

An Evaluation of the Role of Consciousness in Second Language Learning

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The research is financed by Department of Education of Guangdong Province.

Abstract

The role of conscious and unconscious processes in second language learning is one of the problems under dispute in applied linguistics. Richard Schmidt argues, in his article: *The Role of Consciousness in Second Language Learning* (1990), that the notion of consciousness is both useful and possibly necessary in second language learning. Conscious processes are important in second language learning, but unconscious processes should not be neglected in language comprehension and production, both of which contribute to second language learning. He concludes that much more research is needed on learners' noticing, which becomes intake when combined with input, on incidental learning, on implicit learning, and on what learners are conscious of as they learn a second language. This paper presents how Schmidt's theory of the Noticing Hypothesis and L2 conscious processes have influenced other research and aroused many advocates and criticisms. The argument on the role of conscious and unconscious processes in SLL will last and needs more research. This theory lays a new theoretical foundation for constructing the theories of foreign language learning, and provides the theoretical support for renewing teaching ideas, improving teaching methods and learning strategies in English teaching and learning of China. However, whether and how the Noticing Hypothesis and L2 conscious processes are appropriate for English language education in China deserves more discussion and research.

Keywords: Consciousness, Unconscious, SLA, SLL, Implicit, Explicit

1. Introduction

The role of conscious and unconscious processes in second language learning is one of the problems under dispute in applied linguistics. Krashen (1982, p. 10) puts forward a distinction between two independent processes: acquisition and learning. 'Acquisition' is a subconscious process; while 'learning' is a conscious process which results in 'knowing about' a language. He claims that conscious knowledge cannot become unconscious linguistic knowledge. McLaughlin, Rossman and Mcleod (1983) disagree with Krashen's notion of the distinction of acquisition and learning. They hold their ground to avoid the issue of consciousness in the theory of language acquisition. Schmidt (1990, 1994) claims that learning a language is largely a conscious process and noticing is important in learning process. Another argument is acquisition is a blend of the conscious and sub-conscious - in part conscious and in part subconscious (Tomlin and Villa, 1993). However, Ellis argues that 'this discussion of consciousness in L2 acquisition suggests that the distinction between conscious 'learning' and subconscious 'acquisition' is overly simplistic' (1994, p. 361). Such an argument will last.

In his article: *The Role of Consciousness in Second Language Learning* (1990), Richard Schmidt suggests that the notion of consciousness is both useful and possibly necessary in second language learning. Schmidt's aim is to reveal that conscious processes are important in second language learning, but unconscious processes should not be neglected in language comprehension and production, both of which contribute to second language learning. Schmidt first puts forward clearer definitions of consciousness, which are necessary to understand the multitudinous problems concerning second language learning. He says that three senses of consciousness should be distinguished: consciousness as awareness, consciousness as intention, and consciousness as knowledge (Schmidt, 1990, p. 131). Schmidt then demonstrates the theories of consciousness: consciousness in information processing theories and a global workspace theory. Focus is on the discussion of the role of consciousness in second language learning in the rest of this article. Schmidt presents three issues to be considered: '(1) intake,

noticing and subliminal perception; (2) the incidental learning and intentional learning; and (3) the issue of implicit learning and explicit learning (Schmidt, 1990, p. 138). He concludes that much more research is needed on learners' noticing, which becomes intake when combined with input, on incidental learning, on implicit learning, and on what learners are conscious of as they learn second languages.

Schmidt's noticing hypothesis and its role in language acquisition has aroused some support and argument (Cross, 2002), which drives forward more concerns and research on the issues related to it in SLA. Schmidt's theory and research have been used and quoted as important literature by many researchers (Ellis, 1994, 1997; Skehan, 1996; Lee et al., 1997; Cross, 2002; Forth and Dewaele, 2002 and many others). Therefore, he is probably one of the most influential researchers who contribute to impelling further research on consciousness and unconsciousness in second language learning. The purpose of this paper is to evaluate Schmidt's article, *The Role of Consciousness in Second Language Learning* and discuss how he has influenced other research and China's foreign language teaching and research.

