A STUDY OF ERRORS, CORRECTIVE FEEDBACK AND NOTICING IN SYNCHRONOUS COMPUTER MEDIATED COMMUNICATION

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Setareh Hassanzadeh Nezami
Abstract

This study investigated the different types of errors that EFL learners produce in chat logs and also analyzed the different types of corrective feedback given by the teacher. An eye tracker was employed to study the eye movements of the participants to see how they notice the corrective feedback. This investigation can assist teachers to act better in online classrooms and helps them understand which type of corrective feedback is most likely to result in uptake based on noticing. The results showed that the most common errors in chat logs were related to grammar. It was also found that both recasts and metalinguistic feedback were noticed most of the time during the chat sessions although only a few of them led to uptake in post task session.
1 INTRODUCTION

Synchronous computer-mediated communication (SCMC) has been suggested to be helpful for classroom-based second language acquisition (cf. Smith 2009:1). According to Ortega (2009), task-based SCMC studies have shown evidence that such interaction can be facilitative for second language development. Although there has been much research in this area, more studies are needed to make this medium more reliable and helpful in language acquisition and language teaching. Furthermore, this area includes a variety of different scopes, which need to be focused, and most previous studies have only investigated some specific factors that influence the effectiveness of task-based online classrooms. This means that there are different aspects, which can affect the effectiveness of task-based online classrooms such as different chat applications, different level of learners’ computer skills, different genders and also different types of tasks in online classrooms (for example: describing a video, solving a problem, turn taking tasks), while one of the aspects, which has been focused recently, was analyzing the different types of feedback and the noticing phenomenon (Smith, 2010).

The main goal of this thesis is to investigate the effectiveness of different types of corrective feedback in text-based online chat in order to help improve the use of applied computer-mediated communication in language learning for EFL learners. The analysis of the effectiveness is centered on the concept of noticing (Schmidt, 2001). First a linguistic analysis is conducted, whereby feedback, errors and instances of uptake are coded and counted. This analysis is complemented by an analysis of gaze patterns, through the employment of eye-tracking technology.

The current study was in many respects influenced by a study by Smith (2010). In his study, he tried to investigate the effectiveness of recasts, a type of corrective feedback, and employed eye tracking technology to see if there had been noticing, based on the fixation duration. In the current study, focus is not only on recasts, but also on metalinguistic feedback given to different types of errors: typing/spelling, lexical and grammatical, while applying a methodology similar to that of Smith (2010). Likewise, the fixations and noticing were studied to find any particular relations or pattern.
This thesis is divided into 4 chapters, of which the first one explains a few main concepts in relation to computer-mediated communication, theoretical background, corrective feedback, uptake and noticing. Chapter 2 describes what the current study is about and also identifies the methods applied for gathering and analyzing data. The results are presented in chapter 3, illustrating the analysis of different types of corrective feedback and their relation to errors and noticing. Finally, the analyzed results and the study limitation are discussed in chapter 4 and some ideas for further studies are suggested.

1.1 Theoretical Background

Text-based online chat is a synchronous form of computer-mediated communication (SCMC) during which learners type their conversations in real time (Almedia d’Eca, 2002). This type of conversation takes place via computers and between two or more people. Sometimes it is combined with video and audio and helps people all around the world talk in real time as if they were in the same place. Nowadays, this type of communication is used as a medium for education, and especially for language learning. Many researchers have tried to investigate the characteristics of SCMC to be employed in language acquisition and language learning, so some of these results will be presented in the following.

1.1.1 SCMC

Text-based online chat, as a particular form of SCMC, has received increased attention in language learning contexts for two important reasons: first, the conversation takes place at a slower pace compared to face-to-face conversation, and gives interlocutors more processing time to produce correct target forms; secondly, the chat logs are saved during the conversation, so that users can access previous messages easily during the conversation, while in face-to-face conversation the learner may forget what the teacher has just said when trying to produce the target like structure/language (cf. Chun Lai and Yong Zhao, 2006, p. 102).
Blake & Zyzik (2003) suggest that the text-based SCMC medium can be used to increase students’ attention to linguistic form. Smith (2005) also argued that text-based online chat offers learners sufficient opportunity to notice the lexical and grammatical features of the input. Ong (1982) previously argued that text-based discourse frees learners from the constraints of memory, and lets them investigate the structures and rules of the target language more efficiently than one could in an oral conversation. Besides, Kern (1995) has shown that text-based interaction reduces anxiety and leads to an increase in output.

Later, Lai and Zhao (2006) have explained that one of the main potentials of text-based online chat is that it helps learners notice both their own problematic L2 utterances and the feedback on problematic linguistic forms provided by their interlocutors. During the last few decades, many have suggested that the analysis of chat logs from text-based online classrooms can be helpful for educators. Chat logs or chat scripts are those transcripts text files that are saved during the online conversations automatically. These may be used as tools to identify the students’ developments in learning specific grammatical structures or word forms. This information may be helpful in guiding instructors in where to focus their energies (Smith, 2009, p. 3).

Smith has done a variety of good studies in computer-assisted language learning (CALL) and specifically, at the intersection of CALL and Second Language Acquisition (SLA). He has investigated SCMC from different perspectives, focusing on, for instance, Task-based learning in the computer-mediated communicative ESL/EFL classroom (2009), in which he investigated some of the potential benefits of SCMC in an ESL classroom setting for younger learners of English. Likewise, he examined the relationship between the interruptions and deleted texts as well as the effect such interruptions have on the subsequent output produced by learners (2009). In 2010, he studied the linguistic complexity and lexical diversity of both overt and covert L2 output produced during synchronous written computer-mediated communication. Then, employing eye-tracking technology in researching the effectiveness of recasts in CMC (2011), an important piece of work was performed that has greatly influenced the methodology of the current thesis. Recently, he has tried to investigate eye tracking as a measure of noticing (2012).

Smith and Gorsuch (2004) argue that relying only on chat-scripts when interpreting task-based SCMC discourse is unsatisfactory and the analysis may not lead to a definite and precise result. In this regard, O’Rourke (2008) and Smith (2010) suggest that combining
keystroke logs, video screen capture records, eye-tracking data, and conventional video recordings of users’ physical environment can make the data collection more precise.

