective, the teacher's role is to develop and offer a context-rich nonnative language classroom (as a source of external self-regulation) that stimulates both kinds of internal self-regulation and to encourage learners to seek other context-rich nonnative language opportunities outside of class. The learner's role is to seek rich out-of-class contexts in which to use the target language, take full advantage of the rich contexts of the classroom itself, and within these contexts employ nonnative language learning strategies that maximize the interaction between active and dynamic self-regulation.

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