2. Review of the Role of Consciousness in Second Language Learning

The role of consciousness in cognition and learning has been seriously reconsidered in the last twenty years. Some claim that conscious knowledge cannot become unconscious linguistic knowledge (Krashen, 1982; 1985). Some try to avoid the issue of consciousness in the theory of language acquisition (McLaughlin, Rossman and Mcleod, 1983). Others argue that the reason why the problem of consciousness in L2 acquisition leads to discussion is that it is hard to tell the difference between conscious 'learning' and subconscious 'acquisition' (Ellis, 1994, p. 361). Another argument is acquisition is in part conscious and in part subconscious (Tomlin and Villa, 1993). However, Richard Schmidt argues, in his article: *The Role of Consciousness in Second Language Learning* (1990), that the notion of consciousness is both useful and possibly necessary in second language learning.

Schmidt aims to argue that conscious processing is useful and necessary in second language learning. In order to discuss the contributions of conscious and unconscious processes involved in second language learning, Schmidt makes a clearer discussion on the definitions of consciousness, the theories of consciousness, and the evidence related to three questions in second language learning.

2.1 Definitions: Dimensions and Degrees

Krashen (1982, 1985) puts forward 'consciousness' in his Input Hypothesis, but no definition is given. Krashen declares that 'acquisition' and acquired knowledge are a subconscious process, while learning and learned knowledge is a conscious process. Conscious knowledge cannot become unconscious linguistic knowledge (Krashen, 1982, 1985).

However, Schmidt gives a relatively clearer definition of consciousness in his article: *The Role of Consciousness in Second Language Learning*. Schmidt divides consciousness into three categories: consciousness as awareness, consciousness as intention and consciousness as knowledge, arguing that noticing at the level of awareness is necessary for input to become intake (1990, p. 131). He posits:

$$\text{Input} + \text{noticing} = \text{intake}$$

Awareness has degrees or levels, but three are given in this article: perception, noticing (focal awareness), and understanding. Perception is generally believed to be mental reflection on exoteric occurrences, but Schmidt thinks 'perceptions are not necessarily conscious, and subliminal perception is possible' (1990, p. 132). Consciousness as awareness, as he observes, can also exist at the level of perception, which can be subliminal. Noticing refers to private or subjective experience. Understanding is higher-order awareness. Problem-solving and meta-cognition (awareness of awareness) belong to this level.

As to consciousness as intention, Schmidt notes that 'the most common ambiguity in use of the term consciousness is between passive awareness and active intent' (1990, p. 133). That is to say, the difference between passive awareness and active intent is always confusing. However, Schmidt carefully distinguishes between awareness and intention. The dissociation between the two is apparent in that we often become aware of things we do not intend to notice. Schmidt agrees with Baars's opinion that intention can be either conscious or unconscious (1990, p. 133).

Various terms are used to explain the difference between conscious knowledge and unconscious knowledge. Bialystok (1978) provides a theoretical framework that allows for an interface between explicit and implicit knowledge. They assent to the role of consciousness in second language acquisition (SLA). Bialystok (1978) argues that the contrast between explicit knowledge and implicit knowledge represents the continuum. However, there is no consensus among researchers regarding where the line should be drawn to distinguish these two types

of knowledge. Another distinction of knowledge type is declarative knowledge and procedural knowledge, as argued by Sharwood Smith (1981), namely, 'knowing that' and 'knowing how'. Just as Schmidt argues, other available terms besides conscious and unconscious can also be used. Some different contrasts caused by the ambiguities need more consideration and research, such as: subliminal and noticing, incidental and intentional, and implicit and explicit learning. However, VanPatten embodies the definition: consciousness is similar to explanation, grammar practice, knowing the rules and drills, while subconsciousness is equivalent to input, communication, and communicative activities (1994, p. 29). Schmidt (1994) tries to standardize the theoretical concepts which help understand the role of conscious and unconscious process in second language learning. There are four senses of consciousness "in the study of learning: consciousness as intentionality (the intentional/incidental learning' contrast), consciousness as attention (focal attention and "noticing" vs. peripheral attention), consciousness as awareness (the contrasts between explicit/implicit learning and knowledge), and consciousness as control (controlled vs. automatic processing, automaticity, explicit/implicit memory)" (Schmidt, 1994, p. 11). Schmidt posits that incidental learning does occur normally, but the knowledge gained through incidental learning differs from the knowledge gained through intentional learning. He suggests using "incidental learning" instead of "unconscious learning" when we talk about learning without intention, or the learning of grammar for communication. As to consciousness as attention, Schmidt posits that we are conscious of only a few environmental stimuli owing to the focus shifting and peripheral attention in contrast to focal attention can be used for learning 'in which the primary focus of attention is elsewhere' (1994, p.18). Awareness, a third sense of consciousness, has different levels or types. Schmidt suggests the differences should be known between implicit and explicit learning, implicit and explicit knowledge, and explicit learning and explicit instruction. Schmidt separates control and attention in order to emphasize output processing rather than input processing which is focused in the discussion of attention (1994, p.20). The understanding of definitions of consciousness tends to help understand the theories of consciousness further.