Up to now, the available studies dealing with SCMC are primarily related to task-based SCMC discourse analysis. Studies applying tools such as video recording, eye-tracking data and keystroke logs are insufficient in number and inconsistent in design and focus, and so far firm conclusion have rarely been drawn (cf. Ortega, 2009). In other words, up to now nobody could confidently demonstrate that, for example, a specific type of feedback is noticed better or a specific type of feedback leads to more uptakes. Applying eye trackers or keystroke logs might help in some respects but primarily give the researchers some hints instead of definite answers.

1.1.2 Noticing

What is noticing and how is it related to task-based SCMC? Noticing is often associated with the influential notion of consciousness raising (Rutherford, 1987; Sharwood Smith, 1981) or input enhancement (Sharwood Smith, 1991).

The Noticing Hypothesis, which was first formulated by Schmidt in 1990, is a crucial factor in language learning and especially in second language acquisition. Schmidt (1990) viewed language acquisition as a developmental process, in which input data is noticed and processed in short-term memory and then it will be encoded in long-term memory and stored permanently in the learner’s language system order to produce target like language. Therefore, Schmidt (1990) suggested that “… noticing is the necessary and sufficient condition for second language acquisition…” and later, he argued that noticing is a prerequisite to L2 learning (Schmidt, 1993). Also later studies by Schmidt have confirmed that noticing plays a vital role in second language acquisition (Schmidt, 2001).

Similarly, Tomlin and Villa (1994) acknowledged the significance of three different components in learning: alertness, orientation and detection. Moreover, Lai et al., (2008) proposed noticing as a crucial condition for acquiring recasts. Although many researchers have proposed noticing as an important factor in language acquisition, there are no standard procedures for how to measure noticing. Some of the methods previously employed to
measure *noticing* include think aloud protocols, questionnaires and the analysis of immediate uptake (see section 1.1.5) (Braidi 2002; Lyster and Ranta 1997; Mackey and Philp 1998; Tarone and Bigelow 2007). Another, more recently suggested method by Smith is to employ eye tracking to investigate learners’ gaze patterns and analyze fixation durations to see how long learners fixate on a specific word or structure. He suggests that by setting an appropriate threshold for the fixation duration, it can be decided if an area of interest has been noticed or not (see section 1.1.5).

### 1.1.3 Error Correction/Corrective Feedback

In a task-based online classroom usually the teacher tries to correct the learners’ errors in different ways. Error correction is sometimes considered as the reaction of competent speakers to learners’ language errors (Hyang, 2010). This phenomenon is called different things among different groups of researchers (cf. Lyster and Ranta 1997). Within linguistics it is examined in terms of negative evidence (White, 1989). For discourse analysis it is called repair (Kasper, 1985). Psycholinguistics refers to it as negative feedback (Annet, 1969) and second language teachers name it corrective feedback (Fanselow, 1977).

What is *Negative Feedback/Corrective Feedback?* According to Long (1996), the type of error correction that draws the L2 learners’ attention of the differences between their output and the target language is known as negative feedback. Lyster and Ranta (1997) identify different types of feedback such as: *Explicit Correction, Recast, Clarification requests, Metalinguistic feedback, Elicitation* and *Repetition*. Among the stated types of corrective feedback, *Recasts* and *Metalinguistic Feedback* have been more studied and applied in recent research. For instance, Smith (2010) investigated the effectiveness of recasts in CMC. Likewise, Lai & Zhao (2006), Lourdes (2009), Sotillo (2005) and Prendergast (2011) all studied different types of corrective feedback, while mainly focusing on recasts and in some cases on metalinguistic feedback.

Recast is a type of implicit negative feedback, which has been argued to facilitate SLA (cf. Smith, 2010, p.6). It involves the teacher’s reformulation of all or parts of a student’s utterance, minus the error (Doughty 1994). Recasts are generally implicit, which means that they are not introduced by phrases such as “you mean”, “you should say”, “use” (Lyster and
Recasts are believed to be powerful since they provide both negative feedback and positive input (Leeman, 2003, Smith, 2012).

Similarly, Smith explains “recasts as essentially discourse moves (by an interlocutor) that rephrase a learner’s utterance to be more target-like by changing one or more sentence components” (Smith 2012:54). One of the positive effects of recasts is very often tied to the construct of noticing in the L2 literature, which, as we have seen, has been indicated to be a prerequisite for L2 Learning (Schmidt, 1993). This means that recasts may result in noticing.

The other type of corrective feedback which was studied in this project is Metalinguistic Feedback. It contains comments, information or questions related to the errors of the learner’s utterance without explicitly providing the correct form. Metalinguistic comments generally indicate that there is an error somewhere in order to allow for the learner to notice the mistake (Lyster and Ranta 1997).

1.1.4 Uptake

The term uptake originates from speech act theory, where it described the relationship between illocutionary and perlocutionary acts (Smith, 2005). In other words, uptake is what learners claim to have learned from a particular task or lesson (Slimani, 1992). It means that the user affirms the uptake by using the correct form of the errors they have made and this use of the correct form/target-like structures admits that they have learnt it, so it could be an indication of uptake.

In the field of SLA, focus on form has been a key theoretical framework in many interactional-based studies (Yilmaz, 2008). While studying the “uptake”, studies usually deal with the correct “form” of the words and structures in the target language and this helps to understand whether there has been an uptake.

It is also hypothesized that successful student uptake may lead to L2 acquisition (see Ellis, Basturmen, & Loewen, 2001; Loewen, 2004; Lyster & Ranta, 1997). Uptake can facilitate acquisition, which provides opportunities for learners to process their target language knowledge already internalized in declarative form. It means that when there is an uptake and
it is saved in the short-term memory, it could be compared with the previously internalized forms. Then producing a correct form may automatize the production and lead to increased fluency. Finally, reanalyzing and modifying the non-target output may be an indication of noticing that Schmidt suggested being necessary for second language acquisition (cf. Mohammad Hossein Yousefi, 2011, p. 3). In other words, if the corrective feedback leads to any uptake, it will bring the opportunity for the learner to think once more about the incorrect form, which has been internalized in declarative form. This opportunity will be accessed more when the given feedback is written for example in online classrooms. So, it could be noticed better and then it will lead to a better and faster language acquisition. Figure 1 is the visualization of the uptake process, which ends in language acquisition.

