The Routledge Handbook of Second Language Acquisition and Individual Differences

Shaofeng Li, Phil Hiver, Mostafa Papi

Metacognition

Publication details

Masatoshi Sato

Published online on: 31 May 2022

How to cite: Masatoshi Sato. 31 May 2022, Metacognition from: The Routledge Handbook of Second Language Acquisition and Individual Differences Routledge
Accessed on: 15 Dec 2023

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Background

Imagine a teacher presents a group decision-making task. Half of the class does not engage in the task and the other half completes the task in their first language. Then, the teacher implements metacognitive instruction (MI) designed to enhance students’ planning, self-monitoring, and self-reflection of their own learning processes and products. For the rest of the semester, the students seem generally more motivated. They come to classes with their specific personal goals to achieve. They actively participate in group tasks in the target language, contribute their ideas to the discussion, provide content and language feedback to each other, and ask the teacher for more tasks. During the tasks, the students seem to be aware of what the purpose of the tasks is and how they are engaging with the tasks. After each task, the students seem to reflect on what they have learned from the task. Also, they seem to plan how they will take more advantage of the task for their own learning, as evidenced by their extra questions to the teacher after the task. Without the teacher telling them, the students start to explore learning opportunities outside the classroom, such as watching movies and participating in social events in the target language. As a result, the students’ oral production becomes more complex, accurate, and fluent.

The above scenario illustrates successful MI resulting in the learners’ heightened metacognitive knowledge and increased use of metacognitive strategies, fueled by metacognitive experiences in the classroom. In this scenario focusing on group work, not only did MI heighten learners’ metacognition, but the heightened metacognition served as cognitive support for engaging in behaviors that are conducive to L2 learning. For instance, sociocultural theory (Vygotsky, 1978) explains that when learners form a collaborative relationship, they resolve language-related issues and each learner internalizes the scaffolded knowledge (Storch, 2017). MI, in this case, facilitated the internalization of L2 knowledge based on collaborative interaction. From the cognitive-interactionist approach, the quantity and quality of input, feedback, and output are the primary sources of L2 development (Loewen & Sato, 2018). In this scenario, MI increased general participation in group work as well as out-of-class learning activities, which, in turn, promoted those interactional behaviors. Heightened and sophisticated metacognition relates to L2 motivation too, which is required for learners’ long-term efforts in pursuing L2 learning (Dörnyei, 2020). In this chapter, I will discuss theoretical and pedagogical questions embedded in this scenario: (a) What is metacognition? (b) What other individual differences are related to metacognition? (c) What is MI? (d) How does MI support L2 learning? In answering those questions, I will draw on theoretical knowledge and empirical evidence from cognitive and educational psychology, in the context of increasing yet
metacognition in L2 research. Finally, I will discuss how metacognition research can be used for classroom practice and policy making, and conclude with future research directions.

Metacognition is often described as “knowledge about knowledge”, “thoughts about thoughts”, or “reflections about actions” (Weinert, 1987, p. 8). Dinsmore et al. (2008) explained metacognition as “reflective abstraction of new or existing cognitive structures” (p. 393). Boekaerts (1997) stated that metacognition is a “theory of mind, theory of self, theory of learning and learning environments” (p. 165). Metacognition has been associated with “executive function” as well, which is another way of understanding higher-order cognitive processes entailing “deliberate, goal-oriented, and self-regulated information processing” (Roebers, 2017, p. 32). In simpler terms, metacognition is the third-person point of view of one’s own knowledge and thoughts that one possesses, to different degrees of clarity, accuracy, and control. The information people obtain from this view—metacognitive knowledge—can be controlled to further enhance learning, that is, metacognitive regulation. Meanwhile, metacognition is a type of individual difference that can be trait-like and state-like. While earlier research considered metacognition as a trait and investigated its connection to learning outcomes, the current research focuses on the construct’s state-like aspects that are susceptible to instruction.

In the fields of cognitive and educational psychology, metacognition has been investigated for decades amounting to a general consensus that metacognition is a strong predictor of learning success (see Donker et al., 2014), even after factoring in other individual differences such as general intelligence (see Ohtani & Hisasaka, 2018). For instance, Wang et al. (1990) analyzed 179 primary studies and identified various predictors of learning outcomes, such as classroom management, quantity of instruction, and student–teacher interaction, among which metacognition was the strongest. The construct has a broad presence in cognitive and educational psychology, and it has been examined in different content areas (e.g., science and mathematics). In their meta-analysis, de Boer et al. (2018) identified 8,744 studies from international journals in their initial literature search related to metacognition published between 2000 and 2017. That there is an international journal called *Metacognition and Learning* published by Springer attests to the construct’s importance in learning and research.

