Research

A Psycho-linguistic Study of the Role of Consciousness in Language Acquisition

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Abstract: The role of conscious and unconscious processes in second language learning is one of the problems under dispute in applied linguistics. It is argued: the Role of Consciousness in Second Language Learning, 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. 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, Second Language Learning (SLL), Implicit, Explicit

Introduction

The question is ‘what should the role of consciousness in second language (L2) acquisition be?’ It is important to answer this question in order to resolve one of the biggest debates in the field of SLA, namely whether or not direct instruction is necessary or even valuable in L2 acquisition. SLA researchers interested in consciousness should start by considering what others have to say about it. This is necessary to develop a comprehensive picture of consciousness. The debate in SLA needs to be informed by an adequate notion of what consciousness is. Only in this way can we reach an adequate view about its role. One place
to start is to consider what is said about consciousness in philosophy. We will start by comparing the different definitions of consciousness used by SLA researchers and by philosophers. Next we will introduce the controversy over whether L2 learners need to be conscious of grammar rules to learn the target language. Then we will examine Block’s well-known distinction between access (A) consciousness and phenomenal (P) consciousness and where language, or more specifically second language, fits into this categorization. With this, we might be one step closer to understanding the role of consciousness in L2 learning/acquisition.

Definition(s) of Consciousness

How do SLA theorists and philosophers think about consciousness? As it turns out, quite differently. Let us look at some of the similarities and differences. When SLA theorists talk about consciousness, they use the term in a quite narrow sense. Schmidt (1995), for example, points out that there are three different senses of the term ‘consciousness’ as it is used in SLA theory: levels of perception, noticing, and understanding. By contrast, philosophers have a broader understanding of the term. According to Clark (2001), the possibilities include wakefulness, self-awareness, availability for verbal report, availability for control of intentional action, and qualia. To determine if all these terms are discussing the same, complex entity, they need to be further defined. If one desires to apply concepts of one discipline to another (philosophy to SLA in this case), this is something that we need to know. According to Schmidt, ‘levels of perception’ could be defined as levels of a process of obtaining and perhaps processing information. Schmidt defines ‘noticing’ as rehearsal in short-term memory, while by ‘understanding’ he refers to rule understanding, i.e., grasping the meanings of rules and becoming thoroughly familiar with them. Definitions of the terms from Clark's list of possibilities might go as follows: wakefulness is defined as a state in which we are sensitive to our surroundings and in which we can process incoming information and respond to it appropriately. Self-awareness he defines as a capacity to represent ourselves and to be conscious of ourselves ‘as distinct agents’. Availability for verbal report is the capacity to access our own inner states and to describe them using natural language, while qualia concerns how things feel to us. From the above, one can conclude that SLA theorists take consciousness to be something narrower than philosophers believe. Perception and wakefulness may refer to (or be contained in) the same aspect of consciousness, while noticing and understanding could be seen as part of availability for verbal report. However, self-awareness and qualia are missing from the SLA picture of
consciousness. Yet in second language learning (SLL) and acquisition, self-awareness and qualia may play an important role. It is well known that language is closely associated with consciousness in the broader understanding that we find in Clark and other philosophers. If so, this broader notion of consciousness needs to be considered by SLA theorists. We will return to this topic. For now, let us simply note that SLA researchers use a narrow notion of consciousness.

**Consciousness and SLA**

Next we want to consider a group of related issues: the role of consciousness in various SLA theories the debate in SLA and L2 pedagogy about its proper role, the role of Universal Grammar (UG) in L2 acquisition, and the respective roles of implicit and explicit learning in SLA. According to Robinson (1996), current debate in SLA is centred on the role of consciousness in L2 development. This controversy is centred in turn on the question of whether or not grammatical instruction is effective for L2 acquisition and if so what kind of grammatical instruction is best. There are researchers who argue that grammatical instruction has only minimal effect on L2 acquisition, Krashen (1981) for example. According to him, L2 development is largely an unconscious process. Krashen does allow that there are two processes involved in L2 development, a conscious process of learning and an unconscious process of acquisition. The conscious process of learning is a system based on rules and their application, while the unconscious process of acquisition is a system responsible for language production. According to Krashen, conscious learning is limited to a small set of simple rule-governed domains. By contrast, development of the much more substantial acquired system is fostered by avoiding instruction and the provision of L2 rules. In his view, learners only have to be exposed to comprehensible language input in order to acquire grammar. On the other side, there are researchers who argue that comprehensible input alone is not enough for optimal acquisition of the different aspects of grammar and that conscious grammatical instruction is necessary if learners are to have the data they need to acquire grammar (Strozer, 1994). In particular, Schmidt (1994) argues that consciousness of input at the level of noticing is a necessary condition for L2 development. Many other researchers support this view. They use terms such as focus-on-form (Long, 1994), consciousness-raising (Ellis 1993, Fotos and Ellis 1991, Rutherford, 1987), and input-enhancement (Sharwood Smith, 1991). In one way or another, all of these terms are about directing learners’ attention to grammatical form in order to help them internalize the L2 system.
According to these researchers, teaching should include opportunities for learners to focus on form and consciously notice features of the L2 they are learning.