Figure 1 - Uptake and facilitating language acquisition (based on Yousefi, 2011, p.3)

In SLA, uptake is considered as what the student attempts to do with the teacher’s feedback. Generally, there are two types of uptake (Lyster and Ranta, 1997, p.49):

“- Repair: The learner produces a correct form in the target language.
- **Needs-Repair**: An utterance that still needs repair. This means that the learner has noticed the difference between the error and the teacher’ correct form, but he/she still has problems to produce the target like form.”

### 1.1.5 Recent Approaches

As previously mentioned, earlier studies have built their analyses on the transcripts of the chat logs, or output logs. Recently, many studies have included retrospective methods such as *stimulated recall* (Lai & Zhao, 2006) *think aloud protocols* (Lai et al., 2008), *screen capturing* (Lai & Zhao, 2006) and *video recording* (Beisswenger, 2008). Smith (2010) and O’Rourke (2008, 2012) applied a more modern approach in data collection, which involved an eye tracker.

We also saw that O’Rourke (2008) argues strongly against the overreliance of output logs when interpreting chat interaction and suggests combining keystroke logs, video screen capture records, eye-tracking and conventional video recording. To enhance the richness of the SCMC data collected, Smith (2010) has done a study investigating the effectiveness of recasts in CMC, in which he employed an eye tracker to trace and record the participants’ gaze on the screen and also observed users’ focus on linguistics forms in task-based interactions in SCMC (Smith, 2010).

Smith (2010) categorized the given recasts by type: *lexical* and *grammatical*. He found that there were more fixations on lexical recasts than on grammatical ones. He also investigated the assumption that uptake may take place when there is *noticing*. Although the results were not exactly what was expected, at least they showed that “noticed lexical recasts, which also result in successful uptake, are easier to process and retain at least in the shorter and middle term” (Smith, 2011, p.14). He declared that when there is an evidence of successful uptake, the item should be noticed by the learner. Moreover, as it was mentioned earlier in section 1.1.2, Smith suggested that by setting an appropriate threshold for the fixation duration, noticing can be more analyzable. In his recent study (2011), he set 500msec as a minimum fixation duration, which was considered as a threshold, and then the areas with more than 500msec fixations were regarded as noticed ones.
2 CURRENT STUDY

2.1 Aims and Research Questions

The aim of the current study is to investigate the different types of errors which EFL learners make in a text-based online classroom and also to analyze how the given corrective feedback is noticed. Noticing is investigated through an analysis of how much of the provided corrective feedback, specifically recasts and metalinguistic feedback, leads to learners' uptake. Additionally, through the employment of eye-tracking technology, further perspectives on noticing are examined. The specific research questions are as follows:

- What type of errors do the students produce in the chat logs?
- How many of the errors in the chat logs receive corrective feedback?
- Are recasts and metalinguistic feedback noticed by the participants? Is one kind of corrective feedback noticed more than the other?

2.2 Methodology

In this project, a semi-experimental type of research design was employed. Data from interactions involving Swedish upper secondary students of English were analyzed both qualitatively and quantitatively. Three researchers were present and involved in the data collection and one, who was a university lecturer in English, acted as the English teacher in the chat sessions. In order to make the environment of the experiment closer to that of real chat room classes, the English teacher sat in a separate room and started to chat from there after explaining the procedures.

2.2.1 Participants

Participants were the students of an English class in a Swedish upper secondary school, who participated voluntarily in this project. At first, the project was introduced to them and they were given a brief written description by their teacher, so that they had a clear view of what
would happen on the day of the experiment. In this project, 8 subjects volunteered, and since the aim was not focused on the differences of gender in SCMC interaction, the ratio between girls and boys was not considered. Table 1 shows the range of the students’ English proficiency, based on their most recent grade in the subject English.

<table>
<thead>
<tr>
<th>Number of Participants</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>G (Godkänt)</td>
<td>Pass</td>
</tr>
<tr>
<td>2</td>
<td>VG (Väl Godkänt)</td>
<td>Pass with merit</td>
</tr>
<tr>
<td>3</td>
<td>MVG (Mycket Väl Godkänt)</td>
<td>Pass with distinction</td>
</tr>
</tbody>
</table>

Table 1- Participants’ recent grades

2.2.2 Procedures

Before the experiment, participants were asked to read a written information sheet, reminding them of the general aim of the project and the details concerning the task and the data gathering. They were then asked to sign a consent form stating that they agreed to taking part and being recorded. After the experiment, they were asked to answer some questions about their background, and were asked to sign a second consent form where the more detailed aims were described.

The experiment took about 15 to 40 minutes per subject. After filling out the form, the participants were asked to sit still in front of the monitor and look at the center of the screen for calibration. Meanwhile, one of the researchers was monitoring the procedures. (See section 2.2.3). Then participants were asked to track a red dot in the screen in order to calibrate the gaze points with the contents on the screen. After doing the calibration, the participants read a text on screen as an instruction for the next step.

The task and setup was similar to that used by Smith (2010). An animated short video clip, with no spoken language used, was played and then again, a text was shown for the announcement of the next step. Meanwhile, the teacher left the room and the chat session was started. During the chat session, the teacher asked questions about the clip and tried to give different types of corrective feedback to the subjects’ errors in their written production. As the last part of the experiment, the participants were asked to retell the story of the animated
clip typing in Microsoft Word 2010, using the font size 28. There was no time restriction for their typing process in this section. Likewise, there was no word count limitation for retelling the video clip. The participants were alone in the room during this task to avoid any distractions.

2.2.3 Equipment

The chat application applied in this project was Google Talk version 1.0.0.104, which the font size was set to 24 and the chat window was zoomed to be fit in the center of the screen to allow for a more precise analysis of the gaze patterns.

