Noticing in a Dictogloss Task: Learning Outcomes and Constraining Factors

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The present study was motivated by the claim that attention and noticing are important for SLA and investigated the extent to which learners may notice the target form and its subsequent learning through noticing. To address the methodological concern about how to collect and analyze noticing data, the dictogloss procedure was employed following Swain’s (1998) suggestion. The transcripts of LREs of each pair of the learners were examined to capture the moments when their attention was drawn to form for their L2 output when performing a dictogloss. In general, the basic premise that the more attention to the form, the better its chance of learning was attested. There was also a positive relationship between the extent of noticing and subsequent learning and the learner’s readiness for the target form. This result led to the second research question which explores what factors constrain noticing and learning of the target form. Internal learner capacities (i.e. readiness, attentional capacity, bias, type of processing, and familiarity) appear to be the crucial constraining factors on noticing and subsequent learning. There was a disparity between the extent of noticing and learning outcomes in the case of some learners. This disparity seems partly due to the problem with the coding of noticing data. Therefore, the present study suggests that concerns still exist about how to best operationalize and measure the noticing of L2 forms. Finally, the limitations of this study are discussed and suggestions for future research are provided.

I. INTRODUCTION

There has been a growing concern with the significant role of conscious processes in second language acquisition (SLA). This concern is frequently centered on the Noticing Hypothesis of Schmidt (1990, 1994). Drawing on research in cognitive psychology and his own retrospective diary study (Schmidt & Frota, 1986), Schmidt (1994) proposes that “noticing is the necessary and sufficient condition for the conversion of input to intake for learning” (p. 17). Intake refers to that part of input that the learner has comprehended both
Learners are likely to notice linguistic form during interaction (Long, 1996). The most useful interactions are those which help learners comprehend input and which help learners improve the comprehensibility of their own linguistic output. Swain (2000) claims such beneficial interactions can occur in a collaborative dialogue. Collaborative dialogue is a dialogue in which learners talk about the language they are producing or produced, question or reflect on their language use or correct themselves and others.

Noticing in the context of what Long (1988) has called focus-on-form, i.e. the incidental attention to form in the context of communicative activity, and interactions in the form of collaborative dialogue are the theoretical assumptions underlying the dictogloss procedure. Although dictogloss is a task which can be considered communicative, it results in very explicit attention to form of the kind that is characteristic of noticing (Swain, 1998). This explicit focus on form comes about as learners attempt to collaboratively reconstruct a text they heard as accurately and as coherently as they are able.

This paper sets out to investigate the claimed importance of noticing by examining the moments when learners’ attention is directed towards their own second language (L2) output in a dictogloss task. The focus will be on the extent to which learners may notice the target form and its subsequent learning through noticing when performing a dictogloss. This research question led to the second research question which explores what factors constrain noticing and/or learning of the target form. Finally, the findings and limitations of this study are discussed and suggestions for future research are provided.

II. LITERATURE REVIEW

1. Differing Accounts of Attention

Noticing is an important cognitive construct in SLA because it accounts for which features in input are attended to and so become intake for learning. A number of studies have demonstrated the link between the noticing of a target structure and its subsequent learning (Izumi, 2002; Jourdenais, Ota, Stauffer, Boyson, & Doughty, 1995; Leow, 1997, 2000; Rosa & O’Neill, 1999; Schmidt & Frota, 1986).

Although researchers agree that noticing plays a crucial role in SLA, the definitions of noticing differ in the amount and type of attention needed for learning. Schmidt (1990) proposes that attention to input is necessary for learning to occur. By consciously noticing specific forms in the input, Schmidt claims, we subsequently learn an L2. “Intake is that part of input that the learner notices” (p. 139) and noticing requires that the learner has focal attention and awareness of some particular form before any subsequent processing of
Tomlin and Villa (1994) acknowledge the importance of attentional processes in SLA and postulate a more fine-grained analysis of attention by identifying three components: alertness, orientation, and detection. Alertness is the initial stage of attention and represents an overall and general readiness to deal with incoming stimuli. Orientation is the specific aligning of attention to a certain stimulus, that is, actually attending to that stimulus. Detection is the process that selects or engages a particular and specific bit of information. Detection is, then, the component of attention that is close to what is known as focal attention in Schmidt’s idea of noticing. Detection is crucial for learning because detection serves as the process by which particular exemplars are registered in memory and therefore could be made accessible to the key processes for learning such as hypothesis formation and testing. Tomlin and Villa (1994) disagree with Schmidt on the importance of awareness in SLA. They argue for a dissociation between attention and awareness and hold that detection, with or without awareness, is sufficient for learning.

