

# Psycholinguistic Perspectives Underpinning the Effects of Practice in Second Language Acquisition

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## Abstract

In second language (L2) classrooms, various types of practice are implemented to develop L2 competence. However, as practice can be widely defined, L2 teachers need to understand the effective type of practice and the way of integrating practice into their lessons. This paper aims to elucidate the cognitive aspects of practice for L2 learning by reviewing the cognitive perspectives in L2 development (e.g., interface debate between explicit and implicit L2 knowledge), information-processing theories (e.g., skill acquisition theory), and psycholinguistic models/theories involving cognitive processes in L2 production, such as Levelt's production model and transfer appropriate processing theory. Finally, pedagogical implications in implementing practice into L2 classrooms are suggested.

## 1. Introduction: The role of practice in SLA

The term 'practice' can be broadly defined in various ways, ranging from traditional mechanical drills to an exclusive focus on meaningful activities (e.g., free conversation). It seems that practice reminds many of us of the traditional Presentation-Practice-Production (PPP) sequence, in which practice refers to repetition in mechanical drills and grammar exercises, such as fill-in-the-blanks (DeKeyser & Criado, 2013). However, as discussed by DeKeyser (1998), neither mere decontextualized practice nor mere exposure to free communicative activities enables L2 learners to develop well-balanced communicative competence. DeKeyser (1998) regards practice as any "activity with the goal of becoming better at it" (p. 50). Therefore, we need to know what kind of practice activities are effective and why these activities are effective for L2 development. In order to investigate effectiveness of practice, we need to understand the psycholinguistic mechanism underlying L2 knowledge representation in relation to grammar instruction. As Muranoi (2007) posits, understanding the cognitive processes involved in L2 production will enable us to investigate the possible roles of practice in SLA and to determine how best to design and implement practice in L2 classrooms. This paper will illuminate the possible roles of practice in L2 acquisition by reviewing the interface debate between explicit and implicit knowledge, followed by skill acquisition theory and L2 developmental processes. Then cognitive processes of L2 grammar knowledge will be examined based on psycholinguistic models, such as Levelt's production model and transfer appropriate processing (TAP) theory.

## 2. Cognitive perspectives in L2 development

### *Interface debate: Explicit and implicit knowledge*

SLA researchers view the role of grammar instruction in the development of L2 knowledge differently. These different approaches are known as the interface positions based on the presumed strength of the relationship between explicit knowledge and implicit knowledge (Ellis, 2015). In Paradis's (1998) definition, *implicit knowledge* is acquired incidentally and, is stored in the form of procedural know-how without conscious knowledge of its contents and is used automatically (*procedural knowledge*). In contrast, *explicit knowledge* is learned consciously, is available for conscious recall and is applied to the production (and comprehension) of language in a controlled manner (*declarative or metalinguistic knowledge*).

*The non-interface position* views *explicit* and *implicit knowledge* as dissociated because the two types of knowledge entail different processes in L2 development (Krashen, 1991, 1992; Paradis, 1994). *The weak-interface position* views *explicit knowledge* as not directly transformable into *implicit knowledge* but as facilitating the processes in L2 development (Ellis, 2008, 1994), whereas *the strong-interface position* claims that explicit knowledge can be transformed into implicit knowledge through practice (Bialystok, 1978; DeKeyser, 2001, 2015; McLaughlin, 1990; Sharwood Smith, 1981). This position led to skill acquisition theory (e.g., DeKeyser, 1997, 1998, 2015; Lyster & Sato, 2013) making a similar claim that declarative knowledge can be converted into procedural knowledge by means of practice during communicative activities. As the strong-interface position acknowledges the positive effects of practice in L2 development, the following section will illuminate the claims of this position, particularly focusing on skill acquisition theory.

### *Information-processing model: Skill acquisition theory*

A similar distinction to the explicit/implicit distinction is the declarative/procedural distinction. However, the former distinction has been variably considered as a dichotomy and a continuum, whereas the latter distinction is regarded as a continuum, with *declarative knowledge* converting into *procedural knowledge* through practice. I will illustrate skill acquisition theory proposed by Anderson (1982, 1983) and developed by DeKeyser (1997, 2001, 2015) based on the information-processing models (e.g., McLaughlin, 1987, 1990).

Building on information-processing models (e.g., Bialystok, 1978; McLaughlin, 1987, 1990; Sharwood Smith, 1981), Anderson (1982, 1983) proposed his skill acquisition theory based upon his ACT (Adaptive Control Theory) model. Skill acquisition theory regards learning as a transformation of performance from controlled to automatic. L2 learners first resort to controlled processing, in which a lot of attentional control is required to learn new linguistic items. Through repeated practice, the controlled processing becomes converted into automatic processing, in which learners rapidly retrieve the information they need with minimal