The eye tracker, which was employed in this project, was a RED250\(^1\), video-based eye tracker with a sampling rate of (60Hz). The eye tracker was attached to a 19” Philips 190SW monitor with a resolution of 1440×900, 75-hertz and 32-bit color display. The related software (SMI Experiment Suite 360\(^\circ\)) was installed and run on a laptop with Windows XP as its operating system. During the experiment, all the procedures were recorded by a camera to check the possible distractions.

While the subject was typing, the Inputlog\(^2\) software (version 5.1.0.22) was run to record the editing, pausing, repairing and any other changes that the student made during the chat and retelling session.

2.2.4 Ethics

All participants were informed about the experiment and agreed to participate. They were also informed that should they change their mind, they could ask to have their data omitted.

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\(^2\) http://www.inputlog.net/
from the experiment results and analysis. As previously mentioned, they were also asked to give their written consent.

2.3 Data Coding

The purpose of this study was twofold: first the type of errors and the corrective feedback were analyzed, second the noticing of the errors and the related corrective feedback were investigated.

2.3.1 Coding Errors and Feedback

When coding the data, the chat logs were analyzed and the errors, as well as the cases of corrective feedback, were counted. The errors were divided into three main subgroups: typing/spelling, lexical and grammatical ones. Any mistakes in the word form were considered a typing/spelling error, which included the ones that were caused by mistyping and ill-formatted forms of words according to Standard English. Meanwhile, the words that were used in improper places and caused the structure meaningless or vague and also inappropriate choice of words were all counted as lexical errors. Any types of problems in the structure of the sentences, including verb tense errors, incorrect preposition use, incorrect choice of relative pronouns etc. were considered grammatical errors. If there was more than one error in a single word according to the categories, the error was coded twice. In other words, when a word had a spelling/typing error in addition to an error in relation to the grammatical structure, this single word was coded as two different types of error in the chat logs.

Similarly, the corrective feedback provided by the teacher was counted and the list was divided into three sub-categories: recast, metalinguistic feedback and other. The coding was compared to that of another researcher, and ambiguous cases were discussed and resolved. Then, all the errors were counted and the figures were compared to those relating to feedback, in order to see how many of the errors received feedback.
2.3.2 Analyzing the Gaze Data

Here, we were interested in noticing and look-backs that participants made to the typing area while typing and to the chat log after entering the text. In order to have a precise and accurate analysis of these phenomena, the errors and corrective feedback were coded as so-called Areas of Interest (AOI). These were then analyzed in the Begaze software to see if there had been any noticing according to specific threshold based on previous literature. Smith (2010) applied the 500ms threshold as the minimum fixation duration for noticing. In this study the same threshold was applied but the “Dwell Time” was focused instead of fixation duration. Dwell Time (Gaze Duration) is computed as the sum of all individual fixations on the critical word including the later revisits. When there is only one fixation on the word, Dwell Time duration is the same as the first fixation duration (Hyönä et al. 2003). A related concept is the Look-back Fixation Time (second-pass fixation time), which is the sum of fixations duration that returns to a text/area of interest after its first-pass reading (Hyönä et al. 2003).

Normally, we move our eyes every 250-350 msec, when we read or look at a scene or search for a target in a visual array (Rayner, 1998). To be considered a fixation, the point-of-gaze must continuously remain within a small area for some minimum time (Eyenal, 2001). In other words, fixation is the period of time when the eyes remain still for a while. However, Smith (2010, p. 88), in his study, admits that there is not an industry standard for what is considered a meaningful eye fixation and applies a 500 msec fixation threshold when defining noticing (see section 1.1.2). Rayner in 1998 had indicated that the mean duration of a single fixation may depend on the nature of the task. He claimed that the mean fixation duration during silent reading is about 225 msec and for tasks that require hand-eye coordination, such as typing, the mean fixation can be considered as 400 msec. So, according to Rayner (1998) it could be assumed that in data analysis any fixation shorter than 225-250 msec would be of little interest.

In the current study, focus was on Dwell Time (the sum of all the fixations within an AOI) provided by the software statistics (measured in milliseconds (msec)). The output was sorted in descending order of Dwell Time duration. Those Dwell Time with less than 500 msec, as what Smith (2010) applied in his study of recasts and noticing for fixation duration, were not considered further. For AOIs with more than one word in the selected area, the dwell time was divided by number of the words in the AOI.
All in all, the measurement of noticing was somehow the same as what Smith did in his study with a few changes in the current study. That is, in both studies the threshold was considered to be 500msec. One of the differences was in the durations. Smith considered the AOIs with fixation duration more than 500 msec as noticing, while, in the current study, the AOIs with Dwell Time duration more than 500 msec were coded as noticed areas. In addition, in contrast to Smith’s study where the recasts were focused, here both recasts and metalinguistic feedback were studied to see if there had been any noticing.

So, it should be considered that the noticed instances of metalinguistic feedback were counted based on the numbers of words in each defined AOI and this measurement was introduced and suggested in this study. For example, for this metalinguistic feedback: “Please also note the spelling/typo error there.”, which was given to Participant 1, the dwell time recorded for this AOI was 9294.1msec, so that it could be possible to assume each word in this AOI received 1161.7msec and accordingly the learner had noticed the feedback. The following equation shows how the metalinguistic feedback noticing was counted:

\[
\frac{\text{total dwell time for the AOI}}{\text{total number of words per AOI}} = \text{dwell time for each word in that AOI}
\]

This quantitative analysis of gaze patterns was combined with a qualitative analysis of gaze patterns in relation to some particularly interesting episodes. This enabled a more detailed description of some of the look-back patterns.
3 RESULTS

3.1 Errors

This study set out to investigate errors and corrective feedback in online interaction between students and a teacher. As Table 2 and Table 3 show, the chat transcripts contain 102 errors\(^3\), 62 of which received corrective feedback. This means that 61% of the errors in the eight chat logs received corrective feedback. As previously mentioned, the errors were divided into three main categories: Spelling/Typing, Lexical and Grammatical. Figure 1 shows that grammatical errors are the most common error type, closely followed by errors relating to spelling/typing.