Robinson (1995) provides evidence that noticing enhances the subsequent encoding of the ‘noticed input’ in long-term memory, and redefines noticing as detection and rehearsal, or activation, in short-term memory prior to encoding in long-term memory and following the allocation of attentional resources. Noticing and intake are defined somewhat differently by Gass (1997), who presents them in a five-stage model of apperceived input, comprehended input, intake, integration, and output. Apperceived input, similar to Schmidt’s noticed input, refers to some part of the input getting through to the learner. A knowledge gap is recognized between the L2 data and his or her knowledge, and their attention is directed towards particular parts of the input. The next stage, comprehended input, refers to the extent to which the learner comprehends. There are different levels of comprehension for each learner, that is, one can comprehend the input at the level of general meaning. On the other hand, one can have an understanding of the syntactic structure represented. The third stage, intake, is the process of assimilating the input which has been comprehended through the psycholinguistic processing. It is here that generalizations and hypotheses about the L2 are formed and tested. Acquisition culminates with integration of new linguistic information into the learner’s existing linguistic system, output then being the manifestation of newly integrated or acquired knowledge. Depending on whether further input data confirms or rejects the learner’s current hypothesis, new linguistic knowledge is reintegrated into their language system and retested through output in the subsequent interactions.
2. Concurrent Measuring of Noticing

There is a paucity of research that directly investigates learners’ noticing of forms as a result of linguistic and conversational adjustments in oral interaction (Philp, 2003). Studies in SLA tended to use reading and written tasks (Alanen, 1995; Jourdenais et al, 1995; Leow 1997, 2000; White, 1998). Visual input enhancement to draw learners’ attention to form in the written input was indeed an influential pedagogic proposal in the studies of noticing. Hegelheimer and Chapelle (2000) further note that noticing is not observed directly; “assessing noticing requires a high degree of inference because even though learners are presented with a condition in which noticing is prompted, it is not possible to assess exactly when and where noticing has occurred” (p. 44). Schmidt (1993) refers to this as an external approach to noticing. For example, researchers focused on input enhancement (external) as opposed to noticing (internal) to avoid difficult issues about mental states and processes. Philp (2003) cites Truscott (1998) who pointed out that research in this area assumes rather than tests noticing and looks at outcomes rather than internal processes.

Addressing the need for more direct assessment of noticing in oral interaction, researchers have attempted to employ concurrent assessment (Hegelheimer & Chapelle, 2000). Hegelheimer and Chapelle suggest three ways to concurrently investigate noticing in oral interaction: conversational adjustments, requests for modified input, and language related episodes (LREs). Concurrent assessment is capable of indicating when and where the learner stopped and noticed the language due to a problem in comprehension. Communication breakdown allows for noticing which can result in comprehension if conversational adjustments are made or input is modified appropriately through the request for modified input.

Swain (1998) also argues for the importance of concurrent assessment stating that “it seems essential in research to test what learners actually do, not what the researcher assumes instructions and task demands will lead learners to focus on” (p. 80, emphasis in original). Swain encourages noticing in the classroom through the use of dictogloss, in which learners work in cooperative groups to recreate a text that has been read aloud to the class. In the process, the learners engage in collaborative dialogue in which they identify and discuss language problems and pool their linguistic resources for the text they are reconstructing. When learners engage in collaborative dialogue, LREs, defined as “any part of a dialogue in which students talk about the language they are producing, question their language use, or other- or self-correct” (p. 70), are investigated through concurrent assessment to observe the precise object of the linguistic discussion. A crucial aspect of LREs is that they are a product of the learners’ attention directed towards their own L2 output.
3. Contextual Factors on Noticing

A well-established fact about the noticing hypothesis is that some properties of the L2 are noticed while others are not. It is commonplace, therefore, to see the noticing hypothesis coupled with suppositions that various influences affect noticing. There are several factors that have been claimed to have an effect on noticing. Schmidt (1990) lists the following factors: (a) expectation about the language established by instruction (b) frequency (c) saliency of the feature (d) individual skills and strategies and (d) task demands. Skehan (1998) classifies these factors into several categories: (a) input qualities (frequency, saliency) (b) focused input (instruction, selective tasks) (c) task demands on processing resources and (d) internal factors (readiness, individual differences). Other factors which have been suggested to mediate noticing include: prior knowledge in terms of familiarity with lexical and grammatical items (Gass, 1997), the degree to which the message in the input is understood (VanPatten, 1990), individual differences in working memory capacity and cognitive abilities (Mackey, Philp, Egi, Fujii, & Tatsumi, 2002), and different input modalities (written vs. oral/aural modes) (Wong, 2001). Philp (2003) investigated the extent to which learners notice recasts in native speaker (NS)-non-native speaker (NNS) interaction. She identified some factors, such as the length and number of changes in the recast and learner readiness, that affected the noticing of recasts.