At the outset of this chapter, a few caveats need to be pointed out. First, perhaps due to the construct’s broad coverage of cognitive and affective issues, as can be seen in the opening scenario, researchers have defined and operationalized metacognition differently. In Dinsmore et al.’s (2008) analysis of 255 studies in the field of educational psychology published between 2003 and 2007, only 32% of the studies provided explicit definitions of metacognition. Dinsmore et al. cautioned that “there is a deceptively simple conceptualization of metacognition such as ‘thinking about thinking’” (p. 399). Similarly, Veenman et al. (2006) asserted that “while there is consistent acknowledgement of the importance of metacognition, inconsistency marks the conceptualization of the construct” (p. 4). While some recent reviews of the construct have helped clarify its relevance to the field of L2 teaching and learning (Goh, 2018; Lee & Mak, 2018; Zhang & Zhang, 2019), L2 researchers, including myself, continue to use the term without much precision. Second, metacognition is an individual difference that is malleable, unlike some other individual differences such as working memory and aptitude. Taking advantage of the malleability of metacognition, the majority of current research has focused on instructional interventions that foster metacognition, that is, MI. Consequently, the metacognition literature included in this chapter is more applied than basic research. Third, although the construct was introduced to the field of L2 teaching and learning by Wenden (1987) more than 30 years ago, it is only recently that L2 researchers started to conduct empirical research (except, perhaps, in the area of listening skills). Due to the recent interest in the field of L2 research, I will discuss some pitfalls that L2 researchers might want to avoid. These include the distinctions between 1) metacognitive knowledge/processes versus L2 knowledge/processes, and 2) MI versus strategy instruction.
Metacognition

Research

In this section, I will first review metacognition research in educational and cognitive psychology and focus on research in the L2 field. I will discuss how researchers in different fields have used the construct. Then, I will review a few individual differences related to metacognition by focusing on those most relevant to the classroom. I will move on to MI which is the main issue of the current chapter. Finally, I will discuss research participants that researchers have focused on and measurements typically used to examine metacognition.

Evidence

The Construct of Metacognition

Originally, Flavell (1971) conceptualized metacognition as having four components: metacognitive knowledge, metacognitive experience, goals, and the activation of strategies. Soon after, researchers organized the construct into two parts in order to capture its cognitive nature and regulation of the knowledge: metacognitive knowledge and metacognitive regulation (Brown, 1987; Flavell, 1979). Current research mostly operates according to this conceptualization. Depending on researchers, metacognitive knowledge has been conceptualized in two ways. Some researchers use a framework in which metacognitive knowledge is split into three types according to their nature: person, task, and strategy (see Flavell, 1979). Person knowledge relates to the learner himself/herself and others (e.g., the teacher and classmates) as cognitive processors. Task knowledge encompasses the information and resources needed to undertake a task (e.g., the procedure to complete the task). Strategy knowledge concerns strategies that are likely to be effective in achieving the goals and undertaking the task (e.g., communication strategies). Other researchers follow a framework in which metacognitive knowledge is divided into three types according to their processes: declarative, procedural, and conditional (see Schraw & Dennison, 1994). Declarative knowledge refers to knowledge about self (learners themselves) and strategies (e.g., communication strategies). Procedural knowledge pertains to knowledge about how to use strategies. Conditional knowledge is about when and how to use strategies. I will use the first conceptualization in this article, due to the fact that it is the one that L2 research has primarily adopted thus far.

In either conceptualization of metacognitive knowledge, the regulation (or control) of the different types of metacognitive knowledge involves activities that enable learners to attain control of their thinking and learning, including planning, self-monitoring, and self-evaluation (Veenman et al., 2006). Metacognitive monitoring and control processes dynamically communicate with each other (Nelson & Narens, 1990; Roebers & Spiess, 2017). For instance, based on her metacognitive knowledge that “I keep making mistakes of third-person singular -s” (monitoring), the learner may control this knowledge by thinking, “Since I keep making the same mistake, I will listen to the teacher’s feedback more carefully” (control or modifying). After benefiting from the teacher’s feedback and consolidating L2 knowledge related to the grammatical feature, the learner may realize, “I don’t make -s mistakes anymore” (monitoring).