<table>
<thead>
<tr>
<th>Number of Errors in Chat logs</th>
<th>Spelling /Typing</th>
<th>Lexical</th>
<th>Grammatical</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>6</td>
<td>2</td>
<td>9</td>
<td>17</td>
</tr>
<tr>
<td>Participant 2</td>
<td>7</td>
<td>1</td>
<td>7</td>
<td>15</td>
</tr>
<tr>
<td>Participant 3</td>
<td>6</td>
<td>0</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>Participant 4</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Participant 5</td>
<td>6</td>
<td>1</td>
<td>6</td>
<td>13</td>
</tr>
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<td>Participant 6</td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>10</td>
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<td>Participant 7</td>
<td>5</td>
<td>3</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Participant 8</td>
<td>2</td>
<td>2</td>
<td>15</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>102</strong></td>
<td></td>
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</tr>
</tbody>
</table>

Table 2-Number of Participants’ Errors in Chat logs

As could be understood from Table 2, grammatical errors occurred more than the other types in the chat logs, while the lexical errors were found to be the least common errors. Among the total number of errors, 49% were grammatical ones, 41% were typing/spelling errors and only 10% percent of the errors were placed under the lexical category.

\(^3\) Some errors are counted more than once, since they are considered as both lexical and grammatical error.
3 RESULTS

Figure 2 - Error Types Percentage in Chat Transcripts

It could be assumed that most of the participants had problems with grammar and most of the time they could apply proper words in appropriate places during the chat sessions. The main problem with the words related to spelling mistakes and mistyping. Figure 2, shows the percentage of different error types in chat sessions for all the participants.

3.2 Corrective Feedback

Similarly, the corrective feedback types were divided into three categories: Recasts, Metalinguistic Feedback, and Other Types of Corrective Feedback. The chat logs yielded 62 instances of corrective feedback, and the most common type was the recast (see Figure 3). Although, the teacher had planned beforehand to use only two specific types of Corrective Feedback: Recast and Metalinguistic Feedback, in some situations, she had to apply other types of feedback to clarify, for example, in some cases the learner requested clarification and the teacher had to explicitly provide the correct form. In section 3.3, the qualitative analysis of some relevant examples is provided for a better understanding of each type of errors/corrective feedback.

<table>
<thead>
<tr>
<th>Number of Corrective Feedback Comments</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recast</td>
<td>Metalinguistic</td>
</tr>
<tr>
<td>Participant 1</td>
<td>9</td>
</tr>
<tr>
<td>Participant 2</td>
<td>3</td>
</tr>
<tr>
<td>Participant 3</td>
<td>2</td>
</tr>
<tr>
<td>Participant 4</td>
<td>1</td>
</tr>
<tr>
<td>Participant 5</td>
<td>4</td>
</tr>
<tr>
<td>Participant 6</td>
<td>6</td>
</tr>
<tr>
<td>Participant 7</td>
<td>7</td>
</tr>
<tr>
<td>Participant 8</td>
<td>8</td>
</tr>
</tbody>
</table>

Table 3 - Number of Corrective Feedback
According to Table 3, recast was the most common type of corrective feedback the teacher applied to correct the learner. There were 40 Recasts out of 62 total instances of given corrective feedback for 8 participants, which means that more than half of the received feedback types were recasts. This also implies that Metalinguistic feedback was given much less than recasts (27%). The remaining 8% was related to the other types, which the teacher had to use in order to clarify the error. (See Figure 3) The more precise nature of errors as well as of types of feedback is displayed in the qualitative analyses in section 3.3.

![Corrective Feedback Percentage](image)

**3.3 Qualitative Analysis of Errors and Corrective Feedback**

In the following, a qualitative analysis of some segments including different types of errors and corrective feedback will be presented. This will give a better insight into how these phenomena have been coded. Furthermore, looking deeply into participants’ instances of errors and also the given corrective feedback might help a potential teacher to focus on important areas and prepare him/her for actual online classrooms. In the following excerpts, the different types of errors/corrective feedback along with the correct forms of the errors are shown in the parenthesis in the students’ and the teacher’s texts.

**Excerpt 1- Typing/Spelling and Grammatical Error Receiving Feedback-Participant 1**

*Student1: The main character (character_typing/spelling error) is a little (little_typing/spelling error) “man” who wants (wants_typing/spelling and grammatical error) to impress on (no preposition needed_grammatical error) a “girl”.*
Teacher: he wants to *impress a girl (corrective feedback: recast), I see. How does he try to accomplish this?*

please also note the spelling/typo error there (corrective feedback: metalinguistic feedback)

Excerpt 1 is an example of a sentence with some errors typed by Participant 1, while followed by proper corrective feedback. In this instance, the participant had 3 typing/spelling errors and 2 grammar ones, which led to a recast and metalinguistic feedback.

**Excerpt 2- Lexical Error Receiving Feedback- Participant 6**

Student6: *i didn't see them though. she got the apple from him, but it was a small animal in it, a warm* (worm_lexical error) *i think it's called. worm (clarification request).? and she went off.*

Teacher: A worm, yes, that is right.(corrective feedback: recast)

Here, Participant 6 was not sure about the word warm and worm (lexical error), which resulted in a recast. Although in this instance the learner had problem with distinguishing the correct word form, he tried to guess the correct one. It could be also considered as a confirmation request that the teacher replied with a “yes”.

**Excerpt 3-Typing/Spelling, Lexical and Grammatical Error Receiving Feedback- Participant 5**

Student5: *The male-turtle (male turtle_typing/spelling error) finally got the apple down, what* (what_typing/spelling error) *is (it_lexical error) was trying to do in the beginning. He gives (tense switch_grammatical error) it to her and she takes a bite of it. But finds that it was (tense switch_grammatical error) a worm inside.*

Teacher: Yes, that sounds familiar.