As shown in the Literature Review, studies in SLA tended to use reading and written materials and looked at outcomes rather than internal process. Some researchers raised an issue of the methodological concern about how to collect and analyze noticing data. To address this methodological concern, this study employed the dictogloss procedure. The transcripts of LREs of the learners were examined to capture the moments when their attention was drawn to focus on form when performing a dictogloss.

III. THE STUDY

1. Research Questions

1) Do the learners notice the target form when performing a dictogloss task? Is there a relationship between learners’ noticing of the target form and their learning outcomes?

2) What are the factors that constrain noticing and subsequent learning?
2. Participants

The subjects for the present study were 16 L2 learners (2 males and 14 females) with different L1 backgrounds. The subjects were one Chinese, seven Japanese, five Koreans, two Spanish, and one Taiwanese. These learners came from a language institute in Auckland, New Zealand. The learners ranged in ages from 21 to 30. Their length of stay in New Zealand varied from 7 days to 12 months, although most of them had been in New Zealand for less than 6 months. The learners had studied English from 9 months to 15 years but on average they had spent 7.8 years, most of which took place in their home country.

Their level of English proficiency was upper intermediate based on their placement test scores. Relatively advanced L2 learners were chosen for two reasons. First, in reports of previous studies, researchers have suggested that advanced learners may be more consistent than lower-level learners in their performance on a grammaticality judgment test, which was employed in this study. Second, because more advanced learners might have more extensive metalinguistic knowledge than lower-level learners, they might be able to engage in metatalk and if they lack this, they might not be able to benefit to the same degree from the task employed in this study.

3. Research Design

Eight pairs of L2 learners performed a dictogloss task in collaborative dyadic dialogue. The effects of the treatment were measured in terms of three tests: a grammaticality judgment test (GJT), an error correction test (ECT), and a metalinguistic knowledge test (MKT). Since the focus was on relating the process of noticing to the outcome of noticing, and not solely on the outcome of noticing, no control group was used; the study was not an attempt to prove the efficacy of a particular task, but rather to probe the processes that it involved.

4. Development of Materials

1) Target Grammatical Structure

The target structure chosen was psychological verbs. Learners have problems when they use psychological verbs depending on the order of experiencer and stimulus (Burt, 1975). A psychological verb is used in the sentence, The teacher (experiencer) likes hard-working students (stimulus). However, the order is reversed with some specific psychological verbs, for example, The loud music (stimulus) bothered the students in the library (experiencer).
When learners misuse this structure, they may make an error like: *The students in the library bothered the loud music* where the meaning of the sentence is obscured or changed.

Another reason for the selection of this structure was that it does not usually feature in language teaching materials and it is likely to be less familiar to the learners. If learners perform better with this target structure after the treatment, it might have been due to the treatment.

2) Development of the Tasks and the Tests

The materials used for the study were developed through a series of pilot studies. The participants of the pilot studies were drawn from the same population that was later investigated in the main study. For the target structure, a dictogloss task was designed. The learners in the pilot study performed the task in pairs. The task was performed by three pairs at the upper intermediate level of proficiency. Following the suggestions made by the learners in the pilot study, some words were changed to make sure that learners understand the dictogloss text and the task instruction was revised to help them complete the task successfully.

For the GJT, revisions were made to replace the words some learners did not know and to change the sentences which misled them to focus on other than the target structure. When the learners were asked to correct the target sentences they judged ungrammatical, it was found that they corrected them using the passive voice instead of the target structure.

5. Description of Instruments

1) The Dictogloss Task

A dictogloss text was written using seven psychological verbs. The learners were instructed as follows:

Now you are going to work with your partner and you will reconstruct a story together that you’ll hear through a tape. I will play the tape 2 times. The first time, just listen. Don’t write anything. The second time, while you listen to the story, take some notes – words or phrases to help you remember the story. Don’t try to write down everything. You won’t have time. Try to write the story exactly as you hear it, and write it in good English. Try to use the exact words from the story as much as possible, but use other words if you forget the original words. Discuss with your partner the correct grammatical structures you will use.
As each pair worked together to reconstruct the dictogloss text, they were recorded.

2) GJT

In order to evaluate the learning that resulted from the task, a GJT was designed for the target structure. The test consisted of 36 decontextualized sentences with the same number of correct and incorrect sentences. A total of 11 psychological verbs were used to make 22 target structure sentences. A total of seven different grammatical features were used to make 14 distracter sentences. The learners were required to discriminate between the correct and incorrect sentences and to provide the correct version of the sentences they judged ungrammatical. Each of the ungrammatical sentences in the test contained only one error. The sentences used in the test were not controlled for length as long as they are semantically acceptable.