Meanwhile, metacognitive experience, originally juxtaposed with metacognitive knowledge by Flavell (1981), mediates the development of metacognitive knowledge. Learners go through metacognitive experience as they engage in learning activities, and the subjective, affective experiences shape their metacognition (Efklides, 2001). For instance, by using a metacognitive strategy, positive emotions, such as satisfaction or confidence, may arise. This affective experience may encourage the learner to use the strategy more in the future, which in turn affects their metacognitive knowledge. As metacognition is primarily a cognitive enterprise, however, researchers have paid limited attention to metacognitive experience (de Bruin & van Gog, 2012). Nonetheless, metacognitive experience is an important component especially in the context of classroom instruction where
learners experience a variety of emotions and where their past and current experiences in learning shape their future experiences.

An important outcome of heightened metacognition is problem solving and inquiry behavior. A number of observation studies have revealed a direct link between metacognition and the ways in which learners solve issues at hand. For instance, in the field of science education, Anderson and Nashon (2007) investigated the relationship between metacognition and knowledge construction related to physics. The participants (11–12 years old) first answered a metacognitive questionnaire. Then, they visited an amusement park and obtained kinematic information about the rides in groups (e.g., angles, accelerations, and velocities). Their group interactions were audio-recorded. The results suggested that, first, the participants’ metacognition was idiosyncratic. Second, each learner’s metacognition influenced the group dynamics, which, in turn, affected the final knowledge construction of each learner. Those who possessed higher metacognition benefited from the task more. Similar findings were reported by Adler et al. (2016) who focused on environmental education. In particular, these researchers found a connection between metacognition and collaborative learning during group work. The participants were 250 learners in Grades 7 and 8, whose group interactions during inquiry-based learning were observed. The results showed that the group that received collaborative training improved their content knowledge (environmental literacy) the most because the learners’ metacognition was interactively enhanced as they discussed and counter-argued different opinions. These studies show the extended influence of metacognition on inquiry behaviors, including when learners work together to solve a problem.

**Metacognition and L2 Learning**

Flavell (1979) discussed metacognition in relation to language acquisition, albeit not L2 acquisition. He argued that metacognition plays an important role in “oral communication of information, oral persuasion, oral comprehension, reading comprehension, writing, language acquisition” (Flavell, 1979, p. 906). In the field of L2 research, Wenden (1987) was the first to consider metacognition in the context of L2 learning and teaching. She introduced the concept in “a simplified model of language learners’ metacognitive knowledge” (Zhang & Zhang, 2019, p. 888) by narrowly focusing on the three components of metacognitive knowledge: person, task, and strategy. More recently, Goh (2018) described metacognition more broadly as “the ability to step back from the intense activities of learning, problem solving and communicating to becoming an observer, a critic and a commentator of one’s own endeavors” (p. 2).

Although limited to the domains of listening and writing, some studies have been conducted with association models to identify the relationship between metacognition and L2 learning outcomes. In Teng and Zhang (2016), metacognition was included in the higher-level variable of self-regulated learning (SRL) and tested against writing proficiency. The structural equation model based on data from Chinese university-level EFL learners (N = 790) showed a good model fit in which metacognition was an important contributor to the latent construct of SRL. Metacognition significantly predicted writing scores in the multiple regression model. Teng and Zhang suspected that “students who have awareness about realizing and monitoring their task goals might also exert effort to regulate their social behavior and intrinsic motivation to maintain or increase their engagement with tasks” (p. 693). Qin and Zhang (2019) also focused on Chinese EFL learners’ writing proficiency (N = 126). Their questionnaire included three subsections: planning, monitoring, and evaluating. The results showed that metacognitive knowledge scores were highly correlated with the writing scores, especially for higher-proficiency learners. These results imply that successful L2 learners possessed more metacognitive knowledge (see also Lee & Mak, 2018). In the area of listening, Vandergrift’s (1997) observation study showed that more successful listeners used more metacognitive strategies. Similarly, in a qualitative study, Goh (1998) observed the use of cognitive and metacognitive strategies by 16 university-level Chinese EFL learners. The data from
verbal reports during a listening task as well as written diary entries indicated that high-ability listeners used metacognitive strategies more than the low-ability listeners. For instance, high-ability listeners used comprehension evaluation with which they reflected on the accuracy of their comprehension after a listening task (see also Zeng & Goh, 2018).