*Please remember to be consistent in your use of the tenses* (corrective feedback: metalinguistic feedback)

In excerpt 3, Participant 5 had spelling/typing, lexical and grammatical errors, which led to metalinguistic feedback only for the grammatical error. Sometimes the teacher does not have enough time or decides to just focus on a specific error and makes it bold to draw the learner’s attention to it; meanwhile, there are some errors that remain in silence without receiving any feedback, which could be an interesting area to be investigated in further
studies. A reason for this might be the large number of error types in the participant’s text that the teacher decided to give corrective feedback to one of them. Sometimes, it could be helpful because giving lots of information in one turn might make the learner confused, but in order to confirm this idea, more research is needed.

### 3.4 Uptake

Analyzing the post-test section, in which the participants were asked to retell the video clip and type it in Microsoft Word, demonstrated that uptake could be seen only in few occasions for those errors that had received corrective feedback in the chat logs. Some of the participants tried to use different words instead of the ones they had used incorrectly during the chat sessions, some tried not to use such statements, maybe to avoid repeating the errors, some showed uptake and corrected themselves and there were many instances of repeating the errors that the teacher had given corrective feedback in chat sessions. Table 4 shows that just a few of the instances of corrective feedback led to uptake in the post-test task.

Sometimes in the retelling section, when there is a sign of uptake, it has been counted, although it is not the correct form. For example, a student who went from "did think" in the chat log to "thoughted" in the post-test writing shows uptake of the correct form of past tense, but still has problem with irregular verbs. In addition, there are instances of uptake in the retelling section that are not the correction of the exact word or form, which was problematic in the chat session, but that are signs of uptake in the similar structure or word form. These were put in a separate category, called similar uptakes and were not counted as uptake in this study.

Uptake in chat sessions was not considered in this study since the instances in chat-logs were not enough to have a valid analysis. On the other hand, there were more instances of uptake in the post tasks, when the participants were asked to retell the video clip they had seen at the beginning of the experiment. It is understood from Table 4 that the number of uptakes was smaller than the number of the errors and their corrective feedback in the chat logs. However, the grammatical errors led to more uptakes in the retelling section, while the lexical ones had the least uptake among the other types of errors.
In order to further illustrate uptake, some examples of the participants’ uptakes in the post task retelling section is compared with the related errors in the chat logs in Table 5.

<table>
<thead>
<tr>
<th>Error in Chat log</th>
<th>Uptake in Retelling Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>into the apple</td>
<td>inside the apple</td>
</tr>
<tr>
<td>Run away</td>
<td>Ran away (past tense)</td>
</tr>
<tr>
<td>whant</td>
<td>want</td>
</tr>
<tr>
<td>go</td>
<td>got</td>
</tr>
<tr>
<td>warm</td>
<td>worm</td>
</tr>
<tr>
<td>giraff</td>
<td>Giraffe</td>
</tr>
</tbody>
</table>

**Table 5-Uptakes Examples -8 Participants**

**3.5 Noticing and Gaze Data**

For a better understanding of what happens when the corrective feedback is given, where the learner looks after finding that there is an error in his/her statement and whether the feedback makes the learner look back to the specific error or not, the errors and corrective feedback for all 8 participants were selected as AOI in the eye-tracking analysis software employed, and the acquired statistics were analyzed to see whether feedback is noticed based on the defined 500 msec threshold. Figure 4 illustrates the final results\(^4\) for one of the participants and shows how he/she fixated on the errors and the corrective feedback. All the participants’ dwell time statistics were exported and compared to see if there was any particular gaze pattern for

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\(^4\) The table shows only the errors which received corrective feedback and those with no feedback were not considered here.
errors receiving corrective feedback. However, comparing all the instances of errors with the related feedback did not suggest a clear pattern, although it was found that in many cases the dwell time for any type of feedback was longer than the dwell time for the errors.

As mentioned before, noticing has been argued to be crucial to L2 learning (Schmidt, 1993). In this project, the noticing phenomenon was studied to see if the learners notice the given corrective feedback. An analysis of the data revealed that 86.57% of the given recasts and metalinguistic feedback to the eight participants were noticed. Although the fixation durations admitted the fact that the corrective feedback had higher dwell time per word than 500msec, the chat logs and the post-test task did not confirm the assumption of definite uptakes in these cases. It was seen from the exported statistics that most of the corrective feedback instances were fixated more than the considered threshold. The ones with Dwell Time less than 500msec were not considered for detailed analysis. According to the AOIs’ Dwell Time, 86.57% of the corrective feedback was noticed and only 13.43% of them were received fixations less than the threshold.

The analysis of the errors and corrective feedback in combination with the gaze data revealed that on many occasions the corrective feedback was noticed by the participant. Figure 5 shows how the participants reacted to the given corrective feedback and how different types of feedback were noticed. Among the noticed corrective feedback instances (86.57%), the participants noticed 90% of the given metalinguistic feedback, while 79% of the recasts were noticed.
The analysis illustrated that on many occasions the corrective feedback was noticed by the participants. Yet, in some cases when the feedback was noticed, there were still some obvious gaps, as can be seen in the chat logs. In the following, excerpts from such chat logs are presented and discussed in detail.

For instance, the metalinguistic feedback given to Participant 7, in Excerpt 4, was not very helpful at first, as the participant asked for a clarification.

**Excerpt 4: Metalinguistic Feedback-Participant 7**

*Student7:* It was a apple (an apple_grammatical error) to (too_lexical error), who (which_grammatical error) fell down from a tree. Then a giraff (giraffe_ typing/spelling error) was in it too! have I missed something?

*Teacher:* Please note the form of the indefinite article there. (corrective feedback_ metalinguistic)

A giraffe and a penguin, I believe.

*Student7:* indefinite article? whats that? (clarification request)

*Teacher:* Good question!

It is the word that comes before "apple" in the previous sentence. (corrective feedback_ metalinguistic)
Similarly, in the following excerpt, the metalinguistic feedback did not lead to a target like correction. The participant’s attempt to correct the past tense of “catch” was unsuccessful in the post test. Moreover, it was not noticed in the chat log based on the fixation statistics:

Excerpt 5: Metalinguistic Feedback-Participant 3

Chat log:

student3: One of the last scenes the turtle who is trying to get the girls attention fell (against)? the tree while she was walking by him. And that apple that he tried to get in the first sceene, fell to the ground. And that caught her attention. She took a bite from the apple, and while she wound she saw a worm in that fruit she ate and she screamed and ran away. [...] 

