FACE-TO-FACE VERSUS COMPUTER-MEDIATED ADULT LEARNER INTERACTIONS AND SECOND LANGUAGE ACQUISITION

A Dissertation

by

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Submitted to the Office of Graduate and Professional Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

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December 2018

Major Subject: Curriculum and Instruction

ABSTRACT

This dissertation investigated face-to-face (FTF) interactions and computer-mediated communication (CMC) in second language acquisition (SLA) through a systematic literature review and two mixed-methods empirical studies. The systematic literature review analyzed 35 studies' findings that have investigated SLA through task-based interaction in FTF versus CMC. The review's findings support previous review studies indicating a positive connection between CMC and FTF interactions and SLA.

The first empirical study investigated the effectiveness of corrective feedback (CF) in FTF and text-synchronous-computer-mediated communication (SCMC) modes. The participants included six native speakers (NSs) and six intermediate L2 learners. Three NSs were trained to provide implicit CF and three NSs were trained to provide explicit CF. The participants formed six NS-learner dyads, which were divided into two groups: implicit and explicit CF. All dyads performed one task in each mode. The interactions were coded for CF episodes and types. Results of chi-square analysis indicated statistically significant difference in the frequency and effect of CF types on L2 development in FTF versus text-SCMC. This study's findings indicated that the CF nature, the communication mode's features, and the interlocutor impacted L2 development through interactions. Text-SCMC was more conducive in providing explicit CF, whereas FTF was more conducive in providing implicit CF.

The second empirical study investigated dyadic types in FTF versus text-SCMC. The participants included four NSs, four low proficiency learners (LPLs), and four high proficiency learners (HPLs). The participants were paired up to form two of each of the following dyadic types: NS-LPL, NS-HPL, and HPL-LPL. All dyads performed one task in each mode. The

interactions were coded for negotiation episodes and strategies. Results of chi-square analysis found no statistically significant difference in the frequency of negotiation episodes among the three dyadic types or the LPLs' and HPLs' language learning outcome in FTF versus SCMC. Results revealed that learners benefited more from interactions with NSs than with peers. When interacting with NSs, LPLs benefited more from FTF, whereas HPLs benefited more from text-SCMC in terms of generating negotiation episodes. Overall, this dissertation's findings showed that FTF and text-SCMC complement each other in creating opportunities for L2 development.

ACKNOWLEDGMENTS

I would not have completed this dissertation without the guidance and support of several people who followed me throughout the journey of writing it. First, I would like to thank my committee chair, Dr. Zohreh Eslami, who believed in my potential even before I applied to the PhD program. Her belief in me, encouragement, and high expectations increased my determination to be involved in research projects, publications, and conferences. Dr. Eslami's high expectations came with challenges. As I look back, I realize that it was those challenges I had to face that made me stronger and more confident in my work.

Together with Dr. Eslami, my committee members, Dr. Quentin Dixon, Dr. Li-Jen Kuo, and Dr. Hector Rivera, have been roles models in my academic life. They have inspired me to continue to conduct research and work hard. Furthermore, I deeply appreciated their guidance and input, which greatly enhanced my dissertation.

I would also like to thank Dr. Patricia Goodson for the POWER (Promoting Outstanding Writing for Excellence in Research) writing support services. The feedback I received from POWER writing consultants was crucial for me to succeed in the dissertation writing process. I would like to specifically thank Dr. Melika Shirmohammadi for her support and feedback on the numerous drafts of this dissertation.

Moreover, I appreciated the support from my friends, especially Dr. Wei Jiang, Dr. Vanessa Liles, and Dr. Edith Cassell. Their presence and constant encouragement kept me motivated to continue to work hard. I would also like to thank my husband, Kent, for all his encouragement, understanding, and patience throughout my PhD program journey. Finally, I would like to thank my parents for supporting me and God for allowing me to reach this milestone.

CONTRIBUTORS AND FUNDING SOURCES

Contributors

This work was supervised by a dissertation committee consisting of Professors Zohreh R. Eslami (advisor), Li-Jen Kuo, and L. Quentin Dixon of the Department of Teaching, Learning, and Culture and Professor Hector Rivera of the Department of Educational Psychology.

All work for the dissertation was completed by the student, under the advisement of Professor Zohreh R. Eslami of the Department of Teaching, Learning, and Culture.

Funding Sources

No outside funding was received for the research and compilation of this document.

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CHAPTER I

INTRODUCTION

Since technology is extensively used in today's world, second language (L2) learners engage in not only face-to-face (FTF) interactions but also in computer-mediated communication (CMC). Research findings have indicated that interactions through both communication modes can facilitate second language acquisition (SLA). There is no doubt that technology should be incorporated in language teaching (Chapelle, 2014); however, the question is how to effectively use technology to teach language. González-Lloret and Ortega (2014) suggest that the combination of technology and task-based interactions (e.g., jigsaw, decision-making) is an effective way to teach a L2. As Van den Branden (2006) defines, a task is "an activity in which a person engages in order to attain an objective, and which necessitates the use of language" (p. 4). Task-based interactions can occur through FTF and computer-mediated interactions.

Although FTF has been the traditional way to create interaction opportunities in language learning classrooms, CMC has played that role in language teaching since the late 1980s (Warschauer, 1996). In contrast to FTF, CMC refers to "any real-time or delayed communicative transaction that occurs through the use of tools taking advantage of networked technology capabilities" (Lin, 2014, p. 123). As alluded in Lin's (2014) CMC definition, CMC can be synchronous (SCMC) or asynchronous (ACMC). SCMC happens in real-time (e.g., text-based or audio online interaction), whereas ACMC does not happen in real-time (e.g., emails).

The importance of FTF and CMC interactions in SLA is underlined by the Interaction Hypothesis (Long, 1996). According to the Interaction Hypothesis (Long, 1996), in order for learners to acquire a L2 through interactions, they need comprehensible input, output, interactional modifications, and noticing of interlanguage gaps. Long (1996) argued that interactions may promote negotiations of meaning as learners attempt to solve communication breakdowns and achieve clarity in conversations. According to Lyster (2001), interactions may also promote negotiations of form, which are not necessarily triggered by a communication breakdown but a linguistic problem. Negotiations of form provide learners with opportunities to focus their attention on L2 grammatical structures. Since negotiations of meaning and form can promote noticing of interlanguage gaps and involve interactional features, such as comprehensible input, modified output, and corrective feedback (CF), negotiations have the potential to promote SLA. Thus, the Interaction Hypothesis (Long, 1996) supports the connection between interactions and SLA.

Research (e.g., Zeigler, 2016) has shown evidence that both CMC and FTF interactions are beneficial to SLA. Despite the overlapping benefits of FTF and CMC in SLA, the existing literature suggests that both modes may contribute to SLA in different ways. For instance, when compared to FTF, research findings have illustrated that CMC benefits learners because it (a) provided more metalinguistic awareness (Blake, 2000) and noticing of linguistic issues (Lai & Zhao, 2006); (b) created a safer environment where learners feel comfortable to take risks; (c) motivated learners to express themselves in L2; and (d) allowed for reflection and planning time on L2 use (González-Lloret & Ortega, 2014). Furthermore, researchers (e.g., Warschauer, 1996) have found that the CMC mode promoted more language complexity and equal interaction among the participants than the FTF mode. On the other

hand, when compared to CMC, studies have indicated that the FTF mode provided more negotiations of meaning and CF (Rouhshad, Wigglesworth, & Storch, 2016).

There is a growing number of empirical studies on task-based interactions in SLA. However, few of them have investigated interactions in FTF versus CMC environments. It is important to compare the effects of both modes (especially with the same participants to reduce variability) to better understand the role of each mode on L2 development through interactions. Further research is warranted to (a) analyze findings of comparative studies that have investigated SLA through task-based interaction in FTF versus CMC environments; (b) examine the effectiveness of CF in both communication modes; and (c) investigate the role of interlocutors in FTF versus CMC interactions in SLA. Having said that, this dissertation focuses on three studies designed to fill these literature gaps.

The first study is a systematic literature review with a particular focus on dyadic types and interactional features examined in FTF versus CMC interactions with adult learners in SLA. Focusing on comparative empirical studies, the review aims to answer the following research questions:

1. To what extent do the following factors impact the frequency and type of negotiation episodes in face-to-face and computer-mediated task-based interactions with adult English learners?
    a. Grouping types: native speaker (NS)-learner, learner-learner; language proficiency level;
    b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner); timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and

c. Uptake: no uptake, uptake, or successful uptake

2. To what extent do the following factors impact adult learners' second language development in face-to-face and computer-mediated task-based interactions?
   a. Grouping type: NS-learner, learner-learner; language proficiency level;
   b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner); timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and
   c. Uptake: no uptake, uptake, or successful uptake

The second and third studies are comparative empirical studies that investigate qualitative and quantitative aspects of task-based FTF versus text-SCMC interactions with L2 learners. The second study examines the effectiveness of CF types—explicit versus implicit—in L2 development. This study compares FTF versus text-SCMC task-based interactions to discover the (a) frequency of explicit and implicit CF; (b) effect of explicit and implicit CF on subsequent L2 development; and (c) participants' perceptions of CF in SLA through both communication modes.

The third study analyzes the impact of dyadic types— NS-low proficiency learner (LPL), NS-high proficiency learners (LPL), and HPL-LPL— on task-based interactions in SLA. Specifically, the third study compares FTF versus text-SCMC task-based interactions in terms of the (a) effect of three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) on the frequency of negotiation episodes; (b) effect of negotiation episodes on subsequent L2 development; and (c) participants' perceptions of L2 learning through task-based interactions.

Definition of Concepts

To avoid ambiguity of the concepts used throughout this dissertation, operational definitions are provided in Table 1-1.

Table 1-1 Definitions of Concepts

Concept	Definition
Second language acquisition (SLA)	"the acquisition of tools language learners need to rely on in order to successfully carry out communication with the target language users" (Lin, 2014, p. 123). The terms SLA, L2 development, and L2 learning are used interchangeably.
Native speaker (NS)	"a person who has learned a language from an early age and who is deemed to be fully proficient in that language" (Lightbown & Spada, 2017, p. 221)
Second language (L2) learner	a person who speaks English as a second or foreign language; their English proficiency level may be beginner, intermediate, or advanced, and they may or may not be enrolled in English language classes. The terms L2 learner and learner are used interchangeably.
Task	"an activity in which a person engages in order to attain an objective, and which necessitates the use of language" (Van den Branden, 2006, p. 4)
Incidental L2 learning	"learning of some specific L2 feature that takes place without any conscious intention to learn it" (Ellis & Shintani, 2014, p. 338)
Types of negotiation episodes	
Negotiation of meaning	"an interactional sequence that arises when a problem in understanding occurs and there is a temporary communication breakdown leading to attempts to remedy it" (Ellis & Shintani, 2014, p. 342)
Negotiation of form	"an interactional sequence where attention to form occurs even though there is no communication difficulty (i.e., when the problem is entirely linguistic)" (Ellis & Shintani, 2014, p. 342)
Corrective feedback (CF)	"an indication to a learner that his or her use of the target language is incorrect" (Lightbown & Spada, 2017, p. 216)

Table 1-1 Continued

Concept	Definition
Types of CF	
Explicit	direct feedback in which "the corrective force is made clear to the learners" (Ellis & Shintani, 2014, p. 265). Explicit CF strategies are: explicit correction, metalinguistic explanation, elicitation (Ellis, 2015).
Implicit	indirect feedback in which "the corrective force remains covert" (Ellis & Shintani, 2014, p. 265). Implicit CF strategies are: recast, repetition, clarification request, and confirmation check (Ellis, 2015).
Learner' responses to CF	
Uptake	"general learner response to corrective feedback" (Sotillo, 2005, p. 476)
No uptake	"learner does not respond and continues with the activity at hand" (Sotillo, 2005, p. 476)
Successful uptake	"learner incorporates targeted linguistic form or lexical item into his/her output immediately after corrective feedback or subsequently during negotiations work" (Sotillo, 2005, p. 476)

CHAPTER II

FACE-TO-FACE VERSUS COMPUTER-MEDIATED ADULT LEARNER INTERACTIONS AND SECOND LANGUAGE ACQUISITION: A SYSTEMATIC LITERATURE REVIEW

Introduction

The interaction approach to second language acquisition (SLA) underlines the importance of face-to-face (FTF) and computer-mediated communication (CMC) in providing learners with opportunities to develop their language skills. According to Gass and Mackey (2015), interactions have the potential to facilitate learners' language development by promoting feedback and negotiation of meaning, especially when there is misunderstanding in the communication process. Language negotiations improve second language (L2) development by exposing L2 learners to new input and encouraging them to modify their output when they notice gaps between their interlanguage and the target language.