Given the increasing interest in metacognition in L2 research, I would argue that a clearer theoretical distinction needs to be made between metacognitive knowledge/processing and L2 knowledge/processing. This seemingly obvious comparison becomes blurred when explicit (or declarative) L2 knowledge and explicit processing (learning) are taken into account. Explicit knowledge is a conscious type of knowledge and is typically operationalized as “the learners’ explanation of specific linguistic features” (Ellis, 2005, p. 145). For instance, when an L2 learner can explain the grammatical rule related to the simple past tense, the learner is arguably retrieving information from explicit memory. Metacognitive knowledge is also a conscious type of knowledge. However, it differs from knowing rules—cognitive knowledge—in that metacognitive knowledge involves a meta-level and higher-order analysis of the person’s own L2 knowledge. Therefore, when an L2 learner possesses accurate metacognitive knowledge, they are, for example, able to explain: “I still make mistakes of the simple past tense”.

Similarly, while explicit L2 processing involves conscious awareness of particular linguistic information (e.g., a cognitive comparison between acceptable and unacceptable grammatical forms based on the teacher’s corrective feedback), metacognitive processing relates to a different type of knowledge, resulting in the learner’s awareness: “The teacher’s feedback can be helpful for improving my language”, “I will be more careful next time I speak”, or “I shouldn’t think about grammar too much when I am speaking”. Goh (2018) accurately depicted metacognition as involving mental activities for “directly attending to input, processing it in working memory, and storing the processed knowledge and understanding in long-term memory for retrieval and use” (p. 1). However, given the difference between metacognitive processing and explicit L2 processing, I would argue more precisely that metacognition involves the learner’s conscious awareness of their cognitive activities that they are attending to input, that their L2 knowledge retrieval is more accurate and faster, and that they know what to do to facilitate their learning in future tasks. In the same way, self-monitoring in metacognition research differs from the term monitoring used to explain L2 cognitive processing in SLA research. While the former relates to the learner’s awareness of their learning processes and products, the latter denotes processing of L2 information that can occur consciously or unconsciously (Kormos, 2000).

Another cautious note relates to the accuracy of metacognitive knowledge. That is, a learner may possess a high degree of metacognition that is inaccurate. If monitoring of their own learning is inaccurate, leading to overconfidence, students’ learning outcomes tend to be less positive, compared to those who are able to evaluate their learning progresses accurately (Dunlosky & Rawson, 2012). A simple example may be self-assessed proficiency; an L2 learner may believe their own proficiency to be higher than what it actually is. Hence, a study runs a risk if it relies on the questionnaire data of metacognition and assumes that higher scores mean more accurate metacognition. If this metacognitive knowledge was inaccurate, the obtained scores would serve a false role in determining the relation of metacognition to another variable. This issue differs from a methodological issue related to construct validity. Rather, it is a theoretical issue regarding how accurately one can assess their own knowledge.

**Metacognition and Other Individual Differences**

Metacognition has been found to be associated with many other psychological constructs, such as motivation, self-efficacy, achievement goals, feedback-seeking behaviors, and, most closely, self-regulated learning (SRL). In relation to motivation, de Bruin and van Gog (2012) explained that “[i]f a discrepancy exists between desired and current level of understanding, the learner will
regulate learning behavior by continuing to study the material” (p. 246), albeit without invoking self-discrepancy theory (Higgins, 1987). It seems then that metacognition is related to motivation at the level of identifying the discrepancy between the current level of content knowledge (i.e., actual self) and the level that a learner aspires to reach in the future (i.e., possible self). Put differently, if a learner’s metacognition is high and accurate, they are able to identify what needs to be done to improve their skills and content knowledge. This metacognitive activity may result in extra effort put in by the learner to develop these skills (Dunlosky & Rawson, 2012). For instance, in the field of mathematics education, Desoete et al. (2019) showed that intrinsic motivation of primary school students was related to their metacognition. Subsequently, those who exhibited lesser metacognition and lesser motivation were found to be poor mathematics performers. Similarly, de Boer et al. (2018) argued that metacognition combines several motivational aspects, such as self-efficacy and goal orientation (see also Harackiewicz et al., 2002). With pre-service mathematics teachers, Hidayat et al. (2018) showed that students’ components of metacognition (e.g., planning and self-evaluation) were positively correlated with achievement-goals scores (all $r > .52$).