[...]

Teacher: Please also check the past tense form of catch.

Post Test:

....That caught the girls' attention....

Here, the Begaze statistics showed that the learner did not notice the corrective feedback, according to the formal definition used here, but the post-test illustrated the attempt of correction, however it was not successful. This could also relate to the fact that the gaze data was off on some instances for this participant and because of moving her head after calibration, the eyes could not be tracked correctly.

The Dwell Time for the whole AOI “Please also check the past tense form of catch.” was 4376.3msec, which suggested that each word in this feedback took 486.25msec. So, it could not be considered as noticing according to what it was suggested for the Metalinguistic feedback analysis of noticing.

Figure 6 is a screen shot of Participant 3 scan path replay and fixations of the given Metalinguistic feedback. According to the statistics and the chosen threshold, this participant did not notice the feedback, but the scan path replay and the participant’s attempt to correct the error in the post task could be a sign of noticing. This screen shot was taken just before the teacher gave the next corrective feedback, so that the complete gaze path could be recorded without the background moving.
Similarly, the metalinguistic feedback in Excerpt 6 might not be clear enough for Participant 5 to distinguish the related error and connect it to the given feedback. The participant might have been confused with the “remember to use the indefinite article in that type of construction” feedback, since it was not specified whether it should be used for “animal” or “violin”:

Excerpt 6: Metalinguistic Feedback-Participant 5

Student5: a giraff that was singing and animal i can’t remember, that was playing violin

Teacher: a giraffe, right, and then there was a penguin.

Student5: Right.

Teacher: remember to use the indefinite article in that type of construction

Once more, in Excerpt 7, the recast was not noticed and it might be because the error was not bold enough to catch the learner’s attention and the gaze data result admitted it:

Excerpt 7: Recast Feedback-Participant 7

Student7: Yeah, that I remember for sure! The giraffe was driving the boat and he didn’t watch up, so they hit a stone in the water, and some animals fell in the sea.

Teacher: Yes, he didn’t look up, that’s right. Do you remember what music instruments they were playing?
The screen shot in Figure 7 also shows how the participant ignored the corrective feedback and the gaze paths had rarely passed the AOI. The participant might have been busy reading the teacher’s question and thinking about the probable answers.
4 CONCLUSIONS AND DISCUSSION

The overall aim of this study was to investigate the different types of errors that language learners produce in chat logs and to see how many of them receive corrective feedback. Moreover, the way participants react to the recasts and metalinguistic feedback was also examined to see whether they were noticed. The results showed that most of the errors are related to grammatical problems, while the lexical errors were produced less than the other types. Meanwhile, it was revealed that the metalinguistic feedback was noticed more than recasts and the uptakes of the grammatical errors were more frequent than the other types analyzing the post task section.

From this study, it is implied that in the text-based online chat room, applying corrective feedback, specially recasts and metalinguistic feedback, could be helpful for language learners although only a few of them result in learners’ uptake. Maybe one reason could be that the communication is solely based on the written texts; in many cases the participant faces crucial gaps and misunderstanding.

Moreover, both types of corrective feedback investigated in this study appeared to have some shortcomings. Considering the recasts, it should be said that although the correct form of the error was provided, in many situations the learner did not pay attention to it. This ignorance was assumed based on gaze data and also because of not producing the correct form at all or producing the incorrect form later. On the other hand, for metalinguistic feedback, learners were sometimes not able to guess the correct form or did not know the target form at all, despite the fact that he/she was made aware of the error according to the gaze data.

From the noticing point of view, it should be said that noticing does not always lead to uptake, while whenever we have uptake there is usually noticing. That is, noticing is helpful in language acquisition, but will not be enough. This confirms what Smith has argued in his previous studies: that not all the fixated feedback leads to uptake.

In this project, the different types of errors were studied in the chat logs like one of Smith’s studies (2010). But one of the differences between the current study and what Smith did was the categorization of error types. Smith divided errors into 2 groups: lexical and grammatical. Here, the typing/spelling errors were considered as the third subcategory and this led the studies to different results. That is most of the errors, which Smith would have considered as
lexical errors, were placed under the spelling/typing category. Although, considering an error to be lexical or typing/spelling sometimes is not an easy decision, in this project, the errors which had occurred with morphology problems and word formation disorder were counted as typing/spelling errors [For example: chracter(character), litttle (little)]. The words which had problems related to semantics or pragmatics were considered as lexical errors. The other difference between Smith’s study and the current project is that he considered the immediate uptake as a sign of noticing, but here the AOIs with the dwell time duration more than 500 msec was regarded as noticed ones.

Finally, from the selected excerpts, which were analyzed in section 3.3, it should be said that the following problems were highlighted:

- **Not Understanding the Metalinguistic Feedback and Asking For A Clarification Request:**
  This could mostly happen for the metalinguistic feedback; even the participant does not ask for a clarification request, there is still an ambiguity of the correct form of the error in the target language. It may sometimes result in having no uptake while there has been noticing. In this study, there were cases according to the fixations that showed that the learner understood the fact that there was an error somewhere in his/her text, but the correct form was not provided by the teacher, which in a few cases led to either clarification request or neglect.

- **Problem With The Measurement:**
  The problem is related to dwell time measuring for larger AOIs (usually the metalinguistic feedback includes more than just one word). Since there has not been enough studies to measure the metalinguistic feedback and most of the previous studies focused on recasts, in the current study, this type of measurement was suggested for the larger AOIs, but it needs to be studied further to find a standard way of measuring the larger AOIs.

- **Noticing The Error But Not Knowing The Correct Form Anyway:**
  It is not surprising that metalinguistic feedback is noticed more according to the current study definition, since it is explicit and the AOI is usually longer than the recasts.
4 CONCLUSIONS AND DISCUSSION

- Not Noticing The Recast:
  Since recasts are that type of corrective feedback which is given to the learner implicitly, there are many occasions that the learner simply ignores it. Moreover in online classes it could be more problematic since the teacher can only give the feedback as a text, while in a face to face conversion, in a real classroom, she/he can change the intonation or apply some gestures to draw the learner’s attention. One solution could be changing the format of the text for giving the recasts, for example underling the recast or typing it in italic/bold could be helpful.