Research (e.g., Zeigler, 2016) has provided evidence that both CMC and FTF interactions are beneficial to SLA. Interactions in both modes provide learners with opportunities to receive modified comprehensible input and interactional feedback, notice gaps between their interlanguage and the target language features, and produce output (Zeigler, 2016). Although both CMC and FTF interactions are beneficial to SLA, studies suggest that they might facilitate L2 development differently. When compared to CMC, some studies (e.g., Fitze & McGarrell, 2008; Rouhshad, Wigglesworth, & Storch, 2016) have indicated that the FTF mode provides more opportunities for negotiations of meaning and corrective feedback (CF). On the other hand, research has also provided evidence that

compared to FTF, CMC interaction benefits L2 learners because it may: (a) provide opportunities for more metalinguistic awareness (Blake, 2000); (b) create a safer environment for risk-taking; (c) motivate learners to express themselves in L2; and (d) allow them to reflect and plan on L2 use (González-Lloret & Ortega, 2014). Furthermore, researchers (e.g., Warschauer, 1996) have found that the CMC mode promoted more language complexity and equal interaction among participants than the FTF mode.

Despite the fact that there is a growing body of empirical research which investigates interactions in SLA (e.g., Lai & Zhao, 2006, Zeng, 2017), there are no systematic literature reviews on FTF versus CMC interactions. Therefore, following standardized and rigorous search and screening procedures, this review systematically compiles and synthesizes empirical research findings of studies comparing FTF versus CMC interactions in SLA. This review also provides researchers with implications for further research and educators with teaching practices that can be implemented in their classrooms to promote L2 development.

Research Questions

The following research questions guide this systematic literature review:

1. To what extent do the following factors impact the frequency and type of negotiation episodes in face-to-face and computer-mediated task-based interactions with adult English learners?

    a. Grouping types: native speaker (NS)-learner, learner-learner; language proficiency level;
    b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner); timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and

c. Uptake: no uptake, uptake, or successful uptake

2. To what extent do the following factors impact adult learners' second language development in face-to-face and computer-mediated task-based interactions?

a. Grouping type: NS-learner, learner-learner; language proficiency level;
b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner); timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and
c. Uptake: no uptake, uptake, or successful uptake

Literature Review

A limited number of previous literature review articles focused on interactions in SLA. Sauro (2011) reviewed 97 studies to identify the trends and topics that have been investigated concerning synchronous computer-mediated communication (SCMC) in SLA. She used the conceptual framework for communicative competence, which involves the following four competences: grammatical, sociocultural, discourse, and strategic. Sauro found that most studies (n = 48) examined grammatical competence, mainly focusing on the impact of SCMC on grammar and vocabulary development. Thirty-one studies investigated strategic competence, analyzing linguistic and technological strategies applied to negotiate communication breakdowns or to facilitate communication. Twenty-two studies focused on sociocultural competence as they analyzed sociopragmatics development. Finally, discourse competence was the least investigated competence with 11 studies examining linguistic and SCMC specific tools used to maintain coherence and cohesion in conversations.

Golonka, Bowles, Frank, Richardson, and Freynik (2014) reviewed more than 350 empirical studies to determine the effectiveness of technology use in foreign language

learning, including English. Their review showed strong support for the use of chat in foreign language learning as both the amount of learners' language production and its complexity significantly increased. They found moderate support for the effectiveness of technology on enhancement of learners' output and interaction, affect and motivation, feedback, and metalinguistic knowledge.

Lin's (2014) meta-analysis investigated CMC interactions to determine if there is a connection between CMC and SLA. Based on 59 studies (published in 2000-2012), she found a positive and medium effect from CMC interventions used for learning purposes in SLA. Lin also found that the CMC modality (i.e., text and voice-based) or mode (asynchronous and synchronous) did not impact the effectiveness of CMC interactions in SLA. On the other hand, research setting, learner proficiency level, interlocutor type, and task type were identified as significant variables that may impact the effectiveness of CMC in language learning.

In another meta-analysis, which also included 59 studies, Lin (2015) focused on different variables (i.e., learner characteristics, methodological characteristics, and publication characteristics) to examine the effectiveness of CMC in SLA. Her findings showed: (a) there was a positive and medium overall effect for CMC used for instructional/learning purposes in SLA; (b) among the four language skills which CMC was intended to facilitate, writing skills and pragmatic competence produced the largest effect; and (c) smaller group size produced a larger effect than those using larger groups or no grouping. As reported by Lin, the following variables may affect the quantity and quality of online interactions: research context (i.e., in or after class), grouping (i.e., pairs, small group, large group, whole-class), amount of L2 exposure (i.e., treatment length), and learners' L2 proficiency.

There is only one literature review comparing both FTF and CMC interactions (Ziegler, 2016). Ziegler's (2016) meta-analysis focused on the effectiveness of SCMC and FTF interactions in SLA. After analyzing 14 studies (published 1990-2012), Ziegler found that there were no statistically significant differences in impact on SLA between SCMC and FTF interactions. Both modes had positive impacts on SLA in terms of productive and receptive skills, and L2 learning outcome.

Despite Ziegler's (2016) meta-analysis which examines FTF and CMC interactions, there is no systematic literature review that investigates comparative studies between CMC and FTF environments in SLA. Therefore, this dissertation addresses the need for a systematic literature review by compiling and synthesizing comparative empirical studies which examined CMC versus FTF interactions with adult L2 learners in SLA. This review is different from Ziegler's work in three aspects. First, her review was a meta-analysis focused on quantitative empirical studies. In contrast, this review is a systematic literature review of quantitative, qualitative, and mixed-methods studies. Second, Ziegler's review was limited to articles published between 1990-2012. The publication dates for the studies in this review range from 1990 to 2017. And third, Ziegler only focused on SCMC and FTF interactions. This review focuses on SCMC, asynchronous computer-mediated communication (ACMC), and FTF interactions.

Theoretical Framework

This systematic literature review is grounded in the Interaction Hypothesis (Long, 1996) as it underlines the importance of FTF and CMC interactions in SLA. The Interaction Hypothesis was introduced by Long in 1981. According to the Interaction Hypothesis, in order for learners to acquire a second language through interactions, they need

comprehensible input and conversational modification. These interactions may promote negotiations of meaning to allow L2 learners to solve communication breakdowns and achieve clarity in their conversations. As Long (1996) argued, interactions have the potential to promote SLA because negotiations involve comprehensible input, conversational modification strategies, noticing of interlanguage gaps, and pushed output. In short, the Interaction Hypothesis (Long, 1996) supports the connection between interactions and SLA through three main constructs: comprehensible input, output, and noticing. These three constructs will be helpful to understand this review's findings and discussion sections.

Comprehensible input

According to Long (1981), comprehensible input plays an important role in the process of language acquisition because it exposes learners to the target language. Having in mind that "Input refers to the linguistic forms (morphemes, words, utterances) … directed at the non-native speaker" (Long, 1983, p. 127), Long (1983) stated that "lack of access to comprehensible input … results in little or no acquisition" (p. 190). L2 learners can be exposed to comprehensible input through interactions, especially when the interlocutors have to negotiate meaning to solve a difficulty in communication. Long (1981) argued that negotiation of meaning occurred in interactions when L2 learners and a more competent speaker had a conversation breakdown and, therefore, used signals to indicate that the language of one of the interlocutors needed to be adjusted for them to reach an acceptable understanding level. Thus, negotiation of meaning episodes promoted conversational modification strategies (e.g., clarification request, confirmation check, repetition) and provided learners with comprehensible input, which, consequently, facilitated L2 development.

Output

The Output Hypothesis proposed by Swain (1985) points out that comprehensible input is not enough for learners to develop a L2. Swain argued that L2 learners may not have opportunities to practice their production skills (speaking and writing) as much as their comprehension skills (listening and reading). According to Swain, L2 learners need not only to be able to understand input, they also need to be able to produce language to develop all four language skills. Based on her Output Hypothesis, interactions contribute to language learning because they provide learners with opportunities to practice L2, test hypotheses, and pay attention to language structures in L2.

Noticing

Schmidt (1990) pointed out that although input and output are important constructs for language learning, they are not sufficient. Through his Noticing Hypothesis, Schmidt stated that "noticing is the necessary and sufficient condition for converting input to intake" (p. 129). In other words, it is essential for learners to notice new target language form and vocabulary to develop their L2. Noticing new linguistic forms means that L2 learners notice the gap between their interlanguage and the target language.

In sum, the Interaction Hypothesis (Long, 1996) argues that interactions can contribute to SLA because they have the potential to promote language negotiations, especially when communication breakdowns occur.

Methods and Procedures

This study applies the systematic literature review method to answer the research questions. As Higgins and Green (2008) stated, "A systematic review attempts to collate all empirical evidence that fits pre-specified eligibility criteria in order to answer a specific

research question. [Moreover], Systematic reviews aim to minimize bias by using explicit, systematic methods" (p. 3). Grant and Booth (2009) called for reviews that are transparent and clear in reporting the methods used to allow others to replicate the process. Furthermore, after an exhaustive comprehensive searching, a systematic literature review reports "What is known; recommendations for practice. What remains unknown; uncertainty around findings, [and] recommendations for future research" (Grant & Booth, 2009, p. 95).

Keywords and search

I conducted four searches to identify all potentially eligible relevant comparative empirical studies on FTF and CMC interactions with adult L2 learners. In the first search, on March 13, 2016, I used the combination of the following keywords to search for articles in Linguistics and Language Behavior Abstracts (LLBA) and Education Resources Information Center (ERIC) databases: *computer-mediated communication* and *adult* or *vocabulary* or *face-to-face* or *task-based learning* or *task-based instruction* or *feedback* or *corrective feedback*. I limited the time of publication from January 1990 to March 2016. The search resulted in 1,597 articles. In the second search, on August 16, 2017, I used the combination of the following keywords: *computer-mediated communication* and *face-to-face interaction* and *language*. I limited the time of publication from January 1990 to August 2017. Using all available databases, the search resulted in 621 articles. In the third search, on October 20, 2017, I used the same combination of keywords as the previous search. Using all available databases and limiting the time of publication from January 1990 to October 2017, the search yielded 625 articles. I screened the final number of articles generated by the three standardized searches based on the inclusion and exclusion criteria. Finally, I conducted a reference search using literature review articles on SLA and the empirical studies that met the

inclusion criteria for this review. Six articles from the reference search met the inclusion criteria.

Inclusion criteria

1. The article was published in English in a peer-reviewed journal between 1990-2017. Having in mind that CMC started being implemented in language teaching in the late 1980s (Warschuauer, 1996), the time period selected ranged from 1990 to 2017 in order to capture the first and latest investigations on FTF and CMC interactions in language teaching.
2. The article was an empirical study (quantitative, qualitative, or mixed-methods).
3. The participants of the study were adult L2 learners (18+ years old).
4. The article compared FTF versus CMC task-based interactions.
5. The article investigated interactional features (e.g., negotiation episodes, corrective feedback, uptake).

Exclusion criteria

1. The article was not published in English or in a peer-reviewed journal.
2. The article was not published between 1990-2017.
3. The article was not an empirical study.
4. The participants of the study were not adult L2 learners (18+ years old).
5. The article did not compare FTF versus CMC task-based interactions.
6. The article did not examine interactional features (e.g., negotiation episodes, corrective feedback, uptake).
7. The article examined game-based interactions.