attentional control (automatization). In other words, meaningful practice over many trials can transform *declarative/explicit knowledge* (knowing ‘that’) into *procedural/implicit knowledge* (knowing ‘how’) (DeKeyser, 1997, 2001; Lyster & Sato, 2013). This continuing transition from *declarative knowledge* to *procedural knowledge* results in higher-level learning processes, namely, *proceduralization* or *automatization* in L2 use. The final outcome of the gradual process of *proceduralization* or *automatization* is automaticity, which refers to automatic performance that draws on implicit-procedural knowledge and is reflected in fluent comprehension and production (Segalowitz, 2003). DeKeyser (2015) developed the skill acquisition theory further, claiming that existing *declarative knowledge* plays a causal role in the development of *procedural knowledge*. However, he also claims that this does not necessarily mean that the former is converted into the latter. An alternative view of skill acquisition theory is Logan’s (1988) instance theory, in which automatization involves, not the *proceduralization* of rule-based representations with increasingly less attention (i.e., Anderson’s ACT theory), but rather a transition from rule-based performance to memory-based performance (DeKeyser, 2001; Lyster, 2007). In Logan’s theory, automaticity is achieved when it has essentially become faster and more efficient to elicit the instance from memory than to continually apply the rule (DeKeyser, 2001; Rodgers, 2011).

### 3. Psycholinguistic model/theory in L2 output practice

#### *Levelt’s production model and automaticity of grammatical encoding in L2*

Levelt’s (1989) production model is one of the most influential psycholinguistic models of speech. This model accounts for the speech production of L1 adults but does not provide the L2 learning process. However, this model (see Figure 1) will provide L2 teachers with a model of psycholinguistic production mechanisms on which they can rely to examine the validity of pedagogical treatments. In Levelt’s (1989) model, there are five main components: (1) the *conceptualiser*, (2) the *formulator*, (3) the *articulator*, (4) the *audition* and (5) the *speech comprehension system*, and two sources of knowledge, such as *lexicon (lemmas and forms)* and *discourse model* (see Figure 1). A message is initially generated in the *conceptualizer* and the message is produced as a *preverbal message*. While selecting or ordering the relevant information, the speaker is *monitoring* what s/he is saying and how s/he is saying at this stage. Then, the *preverbal message* will be taken by the *formulator* as its input and converted into a *phonetic plan (internal speech)*. In the *formulator*, the *lexicon*, composed of two parts, provides crucial information in the process. The *lemma* contains semantic and syntactic information about the lexical items (main linguistic theme), whilst the *form* contains specific information about the morphological or phonological items. By using the *lexicon’s* information, the *formulator* gives rise to the following plans in two steps: *grammatical encoding* and *phonological encoding* (see also Izumi, 2003). *Grammatical encoding* takes place given that the *lemma* is activated when its meaning matches the *preverbal messages* with the semantic

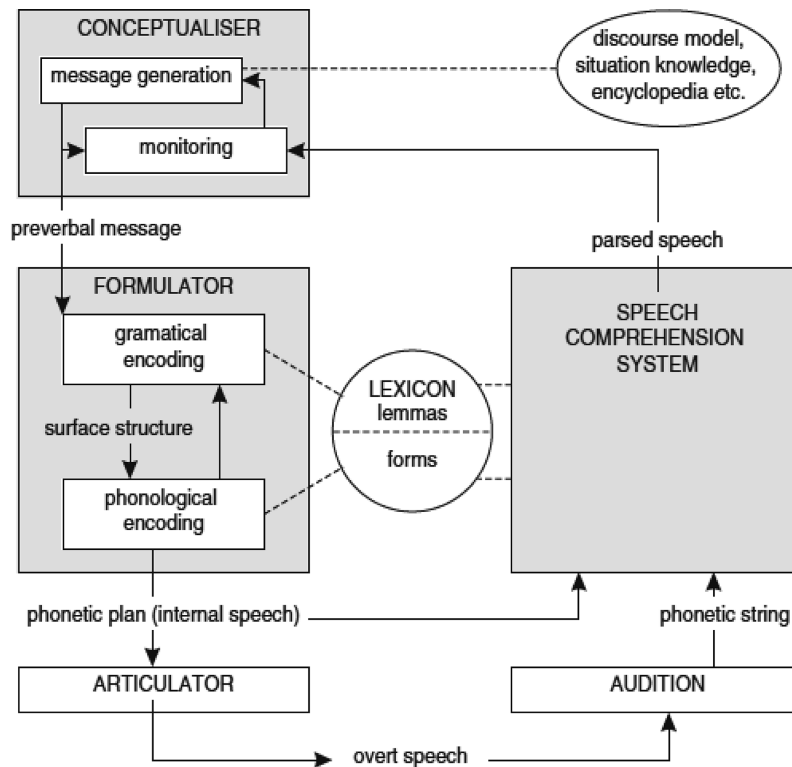


Figure 1. Levelt's model of speech (Levelt, 1989, p. 9)

specifications. This activation prompts the relevant syntactic information to be available, activating *syntax building procedures* (Izumi, 2003). The second step, *phonological encoding*, occurs by accessing morpho-phonological information in the *lemma*, which triggers a *phonetic plan* scanned by the speaker through the *speech-comprehension system*. Then, the *articulator* converts the phonetic speech into actual speech. At this point, the *speech-comprehension system* is connected to the auditory system and the lexicon serves as the feedback function.