Accurate and heightened metacognition is related to feedback-seeking (or help-seeking) behavior as well (Nelson & Narens, 1990). Focusing on young learners, Coughlin et al. (2015) examined the relationship between metacognitive control and help-seeking behaviors. The participants were given a picture-identification task, and their confidence levels and help-seeking behaviors were observed. It was shown that when children were able to monitor their uncertainty more accurately, they asked for help more judiciously. That is, learners’ strategic monitoring and regulation of their knowledge explained how and how much they sought help from another person. Nelson and Fyfe (2019) also found that young learners (six to nine years old) with higher metacognition made more strategic feedback-seeking decisions, compared to those with higher but false confidence in their learning.

Most commonly, metacognition has been linked to SRL. It is important to stress that metacognition and SRL are different constructs, although, as Dinsmore et al. (2008) cautioned, the terms have been used interchangeably in the literature. SRL can be defined as “the degree to which learners are metacognitively, motivationally, and behaviorally active participants in their own learning process” (Zimmerman, 2008, p. 167). Hence, metacognition differs from SRL in that, while metacognition, at the levels of both monitoring and regulation, focuses on cognition, SRL entails behavioral and emotional regulations. As Dinsmore et al. (2008) pointed out, “the act of self-regulation does not occur without the interaction of the person with the environment” (p. 393). Research in educational psychology has shown SRL’s relationship with learning achievement, as shown by a recent meta-analysis by Jansen et al. (2019). When learners engage in self-monitoring related to problem solving and decision making, those metacognitive processes substantiate “the effort learners put into finding and using different types of strategies to solve the problem or make a decision” (Baars et al., 2017, p. 1665). In L2 research, Zhang and Zhang (2019) asserted that learners can “draw on their metacognitive knowledge to make decisions for smoother progress toward higher proficiency in the target language as part of the effort toward learner autonomy” (p. 893). At the same time, the relationship between metacognition and SRL is mediated by motivation, which is required for incurring a propensity for efforts that learners put into learning, after successfully monitoring their current knowledge and skills (Boekaerts, 1997; Kaplan, 2008).

In L2 research, although those constructs have been widely examined (see Dörnyei, 2020 for motivation; Papi et al., 2019 for feedback-seeking behavior; Teng & Zhang, 2019 for SRL), the connection between those individual differences and metacognition has rarely been explored, either in observational or experimental studies.

**Metacognitive Instruction**

Since its inception, research of metacognition quickly shifted from a psychometric to an educational inquiry. Although metacognition is an individual difference factor, the primary questions...
researchers have sought answers to are: “How do students’ monitoring and regulation processes relate to their learning outcomes?” (de Bruin & van Gog, 2012, p. 246) and, more importantly, “How can instruction facilitate those processes?” Dinsmore et al. (2008) noted that one key question in this area of research is: “Who monitors or regulates and when, what types of environments stimulate monitoring and regulation, and how are monitoring and regulation tied to academic performance?” (p. 406). Due to the emphasis on the educational potential of metacognition, the vast majority of current research examines the impact of interventions designed to enhance metacognition. By broadly defining MI as a pedagogical intervention designed to impact domain-general, higher-order thinking processes, I will review empirical evidence from general education and L2 research.

The content knowledge that MI’s impacts have been most tested against relates to mathematics and science. In the field of science education, Yerdelen-Damar and Eryılmaz (2019) targeted tenth-graders’ understanding of force and motion. With a quasi-experimental design, the learners in the experimental group received a seven-stage MI designed to facilitate reflections on and evaluations of the focused physics concepts. The results showed that the instruction was effective, although learners with a higher conceptual understanding of the content benefited more from MI. With university-level students, Zheng et al. (2019) focused on metacognition during group work in the computer-mediated communication context. The group task was to design an instructional plan for teaching physics to secondary school students. The experimental learners were instructed to set goals, plan how to complete the task, monitor their progress, and self-evaluate the outcomes. This MI led to more collaborative interactions (measured via the nature of scaffolding among the group members) as well as higher group performance (measured via the quality and quantity of idea units).