2.2 Theories of Consciousness

Consciousness, as well as unconsciousness or subconsciousness, is a psychological concept. Consciousness and subconsciousness, as mental activities, play an important part in SLA research, but unconsciousness does not (Dai, 2005). Krashen (1982, 1985) differentiate 'acquisition' and 'learning' in his theory using the terms of 'consciousness' and 'subconsciousness, which has a greater effect on SLA research theories. Krashen (1982, p. 10) considers 'acquisition' and 'learning' as two independent processes. Krashen (1985) stresses acquisition. He argues that 'acquisition' is a subconscious process; while 'learning' is a conscious process which results in 'knowing about' a language. He claims that conscious knowledge cannot become unconscious linguistic knowledge.

However, Schmidt claims that learning a language is largely a conscious process and the role of unconscious knowledge has been exaggerated (Ellis, 1994: 361). Schmidt presents some theories of consciousness to explain noticing and its systems: information processing theories and a global workspace theory. Noticed input becomes intake, which may or may be incorporated long-term into interlingua, and therefore involves effective processing. He claims that every theory is controversial. A number of models in information processing theories concern with the notion of consciousness as a limited capacity memory system (McLaughlin et al, 1983). The limitations can be described along two dimensions: the focus of attention and information-processing ability. Human is regarded as limited capacity processors. Just as McLaughlin et al. explain, attention focus is a function of task demands, which can be focal or peripheral, while information -processing ability is a function of how the individual deals with the information based on past experience and the characteristics of the input (1983, p. 137).

Two areas of common ground among these models are the identification of short-term memory with consciousness and processing in short-term memory needed for permanent storage. The concept of attention, in other information processing models, as a resource results in a distinction between two modes of information processing: automatic and controlled processing, both of which are identified with consciousness. The distinction between a controlled process and an automatic process is not based on conscious versus subconscious awareness, but instead relates to the degree to which the skills in question have been established in long-term memory (McLaughlin et al., 1983, p. 140). However, McLaughlin explains that 'controlled processing is explicit and conscious, whereas automatic processing is implicit and unconscious' (1987, p. 152). Some information processing theories see consciousness as an internal programmer or executive control center. Information processing approaches generally stress the importance of awareness, not excluding mental functions. Schmidt shows Baars' model of consciousness as a central information exchange. He argues that the theories are similar in some senses. In these theories, consciousness has been considered as different concepts such as working memory, attention, control processing, and information exchange between different processors. Consciousness

and unconsciousness have different functions in information processing, but consciousness is stated as a condition for dealing with 'novel information, novice behavior, and learning' (Schmidt, 1990, p. 138). There are intermediate positions (e.g. Tomlin and Villa, 1994) who posit that acquisition is a blend of the conscious and sub-conscious.

2.3 Consciousness and Second Language Learning

Schmidt presents three issues to discuss about the role of consciousness in second language learning. The first is the subliminal learning issue - whether conscious awareness at the level of 'noticing' is necessary for language learning. He denies subliminal language learning and emphasizes the importance of noticing, which becomes intake when learners notice consciously.

The second is the incidental learning issue, that is, whether it is necessary to consciously 'pay attention' in order to learn. Schmidt argues that incidental learning is certainly possible in task-based language teaching.

The last is the implicit learning issue, referring to whether learner hypotheses based on input are the result of conscious understanding or an unconscious process of abstraction. However, Schmidt thinks implicit learning is the most difficult question to resolve. These issues will be discussed in detail in the following section. Schmidt concludes that more research needs to focus on the role of consciousness in second language learning. However, McLaughlin (1990) argues that acquisition, not consciousness, is more appropriately used to study according to whether it involves controlled or automatic processing.

Schmidt argues that the reason why the role of unconsciousness in language learning is overvalued is that second language learning seems to grasp an unconscious grammar and that many descriptions of consciousness and unconsciousness are not clear. Whereas, the reason why the role of consciousness is underestimated is that little research has been done to appraise what learners notice and think during their second language learning. He suggests that much more research is needed into what learners are conscious of as they learn second languages.