The dictogloss task introduced seven psychological verbs which require the marked order of experiencer and stimulus. These were surprise, annoy, disappoint, bore, interest, worry, and satisfy. The GJT included sentences with all of these seven verbs, together with four new verbs, bother, impress, excite, and shock. Since the most common error made by learners relating to this structure is to reverse the order of experiencer and stimulus, the GJT focused on this error. Erroneous use of this structure contained sentences such as:

*The politician disappointed his vote.*

3) MKT

The MKT consisted of five sentences which contained the incorrect order of stimulus and experiencer. Learners were asked to correct the error and explain what is wrong with those sentences.

6. Data Collection Procedures

First, the learners were asked to fill out the Learner Questionnaire about themselves. The researcher then explained to them that they needed to take pre-tests in order to see how familiar they were with the target structure. At this point they were not told what the target structure was.

The learners then took the two tests: pre-GJT and pre-MKT. No time limit for completion of the two tests was imposed but the learners were not allowed to change their responses. The learners practiced with three example sentences for those two tests respectively. The completed tests were then collected. While the learners were working on
the tests, the researcher set out the tape recorder to record the pair discussion for the task. The pairs received an instruction sheet. The researcher went over the instruction with them, clarifying any questions that arose. As each pair worked together to reconstruct the dictogloss text, they were recorded. Eight pairs of the learners performed the dictogloss task for about 17-20 minutes. After the task sheets were collected, the learners were given the opportunity to read the dictogloss text in which the target verbs were bold and italicized for as long as they needed. They spent about 1-4 minutes to read the dictogloss text after the performance of the task. This was done because there was no time for conducting the last stage of the dictogloss procedure for analysis and correction, due to time constraint. Once the researcher collected the task sheets, there was no further discussion of the grammar point and no feedback on the task was provided to the learners. Immediate post-tests and delayed post-tests two weeks later were then administered in the same way as the pre-tests. The audio-taped pair work was transcribed in normal orthography.

7. Measures

1) GJT and ECT

The learners were awarded a score of 1 each time they judged a sentence correctly. The total possible GJT score was 36. The total possible GJT scores of the target and the distracter sentences were 22 and 14 respectively. There was an equal number of grammatical and ungrammatical sentences for the target and the distracter sentences. Therefore, the total possible GJT scores of the grammatical and ungrammatical sentences were 18 and 18 respectively.

For the ECT, the learners were awarded a score of 1 each time they changed an ungrammatical sentence correctly using the target structure. When they corrected the sentence using the passive voice, they were not awarded a score. The total possible ECT score of the target sentences was 11.

2) MKT

A rating scale was developed from the comments the learners made in the post-MKT by identifying and describing characteristics of the learners’ metalinguistic comments. The five levels in the rating scale are presented below together with examples taken from the post-MKT. In each example, the number of the learner and the number of the sentence in the post-MKT to which s/he is responding are indicated.
Level 0 - The learner provides no explanation or an irrelevant explanation.
[L10 S3] – (James frightened the darkness.) Needs article. The sentence is ‘James frightened at the darkness.’

Level 1 - The learner refers to the passive voice but the passive form is incorrect.
[L16 S3] – (James frightened the darkness.) If the subject is a person, you should explain be + p.p. form for the verb, ‘frighten.’ So, the sentence should be ‘James was frightened the darkness.’

Level 2 - The learner refers correctly to the passive voice.
[L3 S1] – (Ken’s parents surprised his plan.) be + Ved + prep. Need the passive form and use the prep, ‘at’ instead of ‘by.’ ‘Ken’s parents are surprised at his plan.’

Level 3 - The learner provides an explanation related to the target structure but fails to identify the target structure form.
[L8 S4] – (Phil interested the expensive car.) The verb, ‘interest’ must have the subject that gives something or someone interests. The sentence is ‘Phil was interested in the expensive car.’

Level 4 - The learner provides an explanation of the target structure and identifies the target form.
[L15 S2] – (Phil interested the expensive car.) ‘The expensive car’ impress ‘Phil.’ ‘Phil’ does not impress ‘the expensive car.’ The sentence is ‘The expensive car interested Phil.’

The learners were awarded a rating score of 0 to 4 for each sentence in the MKT, the possible total score being 20. The use of the technical metalanguage was not taken into account in devising the rating scale because none of the learners used any technical language such as *experiencer* or *stimulus*. To determine the reliability of the use of this scale, a second rater who is a TESOL doctoral student scored a random selection of 25% of the MKT data with the researcher. The Pearson Product Moment coefficients of reliability for the two raters were .989 for the pre-MKT, .949 for the post-MKT, and .973 for the delayed post-MKT respectively.

3) Noticing Scores

For research question 1 two measures of noticing were employed: transcribed protocol
data during dyadic discussion and the learners’ written output of the initial dictogloss text. Noticing was defined as a conscious attention to input (Schmidt, 1990). The transcribed data from the learners’ pair work were examined by identifying LREs in which learners’ attention was drawn to the target form by way of metatalk. Two types of noticing were identified: simple and elaborate (Kuiken & Vedder, 2002; Leow, 1997) and a score of noticing was given to each learner. The learners received 1 point for each instance of noticing.