Included articles

Following the inclusion and exclusion criteria, I screened all the final 2,843 articles (1,597 plus 621 plus 625) generated by the standardized searches. I screened them by reading their titles, abstracts, and, when more information was needed, I scanned their methodology sections. I used color coding to distinguish the included and excluded articles. Sixteen articles were not clear in meeting all the inclusion criteria. To ensure these articles met the inclusion criteria items, a second round of screening and coding was done by a second coder. Discrepancies in the coding of those sixteen articles were discussed until agreement was reached. Out of the 2,843 articles identified in the retrieval process, 29 articles met the eligibility criteria. The final number of empirical studies that met the inclusion criteria for this review was 35 (i.e., 29 articles from the standardized searches plus six articles from the reference search).

Coding and data analysis

Once the screening was completed, I followed three steps to code and analyze the data. First, I carefully read and coded the included articles in a matrix (Higgins & Green, 2008). As shown in Table 2-1, each column of the matrix was coded for publication year, methodology, target L2, setting, country, modality of CMC, mode of communication, sample size, grouping type, task type, and L2 proficiency. In addition, I coded whether each empirical study investigated a target form, focused on incidental learning (as opposed to planned learning), or measured learners' L2 development. I also included a summary of each study's main findings (see Appendix A). Second, I used the matrix to synthesize the outcomes of each column. Finally, I analyzed the main findings to answer the research questions of this review.

Table 2-1 Coding Scheme

Feature	Descriptor
Publication year	Year of publication
Methodology	Qualitative/Quantitative/Mixed-methods
Target L2	L2 investigated
Setting	Foreign language/Second language
Country	The country where the study took place
Modality of CMC	Text/Voice
Mode of communication	FTF/SCMC/ACMC
Sample size	Number of participants
Grouping type	Learner-Learner/NS-Learner/Learner-Teacher or Researcher
Task type	Problem-solving/Jigsaw/Decision-making/Opinion-gap/Story-sequencing/Compare-contrast/Dictogloss/Role-play/Information-gap/Storytelling
L2 proficiency	Beginner/Intermediate/Advanced
Target form	Yes/No
Incidental learning	Yes/No
Measured L2 development	Yes/No

Findings

This systematic literature review investigates comparative studies between CMC and FTF environments in SLA. In this section, I present an overview of the included studies based on the coding scheme (see Table 2-1). Then, I describe the studies in terms of the amount of language production, time on task, and frequency and types of negotiation episodes. Finally, I answer the research questions that guide this review.

Overview of the included articles

Publication year

A total of 35 empirical studies are included in this review. The publication dates for the studies included range from 1996 to 2017 (see Figure 1).

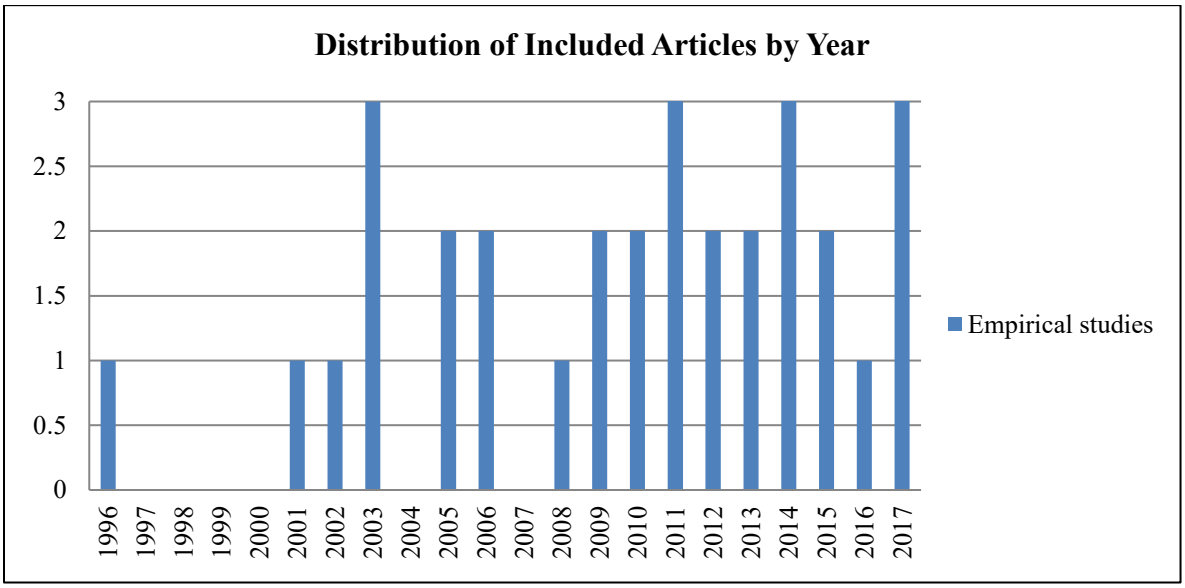

Figure 2-1. Distribution of Included Articles by Year.

Target L2, setting, and country

Most of the studies (n = 20, 57%) investigated English in either an English as a second language (ESL) or English as a foreign language (EFL) settings. Thirteen of them (65%) were conducted in the following ESL settings: United States (n = 5), Canada (n = 2), England (n = 1), New Zealand (n = 1), Australia (n = 1), and Malaysia (n = 1). Two (out of 20) studies did not mention the exact country where they occurred. Seven (35%), out of 20 studies, were

conducted in EFL settings. They took place in the following countries: Thailand, China, Vietnam, Turkey, United Arab Emirates, Iran, and Spain (one study per country).

Fifteen studies (43%) investigated a language other than English in a foreign language setting. The majority of these studies (*n* = 11, 73%) investigated Spanish in the United States. Two (13%) studies examined German in the United States. Two (13%) studies examined Turkish; one of them was conducted in Canada. Two studies that focused on a language other than English did not mention the country where they occurred.

L2 proficiency

Overall, the proficiency level of the participants varied from beginner (B) to advanced (A). As shown in Table 2-2, most studies (*n* = 26, 74%) included participants of only one particular L2 proficiency level, with intermediate (I) level being the most common. However, some studies (*n* = 5, 14%) had participants of two different levels of L2 proficiency (B and I, B and A, or I and A). Four (11%) studies did not specify learners' L2 proficiency level. Out of the 31 studies that reported participants' language proficiency level, 16 of them (52%) reported the instruments used to measure it. The instruments used to measure participants' L2 proficiency were either standardized tests (*n* = 10), such as International English Language Testing System (IELTS) or institutional placement tests (*n* = 6). Fifteen (48%) studies (out of 31) failed to provide information regarding measurement of language proficiency.

Table 2-2 L2 Proficiency Levels of Learners Investigated in the Included Studies

L2 proficiency level*	B	I	A	B & I	B & A	I & A	N/A
Number of studies	4 (11%)	21 (60%)	1 (3%)	1 (3%)	1 (3%)	3 (9%)	4 (11%)

*Note: B: beginner; I: intermediate; A: advanced; N/A: not mentioned

Mode of communication

Most of the studies (n = 32, 91%) compared FTF versus SCMC. Two studies (6%) compared three communication modes (i.e., FTF, ACMC, and SCMC). Only one study (3%) compared FTF versus ACMC. Out of the 35 studies, 19 (54%) of them investigated communication modes using the same group of participants. In contrast, in 16 (46%) studies, the group of participants interacting in the FTF environment was different from the group of participants interacting in the CMC environment.

Modality of CMC interaction

Both text and voice CMC modalities were used in the included studies; however, most studies (n = 28, 80%) investigated text as the CMC modality—27 studies analyzed text-SCMC and one focused on text-ACMC. Five (14%) studies used voice as the interaction modality; all of them were SCMC based. Two (6%) studies examined text and voice as the CMC modality.

Methodology

Quantitative and mixed-methods were the most used methodologies in the studies, with 18 (51%) quantitative and 16 (46%) mixed-methods articles. There was only one (3%) study that used solely qualitative methodology.

Sample size

Overall, in mixed-methods studies, the range of participants was from 12 to 60, with an average of 28 participants. The sample size in quantitative studies varied from 20 to 155, with an average of 51 participants. Finally, the only qualitative study had a sample of 20 participants.

Grouping types

As shown in Table 2-3, researchers used different grouping types. Most of the studies investigated pair or small group interactions among L2 learners (n = 23). Nine studies examined learner-teacher or researcher interactions; two of those studies focused on learner-teacher or researcher interactions in which learners interacted with peers, but the teacher or researcher was also engaged in the interactions. One study paired learners with NSs. Two studies analyzed more than one grouping type (i.e., learner-learner and NS-learner; learner-learner, NS-learner, and NS-NS).

Table 2-3 Grouping Types Investigated

Grouping type*	Learner-Learner	Learner-T/R	NS-Learner	Learner-Learner & NS-Learner	Learner-Learner, NS-Learner, & NS-NS
Number of studies	23 (66%)	9 (26%)	1 (3%)	1 (3%)	1 (3%)

*Note: T: teacher; R: researcher; NS: native speaker

Target form

Most of the studies (n = 30, 86%) investigated L2 learning through interactions without focusing on certain target forms. Five (14%) studies examined interactions focusing on particular L2 target forms, which were the following: questions in English, articles in English, locative and plural morphemes in Turkish, and past subjunctive in Spanish. Since the participants from those five specific studies were not aware of the target forms being examined, the studies investigated incidental learning.

Incidental learning

All studies investigated incidental learning. That is, researchers examined L2 learning by engaging learners in task-based interactions without forewarning them of linguistic aspects requiring their attention.

Measurement of L2 development

Twelve (34%) studies measured L2 development using pre- and posttests. The majority of the studies (n = 23, 66%) did not measure subsequent L2 development during or after interactions.

Task type

Researchers used a variety of task types. Jigsaw and decision-making were the most commonly used tasks, followed by opinion-gap and information-gap. Other tasks used were story-sequencing, compare-contrast, problem-solving, dictogloss, role-play, and storytelling. Together, the 35 included studies implemented 45 tasks. Studies varied regarding the number of task types used in their investigations. The number of task types per study ranged from one to three. Twenty-eight (80%) studies used one task, four (11%) used two tasks, and three (9%) used three tasks. Table 2-4 shows the task types and the number of studies that used each of them.

Table 2-4 Task Types Investigated

Task type	Number of studies	%*
Jigsaw	10	22
Decision-making	9	20
Opinion-gap	8	18
Information-gap	8	18
Story-sequencing	2	4
Compare-contrast	2	4

Table 2-4 Continued

Task type	Number of studies	%*
Role-play	2	4
Storytelling	2	4
Problem-solving	1	2
Dictogloss	1	2
Total of tasks used	45	100

*Note: The calculation of the percentage was rounded.

Amount of language production

Only nine (26%, out of 35) studies specified the amount of language produced by the participants in each mode (see Table 2-5). In most of the studies (n = 7, 78%), participants produced more language in FTF than in CMC. Three of these studies (Fitze, 2006; Fitze & McGarrell, 2008; Lai & Zhao, 2006) showed that despite L2 learners producing more output in FTF, there was no statistically significant difference between the FTF and CMC modes in terms of amount of language production. In Freiermuth's (2001) study, all participants (i.e., L2 learners and NSs) combined produced more words in FTF than in SCMC mode. However, when analyzing only learners' amount of L2 production, learners produced more language in the text-SCMC (n = 163, 62%) than in the FTF (n = 98, 38%) mode.

Table 2-5 Number of Words Produced in FTF and CMC Modes

Study	Words (FTF)	%	Words (CMC)	%	Mode
Abrams (2011)	43.1*	-	68; 3*	-	text-SCMC; text-ACMC
Fitze (2006)	6460	51	6113	49	text-SCMC
Fitze & McGarrell (2008)	6460	51	6113	49	text-SCMC
Freiermuth (2001)	751	56	596	44	text-SCMC
Lai & Zhao (2006)	892	51	859	49	text-SCMC
Nguyen & White (2011)	20352	69	8963	31	text-SCMC

Table 2-5 Continued

Study	Words (FTF)	%	Words (CMC)	%	Mode
Rouhshad et al. (2016)	12970	65	6989	35	text-SCMC
Yanguas & Flores (2014)	161.19*	-	206.32*	-	voice-SCMC
Zeng (2017)	11657	69	5193	31	text-SCMC

*Note: Abrams (2011), and Yanguas and Flores (2014) only provided the mean of the number of words produced in FTF and CMC modes.