The positive impact of MI has been summarized by various meta-analyses (de Boer et al., 2014; Dignath et al., 2008; Donker et al., 2014; Zhou & Lam, 2019). De Boer et al. (2018) analyzed 48 MI studies that examined the long-term effect of MI. The studies, with delayed post-tests, included different content knowledge such as reading, writing, mathematics, and science. The impact of MI was conceptualized as academic achievement aggregated from various test scores in individual studies. The results showed not only that the positive impact was sustained after MI had ended (an average of 21.6 weeks later), but that MI’s impact slightly increased over time. De Boer et al. (2018) confirmed that once students acquire metacognitive skills, “student performance is sustainably enhanced” (p. 111). Again, it is evident that metacognition provides cognitive support for content learning, and this cognitive support can be skillfully and autonomously used by learners, regardless of the targeted content knowledge.

In the field of L2 education, research has shown that MI can impact the development of specific L2 domains, such as listening comprehension (Bozorgian & Alamdari, 2018; Goh, 2008; Tan et al., 2019; Vandergrift & Tafaghodtari, 2010), reading comprehension (Teng, 2020), writing skills (Negretti & McGrath, 2018; Teng & Zhang, 2019), and speaking performance (Sato, 2020; Sato & Dussuel Lam, 2021; Sato & Loewen, 2018). Studies also found that MI can enhance learners’ use of metacognitive strategies, such as peer reviews for writing (Bui & Kong, 2019), pre-planning for writing (Ong, 2014), and collaborative interaction strategies (Lam, 2010; Sato, 2020). MI can affect other psychological constructs as well, such as self-efficacy (Teng & Zhang, 2019), motivation (Tan et al., 2019), and willingness to communicate (Sato & Dussuel Lam, 2021). While the nature of MI differs depending on the targeted L2 skills and/or metacognitive strategies, MI as an experimental intervention can be as simple as telling learners what to expect from the teacher (Sato & Loewen, 2018) or manipulating topics of the task to enhance learners’ metacognitive processes (Ong, 2014). It can also be longitudinal and elaborate, lasting an entire academic semester. For instance, in Vandergrift and Tafaghodtari’s (2010) experiment, university-level learners of French were instructed to predict the types of information they would hear before actual listening. Then, they were told to verify their predictions during listening (i.e., to self-monitor).
Similar to the distinction I made earlier between metacognitive knowledge and L2 knowledge, it is crucial to distinguish between MI and strategy instruction. In the L2 field, learning strategy research has a long history and has produced evidence for the positive impact of strategy training on strategy uses (see Oxford & Amerstorfer, 2018). However, amid the increase in L2 MI research, there seems some confusion between MI and some strategy instruction, especially in the area of feedback training. In Sato and Lyster (2012), for example, Japanese EFL learners were given ten weeks of training on corrective feedback. After extensive training, learners used an increased amount of corrective feedback, and their accuracy and fluency in their spontaneous oral production improved. Similar findings were reported in Sato and Ballinger (2012), Fujii et al. (2016), Sippel (2019), and Dao (2020). I would argue that the interventions in those studies should not be considered as MI. As Flavell (1979) emphasized, cognitive activities are different from metacognitive activities; the latter involve learners’ planning, reflecting, monitoring, and evaluating their own learning processes (see also Vermunt, 1996). Again, the confusion stems from L2 cognitive theories. Learners may be providing feedback, but this behavior itself is based on lower-order cognitive processing; detecting an L2 error and providing interactional feedback (Sato, 2017). Metacognitive knowledge involves awareness of the use of interaction strategies and their usefulness for learning. Only when learners develop metacognitive knowledge of communication strategies will they use them in sustainable and autonomous ways. Having said that, strategy instruction may increase learners’ metacognitive knowledge as a by-product. By using the strategy repeatedly, learners may become aware of its usefulness for their own learning over time.

Data Elicitation

As can be seen from the reviewed studies above, researchers in educational and cognitive psychology have generally examined children’s metacognition. This is due to their interest in developmental sequences that a child goes through in becoming able to regulate their behaviors and thoughts (see Roebers, 2017). For instance, being able to explain their own thoughts and behaviors is an important developmental milestone pertaining to higher-order thinking processes. Being able to listen to the teacher’s instruction or performing school activities in general requires higher-order thinking as well. Consequently, metacognition has been investigated primarily in relation to school performance and academic achievements at school levels. However, in the L2 field, researchers have focused on adults, perhaps due to 1) an overall focus on adults in the field, 2) the way in which metacognition was originally introduced to L2 research, 3) a theoretical conflation between L2 processing and metacognitive processing, and 4) an unclear distinction between L2 learning strategies and metacognitive strategies. Given the extent to which metacognition accounts for the development of content knowledge in different subjects, L2 research can consider metacognition as an important factor in child L2 learning.