Simple noticing was referred to as the instance in which the learners mentioned the target form with more or less emphasis but they did not discuss it. The example of simple noticing is:

L8: And the lecturer
L2: the lecturer at that time
L8: bored him

Elaborate noticing was the occasion on which the learners put the sentences with the target form into question and/or discuss them. In the example of elaborate noticing below L3 corrected L12’s sentence using a target form.

L12: The lecture was bored.
L3: The lecture bored him.

IV. DATA ANALYSIS AND RESULTS

1) The Extent to Which the Learners Notice the Target Form

Instances of simple and elaborate noticing were counted separately. When the outcome of metatalk failed to produce the target form, those instances were not considered as an example of elaborate noticing. Only the learner who initiated the instance of elaborate noticing was recognized because most instances of elaborate noticing occurred by way of correction or self-correction without metalinguistic explanation as follows:

L7: A cat was surprised at him (laughter) surprised him by jumping into him.

Scores of simple noticing ranged from 0 to 6 out of the total possible 7 points, the average being 1.69 and those of elaborate noticing ranged from 0 to 3 with the average
of .63. Table 1 summarizes the scores of two types of noticing of each learner. The number in the parenthesis indicates instances of noticing in which the sentence mentioned by one member of the pair was repeated by another member.

### TABLE 1
Scores of Simple and Elaborate Noticing of Each Learner

<table>
<thead>
<tr>
<th>Pair No.</th>
<th>Learner No.</th>
<th>Simple Noticing</th>
<th>Elaborate Noticing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L 1</td>
<td>1(1)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>L 5</td>
<td>3(2)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>L 2</td>
<td>0(2)</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>L 8</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>L 3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>L 12</td>
<td>2(1)</td>
<td>0</td>
</tr>
<tr>
<td>7</td>
<td>L 4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>L 16</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>L 6</td>
<td>1(1)</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>L 13</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>11</td>
<td>L 7</td>
<td>1(1)</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>L 9</td>
<td>1(1)</td>
<td>0</td>
</tr>
<tr>
<td>13</td>
<td>L 10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>14</td>
<td>L 14</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>15</td>
<td>L 11</td>
<td>1(1)</td>
<td>0</td>
</tr>
<tr>
<td>16</td>
<td>L 15</td>
<td>6(1)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>27(11)</td>
<td>10</td>
</tr>
</tbody>
</table>

Each pair’s written output of the initial dictogloss text was examined to count how many target sentences were reconstructed. Swain (1998) hypothesizes that the activity of producing the target language obliges learners to pay attention to grammar for syntactic processing. It is also plausible that at least some attention is drawn to the target sentences when learners bother to write them down. Table 2 presents the number of the reconstructed sentences of each pair.

### TABLE 2
Number of the Reconstructed Sentences of Each Pair

<table>
<thead>
<tr>
<th>No. of Ss</th>
<th>Pair 1</th>
<th>Pair 2</th>
<th>Pair 3</th>
<th>Pair 4</th>
<th>Pair 5</th>
<th>Pair 6</th>
<th>Pair 7</th>
<th>Pair 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>5</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

There were verbs more frequently noticed and mentioned. They were *surprise* (5 instances of simple noticing and 2 instances of elaborate noticing), *annoy* (6+1 instances), *disappoint* (4+3 instances), *bore* (4+3 instances) and *satisfy* (5+1 instances). The less frequently noticed items were *interest* (2+0 instances) and *worry* (1+0 instance). In a
similar vein some sentences were more frequently mentioned and reconstructed while others were not. Table 3 presents the frequency of two types of noticing of each verb.

### TABLE 3

<table>
<thead>
<tr>
<th>Verb</th>
<th>Simple Noticing</th>
<th>Elaborate Noticing</th>
</tr>
</thead>
<tbody>
<tr>
<td>surprise</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>annoy</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>disappoint</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>bore</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>interest</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>worry</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>satisfy</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4 presents the number of the reconstructed sentences of each verb.

### TABLE 4

<table>
<thead>
<tr>
<th>Verb</th>
<th>Number of the Reconstructed Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td>surprise</td>
<td>5</td>
</tr>
<tr>
<td>annoy</td>
<td>5</td>
</tr>
<tr>
<td>disappoint</td>
<td>5</td>
</tr>
<tr>
<td>bore</td>
<td>4</td>
</tr>
<tr>
<td>interest</td>
<td>2</td>
</tr>
<tr>
<td>worry</td>
<td>1</td>
</tr>
<tr>
<td>satisfy</td>
<td>3</td>
</tr>
</tbody>
</table>

2) Learning of the Target Form

The learners’ tests were scored to examine whether gains in learning after the task performance have any relationship with the extent of noticing. Only the scores of the target sentences not the distractor sentences in the GJT and ECT were considered for the analysis. The similar results were found between the immediate and the delayed post-tests in all three of the tests. Table 5 shows the GJT, ECT, and MKT pre-test and immediate post- and delayed post-test scores of each learner.