4.1 Limitations

Although applying the eye tracker makes the error analysis and the noticing more analyzable, it has some important shortcomings. One of the main problems, which this study faced during the analysis, was the misplaced gaze path and gaze line. In some cases, the participant did not stand still and moving the head during the experiment caused the fixed and correct calibration to be ruined. For example, most of the gaze data Statistics related to Participant 3, such as AOI statistics, Gaze path, and Fixations statistics became useless because of misplaced gaze path; therefore they were not considered in this study for further analysis (See section 3.3 for misplaced gaze path example of Participant 3). Maybe using eye tracker glasses can be a solution to this problem for further studies.

Another shortcoming relates to the problem of generalizing results from a study like this. For instance, different teachers might not provide feedback in the same way (Ortega, 2009). Maybe the same experiment, with two different teachers and different types of corrective feedback would lead to different results.

In addition, in this study, the threshold of 500 msec, which was introduced by Smith (2010), was adapted and applied, and dwell time longer than 500 msec per word was counted as noticing. The present study shows that it may not be a promising one. Maybe with a higher threshold, the statistics and the analysis would show better and more reliable results. Then again, for analyzing the metalinguistic feedback noticing, it should be said that at present there is very little information available to systematically predict the certain noticing instances, which needs further studies. Although, in this study the noticing for metalinguistic feedback was counted according to the suggested equation, this equation is not a standard
way of measuring and it was applied to get an overview of how they were noticed, but it should be studied further to testify the equation validity.

Another shortcoming of the suggested dwell time measurement could be related to the AOIs with dwell time quite close to the threshold. For instance, in Excerpt 5, the dwell time is 486.25msec and it is quite close to the threshold, but because it is less than 500msec, it was not considered as noticing; despite the fact that there was a sign of uptake attempt later in posttest. (See section 3.5)

Additionally, uptake cannot be seen as a strict measure here, since there may be many different reasons why uptake is not shown in the posttest retelling section. In free retelling, students do not necessarily need to produce the same linguistic items again. Maybe making the learner produce the similar structure later in the chat log by asking them similar questions can lead to better results for uptake analysis.

4.2 Further Studies

This study has been based on previous research and the results are suggestive. Further studies should be undertaken before any generalizing can be made. It is suggested that a long-term monitoring of learners and more chat sessions with more than one teacher would be helpful for more reliable results and for finding relevant gaze patterns. In addition, it would be a good idea to study different target languages and compare the results of gaze data and noticing.

Moreover, as for noticing, the learners’ uptake in the post test could be studied to see if there are longer fixations on the related error or corrective feedback in chat sessions. It would be interesting to find out if there is any gaze pattern between the errors and the related corrective feedback. Further studies could also focus on noticing of different types of errors and corrective feedback. It is also interesting to see what happens when the learner is typing and the teacher enters a new sentence in the chat window and other kinds of interruptions.

Furthermore, the proficiency of computer skills and chatting rules could be considered as a factor. For example, the pauses of a novice should not be considered as a pause for thinking or the fixations of his/her eyes are not necessarily means of noticing. For that purpose, two different groups of subjects with the same level of computer skills in each group (novice and professional) can be examined to see if there is any difference between their noticing and
pauses. Similarly, different instant messaging clients may lead to different results. The one which was applied here was a simple application. For instance, using other types of applications with a more complicated user interface may distract the learners. The turn taking tasks also plays an important role in task-based online classrooms which should be studied in further research.

Other suggestions for further studies include the influence of the teacher's language on that of the student. If the teacher has a typing error in his/her feedback, is this considered as a distraction to the learner, or does it lead to incorrect uptakes? Similarly, what happens to the errors that remain in silence, when the teacher is not able to give feedback to all of the errors in one turn? All in all, it is to say that there are still many aspects, which should be further investigated to enhance the efficiency of the SCMC in language acquisition.
REFERENCES


Smith, Bryan (2010). Directions and Prospects for Educational Linguistics. In Francis M. Hult (Eds.), *Employing Eye-Tracking Technology in Researching the Effectiveness of Recasts in CMC* (pp 79-97). Dordrecht: Springer Netherlands


Smith, Bryan. (2012). Eye Tracking As A Measure Of Noticing: A Study Of Explicit Recasts In SCMC. *Language Learning & Technology*, 16(3)


## Appendix A: Sample of Error and Feedback analysis

### Errors

<table>
<thead>
<tr>
<th>Typing/ Spelling</th>
<th>Lexical</th>
<th>Grammar</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Okey</td>
<td>Then</td>
<td>Wants</td>
</tr>
<tr>
<td>2 Chracter</td>
<td>way</td>
<td>On a girl</td>
</tr>
<tr>
<td>3 Little</td>
<td></td>
<td>Makes things to get her see him.</td>
</tr>
<tr>
<td>4 Whant</td>
<td>The guitar</td>
<td></td>
</tr>
<tr>
<td>5 musican</td>
<td>Into sea</td>
<td></td>
</tr>
<tr>
<td>6 Violine</td>
<td>The Violin</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Was-&gt; were</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Then-&gt;than</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Into the apple-&gt; inside the apple</td>
<td></td>
</tr>
</tbody>
</table>

### Corrective Feedback

<table>
<thead>
<tr>
<th>Metalinguistic</th>
<th>Recasts</th>
<th>other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 please also note the spelling/typo error there</td>
<td>wants</td>
<td></td>
</tr>
<tr>
<td>2 remember to use the definite article in a construction like that</td>
<td>to impress a girl</td>
<td></td>
</tr>
<tr>
<td>3 please check your use of prepositions in the first sentence.</td>
<td>the sea</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>On the boat - recast of a non-error!</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>okay</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>the violin</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>were</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>than</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>She runs away</td>
<td></td>
</tr>
</tbody>
</table>

Table 6-Error Analysis-Participant 1

Table 7-Corrective Feedback- Participant 1