As Levelt (1989) states, *formulating* and *articulating* are carried out by adult native speakers automatically with little executive control. However, this does not apply to L2 learners who consciously use the language with a great deal of attention (Kormos, 2000). As Izumi (2003) points out, the process of *grammatical encoding* in production ‘sensitizes the learners to the possibilities and limitations of what they can or cannot express in the TL (Target Language)’ (p. 183). This ‘sensitization’ is boosted by the feedback system available for *monitoring* speech. In this model, both internal and actual speech is taken into the *speech-comprehension system* and returned to the *conceptualizer* to be monitored. This *monitoring* mechanism helps the speaker to produce an accurate and appropriate outcome (Kormos, 2000). In this way, the processes in Levelt’s model, particularly *grammatical encoding* and *monitoring*, can serve as an *internal priming device* for enhancing IL (Interlanguage) grammatical knowledge (Izumi, 2003, p. 184).

### *Kormos's implications for L2 learning*

In order to close the gap between L1 and L2 speakers, Kormos (2006) proposes three crucial aspects as follows. First, L2 learners are required to acquire sufficient declarative knowledge, which involves vocabulary as well as grammatical, morphological, and phonological rules. The acquisition of large amount of vocabulary items may avoid the need for modifications and substitution strategies in their L2 utterances. Declarative rule knowledge will help to compensate for insufficient procedural knowledge by consciously making use of the grammatical rules at the initial stage of L2 learning. Second, declarative knowledge can be transformed into procedural knowledge and finally automatized by strengthening links between the input and the relevant pieces of lexical, syntactic or phonological information (see also MacKay, 1982). As strengthening takes place through repeated exposure to and use of L2, classroom L2 teachers must provide L2 learners with ample opportunities of repetitive practice to bring about automatization. Finally, it is recommended to memorize larger production units, such as chunking or formulaic phrases. The process of L2 production will be facilitated when learners have strongly connected lemmas in retrieving a required linguistic information (Kormos, 2013).

### *Transfer appropriate processing (TAP)*

TAP refers to the relationship between cognitive processes that are used during learning and those required for retrieval (testing) (Lightbown, 2013). TAP is also consistent with the principle of “encoding specificity”, suggesting that “encoding will be specific to the set of conditions prevailing at the time of intake” (Segalowitz, 2010, p. 62). A number of TAP studies found that retrieval was more successful if the cognitive processes and even environmental conditions at the time of learning/practicing are similar to those in retrieval/testing (e.g., Morris, Bransford, & Franks, 1977). In other words, matching the processes employed in learning (practice) with those employed in actual L2 use (testing/retrieval) will maximize the learners' L2 performance. If learners are merely exposed to grammar drills, imitation, or memorized dialogue practice, they will find it difficult to perform fluently and appropriately in a variety of communicative settings.

Integrating grammar practice within communicative activities in L2 classrooms has been a debatable issue. Some researchers (VanPatten, 1990) claimed that drawing attention to form while comprehending meaningful messages in communicative activities may be sometimes demanding for L2 learners. These researchers are in favour of separating form-focused activities (explicit grammar instruction) from communicative activities. However, as found by Spada, Jessop, Tomita, Suzuki, and Valeo (2014), both isolated form focused instruction (FFI) and integrated FFI groups significantly improved their L2 development. As well, the finding that integrated FFI learners significantly better performed on the oral production test than isolated FFI learners lends support for TAP. Bjork (1994), drawing on the perspectives of memory and instruction in cognitive psychology research, suggested that effective instruction involves

'desirable difficulties' in classroom learning. Bjork pointed out that memory research reveals that when learning conditions challenge learners to work harder, the result can yield better long-term retention. As Lightbown (2007) also stated, "language produced under conditions that require more effort, more retrieval from long-term memory, and more competition for processing resources may be a better preparation for using language in new situations" (p. 39).

#### 4. Pedagogical implications and conclusion

This paper overviewed the psycholinguistic processes underlining the roles of practice in SLA, illuminating the interface debate between explicit knowledge and implicit knowledge, skill acquisition theory, and cognitive models of language learning processes, such as Levelt's production model and transfer appropriate processing theory. Practice plays a crucial role to develop L2 knowledge given that the quality and condition of practice are suitable for effective L2 learning. Massive and deliberate practice enable learners to use L2 knowledge more accurately and efficiently. It should be noted that, as discussed by DeKeyser (1998), neither mere decontextualized practice nor mere exposure to free communicative practice activities will enable L2 learners to develop well-balanced communicative competence. Hence, teachers are required to implement grammar practice activities in communicative contexts. Nonetheless, the challenging but most important issue is designing communicative practice activities which promote proceduralization and automaticity in learners' L2 development processes and effectively implementing them in L2 classrooms (Segalowitz, 2003). Despite some objections about guided practice (e.g., Long & Robinson, 1998), many researchers acknowledge the crucial role and effect of guided practice, which enables learners to prepare for subsequent meaning-based communicative tasks (e.g., Lightbown, 1998; Lyster, 2007, 2017; Ranta, 2015). It must be imperative for L2 teachers to design and implement optimal practice activities in their classrooms based on understanding the cognitive processes involved in L2 production.

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