Time on task

Sixteen (46%, out of 35) studies reported the average of time on task; that is, the time from when the participants started working on the assigned task until they completed it. As shown in Table 2-6, the 16 studies varied in terms of participants who performed the tasks in FTF and SCMC, grouping arrangement (i.e., pairs and small groups), number of tasks, and task types assigned to participants. Despite such variables, the 16 studies suggested that participants tended to spend more time completing tasks in SCMC than in FTF environment. However, in Kim's (2017) study, the difference between the time L2 learners spent in FTF and text-SCMC was only 47 seconds.

Table 2-6 Average of Time on Task in FTF and SCMC Modes*

Study	FTF & SCMC		FTF			SCMC		
	Participants	Task type	Time on task	Grouping	Number of tasks	Time on task	Grouping	Number of tasks
Baralt** (2013)	different	storytelling	25.17 min, 21.83 min 21.17 min, 16.5 min	36 pairs	2	58 min, 48.65 min, 43.47 min, 33 min	34 pairs	2

Table 2-6 Continued

Study	FTF & SCMC		FTF			SCMC		
	Participants	Task type	Time on task	Grouping	Number of tasks	Time on task	Grouping	Number of tasks
Baralt & Gurzynski-Weiss (2011)	same	information-gap	11.2 min	25 pairs	1	23.8 min	25 pairs	1
Bueno Alastuey (2011)	different	jigsaw	12 min	12 pairs	1	16 min	20 pairs 2 small groups	1
Gurzynski-Weiss & Baralt (2014)	same	information-gap	13 min	24 pairs	1	25.5 min	24 pairs	1
Gurzynski-Weiss & Baralt (2015)	same	information-gap	13 min	24 pairs	1	25.5 min	24 pairs	1
Hamano-Bunce (2010)	same	jigsaw & opinion-gap	6 min	4 pairs	2	27 min	4 pairs	2
Kim (2017)	same	jigsaw, decision-making, & story-sequencing	34 min 2 sec	10 pairs	3	34 min 49 sec	10 pairs	3
Lai & Zhao (2006)	same	jigsaw	11 min	6 pairs	1	38 min	6 pairs	1
Loewen & Reissner (2009)	different	decision-making	54 min	3 small groups	1	53 min	4 small groups	1
Nguyen & White (2011)	different	compare-contrast	24 min 23 sec	10 small groups	1	59 min 4 sec	10 small groups	1
Rassaei* (2017)	different	storytelling	12 min	57 pairs	1	14 min	57 pairs	1
Rouhshad et al. (2016)	same	decision-making	11 min 2 sec	12 pairs	1	27 min 5 sec	12 pairs	1

Table 2-6 Continued

Study	FTF & SCMC		FTF			SCMC		
	Participants	Task type	Time on task	Grouping	Number of tasks	Time on task	Grouping	Number of tasks
Yilmaz (2012)**	same	information-gap	6 min 17 sec, 5 min 54 sec; 7 min 24 sec, 7 min 5 sec	49 pairs	1	12 min 2 sec, 12 min 19 sec; 15 min 52 sec, 14 min 13 sec	49 pairs	1
Yilmaz & Yuksel (2011)	same	information-gap	6 min 46 sec	24 pairs	1	14 min 4 sec	24 pairs	1
Yuksel & Inan (2014)	same	jigsaw	16 min	32 pairs	1	24 min	32 pairs	1
Zeng (2017)	same	jigsaw & dictogloss	12 min 7 sec	16 pairs	1	30 min 9 sec	16 pairs	1

*Note: None of the studies presented in this table had a set time for participants to complete the tasks. All the studies in this table compared FTF versus text-SCMC, except for Rassaei's (2017) study. Rassaei compared FTF versus voice-SCMC. A small group consists of three or four participants.
**Note: Baralt (2013) compared cognitively complex condition (+C) versus cognitively simple condition (-C) in both modes. FTF+C: *M* = 25.17 (Treatment 1), *M* = 21.83 (Treatment 2); FTF-C: *M* = 21.17 (Treatment 1), *M* = 16.5 (Treatment 2); SCMC+C: *M* = 58 (Treatment 1), *M* = 48.65 (Treatment 2); SCMC-C: *M* = 43.47 (Treatment 1), *M* = 33 (Treatment 2). Yilmaz (2012) compared recast versus explicit correction with two target forms: plural and locative morphemes. FTF: recasts - *M* = 6:17 (plural), *M* = 5:54 (locative); explicit correction - *M* = 7.24 (plural), *M* = 7:05 (locative). SCMC: recasts - *M* = 12:02 (plural), *M* = 12:19 (locative); explicit correction - *M* = 15:52 (plural), *M* = 14:13 (locative).

Frequencies of negotiation episodes

Out of the 35 included studies, 12 (34%) provided the frequency of negotiation episodes that each mode promoted (see Table 2-7). Most studies (*n* = 11, 92%) indicated that FTF resulted in more negotiation episodes than CMC interactions involving L2 learners. As also shown in Table 2-7, researchers used various terminologies to refer to negotiations. Nevertheless, all terminologies aimed at creating opportunities for learners to potentially improve L2 skills through task-based interactions.

Table 2-7 Definitions and Raw Frequencies of Negotiations

Study	Terminology	Definition	Frequency (FTF)	Frequency (CMC)*
Fernandez-Garcia & Arbelaiz (2003)**	negotiations of meaning	non-understanding routines as "exchanges in which there is some overt indication that understanding between participants has not been complete" (Varonis & Gass's definition as cited in Fernandez-Garcia & Arbelaiz, 2003, p. 119).	NS-NS 0.44 NS-L 3.25 L-L 0.85	NS-NS 0.44 NS-L 1 L-L 0.64
Gurzynski-Weiss & Baralt (2014)	interaction episodes	instances in which linguistic errors were identified	164	152
Gurzynski-Weiss & Baralt (2015)	interaction episodes	instances in which linguistic errors were identified	164	152
Hamano-Bunce (2010); Zeng (2017)	language-related episodes (LREs)	"any part of a dialogue where students talk about language they are producing, question their language use, or other- or self-correct their language production" (Swain & Lapkin's definition as cited in Hamano-Bunce, 2010, p. 427).	69 (88%); 71 (52%)	9 (12%); 65 (48%)
Kim (2014)	communicative strategies	communicative strategies that involved the need for assistance. The strategies were (a) direct appeal for assistance where learners asked for the correct term or structure and (b) indirect appeal for assistance where learners indicated communicative problems and asked for help using false starts, repetition, elongated vowels, intonation, pauses in FTF, and false starts repetition, question marks, pauses, and text-based paralinguistic features (e.g., emoticons, capitalization) in SCMC (p. 34).	48 (69%)	22 (31%)
Loewen & Reissner (2009)	focus on form episodes (FFEs)	"discourse concerning a problematic linguistic item, from the initial trigger to the resolution of the item. The trigger could stem from either a miscommunication or an erroneous utterance" (p. 105).	107 (81%)	25 (19%)
Nguyen & White (2011)**	language focus	sociocognitive episodes which focused on language during learners' engagement in a task	0.6%	0.1%

Table 2-7 Continued

Study	Terminology	Definition	Frequency (FTF)	Frequency (CMC)*
Rouhshad et al. (2016)	negotiations	negotiation episodes which could be identified as negotiation of meaning or negotiation of form. "Negotiations for meaning were motivated by communication breakdowns and had clarification, confirmation or comprehension check as their indicators" (p. 522). "Negotiations for form there was no apparent communication breakdown. These negotiations had recasts, explicit provision of CF [corrective feedback] and meta-linguistic CF as their indicators (p. 522).	92 (79%)	24 (21%)
Tam et al. (2010)**	negotiation of meaning	"a non-understanding routine […] wherein a negotiation routine consists minimally of a *trigger* that caused the non-understanding in the utterance, an *indicator* or signal of non-understanding, a *response* to the indicator and finally an optional *reaction to the response*" (p. 62).	HPL 183 (73%) LPL 180 (78%)	HPL 66 (27%) LPL 50 (22%)
Yanguas (2012)**	negotiations of meaning	negotiation routines that produced one of the following: 1) routines in which participants reached complete understanding of the target item, 2) negotiations in which only partial understanding was reached, [or] 3) negotiation routines in which no understanding was achieved" (p. 519).	50%	57%; 48%
Yuksel & Inan (2014)**	negotiation of meaning	an activity "in which learners seek clarification, confirmation and repetition of second language utterances they do not understand" (Pica's definition as cited in Yuksel & Inan, 2014 p. 336).	24.28 (51%)	22.97 (49%)

*Note: All the studies in this table compared FTF versus text-SCMC, except for Yanguas' (2012) study. Yanguas compared FTF, audio-SCMC, and video-SCMC.
**Note: NS: native speaker; L: learner. Nguyen and White (2011), and Yanguas (2012) did not provide raw frequencies. Yanguas compared two modalities within SCMC: audio (57%) and video (48%). Fernandez-Garcia and Arbelaiz (2003), and Yuksel and Inan (2014) only provided the mean calculation for the frequency of negotiations. Tam et al. (2010) provided the frequency of negotiation indicators initiated by high proficiency learners (HPL) and low proficiency learners (LPL).

Out of the 12 studies that reported the overall frequencies of negotiations in FTF and CMC modes, only three studies (Loewen & Reissner, 2009; Rouhshad et al., 2016; Zeng,

2017) took into consideration the differences in the time taken and the amount of language produced in both settings when comparing the occurrences of negotiations across modes. Table 2-8 illustrates how each study standardized the occurrences of negotiations and the results of their calculations. After controlling for time and language production, two studies' (Loewen & Reissner, 2009; Rouhshad et al., 2016) results showed that FTF generated a higher frequency of negotiations than text-SCMC mode. In contrast, one study (Zeng, 2017) found that text-SCMC promoted a higher frequency of language-related episodes (LREs) (i.e., negotiation episodes) than the FTF environment. In Zeng's (2017) study, there was an average of 1.25 LREs per 100 words in text-SCMC, whereas there was an average of 0.61 LREs per 100 in the FTF mode.

Table 2-8 Standardized Frequencies of Negotiations in FTF and Text-SCMC Modes

Study	Terminology	FTF	Text-SCMC	Standardizing Method
Loewen & Reissner (2009)	focus on form episodes (FFEs)	Mean = 0.73	Mean = 0.12	ratio of FFEs per total minutes spent on task
Rouhshad et al. (2016)	negotiations of meaning; negotiations of form	Median = 3.5; Median = 2.6	Median = 1.7; Median = 0	ratio of negotiations per 1,000 words
Zeng (2017)	language-related episodes (LREs)	Mean = 0.61	Mean = 1.25	ratio of LREs per 100 words

Without reporting the raw frequencies of negotiations of meaning, Lai and Zhao (2006) mentioned that there were more negotiations of meaning in FTF than in text-SCMC

interactions. However, they reported the instances of negotiated interactions noticed by L2 learners. According to the researchers, negotiated interactions were instances of negotiation of meaning, recast, and self-correction. The researchers conducted a stimulated recall for both FTF and SCMC interactions to identify instances of noticing of negotiations of meaning and recasts. It was considered evidence of noticing if the participants' recall of the episodes focused on the linguistic forms (Lai & Zhao, 2006). Table 2-9 illustrates how they defined each negotiation move and the frequencies of learners' noticing of each move in both modes. Noticing of negotiation of meaning was computed using the ratio score of negotiation of meaning noticed over the overall instances of negotiation of meaning during the interaction. Noticing of recast was computed based on the ratio of recasts noticed over all instances of recasts. Noticing of self-correction was calculated using the number of self-corrections divided by the number of words produced in each mode.