3. Schmidt' Perspectives and Influence on Other Research

3.1 Intake, noticing and subliminal perception

The concept of intake is extremely important in second language learning theory, but there is no consensus on the definition of it. According to Schmidt (1990, p.139), 'intake is that part of the input that the learner notices'. That is, if learners notice a form in input, it becomes intake. Language input become intake based on noticing. Gass and Selinker consider intake as the process of assimilating linguistic material. Intake is an independent phenomenon like input rather than only being a part of input (2001, p. 406). Just as De Bot et al describe, intake may mean that learners learn new knowledge to complement what they already know (2005, p. 9). The cognitive capacities, such as attained linguistic knowledge and metalinguistic abilities, may play a role at the level of intake (Liceras, 1985, p. 359-360).

Ellis (1994) and Skehan (1998) agree with Schmidt in the theoretical importance of noticing, which accounts for the transfer of input to intake for learning. Rose & O'Neill (1999) and Robinson (2003) agree on the importance of noticing. They think that learners tend to noticing before learning when learning a language or taking 'noticing' as an essential condition for learning. The research results indicate that the degrees of explicitness had a differential affect on intake, and the higher the level of awareness demonstrated, the stronger the effect on intake (Rose & O'Neill, 1999). Sharwood-Smith (1981) and McLaughlin (1987) agree that it is an important first step, for processing language, to notice a feature in the input. However, they differ from Schmidt in that they consider that noticing a feature in input may be a conscious or an unconscious process, while 'noticing the gap' is a conscious process. Fotos (1998, p. 387) explains that "noticing has thus been suggested to perform an interfacing function between the development of explicit knowledge of a feature through formal instruction and the eventual acquisition of that feature – the development of implicit knowledge". That is to say, noticing functions as continuum where learners can develop explicit knowledge into implicit knowledge through formal instruction. Truscott passes some criticism on weak foundations of the Noticing Hypothesis and he claims that there is no research in cognitive psychology to support it or provide a clear interpretation for it (1998, p. 103). He thinks that noticing is only necessary for the acquisition of metalinguistic knowledge, which refers to the ability of using words, making sentences, and stating grammar rules. 'Noticing' is limited, selective, controlled, and it also controls the path to consciousness. 'Noticing' has a close relationship with memory and therefore, foreign language learning is a conscious process (Gui, 2004). Tomlinson (2003) defines language awareness as critical to noticing as a mental attribute and a pedagogic approach that help learners to develop the ability of discerning how language works.

Schmidt upholds the direction of 'subconscious noticing', but he only offers his own experience of learning

Portuguese as the evidence to support the hypothesis, because of a lack of evidence in the second language literature. He says that the frequency in input determines the use in production and what is noticed is used. He thinks that noticing is a necessary condition for storage. It seems that all input makes it into short-term memory, which results from shadowing study—good recall of unattended material of shadowing is discontinued immediately after target word presentation. However, only attended material is a candidate for long-term storage, while unattended material is simply lost. Nevertheless, this study shows evidence that noticing is indispensable for emergence in production, but not that noticing is sufficient for learning and necessary for intake.

As regards subliminal processing, a great deal of pre-perceptual processing is needed before any stimulus can be noticed and unattended stimuli can influence behavior. However, subliminal learning has not been demonstrated in experiments, although some researchers have claimed it. Schmidt states that the data in existence accords with a hypothesis: “you can’t learn a foreign language (or anything else, for that matter) through subliminal perception” (1990, p. 142).

Schmidt (2001) considers it necessary and important to know the concept of ‘attention’ or ‘noticing’. This concept can help know many aspects of SLA research.

3.2 Incidental learning vs. paying attention

Noticing is important and available in language learning (Schmidt, 1990). Schmidt claims that natural orders and acquisition sequences may constrain selective attention but not eliminate its role. Formal linguistic considerations, such as expectations, frequency, perceptual salience, skill level, task demands and the others, may explain the close relationship between noticing and stages of L2 development.

Expectations

Schmidt proposes that instruction may play an important role in priming learners to notice features by establishing expectations about language. Skehan (1998) states that instruction provides structured input supporting for noticing by focusing attention on and enhancing awareness of language features. Ellis (1997) argues that instruction can draw learners’ attention on items that they do not expect and as a result they may not notice.