In understanding the construct of metacognition as well as the impact of MI, different measurement tools have been used. In addition to various instruments used to examine specific L2 skills (speaking, listening, writing, and reading), studies have analyzed the ways in which L2 learners interact with each other to measure their metacognitive knowledge (Sato, 2020). Because metacognition can be uniquely worded for different L2 skills, researchers have developed skill-specific questionnaires focusing on, for instance, listening (Vandergrift et al., 2006) and writing (Teng & Zhang, 2016). In addition, metacognition can be investigated via stimulated recalls, by retrospectively asking learners what they were thinking at the time of task performance (Bui & Kong, 2019; Goh, 1998; Vandergrift, 2003). Yet another method involves data collection materials designed to elicit metacognitive knowledge of a specific construct. In order to investigate young learners’ (eight to nine years old) metacognitive knowledge of oral communication, Sato and Dussuel Lam (2021) used the diagram depicting willingness to communicate. In the original diagram by MacIntyre et al. (1998), various antecedents for oral L2 use were included, but the learners in Sato and Dussuel
Lam were given its empty version. Their discussion while filling out the diagram and the written products were used as measurements of metacognitive knowledge. However, Sato and Dussuel Lam (2021) reported an issue of using a questionnaire to elicit young learners’ metacognitive knowledge. To this end, L2 research may benefit from the methodological advancement in educational and cognitive psychology to investigate young learners. For instance, researchers have examined how students seek help from others (e.g., Coughlin et al., 2015), how they strategically avoid tasks that they perceive as difficult (e.g., Bernard et al., 2015), or what kinds of communication strategies they use during group work (e.g., Zheng et al., 2019).

Practical Applications

Due to the volume of metacognition and MI research in the field of educational psychology, governments around the world are increasingly incorporating MI in their curriculums (see Perry et al., 2019). Various educational consulting services use metacognition as a pillar element as well. For instance, Let’s Think (2020), developed by King’s College London, features “questioning, collaborative work, problem solving, independent learning, metacognition and challenge”. In addition, metacognition has been linked to classroom assessment. Baas et al. (2015) examined the relationship between metacognition and Assessment for Learning, and reported that students’ effective use of metacognitive strategies was enhanced when teachers employed accurate formative assessment. This included providing feedback that moves learners forward, activating students as instructional resources for each other, and activating students as owners of their own learning. Despite the trend in other educational fields, the application of metacognition at the policy level has rarely been seen in L2 education.

In the hope of a stronger presence of metacognition in L2 education, I now list some pointers for MI in the L2 classroom. First, teachers should target different components of metacognitive knowledge (person, task, and strategy). As research has shown, students possess different degrees of metacognitive knowledge in different components (Goh, 2018). For instance, some students may be aware that the teacher is a useful learning source yet do not know how to take advantage of the instruction. In such a case, an explicit lesson focusing on which aspects students should pay attention to during teacher-fronted activities would enhance their metacognition. Second, teachers can consider metacognitive experiences. In a complex learning environment in the classroom, emotions and cognition are inseparable and interdependent (Swain, 2013). In such a learning environment, in addition to teaching students specific metacognitive strategies (e.g., how to collaboratively work during group tasks), focusing on students’ affective responses (e.g., enjoyment during the tasks) would facilitate the control of metacognitive knowledge (e.g., interest in doing more group tasks). Third, and perhaps most importantly, MI should be delivered in a separate instructional unit from regular L2 lessons. In so doing, the teacher and students alike can draw a clear line between metacognitive knowledge/processing versus L2 knowledge/processing. Metacognition involves a higher-order thinking process (Roebers, 2017); L2 learners thinking about their learning processes and products differs from them thinking about L2 grammar or pronunciation.

I believe that the pedagogical potential of MI is limitless because it can target virtually any aspect of L2 knowledge. MI is comparatively easy to prepare and it can be delivered without sacrificing already-limited pedagogical hours. Successful MI results in SRL whereby learners take the initiative and ownership of their own learning. Hence, MI’s impact may go beyond what the teacher can supervise and teach in the classroom, and promote autonomous learning outside the classroom (e.g., homework and other societal participation outside the classroom). As Zhang and Zhang (2019) asserted, the goal of L2 teaching is “to develop students into lifelong learners, who are eager to shoulder responsibilities” (p. 894) for L2 learning. Given the potential, I encourage policy makers, administrators, and teachers to consider MI as a pedagogical option.
Future Directions