Table 2-9 Negotiated Interaction Moves, Definitions, and Frequency of Noticing in Lai and Zhao's (2006) Study

Negotiated interaction	Definition	Frequency of noticing (FTF)*	Frequency of noticing (SCMC)*
Negotiation of meaning	"episodes that either started with indicators of non-understanding such as 'what (is …)?' and 'uh?', or with the partial or complete repetition of the interlocutor's or learners' previous utterance with a rising intonation (for those in online chat, the rising intonation was replaced by question marks)" (p. 107)	0.24 (35%)	0.45 (65%)
Recast	"episodes in which the interlocutors implicitly corrected the mistakes without breaking the flow of the communication" (p. 107)	0.18 (64%)	0.10 (36%)

Table 2-9 Continued

Negotiated interaction	Definition	Frequency of noticing (FTF)*	Frequency of noticing (SCMC)*
Self-correction	"episodes in which the participants immediately corrected their own vocabulary, grammar, phonological mistakes (in the case of face-to-face communication only), or wording without prompts from their interlocutors" (p. 107)	0.11 (28%)	0.29 (73%)

*Note: Calculation based on the mean provided by the researchers.

Types of negotiation episodes

Some researchers (e.g., Lyster, 2001) have categorized negotiations into two major types: negotiation of meaning and negotiation of form. Only one included study (Rouhshad et al., 2016) investigated both types. As Rouhshad, Wigglesworth, and Storch (2016) pointed out, the main difference between these types of negotiations is that negotiation of meaning is triggered by a communication breakdown, whereas negotiation of form is not necessarily based on a communication breakdown. Rouhshad et al. identified more instances of negotiation of meaning and form in FTF (n = 58, 63%; n = 34, 37%, respectively) than text-SCMC (n = 10, 42%; n = 14, 58%, respectively). Moreover, the researchers observed that FTF interactions resulted in more negotiations of meaning than form, whereas text-SCMC promoted more negotiations of form than meaning. The higher frequency of negotiations of meaning in FTF (compared to text-SCMC) suggests that—different from text-SCMC—most of the FTF negotiations were triggered by a communication breakdown. That finding shows that while the participants focused their attention more on meaning in FTF, they focused more on linguistic form in text-SCMC. After controlling for number of words produced by the participants, Rouhshad et al.'s results indicated that FTF promoted significantly more

negotiations of meaning than SCMC. However, the difference in negotiation of form across the modes was not significant.

Thirty-four included studies did not separate negotiation episodes based on their focus on form or on meaning. One study (Loewen & Reissner, 2009), however, investigated pre-emptive and reactive focus on form episodes (FFEs). Pre-emptive FFEs were not triggered by a communication breakdown as they involved "an unsolicited query or advice about a linguistic item" (Loewen & Reissner, 2009, p. 105). On the other hand, reactive FFEs were "an other-initiated response to a problematic utterance" (Loewen & Reissner, 2009, p. 105), indicating that they were trigged by a communication breakdown. Loewen and Reissner's (2009) study showed that in both FTF and text-SCMC modes there were more instances of reactive FFEs than pre-emptive FFEs, suggesting that most negotiations occurred when there was a communication breakdown. However, the modes of communication differed in terms of the frequency of pre-emptive and reactive FFEs. The researchers identified more pre-emptive and reactive FFEs in FTF than text-SCMC setting. There were 37 (35%) pre-emptive FFEs and 70 (65%) reactive FFEs in the FTF environment; whereas only four (27%) pre-emptive FFEs and 11 (73%) reactive FFEs were identified in the text-SCMC environment. The higher frequency of reactive FFEs in both modes suggests that a communication breakdown triggered most negotiations.

Research question 1

The first research question asks: To what extent do the following factors impact the frequency and type of negotiation episodes in face-to-face and computer-mediated task-based interactions with adult English learners?

a. Grouping types: NS-learner, learner-learner; language proficiency level;

b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner); timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and
c. Uptake: no uptake, uptake, or successful uptake

To answer this research question each of the factors will be addressed separately in the following sections.

Grouping types

Grouping types have been considered because type and frequency of negotiation episodes and, thus, L2 learners' language development could be affected by the interlocutors with whom they interact (e.g., Freiermuth, 2001). Out of the 35 included studies, 23 (66%) examined learner-learner grouping, 10 (29%) investigated NS-learner grouping (NSs also include teachers and researchers), and two (6%) examined more than one grouping type (i.e., learner-learner and NS-learner; learner-learner, NS-learner, and NS-NS).

Learner-learner grouping

Out of the 23 studies that used learner-learner grouping, 18 grouped learners of similar proficiency level, with 15 focusing on intermediate, two on beginner, and one on advanced. Only one study grouped learners of different proficiency levels (four studies did not specify learners' L2 proficiency level).

Two (out of 23) studies (Rouhshad et al., 2016; Tam, Kan, & Ng, 2010) directly addressed the impact of learners' proficiency level on the number of negotiations generated in FTF and CMC interactions within the learner-learner grouping type. Tam, Kan, and Ng (2010) found that interactions between low and high proficiency L2 learners encouraged negotiations, especially in the FTF environment. Since comprehensible input was necessary

for learners to complete language learning tasks, negotiations were triggered by problems with message comprehensibility. In the FTF mode, the researchers found that low proficiency learners (n = 180; 78%) experienced more problems with message comprehensibility than high proficiency learners (n = 183; 73%). On the other hand, in the text-SCMC mode, the high proficiency learners (n = 66; 27%) indicated more problems with comprehension than low proficiency learners (n = 50; 22%).

Rouhshad et al. (2016) investigated interactions within the same proficiency level (i.e., intermediate) learners. The researchers also identified more negotiations in FTF (n = 92) than in text-SCMC (n = 24) mode. There were 58 (63%) negotiations of meaning and 34 (37%) negotiations of form in the FTF environment, whereas there were 10 (42%) negotiations of meaning and 14 (48%) negotiations of form in the SCMC environment. Although same-proficiency pairs resulted in negotiations in both modes, the researchers suggested that L2 proficiency level might have impacted the number of negotiations, especially of form. Learners' intermediate proficiency level might not have allowed them to notice linguistics issues during the interactions. Furthermore, Rouhshad et al. suggested that the number of negotiations might have been limited as "a result of the face-threatening nature of frequent negotiations, which could be taken to imply the partner's incompetency in the second language. L2 learners may, therefore, feign comprehension and hope that future utterances may resolve the problem" (p. 529).

Twenty-one studies did not directly address learners' proficiency level to explain the number of negotiations generated in FTF and in CMC interactions within the learner-learner grouping. Instead, these studies indicated other variables (i.e., mode of communication, task type, and presence of a teacher) may have affected negotiations. For example, compared to

FTF, Zeng (2017) found that the text-based nature of SCMC and task type encouraged a higher frequency of LREs. After controlling for the number of words produced by the learners in FTF and in SCMC modes, Zeng found that SCMC generated a significantly higher frequency of LREs than FTF interaction. Learners generated an average of 1.25 LREs per 100 words in SCMC compared to an average of 0.61 LREs per 100 in FTF. That finding showed that FTF produced more language in less time, but LREs were more frequent in SCMC, suggesting that learners paid more attention to language use in SCMC. Zeng explained that the text-based nature of SCMC and task type (i.e., dictogloss) encouraged learners to pay closer attention to their own and their partner's language use. For example, the visual display of text-SCMC may have facilitated the visibility of language errors. Also, the fact that dictogloss required learners to reconstruct a story might have drawn their attention to language use.

Studies (e.g., Yuksel & Inan, 2014) also found that the nature of FTF interactions impacted interactions within the learner-learner grouping type. Yuksel and Inan (2014) found that FTF interactions encouraged more negotiations than interactions in text-SCMC. The researchers identified a higher number of confirmation and comprehension checks in FTF (M = 9.06; M = 8.19, respectively) than in SCMC (M = 8.16; M = 7.66, respectively). The difference in the frequency of confirmation checks in FTF and SCMC was statistically significant. Rouhshad et al. (2016) also found that frequency of negotiations in FTF (FTF 79% versus SCMC 21%) was impacted by the communication mode. As Rouhshad et al. explained, there were probably fewer negotiations in text-SCMC because of the extra processing time available for learners. Instead of negotiating meaning, learners could reread messages they did not understand. Therefore, text-SCMC might have encouraged less

confirmation and comprehension checks than FTF. Learners could move back and forth through the interactions when they needed to confirm or check for comprehension.

Other studies (e.g., Hamano-Bunce, 2010) indicated that artifacts related to computer skills, such as learners' typing skills, impacted the number of negotiations in text-SCMC. For example, based on interviews, Hamano-Bunce (2010) found that compared to FTF, beginner learners had a low frequency of negotiations in text-SCMC (SCMC 12% versus FTF 88%) because of their limited typing skills. According to Hamano-Bunce, the long wait for learners to type may have caused frustration and distraction. Based on observations of learners interacting in text-SCMC, the researcher reported that, frustrated with long waits, learners frequently daydreamed, browsed the internet, or talked in their first language to their peers sitting next to them. As a result, learners' slow typing may have discouraged them from initiating negotiations, and thereby extending their interlanguage. Furthermore, Hamano-Bunce found "no evidence that the extra time and visual saliency resulted in more accurate or complex language. Rather, time that could have been more usefully spent conceptualizing, formulating, and monitoring production seemed to be lost in the articulation of the message" (p. 433).

Similarly, based on interviews and observations, Nguyen and White (2011) concluded that learners' limited typing skills affected the number of negotiations. Nguyen and White examined interactions between advanced proficiency level learners and found a very limited frequency of language negotiations in FTF (0.6%) and text-SCMC (0.1%). Another study (Kim, 2014) revealed that 70% of intermediate proficiency learners reported that they avoided negotiations in text-SCMC interaction (SCMC 31% versus FTF 69%) because it would be time-consuming to negotiate through typing as opposed to orally speaking.

Loewen and Reissner (2009) investigated the learner-learner grouping type in a different way from the above studies and found that a teacher's presence impacted L2 learners' interactions. In Loewen and Reissner's study, L2 learners interacted with same proficiency level peers, but they were monitored by a teacher who circulated through the classroom. Using both FTF and text-SCMC modes, the researchers compared a group of learners who were monitored by a teacher with a group of learners who were not monitored by a teacher. The researchers found that, regardless of the mode of communication, the groups that were monitored by a teacher produced more FFEs. The monitored SCMC groups produced 20 (80%) FFEs (out of the 20, eight were teacher reactive), compared to five (20%) FFEs from the unmonitored SCMC groups. In the FTF setting, where learners were monitored, there were 107 FFEs. Seventy (65%) out of the 107 FFEs were teacher pre-emptive FFEs, suggesting that the teacher encouraged learners to pay closer attention to linguistic aspects. Loewen and Reissner also observed that the presence of the teacher might have led L2 learners to produce more self-corrections. While there was no self-correction in the unmonitored groups, there were 10 self-corrections in the SCMC monitored groups.

NS-learner grouping

Ten studies (e.g., Blake, 2009; Fitze & McGarrell, 2008; Freiermuth, 2001) investigated the NS-learner grouping. Despite not comparing different grouping types (i.e., learner-learner versus NS-learner), these studies' findings revealed that NSs impacted the quality and amount of interaction by providing input, promoting output, and correcting learners' linguistic errors.

Some studies' findings suggested that the fact that NSs provided input and promoted output while interacting with learners might have contributed to their L2 development. For

example, Fitze and McGarrell (2008) investigated NS-learner interactions in FTF and text-SCMC environments. The researchers found that the NS modeled pronunciation by clarifying learners' utterances in group FTF discussions. Moreover, the NS modeled syntactically complex language by clarifying learners' ideas and encouraged output by motivating them to participate more in FTF than in SCMC interaction. As a result, the NS might have contributed more to learners' L2 potential development in FTF than in SCMC. According to Fitze and McGarrell, compared to FTF, L2 learners were better able to manage their text-SCMC interactions because they did not have any issues with pronunciation and felt more comfortable participating in the discussion.

In another study, Freiermuth (2001) found that the NS encouraged learners to produce output by asking them questions, especially open-ended questions. According to Freiermuth, "more open-ended questions means more opportunities for [learners] to contribute to the interaction, which in turn, has the potential to push them to stretch their language production skills" (p. 192). He observed more open-ended questions in text-SCMC, which could promote more learner participation in SCMC than in FTF interactions. While L2 learners produced 98 (38%) words in FTF, they produced 163 (62%) words in the text-SCMC setting. Freiermuth's findings are based on his analysis of the interactions after controlling for number of turns. Since one dyad produced a total of 24 turns, he analyzed only the first 24 turns from each dyad.