**Universal Grammar and L2 Acquisition**

It might appear that because there is little or no need for conscious instruction in L1 acquisition, there is little or no need for it in L2 acquisition either. However, it is well known that the two processes are quite different from one another. Let us compare the two in terms of the theory of Universal Grammar (UG). According to Chomsky (1980), all of us have an innate capacity for language and we cannot chose not to learn language. We have a mental faculty for language that simply ‘grows’ as any other organ of our body grows. All that we need is a triggering cause, namely, a language environment. For L1 acquisition, little or no direct teaching is needed. According to Flynn (1996), the theory of UG does not make any direct claims about L2 acquisition. However, it is important to know whether or not L2 learners in the process of L2 acquisition have access to UG. Ellis (1997) points out that different theories deal with this issue differently. However, there is some good evidence for the a Partial Access Hypothesis, which holds that only the parameters of UG that are common to L1 and L2 are accessible to an L2 learner. According to this view, an L2 learner needs to learn everything else by using general problem-solving strategies. If this is so, there is clearly room for direct conscious instruction in L2 learning.

![Diagram of Linguistic Competence](Image)

**Figure 1**: Indirect effect of explicit instruction in L2 on linguistic competence
Experiment

I refer to the notion that consciousness comparatives are easier for addressees to process than unconsciousness comparatives as the consciousness advantage hypothesis (AAH). Experiment offers a simple test of the AAH. I methodically manipulate consciousness type (consciousness – unconsciousness) in a series of stimulus sentences, and measure comprehension preferences by condition. (2) Manipulating type a. consciousness: Kenny G is more mellow to listen to than Yanni. b. Unconsciousness: Kenny G is mellower to listen to than Yanni. Both (2a) and (2b) are complex in that they contain a comparative followed by an infinitival complement. The only difference between the two is that the consciousness variant is used in (2a), and the unconsciousness variant is used in (2b). If morphology type has an effect on comprehension in the way that the AAH predicts, then we would expect that participants would prefer sentences like (2a) over sentences like (2b) on a variety of comprehension measures. In Experiment 1, I use an offline measure—acceptability ratings—to assess whether or not this expectation is warranted. Experiment 1 focuses on complex sentences and not simple sentences in an attempt to give the AAH the best possible chance of succeeding. According to Mondorf’s (2003) interpretation of the data pattern in Figure 2.1, speaker use of the consciousness is particularly helpful in complex processing environments, where processing loads on addressees are high. This account suggests that use of the consciousness might not be equally helpful in simple environments because addressees are working under low loads and are able to devote more resources to comparative processing. That is, a floor effect that obscures the consciousness advantage may occur under low loads. This possibility motivates an initial focus on processing in complex environments.

Participants

95 undergraduates from an introductory course in language acquisition participated for course credit.