Frequency

Schmidt claims that items used more frequently are more likely to be noticed. If a language feature appears more frequently in the input, because of repeating instruction, the item will be more likely to be noticed and integrated into the interlanguage system. As Skehan (1998) suggests, a form may not be noticed at times when learners’ intentional resources are stretched. Therefore, the more frequent an item is repeated, the more learners notice it.

Perceptual salience

According to Schmidt (1990), phonologically reduced morphemes are less likely to be noticed, such as contracted and unstressed forms. If a language form is much more conspicuous in input, it will be more likely to be noticed (Skehan, 1998).

Skill level

Schmidt (1990) suggests that acquisition of new features requires the routinization of previously learned skills. This is concerned with learners’ processing ability of noticing new forms in the input, and an individual’s ability to attend to both form and meaning in L2 processing. No one has the same noticing ability. As Skehan (1998) describes, some learners are better “input processors,” as they have a larger working memory capacity or they can process analytically and quickly within working memory.

Task demands

According to Schmidt (1990), task demands refer to how an instructional task causes learners to notice particular features in order to carry out that task. Ellis (1997) suggests that some particular language features may be made intentionally prominent or the task may be designed to activate learners to process the language. The level of processing may determine the level of noticing. If the task demand, such as the exchange of familiar information, is low, the level of noticing decreases, whereas if the task demand, such as the imaginative decision-making, is high, the level of noticing increases (Skehan, 1998). Schmidt suggests that incidental learning without ‘paying attention’ is possible, if task demands focus attention on what is to be learned.

Schmidt claims that learners learn most if they notice most, and learners who pay attention most may notice most. However, paying attention is probably facilitative and necessary when adult learners are to acquire grammatical conventions. He argues that ‘it is possible that selective attention may relate to some grammatical features and

not others' (1990, p. 144). He argues that both intentional and incidental learning involves conscious attention to features in the input. Schmidt further claims that intentional learning refers to attention to input, which is of importance for explicit learning and may be necessary for implicit learning. Intentional learning also involves attention to form and test, which is important in 'some kinds of artificial grammar learning and probably for some features of natural language learning, but not others' (1997, p. 198-199). "Incidental learning takes place along a continuum of conscious awareness. The degree of conscious awareness of one's learning plays an important role in the clarity of learning" (Marsick and Watkin, 1990, p. 13). Ellis praises the distinction made by Schmidt as important and helpful, which recognizes that incidental learning is different from learning without conscious attention (1997, p. 55). Marsick and Watkins (1990) argue that incidental learning, as a byproduct of some other activities, is never intentional and seldom explicit. VanPatten argues that 'it should be clear that attention is not a product as are the referents for explicit knowledge and implicit knowledge' (1994, p. 28). That is to say, attention tied to processes is a resource, not a product, which is used as a continuum between explicit knowledge and implicit knowledge. The terms acquisition and learning can explain the distinction between processes and products.

Ellis (2001) argues that intentional learning has been proved to be more effective than incidental learning for both vocabulary and grammar. However, arguments for incidental learning are still advanced: it is impossible to learn a complete language intentionally, because there is too much to learn; intentional learning will influence learners' proficiency because it is more likely to lead to explicit than implicit knowledge.

3.3 Implicit learning vs. learning based on understanding

Schmidt states that there are two opposing ideas about language learning: the first is learning without conscious awareness, and the second is that there is no learning without awareness. There exists a continuum between explicit and implicit knowledge, but where to draw the line is in dispute. Ellis explains that explicit knowledge in SLA research generally refers to the learners' conscious representation, while implicit knowledge consists of formulaic and rule-based knowledge which is intuitive and largely hidden, which means learners are unconscious of what they know (1994, p. 355). There is less evidence for evaluation of implicit rule acquisition in second language learning, but there is evidence for explicit rules which are useful in second language learning (Schmidt, 1990). However, Nick Ellis based on the research related to vocabulary acquisition, claims the recognition and production aspects of vocabulary learning build on implicit processes, while meaning and mediational aspects depend on explicit and conscious learning processes (1994, p. 12). In general, understanding can improve second language performance. Numerous cases reported agree that 'understanding led to correct production and misunderstanding was reflected in deviant performance' (Schmidt, 1990, p. 147).