Other studies indicated that the NS facilitated learners' L2 development by also correcting learners' linguistic errors. For instance, in her investigation of NS-learner interactions, Blake (2009) found that the NS facilitated learners' L2 development. Since the text-SCMC mode allowed learners to see the NS's corrections and participate without having

to wait for their turns, Blake found that by encouraging learners to interact in the L2 and correcting their linguistic errors, the NS was a key factor in learners' improvement of L2 oral fluency. Studies, which focused on a particular target form, showed that the NS (i.e., researcher) contributed to learners' L2 development by correcting learners' misuse of the target L2 form. For example, Rassaei (2017) found that L2 learners were able to notice the NS's corrections on their misuse of articles in both SCMC video-chat and FTF modes. No statistically significant difference was found between the modes. Results of pre- and posttests indicated that the NS's corrections provided through both settings were effective.

NS-learner and learner-learner grouping

Two studies (Fernandez-Garcia & Arbelaiz, 2003; Moreno-Lopez & Miranda-Aldaco, 2013) investigated more than one grouping type. Despite not comparing grouping types, Moreno-Lopez and Miranda-Aldaco's (2013) study suggested that learners performed better when interacting with NSs than with peers. The researchers found that the learners from the CMC groups, which involved interactions with NSs, had significant higher scores in reading and listening tests than the learners from the FTF groups. Being actively engaged in using acquired knowledge and negotiation of meaning while interacting with NSs in CMC environments might have helped the learners enhance their reading and listening skills.

Fernandez-Garcia and Arbelaiz (2003) compared three grouping types: learner-learner, NS-learner, and NS-NS. The researchers discovered that the NSs contributed to potential L2 development by promoting negotiations during their interactions with learners. Compared to the learner-learner and NS-NS dyads, the NS-learner dyads negotiated significantly more, especially in the FTF mode (as opposed to text-SCMC). According to Fernandez-Garcia and

Arbelaiz, the NS-learner dyads negotiated the most probably because learners' lack of familiarity with the NSs' pronunciation triggered communication breakdowns.

Corrective feedback

CF is important in SLA because it provides negative evidence to help learners notice L2 input and their interlanguage gap (Sotillo, 2005). Studies on CF have basically discussed two CF types: explicit and implicit. As explained in Hosseini (2012), explicit CF clearly indicates, corrects, and explains the learner's errors. On the other hand, implicit CF indicates that the learner's utterance contains an error(s) and should be reformulated. Examples of implicit feedback are recast and clarification request, whereas metalinguistic feedback and explicit correction are examples of explicit feedback.

Corrective feedback types and providers

Ten (29%, out of 35) studies specified the CF type that interlocutors exchanged during task-based interactions. Out of those 10 studies, four had a L2 learner as the CF provider and six had a NS (i.e., teacher or researcher) as the CF provider. Table 2-10 illustrates the four studies in which a L2 learner was the CF provider. Three out of the four studies reported only the amount of implicit feedback that learners exchanged during FTF and text-SCMC interactions. Different from Kim (2014), Yuksel and Inan (2014), and Tam et al. (2010) limited their CF analysis to implicit feedback. Therefore, it is unclear if learners also applied explicit feedback in their studies.

Table 2-10 Frequency of Corrective Feedback Types Provided by Learners

Study	Implicit (FTF)	Implicit (SCMC)	Explicit (FTF)	Explicit (SCMC)
Kim (2014)	48 (100%)	22 (100%)	0 (0%)	0 (0%)
Tam et al. (2010)	363 (100%)	116 (100%)	N/A*	N/A*

Table 2-10 Continued

Study	Implicit (FTF)	Implicit (SCMC)	Explicit (FTF)	Explicit (SCMC)
Yuksel & Inan (2014)	24.28 (100%)*	22.97 (100%)*	N/A*	N/A*
Zeng (2017)	52 (83%)	38 (79%)	11 (17%)	10 (21%)

*Note: Yuksel and Inan (2014) only provided the mean of raw frequencies. N/A: researchers did not investigate explicit CF.

Table 2-10 displays two interesting points about the occurrences of CF provided by L2 learners. First, all four studies reported that learners applied more instances of CF in FTF than in text-SCMC. Moreover, Kim's (2014) and Zeng's (2017) studies showed that learners applied implicit feedback more often than explicit feedback in both modes, especially in the FTF mode. As Zeng suggested, learners might have used more implicit feedback in FTF due to the nature of the communication mode. For example, in her study the instances of request for clarification (a type of implicit feedback) in an FTF setting were significantly higher than in SCMC (n = 36 in FTF versus n = 25 in SCMC). The researcher explained that the slow pace of text-SCMC interaction allowed learners to have more time to reflect on the input received. As a result, they were more likely to clarify any linguistic issues they had without having to request clarification.

Second, Tam et al.'s (2010) study was the one with the highest occurrences of CF in both FTF and SCMC modes. According to Tam et al., the high number of CF instances could be due to the different proficiency dyadic interactions. As Table 2-11 shows, both groups of learners (low and high proficiency) provided roughly similar amounts of implicit feedback in both modes. The exchange of implicit CF provided low and high proficiency learners with linguistic models and encouraged modified output, especially in FTF interactions.

Table 2-11 Frequency of Corrective Feedback Types Provided by Low and High Proficiency L2 Learners in Tam et al.'s (2010) Study

Proficiency level	Implicit CF (FTF)	Implicit CF (SCMC)	Explicit CF (FTF)	Explicit CF (SCMC)
Low	180 (100%)	50 (100%)	N/A*	N/A*
High	183 (100%)	66 (100%)	N/A*	N/A*

*Note: Researchers did not investigate explicit CF.

Six (out of 10) studies had a NS (i.e., teacher or researcher) as the CF provider. One study (Fitze & McGarrell, 2008) examined a teacher's feedback to a group of L2 learners in FTF compared to text-SCMC. Fitze and McGarrell (2008) observed that all of the teacher's CF instances were implicit (see Table 2-12). The researchers suggested that the teacher's preference for implicit feedback might be explained by his focus in both modes on content rather than on language issues. Fitze and McGarrell also found there were more implicit feedback instances in FTF than in SCMC due to the nature of the communication modes. Since text-SCMC did not involve oral skills, students were better able to understand each other's messages having visual access to the texts. On the other hand, FTF required oral comprehensibility, therefore, the teacher had to clarify students' utterances when learners had difficulty understanding each other's pronunciation. This type of implicit feedback occurred 61 (76%, out of 80) times during teacher and learners' interactions.

The other five studies (e.g., Baralt, 2013; Gurzynski-Weiss & Baralt, 2014) examined researchers' provision of CF to L2 learners in FTF versus SCMC. As shown in Table 2-12, two of those studies (Gurzynski-Weiss & Baralt, 2014; Yilmaz, 2012) investigated implicit and explicit feedback in both modes. While Gurzynski-Weiss and Baralt (2014) found more occurrences of explicit CF in FTF and text-SCMC, Yilmaz (2012) found more instances of

implicit CF in FTF and text-SCMC. However, the participants in Yilmaz's study performed better on oral production and comprehension tests after receiving explicit CF. Explicit CF clearly showed the learners that their utterances were incorrect and provided them with the correction, allowing for a comparison between the target and nontarget forms. As a result, Yilmaz found that the features of explicit CF facilitated L2 development of the target forms.

Three (out of five) studies (Baralt, 2013; Rassaei, 2017; Yilmaz & Yuksel, 2011) focused only on implicit CF in FTF versus SCMC. The findings of these studies varied. Yilmaz and Yuksel (2011) observed a higher frequency of implicit CF in FTF, whereas Rassaei (2017) reported a higher frequency of implicit CF in SCMC. The modalities compared might explain the difference between these studies. Rassaei compared FTF versus voice-SCMC, two oral modalities. Yilmaz and Yuksel, however, examined FTF versus text-SCMC. The features of oral modality (i.e., fast pace, immediate response) tend to promote more implicit CF (Zeng, 2017). Table 2-12 also shows that Baralt's (2013) findings indicated that cognitively simple task-based interactions led to more implicit CF in FTF, while cognitively complex condition led to more implicit CF in SCMC.

Table 2-12 Frequency of Corrective Feedback Types Provided by a NS*

Study	Implicit CF in FTF	Implicit CF in SCMC	Explicit CF in FTF	Explicit CF in SCMC
Baralt (2013)**	8.61, 7.83; 9.17, 8.56 (100%)	8.88, 8.56; 6.88, 4.24 (100%)	N/A*	N/A*
Fitze & McGarrell (2008)	80 (100%)	7 (100%)	0 (0%)	0 (0%)
Gurzynski-Weiss & Baralt (2014)	68 (42%)	62 (41%)	95 (58%)	90 (59%)
Rassaei (2017)	244 (100%)	235 (100%)	N/A*	N/A*
Yilmaz (2012)**	15.75, 16	15.5, 13.75	11.75, 11.63	12.5, 8.25
Yilmaz & Yuksel (2011)**	15.71 (100%)	14.53 (100%)	N/A*	N/A*

*Note: All the studies in this table compared FTF versus text-SCMC, except for Rassaei's (2017) study. Rassaei compared FTF versus voice-SCMC. N/A: Researchers did not investigate explicit CF.
**Note: Baralt (2013), Yilmaz (2012), and Yilmaz and Yuksel (2011) only provided the mean calculation for the frequency of corrective feedback instances. Baralt compared cognitively complex condition (+C) versus cognitively simple condition (-C) in both modes. FTF+C: *M* = 8.61 (Treatment 1), *M* = 7.83 (Treatment 2); FTF-C: *M* = 9.17 (Treatment 1), *M* = 8.56 (Treatment 2); SCMC+C: *M* = 8.88 (Treatment 1), *M* = 8.56 (Treatment 2); SCMC-C: *M* = 6.88 (Treatment 1), *M* = 4.24 (Treatment 2). Yilmaz (2012) compared recast versus explicit correction with two target forms: plural and locative morphemes. FTF: recasts - *M* = 15.75 (plural), *M* = 16 (locative); explicit correction - *M* = 15.5 (plural), *M* = 13.75 (locative). SCMC: recasts - *M* = 11.75 (plural), *M* = 11.63 (locative); explicit correction - *M* = 12.5 (plural), *M* = 8.25 (locative).

Corrective feedback timing

CF timing is important to SLA because it might impact L2 learners' noticing and incorporation of the CF received. CF timing can be immediate or delayed; that is, L2 learners may receive CF immediately after the occurrence of their linguistic errors or some turns later. As Lai, Fei, and Roots (2008) pointed out, immediate CF requires less working memory than delayed; therefore, it is easier for L2 learners to notice immediate feedback. According to Schmidt (1990), noticing feedback is important because "noticing is the necessary and sufficient condition for converting input to intake" (p. 129). When learners notice CF, they are more likely to incorporate it into their language production; so consequently, it contributes to their L2 development (Sotillo, 2005).

Only one study (Lai & Zhao, 2006) examined the effect of immediate versus delayed CF on L2 learners' potential learning in CMC versus FTF mode. Lai and Zhao (2006) reported that L2 learners probably did not notice most recasts in text-SCMC because about 50% of them (eight out of 17) did not happen immediately after the occurrence of the linguistic error. Although most recasts in text-SCMC were embedded in sentences as opposed to being presented in isolation, the researchers also observed little noticing of recasts in FTF

interactions (18%). That was puzzling because all of the recasts in the FTF mode occurred immediately after the linguistic error and 47% of them were presented in isolated phrases or words.

Linguistic focus

As shown in Table 2-13, only five (out of 35) studies reported the linguistic focus of CF during task-based interactions. In the following subsections, I present the findings on syntax and lexicon separately from pronunciation and spelling because not all four studies addressed the last two linguistic issues.

In considering syntax across modes of communication, as Table 2-13 illustrates, three studies (Lai & Zhao, 2006; Yuksel & Inan, 2014; Zeng, 2017) showed that interlocutors focused more on syntax in SCMC than FTF. In contrast, in Loewen and Reissner's (2009) and Gurzynski-Weiss and Baralt's (2014) studies, learners focused more on syntax in FTF than in SCMC. The presence of a teacher or researcher either monitoring or interacting with the learners during the tasks might have impacted the linguistic focus (Loewen & Reissner, 2009). In Loewen and Reissner's study, the learners were monitored by a teacher in the FTF mode but not in the SCMC mode; in Gurzynski-Weiss and Baralt's study, the learners interacted with a researcher.