Materials

Stimulus sentences were created using 18 different adjectives. Seven of these (apt, fit, free, keen, proud, ready and pleasant) were identified in Mondorf (2003) as items that showed increased use of the consciousness in the complex condition, and occurred in the corpus enough times that confidence in the P(more) estimates given in Figure 2.1 was high. Another five (crazy, hungry, lucky, risky and sure) were argued to provide weaker support based on the notion that they were also favored more in complex environments, but were represented
by too few tokens in the corpus to know whether this trend was reliable. This group of 12 was supplemented with an additional six adjectives (angry, cruel, lively, mellow, sorry and stark), which were selected based on counts from the BNC (2001). We identified all adjectives that varied in comparative form in the 10 million-word spoken section of the BNC, then chose six that appeared in the comparative at least 20 times (the sum of the -er and more tokens for that adjective), and had roughly equal -er and more counts. Use of this method served to increase the set of test adjectives available to us by identifying items that should be amenable to either -er suffixation, or inflection with more. 36 critical sentences were constructed using the 18 adjectives given above. Each critical sentence followed the pattern in (2), and contained an adjective in comparative form immediately followed by an infinitival complement. For each adjective, two sentences were created. These constituted a minimal pair that differed only in terms of how the comparative was realized: either consciously (as in 2a), or unconsciously (as in 2b). Additionally, 18 filler sentences were constructed. Filler sentences did not contain comparative adjectives. They functioned as washout trials whose purpose was to allow the representations activated when dealing with a critical sentence to return to baseline before the onset of the next critical sentence (Anderson, 2001). All critical sentences are listed in Appendix A. Paper-and-pencil ratings questionnaires were created using different combinations of the 36 test sentences and 18 filler sentences. Specifically, each questionnaire was constructed by printing one randomly-selected filler sentence, then following it with a 2 randomly-selected member of a critical pair (e.g., either 2a or 2b, above). Once one member of a test pair had been selected, its counterpart was made unavailable for selection. This process was iterated until the questionnaire contained 36 items. Use of this method ensured that test and filler sentences alternated, that each participant provided ratings for 18 test sentences and 18 filler sentences, and that each participant saw only one member of a critical sentence pair. 95 questionnaires were constructed in this fashion altogether—one for each participant. A 7-point ratings scale was printed immediately beneath each questionnaire item. Each scale had the words “Completely normal” printed under the numbers at the high end of the scale—6 and 7. “Okay” was printed under 3, 4 and 5, and “Completely bizarre” was printed under 1 and 2. The first page of each questionnaire consisted of questions about participants’ language backgrounds.

Procedure
Each participant received a questionnaire to fill out. Participants were told to complete the questionnaire on their own time and to return it within a week. Instructions printed at the
beginning of each questionnaire asked participants to individually rate the acceptability of all questionnaire sentences by circling a number on the 7-point scale printed beneath each sentence.

Results
Access to the student subjects used in Experiment 1 was contingent on allowing any student who wanted to participate the opportunity to do so. This resulted in 19 nonnative speakers of English being tested. These participants were excluded from all subsequent analyses, leaving a total of 76 native speakers. This group participated in 1,368 total critical trials. Two subjects, however, failed to rate one sentence apiece, so the analyses below are based on data from 1,366 trials. Overall, participants seemed to feel that most of the critical sentences they considered were quite native-like. High ratings—a six or seven—were given on 46.3% of all trials. A similar proportion of trials (42.3%) were given medium ratings—threes, fours, or fives. Only 11.4% of trials received a low rating—either a one or a two. When considering ratings behavior by morphology type, we found that critical sentences in more were rated more than a point higher than sentences in -er (5.46 versus 4.39). To ascertain whether this difference was reliable, we conducted separate ANOVAs using morphology type (-er versus more) as a repeated-measures variable, and modeling subjects ($F_1$) and items ($F_2$) as random effects. These analyses show that the difference in ratings between sentences containing consciousness comparatives and those containing unconsciousness comparatives is significant by subjects, $F_1(1, 75) = 73.80, p < .0001$, and by items, $F_2(1, 17) = 13.30, p < .002$. Results are depicted graphically below.

![Figure 2: Effects of conciousness -unconciousness type on sentence acceptability.](image)

That participants in Experiment 1 found sentences in more to be significantly more acceptable than the same sentences in -er suggests that Mondorf (2003) was correct in
claiming that consciousness comparatives are simpler for listeners to process. This result would appear to go in favor of the AAH. Acceptability ratings, however, may not be the most valid measure of processing ease or difficulty. In particular, because Experiment 1’s participants completed their ratings questionnaires on their own time, over the course of a week, it is impossible to know whether non-processing-related factors may have influenced how the ratings task was completed. Given enough time to consider an item, all sorts of factors may have been brought to bear in deciding how to rate it—stylistic considerations, explicit comparison to other items, etc. This motivates a replication of Experiment 1 using a design in which the relationship between processing and the preference for consciousness morphology is made much more direct.

Conclusion
Psycholinguistic studies of the consciousness/unconsciousness provide a unique window into the functional and neural architecture of language. The syndromes produce a rich tapestry of impairments and abilities that show evidence of how the language system fractionates as well as how robust the properties of language are under conditions of brain injury (may be) . Together, they provide converging evidence with literature showing that the processing of language engages a network. What remains unclear is the functional role of different neural areas in the processing of syntax. Despite damage to perisylvian areas of brain. As new findings emerge on the role of consciousness and attention in the learning process, their relevance to the classroom is evident. However, there is an urgent need to operationally define these processes, lest they be mis-applied to classroom practice in behaviorist rather than cognitive terms.

References


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