With abundant theoretical and methodological knowledge from cognitive and educational psychology, L2 research can explore metacognition and MI in a number of directions. First, L2 researchers need to increase the understanding of metacognition in the specific context of L2 learning and teaching. Perhaps due to Wenden’s original focus on the instructional value of metacognition and learner autonomy, L2 research quickly moved on to experimental research examining the impact of MI. Key questions still remain, however: what is the nature of the metacognition of successful (and unsuccessful) L2 learners? What kinds of metacognitive strategies do they use? Does the accuracy of metacognitive knowledge matter for L2 learning? How does metacognition relate to other L2 cognitive and affective individual differences, as well as learning outcomes of different L2 aspects? Answering these questions would help devise MI that would enhance metacognitive knowledge specific to L2 learning. In so doing, however, researchers need to make a clear distinction between L2 knowledge/processing versus metacognitive knowledge/processing. An independent measure of metacognitive knowledge and regulation is a must as well.

Second, it is equally important to examine L2 learners’ metacognition in relation to their behavioral patterns in the classroom. For instance, recent metacognition research from educational psychology has reported that learners with high metacognition tend to take advantage of group work by constructing collaborative relationships with their classmates (Biasutti & Frate, 2018; Zheng et al., 2019). Although L2 research too has shown that collaborative interaction is key for group work to be beneficial for L2 learning (Storch, 2017), no research has examined group work from a metacognitive perspective. Given that metacognition accounts for problem-solving behaviors, another intersection may be the ways in which L2 learners solve language-related issues during communicative interaction (i.e., language-related episodes). The processes involving how L2 learners detect a language issue (a cognitive aspect), deliberate about the language (a behavioral aspect), and collaborate with each other to resolve the issue (a social aspect) closely resemble the nature of metacognitive monitoring and regulation. It would also be interesting to observe how successful L2 learners monitor and regulate their learning processes outside the classroom. It is possible that those learners are more aware of the benefit of exposure to the L2 (e.g., reading books in the L2) or interaction in the L2 (e.g., using the L2 in their social lives) than less successful learners. In observing L2 learning behaviors, it is important to focus on those that have been shown to lead to L2 development (see Sato & Csizér, 2021).

Third, given that acquisition of language differs from learning of other types of content knowledge (Vygotsky, 1978), we need more MI studies targeting L2-specific metacognitive knowledge, metacognitive strategies, other psychological constructs, and L2 skills. In terms of participants, the vast knowledge from educational psychology would provide a firm foundation for L2 researchers who are increasingly interested in young learners (for example, see Sato & Dussuel Lam, 2021). If a study explores MI in the classroom, metacognitive experience also seems to be relevant. In reviewing MI research, de Bruin and van Gog (2012) argued that to gain a fuller understanding of metacognition in the classroom, “more attention should be given to prior and current affective experiences and how these influence learning” (p. 251). In L2 research as well, there is an increasing interest in positive psychology (see MacIntyre & Gregersen, 2016). It would be interesting to examine different emotions in the classroom (e.g., anxiety and enjoyment; Dewaele & Dewaele, 2020) via the lens of metacognitive experience. To date, there have been around two-dozen experimental MI studies in the field of L2 teaching. I would suspect and hope that there will be many more in a few years, which would enable us to conduct a meta-analysis of MI on L2 learning.

Finally, future research must investigate what L2 teachers, whose students became highly metacognitive, do in the classroom when planning, teaching, and assessing. It would be interesting to see whether those teachers’ goals include the transmission of L2 knowledge, or more
global autonomous learning skills, that their students can exploit by themselves, both inside and outside the classroom. As Zhang and Zhang (2019) wrote, successful L2 teaching lies in the teacher's and students’ “shared understandings of what it entails when they talk about the enterprise of language teaching and learning” (p. 894). It is likely that the impact of L2 instruction is enhanced if students understand the intention and benefit of the teacher’s choice and use of specific tasks (see Sato & Loewen, 2018). A focus on teachers’ metacognition is another future direction. Hiver et al. (2019) described metacognitive teachers as those who are “able to assess how their actions will encourage or mediate their students’ development” (pp. 7–8). In addition to understanding teacher metacognition, future research can explore how this interacts with their students’ metacognition. As always, knowing what good teachers do is the best way to explore and examine pedagogical options, to help other L2 teachers use the limited instruction time more effectively and efficiently.

References


Metacognition


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