Table 2-13 Occurrences of Linguistic Focuses

Study	FTF					Text-SCMC				
	syn*	lex*	pron*	spel*	other	syn*	lex*	pron*	spel*	other
Gurzynski-Weiss & Baralt (2014)	41 (25%)	106 (65%)	5 (3%)	N/A*	12 (7%)	31 (20%)	107 (70%)	N/A*	1 (1%)	13 (9%)

Table 2-13 Continued

Study	FTF					Text-SCMC				
	syn*	lex*	pron*	spel*	other	syn*	lex*	pron*	spel*	other
Lai & Zhao (2006)*	28%	39%	11%	N/A*	5%	65%	17%	N/A*	N/A*	13%
Loewen & Reissner (2009)	39 (36%)	38 (36%)	23 (21%)	7 (7%)	N/A*	5 (20%)	5 (20%)	N/A*	15 (60%)	N/A*
Yuksel & Inan (2014)*	10.97 (45%)	11.69 (48%)	N/A*	N/A*	1.62 (7%)	10.91 (47%)	10.63 (46%)	N/A*	N/A	1.44 (6%)
Zeng (2017)	16 (25%)	42 (59%)	N/A*	8 (11%)	N/A*	21 (30%)	35 (54%)	N/A*	14 (22%)	N/A*

*Note: N/A: Data is not available from the study; syn: syntax; lex: lexicon; pron: pronunciation; spel: spelling; Lai and Zhao (2006) did not provide the raw data, and Yuksel and Inan (2014) only provided the mean for the linguistic focuses.

As for lexicon, most of the studies (n = 4) indicated that learners focused more on lexicon in FTF than in SCMC interactions. Having in mind that lexicon affects communication of meaning more than syntax, as Yuksel and Inan (2014) suggested, the FTF mode probably generated more focus on lexicon due to the higher frequency of negotiations of meaning in FTF than in text-SCMC interactions. In Yuksel and Inan's study, most of the negotiations of meaning in the FTF mode involved confirmation and comprehension checks. That finding suggests that learners probably focused more on lexicon in FTF than in SCMC because text-SCMC allows for a slower pace of interaction and for accessibility of the previous messages. Since learners have more time to reflect on both the input received and their language production in text-SCMC, they do not need to use confirmation or comprehension checks as much as in FTF.

Although learners focused more on lexicon in FTF, four out of the five studies (Gurzynski-Weiss & Baralt, 2014; Lai & Zhao, 2006; Yuksel & Inan, 2014; Zeng, 2017) reported that learners noticed more language errors, including lexical and syntactic errors, in

SCMC than in FTF (noticing was measured either through stimulated recall or questionnaire). As Lai and Zhao (2006) explained, the longer processing time and relative permanency of text are two unique features of text-SCMC that might have contributed to learners noticing more linguistic errors. Also, Lai and Zhao pointed out that the lack of paralinguistic cues might have lowered learners' time pressure to respond, allowing them to spend more time monitoring and refining their output.

Out of the 35 included studies, only Loewen and Isbell's (2017) study investigated pronunciation across modes of communication. They examined FTF and voice-SCMC task-based interactions within the same-first language (L1) and different-L1 dyads. Loewen and Isbell identified 158 LREs (out of 1,114 LREs) that focused on pronunciation. Compared to suprasegmental features (e.g., intonation, word stress), segmental features were more prevalent (90%), meaning that mispronunciation of vowels and consonants triggered LREs and affected intelligibility in interactions between L2 learners. Although more pronunciation-related LREs were identified in FTF (16%) than in voice-SCMC (11%), the difference was not statistically significant. According to Loewen and Isbell, this lack of difference might be because phonological breakdowns in communication do not rely on visual cues, which were not required in either FTF or voice-SCMC interactions.

Only one study (Zeng, 2017) reported information about learners' attention to spelling while performing a task involving written reconstruction of a text in both modes. Zeng (2017) found a significant difference in the frequency of focus on spelling in text-SCMC (n = 14) and FTF (n = 8) interactions. Questionnaire results showed that learners who reported attention to spelling stated that SCMC facilitated the noticing of spelling errors. Zeng explained that the

unique features of text-SCMC, such as visibility of interactions, might have drawn L2 learners' attention to spelling.

Uptake

Uptake has been of interest in SLA because it is a type of pushed output—a key element of interaction (Smith, 2005). Uptake is a general response from a L2 learner to CF received (Sotillo, 2005). The quality of uptake is measured in terms of the incorporation (i.e., successful uptake) or lack thereof (i.e., unsuccessful uptake) of feedback received. Researchers (e.g., Chen & Eslami, 2013) have found that successful uptake facilitated L2 learning because successful uptake demonstrated that learners noticed their interlanguage gaps. In other words, when L2 learners responded to feedback received from interlocutors by incorporating the linguistic information into production, learners improved their L2 grammatical and lexical knowledge.

Out of the 35 included studies**,** four of them (Gurzynski-Weiss & Baralt, 2014; Gurzynski-Weiss & Baralt, 2015; Rouhshad et al., 2016; Tam et al., 2010) investigated L2 learners' responses to CF as successful uptake (i.e., incorporation of the CF) or uptake (i.e., confirmation or acknowledgement of the CF). As Table 2-14 shows, all four studies identified more successful uptakes in FTF than in text-SCMC interactions. Tam et al. (2010) examined interactions between high and low proficiency learners and found that the low proficiency learners produced more uptakes and successful uptakes than the high proficiency learners in both modes, especially in FTF.

Table 2-14 Occurrences of Uptakes and Successful Uptakes

Study	Proficiency level	Uptake (FTF)	Uptake (SCMC)	Successful Uptake (FTF)	Successful Uptake SCMC)
Gurzynski-Weiss & Baralt (2014)	Intermediate	48 (32%)	31 (38%)	102 (68%)	50 (62%)
Gurzynski-Weiss & Baralt (2015)	Intermediate	63 (38%)	101 (66%)	70 (43%)	27 (18%)
Tam et al. (2010)	Low	71 (40%)	25 (42%)	22 (12%)	3 (5%)
	High	56 (32%)	5 (11%)	9 (5%)	2 (4%)
Rouhshad et al. (2016)	Intermediate	N/A*	N/A*	23 (59%)	4 (31%)

*Note: N/A: Rouhshad et al. (2016) did not investigate occurrences of uptakes.

The included studies identified two additional learner responses to feedback: output modification (Rouhshad et al., 2016; Tam et al., 2010) and the LRE outcome (Zeng, 2017). Rouhshad et al. (2016) examined output modification, which differs from successful uptake. Rouhshad et al. defined successful uptake as "successful repetition of corrective feedback" (p. 524). As Ammar and Spada pointed out, the difference between successful uptake and output modification is that "the former 'is not necessarily evidence of hypothesis reevaluation, noticing and L2 learning, but the latter reflects a certain level of analysis and hypothesis reevaluation' because it originates from the person responsible for the error" (as cited in Rouhshad et al., 2016, p. 520). As illustrated in Table 2-15, overall, Rouhshad et al. and Tam et al. (2010) identified more occurrences of output modifications in FTF than in text-SCMC. However, in a closer analysis between high and low proficiency learners, Tam et al. observed that high proficiency learners produced a higher percentage of output modifications in SCMC than in FTF.

Table 2-15 Occurrences of Output Modification

Study	Proficiency level	FTF	SCMC
Tam et al. (2010)	Low	56 (32%)	15 (25%)
	High	81 (46%)	30 (65%)
Rouhshad et al. (2016)	Intermediate	25 (63%)	3 (27%)

According to Rouhshad et al. (2016), the lower percentage of successful uptake and output modifications in text-SCMC—compared to FTF—was probably due to disruptive turn adjacency (i.e., multiple turn delays between elements of negotiations) in SCMC interactions. Rouhshad et al. stated that the L2 learners' intermediate proficiency level "may explain the relative infrequency of output modifications in both modes since they may not have the linguistic resources to modify the trigger of negotiations" (p. 520). The researchers concluded that successful uptake and output modification were influenced by the mode of interaction. According to Rouhshad et al., CF was more likely to be followed by successful uptake in FTF than in text-SCMC mode.

Only Zeng's (2017) study investigated the LRE outcome (i.e., correctly resolved, incorrectly resolved, and unresolved). Based on 71 and 65 LREs in FTF and text-SCMC interactions between L2 learners, Zeng found a statistically significant difference in correctly resolved LREs in SCMC (SCMC 81.54% versus FTF 71.83%). She also found a statistically significant difference in incorrect LREs in FTF and SCMC. The percentage of incorrectly resolved LREs in FTF (12.68%) was almost three times that in SCMC (4.62%). Zeng stated that the visibility feature of text-SCMC mode might explain the greater accuracy in that mode. Another feature that may have contributed to more correctly resolved LREs in SCMC is that

"messages in SCMC are retrievable, which can help relieve memory load, thus making learners concentrate more on the collaborative effort in identifying and solving emerging language problems" (Zeng, 2017, p. 269).

In sum, few (n = 2) studies suggested that the learners' proficiency level impact the number of negotiations generated in FTF and CMC interactions within the learner-learner grouping type. Several (n = 21) studies indicated that the communication mode, task type, and presence of a teacher may influence the quantity and quality of negotiations. This review's findings show that the presence of a teacher, a NS, or a higher proficiency learner contributes to learners' L2 development through FTF and CMC interactions by promoting negotiations, providing input, and encouraging output modifications. In terms of CF, interlocutors tend to implement implicit feedback and focus more on lexicon. Also, interlocutors apply more instances of CF in FTF than in SCMC mode. Although more CF occurs in FTF, text-SCMC promotes more noticing of CF and interlanguage gaps because of its unique features (e.g., visibility of the messages). The few studies that investigated uptake suggested that due to the disruptive turn adjacency found in text-SCMC mode, CF is more likely to be followed by a successful uptake in FTF than in text-SCMC interactions.

Research question 2

The second research question guiding this review is: To what extent do the following factors impact adult learners' second language development in face-to-face and computer-mediated task-based interactions?

a. Grouping type: NS-learner, learner-learner; language proficiency level;

b. Corrective feedback: type (explicit or implicit); provider (teacher, NS, or learner), timing (immediate or delayed); and linguistic focus (syntax, lexicon, pronunciation, or spelling); and
c. Uptake: no uptake, uptake, or successful uptake

The factors will not be able to be addressed separately because most of the included studies did not point to one particular interactional feature (e.g., CF, uptake) that impacted adult learners' L2 development in FTF and CMC interactions. Instead, most studies indicated that a combination of interactional features might have contributed to L2 development. Also, although all 35 included studies concluded that FTF and CMC interactions facilitated language learning, only twelve (34%) studies (e.g., Blake, 2009; Bueno Alastuey, 2011) measured the impact of interactions on learners' L2 development in each modality. Therefore, I will answer this research question in two parts: (a) studies that measured L2 development through FTF and CMC interactions and (b) studies that claimed that FTF and CMC interactions facilitated L2 learning.

Studies that measured L2 development through FTF and CMC interactions

Twelve (34%) included studies (e.g., Blake, 2009; Yilmaz, 2012) measured L2 development through FTF and CMC interactions. These 12 studies, which mostly investigated Spanish as a L2 (n = 6, 50%), focused on different linguistic aspects of L2 development. Four studies focused on a target form (e.g., Rassaei, 2017), four focused on oral production (e.g., Abrams, 2011), two measured vocabulary (e.g., Yanguas, 2012), one examined pragmatics (Sykes, 2005), and one study investigated listening and reading skills (Moreno-Lopez & Miranda-Aldaco, 2013) through task-based interactions.