### TABLE 5

<table>
<thead>
<tr>
<th>Learner No.</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Delayed Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pair No.</td>
<td>GJT</td>
<td>ECT</td>
<td>MKT</td>
</tr>
<tr>
<td>L1</td>
<td>15</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>L5</td>
<td>9</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>L2</td>
<td>9</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>L8</td>
<td>14</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>L3</td>
<td>20</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>L12</td>
<td>12</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>L4</td>
<td>16</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>L16</td>
<td>14</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>L6</td>
<td>21</td>
<td>0</td>
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<td>L15</td>
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V. DISCUSSION

1. Research Question 1

The transcribed protocol and the reconstructed output data showed that the learners noticed the target form and attended to it, as Schmidt (1990) might say, although each learner varied in the extent of noticing. The effect of noticing on learning seems apparent on the GJT: a number of learners went from middle or high scores to full scores (L1, L3, L6, L13, L7, L15) and others went from low or middle scores to middle or high scores (L2, L5, L8, L11, L12, L14) between the pre- and post-GJT. Without any kind of noticing, the learners (L4, L9, L10, L16) demonstrated little or no learning of the target form. L4 and L16 as a pair rarely mentioned or discussed the target form nor reconstructed any target sentences in the dictogloss text (see Tables 1 & 2). L10 did not initiate any kind of noticing and rather confused her partner (L14) during dyadic discussion. These were the learners who achieved even lower scores on the post-GJT than on the pre-GJT.

The test sheets showed that it was possible for the learners to make grammatical judgments on the GJT based on meaning and then correct the sentences using a passive form than the target form. These learners received a score for the GJT because they judged incorrect target sentences as ungrammatical but no score for the ECT when they corrected the incorrect target sentences using a passive form. The ECT and MKT were therefore considered as a better index for learning of the target form.

The ECT and MKT scores provided a quite clear-cut picture. Only two learners, L1 and L15 achieved high scores on both the post-ECT and post-MKT. Although L1 did not engage in metatalk actively, her score on the pre-ECT showed that she had partial mastery of the target form. Furthermore, she appeared confident of the form as shown in the excerpt below:

35 L5: *It annoyed him.*
36 L1: Yep. *Annoyed him.*
69 L5: *The lecture was bored.* Why is it bored?
70 L1: because *the subject bored him, the lecture.*
71 L5: *The lecture bored him.* I think *subject don’t* something (laughter)

L1 assures L5 that L5’s sentence is correct in line 36 and she corrected L5’s sentence using a target form in line 70. L5 initiated noticing of the target sentences more often than L1; however, she appeared confused with the target form in line 69 and changed her sentence correctly after L1’s correction in line 71. L5 achieved a moderate score on the post-ECT but her post-MKT score suggested that she did not form a correct target rule. L5
along with L1 noticed and recalled the target sentences, however, the input she noticed may not have been further analyzed as intake while that noticed by L1 has. They seemed to reach different levels of comprehension; that is, L5 comprehended the input at the level of general meaning. On the other hand, L1 had an understanding of the syntactic structure represented as suggested by Gass’s model.

Learner 15 did not show any mastery of the target form on the pre-ECT or pre-MKT but she was very ready for and keyed to the target form during dyadic discussion. She was the only one learner who attended to all the target sentences by mentioning them all. Her noticing of the target form occurred consistently and significantly. In the case of L1 and L15 we might say that they detected the target form in the input and further processed the data and these two processing operations led to Schmidt’s (1990) sense of noticing that is both necessary and sufficient for learning.

All discussion taken together, a case can be made for individual readiness for noticing the target form in the input and its subsequent learning. It is suggested that readiness to acquire a form affects the learner’s noticing of that form in the input, a step argued by most to be requisite to acquisition (Gass, 1997; Schmidt, 1990). The sample is too small to provide convincing quantitative evidence but it appears that the learners who notice the target form most and make the greatest learning gains are those who are ready and can find the relevant data wherever they can, with or without instructional treatment. The pedagogical implication of the findings is that individual student has a point of readiness for attention to a form and that there is the need for a greater awareness on the part of the teacher regarding emergence of forms in their students’ interlanguages (ILs) and for organizing developmentally targeted teaching.

2. Research Question 2

The findings from research question 1 led to research question 2 which investigated what other factors constrain noticing and subsequent learning of the target form when learners engage in noticing.