However, Schmidt thinks it is most difficult to resolve the issues of implicitness in second language learning. He argues that he has acquired considerable unconscious knowledge of a complex system in his experience of learning Portuguese, but the case is overstated from the data. Implicit learning seems to be possible in a connectionist model, in which information exchange occurs after gradual accumulation of related forms in memory (for example, implicit or explicit knowledge of gender in French), and interconnections are influenced by frequency. Connectionist models have the view that only conscious processing is associated with problem solving while unconscious processing concerns 'the processing of frequency information and the resolution of probabilistic constraints' (Schmidt, 1990, p. 149). Schmidt's acquisition of Portuguese shows that explicit knowledge may at least indirectly help learners to develop implicit knowledge by processing input and intake (Ellis, 1994, p. 57). Both of the processing requires conscious attention to form at input. Bialystok argues that both explicit and implicit knowledge are used evidently in SLA (1994, p. 550). Besides the grasp of the rules, there are some parts of the L2 used correctly by learners without being noticed or attended. VanPatten argues that L2 learners construct similar systems in L1 learning when they go about the task of SLA and may indeed have explicit knowledge or explicit rules (2003, p. 12). Ellis posits three roles for explicit knowledge: (1) explicit knowledge may only transfer into implicit knowledge at the stage of development; (2) explicit knowledge may facilitate the intentional process; and (3) explicit knowledge may facilitate the 'noticing the gap' (1997, p. 57). This means that Ellis allows a weak interface between explicit and implicit knowledge. Ellis (1994) argues that explicit knowledge can be transferred into implicit knowledge under some conditions. Ellis says: "At the level of product the explicit/implicit distinction seems less problematic (1994, p. 362). Clearly, learners may know a rule, or know about it, or both. The relationship between explicit and implicit knowledge, then, continues to be a key issue". Bialystok thinks how the change between explicit and implicit knowledge occurs is more important for SLA (1997, p. 550). It is hard to differentiate the definition of explicit and implicit so that it causes more controversy on implicit and explicit learning (Hulstijn, 2005).

4. Schmidt's influence on other research

4.1 *Regarding his theory as an important piece of literature*

Schmidt's theory of the Noticing Hypothesis and the L2 conscious process has been considered as one of the important theories in L2 acquisition, and is quoted by many researchers as prominent literature in their research (Ellis, 1994, 1997; Skehan, 1996; Lee et al., 1997; Cross, 2002; Forth and Dewaele, 2002 and many others). According to the data in the website - scholar.google.com, Schmidt's the role of consciousness in second language learning has been cited in papers and books over one thousand times, which shows how his theory and hypothesis has an influence on the research concerned. Just as Ellis mentions, as to the controversial issue - the role of consciousness in L2 acquisition, two opposing positions can be identified: one is Krashen's distinction between acquired L2 knowledge and learned L2 knowledge, and the other is Schmidt's idea of standardizing the concept of consciousness (1997, p. 55).

Zlatev (2004) suggests three basic positions for the discussion on the role of consciousness in L2 learning, relating to the role of 'rules', as follows: 1. Conscious learning of linguistic rules is impossible in all but the simplest cases, and even then it is inferior to unconscious "acquisition" (Krashen 1985). 2. Conscious rules are useful to focus attention on selected aspects, which are then learned by unconscious inductive processes (Sharwood Smith 1991). Consciousness is essential for noticing features, and the understanding of the structures of the language being acquired is done through rules (Schmidt 1990).

Schmidt's noticing hypothesis and its role in language acquisition has aroused some support and argument (Cross, 2002). The 'noticing hypothesis' has contributed to the debate on various views regarding the role of conscious and unconscious processes in L2 acquisition. An increasing number of researchers has supported this hypothesis (Truscott, 1998). Many researchers advocate his view that consciousness of input at the level of noticing is a necessary condition for L2 development (Torlakovic and Brook, 2001). Different terms are used, such as focus-on-form (Fotos, 1994); conscious-raising (Ellis, 1994; Fotos, 1994, 1998; Yule, 1986; Nitta and Gardner, 2005; Mohamed, 2004); input-enhancement (Sharwood Smith, 1981; White et al., 1991), to present their opinion that learners should have opportunities to focus on form and notice features of L2. Robinson (1997) argues that 'it is difficult to measure noticing, but Schmidt's claim is the focus of much recent theoretical discussion, and classroom and experimental research into the effect of awareness on instructed learning'.