1) Limited Available Attentional Capacity

VanPatten (1990) has suggested that form and meaning compete for learners’ limited attentional resources during input processing in the aural mode with a preference for processing meaning before form. This is illustrated in the episode below in which L12 is struggling to retrieve the passage content in lines 58 and 70:
L12 noticed and mentioned the target sentence in line 74 but she is trying to understand what the sentence means. It seems that she used most of her resources for meaning surrounding the target sentences and had little attention to free up for noticing the target form. She was given a simple noticing score of 2 because she appeared to notice the target form in lines 58 and 70 (or 74). One may argue that she did not in fact notice the target form. That is, the measurement of noticing was not sensitive enough the problem being overestimation of actual noticing (Izumi, 2002).

Most target sentences the learners mentioned during the reconstruction phase appeared in their written output but they sometimes wrote down modified sentences in the end. Pair 4 mentioned one target sentence (The grade disappointed him) during dyadic discussion as in the excerpt below.

L4: The subject was very boring and they wait? For the test result?
L16: Yeah, disappointed
L4: disappointed
L16: He disappointed the grade disappointed him.
L4: Teacher gave results of the test but Tony was disappointed with
L16: with with
L4: with? His grade
L16: Maybe the tape said grade disappointed him. No? The grade disappointed him?
   Maybe.
OK. And then after that he went to the library straight
L4: library
L16: went straight
L4: because
L16: [x]¹
L4: Huh? I remember this part.

¹ [x] in the transcript means unclear utterances on the tape.
L16: *went straight to the library*
L4: *straight to the library?*

But they reconstructed two target sentences using a form other than the target form as follows:

*The subject of the class was very boring.*
*Tony was disappointed with his grade.*

They appeared to comprehend the content of the text but used a present participial adjective and a passive form than the target form in the reconstructed text. The processing demands on these learners tend to be in terms of global comprehension of the content; and this is the likely focal point of their attention, leaving few resources for attending to the target form that is incongruent with their existing knowledge (i.e. passive form). Although these learners appeared to be able to understand (decode) messages containing the target form, they have not yet noticed the target form, as reflected in their low noticing scores. Nor have they worked out the underlying rule (broken the code), as reflected in their scores on the post-ECT and post-MKT. Using Gass’s model they may be at the stage of ‘comprehended input’ in which the learners can comprehend the general meaning of the input but cannot process it any further, perhaps due to lack of time (Mennim, 2007).

The results altogether suggest that to engage learners in the syntactic processing that is necessary to trigger L2 learning, meaning should already be transparent for the learners and they are therefore able to concentrate on the more formal features of the target form. Care needs to be taken to make sure learners’ processing capacity is not overloaded during input processing to allow for adequate allocation of attentional resources to forms.

2) Learner Bias

L2 acquisition researchers have suggested that learners are biased to some degree to the input they are exposed to by their current IL knowledge (Gass, 1997; Philp, 2003). Philp (2003) noted that this bias modulates the learner’s noticing of the input and ultimately what becomes intake for the learner. In the episode below, L10 is struggling to recall the target sentences:

139 L10: ... *So he was annoyed about that.*
151 L10: *disappointed no the grade was disappointed.*
163 L10: No, no. *Also the lecture was bored* but I don’t know what to do. I need also was anyway and there was something.
L10: Also the lecture bored the lecture bored because the subject is not interested him.

She modified most of the target sentences in her recall, maintaining the target lexical items (annoy, disappoint, bore, interest) but modifying the form. She may have noticed the target form in the input but her noticing of the target form was partial; she received an incomplete picture of the input given like the learner who modified the recast provided by the native speaker in Philp’s study. It seems that L10 was biased by her own IL grammar. She is constantly trying a passive form albeit incorrectly but she appears not to be ready for the target form.

3) Type of Processing: Integrative Processing

In the case of L6 and L13, there was a disparity between the extent to which they noticed the target form and learning outcomes. Noticing scores of L6 and L13 indicated that they attended to the target form to a greater extent than other learners but they did not use the target form on the post-ECT nor provided a target rule on the post-MKT. These two learners in the same pair used only a passive form consistently both on the post-ECT and post-MKT. As White (1998) reported, the learners noticed the target form but were not sure of its relevance or importance.

The notion of integrative processing (Graf, 1994, cited in Izumi, 2002) may be relevant to account for this result. Thus, it can be argued that to learn the structure like the target form used in the present study, the learners needed not only to attend to key form elements (i.e. psychological verbs) but also to focus their attention on how they are related to one another (i.e. stimulus and experiencer). Attending to individual target verbs such as surprise, satisfy, annoy, etc., no matter how intensely learners do so, would not by itself lead to the learning of the target form unless these items are grasped in relation to other items that make up the structure. It is therefore necessary to consider the qualitative aspects of noticing (i.e. depth or type of processing) in addition to the quantitative aspects of noticing (i.e. amount of processing).