Mitchell and Myles (2004, p. 183) consider Schmidt as one of the researchers who has been most influential in promoting the view of how input becomes intake, that is, the amount of attention on form may influence the extent to which L2 input and interaction produce L2 intake. Foth and Dewaele (2002) mention that the computational model highlights Schmidt's (1990) research finding that consciousness as attention to form-noticing the gap, is crucial to turn input into intake. With respect to SLA, Schmidt (1990, 1994) has concluded that learning is impossible without attention and adult learners must pay attention to form in order for that form to become intake (Lee et al, 1997). A number of studies have clarified the theoretical basis for a cognitive approach to language learning, involving the role of consciousness (Skehan, 1996). Takahashi starts his article by stating that "the issue of attention and awareness in SLA has been explored in the framework of Schmidt's Noticing Hypothesis, which has been a driving force in advancing research on implicit versus explicit learning" (2005, p. 90). Therefore, it can be concluded that Schmidt is one of the most influential researchers on the role of conscious and unconscious processes in SLA.

4.2 *Renewal of Schmidt's theory promoting more research*

The development of the theories will arouse more arguments and more research. As a result, it will gradually improve the theory in practice. Hulstijn and Schmidt organized a symposium on consciousness in second language learning in the framework of the 10th World Congress of the International Association of Applied Linguistics (AILA), during August 1993 in Amsterdam. They subsequently edited 'Consciousness in Second Language Learning, AILA REVIEW, 11'. The purpose was to show 'necessity of combining multiple perspectives on consciousness and explicit grammar teaching and showing to what extent new views can and should be put to the test, thus giving fresh input to a matter of great theoretical and practical importance' (Hulstijn and Schmidt, 1994, p. 5). This is of importance in attracting the attention of theorists, empirical researchers and educationalists to conduct further research on the role of consciousness in SLA. Schmidt's paper serves as a terminological and theoretical framework for the remaining papers (Hulstijn and Schmidt, 1994, p. 5). Schmidt (1994), in his paper, reinforces different senses of consciousness in regard to L2 acquisition: (1) Consciousness as intentionality: the intentional and incidental learning contrast; (2) Consciousness as attention: focal attention and 'noticing' versus peripheral attention; (3) Consciousness as awareness: the contrasts between explicit/implicit learning and knowledge; and (4) Consciousness as control: controlled versus automatic

processing. The first three items mentioned and discussed in 1990 are given more research and explanations, and the last one was also mentioned but not listed as an independent item. Schmidt suggests separating control and attention into different perspectives to emphasize output processing, especially the question of fluency, rather than input processing (Schmidt, 1994, p. 20).

Besides Schmidt's *Deconstructing Consciousness in Search of Useful Definitions for Applied Linguistic*, 'all authors give evidence of the need to combine insights from linguistics, cognitive psychology, and pedagogy and evaluate them against the results from empirical investigations based on data obtained in classrooms as well as laboratory settings' (Hulstijn and Schmidt, 1994, p. 5). VanPatten, for example, takes attention as a processing resource rather than a product orientation (1994, p. 27). Harley (1994, p. 57) uses the definitions by Schmidt and suggests that introspective methods be used to know the role of awareness at the point of learning. Nick Ellis offers evidence that formal features of vocabulary can be acquired implicitly (1994, p. 37). Hulstijn and De Graaff put forward nine hypotheses stating the facilitating effect of explicit grammar features versus implicit learning (1994, p. 97). Van Lier discusses that the notion of consciousness should be the intrapersonal, cognitive perspective, as well as an interpersonal, social perspective as well (1994, p. 69).

4.3 Influence and Implications on SLA research in China

Influenced by cognitive psychology, several terms such as 'noticing', 'memory' and others gradually occur in the fields of linguistic research since the eighties of last century (He, 2009). Schmidt puts forward the noticing hypothesis based on the concepts and methods in cognitive psychology, which has advanced the frontier of English teaching and research in China. The SLA research in China developed rapidly and was well considered in the eleven years from 1994 to 2004 (Dai & Zhou, 2005). The research on explicit and implicit lays a new theoretical foundation for constructing the theories of foreign language learning, and provides the theoretical support for renewing teaching ideas, improving teaching methods and learning strategies (Dai & Ren, 2008).

The theories and hypotheses in SLA have inspired the further theoretical study in China. Dai and Ren (2008) present a theoretical introduction to explicit and implicit learning in SLA from three fields of view: biology, social culture and cognitive psychology and some important hypotheses of explicit and implicit learning. Research on explicit and implicit knowledge has inspired foreign language teaching. Dai (2005) makes an analysis of the core concept (attention and awareness, intentional learning and incidental learning, implicit and explicit learning), and some related research. Dai (2005) states that many terms, such as 'explicit/implicit', 'conscious', 'subconscious', 'intentional learning' and others, are confusing, which may cause the contradiction between the results and the design and data analysis of case study. Wang and Yang (2009) make an analysis of the intention in three language learning processes: input, process, and output. Input is the essential part of language learning while noticing is the core of input. Schmidt's Noticing Hypothesis should be the first in the input and notice theories (Wang & Yang, 2009).

Schmidt's Noticing Hypothesis in SLA theoretical research also stimulates further study in English language teaching and learning. Chen (2008) makes a quantitative analysis of the role of awareness in English prepositional structure learning in relation to Schmidt's noticing hypothesis about processing the target language form. The implication is that it may be necessary to use a more explicit pedagogical approach (Chen, 2008). Cai (2009) makes a study of the effect of different modes of input and output on L2 learning. The results show that the students who gained comprehensive input made significant progress and outperformed the controlled group in their knowledge and ability to use the target structures. The study by Jin (2009) presents that noticing plays an essential role in language teaching, especially in college English writing based on Schmidt's Noticing Hypothesis. The conclusion is that 'Noticing does play a crucial role in the college English teaching in the light of the analysis of the function of noticing from the point of morphological errors. Gao & Dai (2004) make an empirical study showing what results from providing Chinese learners with explicit/implicit instruction of English relative clause extrapolation. The result in this case shows explicit teaching helps enhance linguistic knowledge, grammatical judgment and performance, but not sufficient for construction a perfect L2 knowledge system (Gao & Dai, 2004).

SLA research in China lags behind western countries. China started studying SLA theories from the 80th of last century. China has made much great progress but there are still much to be concerned. Some Chinese researchers (Dai, 2005; Dai & Ren, 2008; Wang & Yang, 2009) have made systematic research on SLA theories and hypothesis, and present detailed introduction or explanations, however, no theoretical system in China adapting to Chinese situation has been constructed. Almost all the theories and hypotheses is based on the context of Latin language system, while Chinese belongs to quite different language system. Furthermore, some terms or concepts in SLA are confused or complicated which still result in contradiction to be discussed or argued

although many experiments or surveys have been made. Besides, most of SLA research in China focuses on the case study, copy the theories or hypothesis mechanically and study the conclusion. These researches focus on using these theories or hypotheses in English learning: reading, writing, vocabulary and grammar (Zhao & Sun, 2009; Cui & Wang, 2002; Xu, 2009), but no new theoretical concepts or ideas arise with them.

Chinese researchers need to study the theories and hypothesis completely, systematically and deeply, train more theoretic researchers, and develop SLA theoretical system adapting to Chinese situations in order that SLA research serves the further development of theories and foreign language teaching in China.

5. Conclusion

The issue of “conscious” versus “unconscious” has given rise to much controversy in the field of second and foreign language pedagogy. Schmidt concludes that it is impossible to learn a foreign language through subliminal perception and input becomes intake when learners consciously notice what they learn. Combined with many other theories in SLA, Noticing Hypothesis can be used in all aspects of language, such as lexicon, phonology, grammatical form and pragmatics. Incidental learning is both possible and effective when the demands of a task focus attention on what is learned. This provides researchers interested in task-based language teaching with a wide range of research. Schmidt argues that incidental learning seems unlikely for adults, but paying attention to language form may be necessary for adults to acquire superfluous features of grammar. Attention and awareness can be connected to the study of individual differences and the consideration of formal instruction in language learning. Schmidt presents his idea that the most difficult question to resolve in SLA is the issue of implicit learning. He argues that awareness affects second language learning, understanding is of importance in learning, and that most second language learning is explicit. Schmidt states that much more research needs to be done on the role of consciousness in second language learning. He argues the role of unconsciousness in second language learning is overestimated, while the role of consciousness is undervalued. There are several reasons for this, such as, lack of description of consciousness and unconsciousness. However, the main reason is that not enough research is to assess what learners notice and what they think in learning second languages. That means much more research is needed on the role of consciousness and unconsciousness in second language learning. The teachers and researchers in China meet more challenge in practice, test and research on such a theory in English teaching and learning in China.

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