4) The Length of the Target Sentences

L8’s noticing score was relatively high and she, as a scribe of her pair, consistently wrote down the target sentences while reconstructing the text. However, her scores on the post-ECT and post-MKT have not improved. In the note she jotted down during the dictation stage some of the target sentences were written down as a whole and one of them was ‘the subject don’t interestin’ and this modified sentence appeared in the reconstructed
text.

The target sentences were kept short. This was done because listening to short sentences would require fewer attentional resources to comprehend the text and would consequently leave more resources available for processing of the target form. It is, therefore, possible that she could have used memorized chunks from her note in the reconstructed text but she had not yet analyzed the chunks to find the underlying target rule as reflected on the post-ECT and post-MKT.

Philp (2003) and White (1998) reported that some learners were able to retain short target sentences from the input in working memory (i.e. short-term memory) and recall them accurately irrespective of their readiness. The learners like L8 may be more memory-oriented than others and more likely to rely on chunks and routines. Following Robinson (1995), it can be said that she detected the target structure but has not yet cognitively processed the detected data to find the underlying target rule. The learner has not yet found the underlying target rule but Philp (2003) suggests that such short chunks, although beyond the level of the learner, form the basis for future development with long-term effects. Thus, learners will slowly accumulate frequent patterns in the input into a larger unit and abstract regularities from those chunks (Ellis, 2002).

5) Familiarity with the Material

Familiarity with the key lexical items may also account for the extent to which the target sentences are noticed. Cowan (1993) reported on a study of speeded pronunciation and memory span in adults, using both English words and nonsense words as stimuli. There was the usual linear relation between speech rate and memory span, but subjects recalled much more English words than nonwords. He noted that the result illustrated that “one’s long-term lexical familiarity with the material to be activated makes a big difference in short term memory (STM) tasks” (p. 166).

The result of the present study supported this claim. The learners noticed the target sentences with surprise, annoy, disappoint, bore and satisfy more often than those with the other two verbs, interest and worry (see Tables 3 & 4). The learners are likely to be more familiar with the first group of verbs than those in the second group. In terms of noticing, prior lexical familiarity may be of more or less potential benefit to the learner and learners who have a larger store of L2 data may have an advantage.

VI. CONCLUSION

The present study was motivated by the claim that attention and noticing are important
for SLA and investigated the extent to which learners may notice the target form and its subsequent learning through noticing. To address the methodological concern about how to collect and analyze noticing data, the dictogloss procedure was employed following Swain (1998). In general, the basic premise that the more attention to the form, the better its chance of learning was attested. There was also a positive relationship between the extent of noticing and subsequent learning and the learner’s readiness for the target form. This result led to exploring what factors constrain noticing and/or learning of the target form. Internal learner capacities (i.e. readiness, attentional capacity, bias, type of processing, and familiarity) appeared to be the crucial constraining factors on noticing and subsequent learning.

There was a disparity between the extent of noticing and learning outcomes in the case of some learners. This disparity seems partly due to the problem with the coding of noticing data. The useful interactions which connect input, internal learner capacities, selective attention, and output in productive ways (Long, 1996) occurred in the dictogloss allowing the learners opportunities for noticing. However, the exploration of LREs in the dictogloss as occasions for noticing, which Mackey (2006) refers to as coarsely grained coding systems, did not distinguish between various levels of understanding (e.g. awareness at the level of noticing and awareness at the level of understanding). On the other hand, some learners did not engage in the talk actively lowering their noticing scores. As Mackey (2006) rightly points out, lack of noticing is not equivalent to the evidence of non-occurrence of noticing. Although care was taken to address the need for more direct assessment of noticing in oral interaction, concerns still exist about how to best operationalize and measure the noticing of L2 forms. Future research should address these methodological concerns more carefully.

A second limitation involves the target form employed. Psychological verbs were chosen as the target form because they are not frequently taught and learners may be less familiar with this form. However, the target form appeared to be highly complex to most of the learners in the present study. In retrospect, the conceptual complexity of psychological verbs may have limited the learners to engage in metatalk with the result of sparse data. The analysis of sparse data may have been unable to capture the full extent of noticing.

Another limitation in the present study is the small sample size and it remains difficult to generalize the findings of the present study to other populations of learners. Future research on noticing needs to be done with a larger population of learners. Further, this study involved one-on-one NNS-NNS interaction in a controlled setting. Thus, future research in authentic instructional settings closer to those normally found in the educational contexts needs to be done to allow for instructors to be better informed.
REFERENCES


Applicable levels: secondary, tertiary
Key words: dictogloss, interaction, collaborative dialogue, noticing, attention, constraints on noticing

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Received in April, 2011
Reviewed in May, 2011
Revised version received in June, 2011