A group of four studies examined FTF versus SCMC interactions between a L2 learner and a NS (i.e., a teacher or a researcher) and focused on the following particular target forms: definite and indefinite articles in English (Rassaei, 2017), two plural and locative morphemes in Turkish (Yilmaz, 2012; Yilmaz & Yuksel, 2011), and past subjunctive in Spanish (Baralt, 2013). Most of the studies (n = 3) compared FTF versus text-SCMC. Rassaei (2017), however, compared FTF versus voice-SCMC. These four studies (Baralt, 2013, Rassaei, 2017; Yilmaz, 2012; Yilmaz & Yuksel, 2011) measured the effectiveness of CF, especially recasts, in the development of the target form. In Yilmaz and Yuksel's (2011) study, analysis of two oral production tasks which were used as posttests to measure learners' performance on the target forms (i.e., plural and locative morphemes in Turkish) showed that recasts through text-SCMC resulted in better oral production performance of the target forms than FTF interactions. Despite the difference in the level of saliency between the two target structures, no statistically significant difference between the scores on the plural versus locative recasts was found between FTF and text-SCMC modes.

In another study, Yilmaz (2011) applied recognition, oral production, and comprehension tasks on both immediate and delayed posttests to measure learners' development of the target forms (i.e., plural and locative morphemes in Turkish) after receiving either explicit CF (i.e., explicit correction) or implicit CF (i.e., recast). The researcher found that, regardless of the communication mode, the explicit CF group outperformed the implicit CF group in the oral production and comprehension tasks on both posttests. According to the researcher, explicit CF facilitated noticing of CF and allowed learners to make a comparison of the target and nontarget forms. In terms of the communication mode, regardless of the CF used, text-SCMC was more effective than FTF

mode, specifically on oral production and recognition tasks. In both of these studies, learners performed better in text-SCMC than in FTF mode because the text-SCMC allowed for greater processing time and rereading of the messages, which facilitated noticing of CF and language use (Yilmaz, 2012; Yilmaz & Yuksel, 2011).

Rassaei (2017) and Baralt (2013) also focused on the effectiveness of CF in the development of specific target forms. Rassaei examined CF (i.e., recast) in the development of a target form through FTF versus SCMC interactions between a L2 learner and a teacher. Results of pre- and posttests (i.e., oral production task and error correction test) indicated that recasts provided through SCMC video-chat and FTF modes were effective. No statistically significant difference was found between the two modes in terms of the effectiveness of recasts applied to correct the use of articles in L2. Also, stimulated recall interviews suggested that L2 learners were able to notice recast corrections in both SCMC video-chat and FTF modes, with no statistically significant difference between the modes. In another study, Baralt implemented pre- and posttests (i.e., productive tasks and a receptive multiple-choice test) to measure learners' L2 development of the target form (i.e., Spanish past subjunctive). Results suggested that recasts together with increases in task complexity led to more learning of the target form, however, only in the FTF mode. In contrast, the text-SCMC mode led to more L2 learning of the target form when learners performed a cognitively simple task.

Another group of four studies (Abrams, 2011, Blake, 2009; Bueno Alastuey, 2011; Payne & Whitney, 2002) focused on the development of L2 oral production through task-based interactions. Two main factors contributed to learners' oral production development: features of SCMC (e.g., Payne & Whitney, 2002) and grouping type (e.g., Blake, 2009). For example, Blake (2009) found that intermediate L2 learners improved their oral fluency more

through text-SCMC than FTF interactions. For six weeks, two separate groups—FTF and text-SCMC—reviewed new vocabulary and engaged in a discussion among peers and a NS (who was the teacher). During the discussion in both modes, the NS asked open-ended questions to encourage learners to participate, made comments, and corrected learners' linguistic errors whenever necessary. Blake used pre- and posttests to measure FTF and text-SCMC groups of learners' oral fluency. Pre- and posttests required learners to record a 60-second open-ended response to a written prompt. Learners' oral fluency was measured based on the following aspects: speaking rate, phonation time ratio, articulation rate, mean length of run, and average length of pauses. Blake's findings revealed that the text-SCMC group developed more oral fluency than the FTF group. Text-SCMC learners showed gain scores in all measures, expect for articulation rate. Blake concluded that the text-SCMC features and the NS's presence in the interactions were key factors for L2 learners' oral fluency development in the SCMC mode. Compared to FTF, the text-SCMC mode was more conducive to L2 learning because text-SCMC allowed for overlapping turns and visibility of messages. Such text-SCMC features might have encouraged learners to produce more output and facilitated more noticing of their interlanguage gaps and more CF received than in the FTF mode.

In another study, Bueno Alastuey (2011) investigated intermediate learners' L2 oral and general proficiency by comparing voice-based SCMC interactions between different-L1 speakers versus FTF interactions between the same-L1 speakers. The researcher measured learners' L2 development through pre- and posttests (i.e., Oxford Placement Test), and an oral presentation. The language aspect of the oral presentation was scored based on fluency, intelligibility, and accuracy (grammar and vocabulary). The different-L1 speakers who used

the voice-based SCMC mode scored higher than the same-L1 speakers who used the FTF mode. Bueno Alastuey explained that the voice-based SCMC group probably showed more L2 improvement than the FTF group because of two factors: the SCMC features and the interlocutor who was of a different-L1. Unlike FTF, the voice-SCMC mode encouraged learners to use the L2 more because SCMC lacked visual cues and required learners to interact with a peer of a different-L1. As a result, different-L1 speakers' voice-SCMC interactions promoted more input, negotiation of meaning, pushed output, and significantly higher language proficiency achievement than the same-L1 speakers' FTF interactions.

Two studies (De la Fuente, 2003; Yanguas, 2012) focused on vocabulary acquisition through FTF and SCMC interactions between learners of Spanish as a L2. Besides applying a pretest, De la Fuente (2003) used four posttests (i.e., receptive and productive, oral and written) to measure learners' acquisition and retention of target vocabulary words. Results indicated that both FTF and text-SCMC modes are effective in developing written receptive and productive acquisition and retention of L2 vocabulary. Nevertheless, FTF was more effective in promoting oral acquisition of L2 target words than text-SCMC. Yanguas (2012) used pre- and posttest production, recognition, and listening assessment tasks to measure target words. Results suggested a link between negotiated learner-learner interaction and L2 acquisition in terms of recognition of target words. However, Yanguas's study did not find evidence to support the claim that negotiated interaction through FTF, video CMC, or audio CMC leads to full acquisition of new vocabulary. The only significant difference across the three modes was in the listening comprehension measure. Probably due to the lack of visual cues, the audio CMC group significantly outperformed the other two groups.

One study (Sykes, 2005) examined pragmatics through task-based interactions. Sykes (2005) used role-play tasks as pre- and posttests to assess learners' pragmatic development of invitation refusal in Spanish. The researcher compared the following three groups: FTF, text-SCMC, and voice-SCMC. Learners from all three groups performed more like native Spanish speakers in the formal situation than in the informal situation. However, the text-SCMC group outperformed the other groups in terms of variety and complexity of strategies used because the lack of paralinguistic cues makes learners be more explicit in how they communicate in text-SCMC (Sykes, 2005).

Finally, one study (Moreno-Lopez & Miranda-Aldaco, 2013) investigated listening and reading skills through FTF and CMC interactions. Compared to FTF classes, where no technology was applied, CMC classes helped beginner and intermediate Spanish learners improve reading and listening skills. Based on pre- and posttest results, the learners from the CMC classes, which involved SCMC and ACMC activities, had significantly higher scores in reading and listening tests than the learners from the FTF classes. Being actively engaged in using acquired knowledge and negotiation of meaning might have helped learners enhance their reading and listening skills.

Studies that claimed that FTF and CMC interactions facilitated L2 learning

Twenty-three (66%) included studies claimed that FTF and CMC interactions facilitated L2 development. Five of them were clear in suggesting that the presence of a teacher, a NS, or a higher proficiency learner impacted L2 development. However, the other studies (n = 18) did not point to one particular interactional feature (i.e., negotiation of meaning and form, CF, or uptake) that impacted language learning through interactions.

Instead, they indicated that a combination of interactional features may have contributed to learners' L2 development.

A group of five studies (Fernandez-Garcia & Arbelaiz, 2003; Fitze & McGarrell, 2008; Freiermuth, 2001; Loewen & Reissner, 2009; Tam et al., 2010) suggested that the presence of a teacher, a NS, or a higher proficiency learner contributed to L2 learners' learning through FTF and text-SCMC interactions. Loewen and Reissner (2009) found that the presence of the teacher might have increased the frequency of negotiations and encouraged learners to pay closer attention to accuracy, as well as to meaning. Freiermuth (2001) and Fitze and McGarrell (2008) observed that the NS encouraged learners to produce more output by engaging them in FTF and SCMC interactions through questions. Also, Fernandez-Garcia and Arbelaiz (2003) found that the presence of the NS promoted more language negotiations with L2 learners. Furthermore, Tam et al. (2010) reported that interactions between high and low proficiency L2 learners contributed to SLA because the proficiency level gap promoted negotiations, which provided high and low proficiency learners with input and encouraged output modifications.

Another group of studies (n = 18) indicated that learner-learner interactions contributed to L2 learning due to a combination of interactional features provided by each mode. Out of 18, six studies (Gurzynski-Weiss & Baralt, 2014; Gurzynski-Weiss & Baralt, 2015; Hamano-Bunce, 2010; Kim, 2014; Knight, 2005; Rouhshad et al., 2016) concluded that, compared to CMC, the quantity and quality of negotiations in FTF environment could promote more opportunities for language learning. FTF interactions resulted in more negotiations—especially of meaning—than CMC interactions. Kim (2014) explained that learners tended to avoid negotiations in text-SCMC because they are more time-consuming

than in FTF mode. Moreover, FTF interactions resulted in more input, language productions, modified output, CF, and successful uptake (Gurzynski-Weiss & Baralt, 2014; Gurzynski-Weiss & Baralt, 2015; Hamano-Bunce, 2010; Kim, 2014; Knight, 2005; Rouhshad et al., 2016). The delay and disrupting turn-taking adjacency in text-SCMC seemed to have partially inhibited learners from participating and collaborating in text-SCMC compared to FTF interactions (Hamano-Bunce, 2010). This group of six studies suggests that CMC should not replace FTF mode interactions in SLA. Instead, CMC should be applied in addition to FTF interactions as a way to enhance learners' opportunities for L2 development.

A different group of six (out of 18) studies (Bohlke, 2003; Fitze, 2006; Kim, 2017; Nguyen & White, 2011; Yanguas & Flores, 2014; Zeng, 2017) also claimed that learner-learner interactions facilitated L2 learning due to a combination of interactional features. However, these studies indicated that SCMC could contribute to language learning more than FTF interactions. Nguyen and White (2011), Fitze (2006), and Bohlke (2003) found that text-SCMC interactions benefited L2 learning more than FTF interactions because they equalized participation among learners. Text-SCMC created more balanced participation than FTF because text-SCMC made learners feel more comfortable expressing themselves while not physically present with their interlocutors and allowed them to overlap turns—that is, learners did not have to wait for their turns to participate. Furthermore, Yanguas and Flores (2014) discovered that, compared to FTF, audio-SCMC yielded a greater willingness to communicate due to affective variables. Audio-SCMC most likely made learners feel less anxious and more motivated because of factors such as anonymity and positive attitudes towards technology. Moreover, compared to FTF, text-SCMC provided L2 learners more opportunities to use a wider range of vocabulary (Fitze, 2006). According to Fitze (2006), text-SCMC encouraged

learners to use a wider range of vocabulary than in the FTF mode because text-SCMC lacks paralinguistic cues (e.g., gestures) that are usually applied to convey information in FTF interactions. As a result, text-SCMC encouraged learners to use more language functions (e.g., show agreement) and express themselves in a more explicit language than in the FTF mode. Furthermore, Kim (2017) and Zeng (2017) suggested that text-SCMC mode might be more beneficial to language learning because it led L2 learners to pay more attention to form and promoted more accuracy. Zeng explained that learners focused more on language use in text-SCMC because of the text-SCMC's unique features. For example,

> the visual display may magnify the visibility of language errors […], the lack of social context cues may push the learners to resort solely to text-based communication, thereby facilitating easier noticing of language errors […], the accessibility of the previous messages allows learners to move back and forth through the interactions, thus increasing the changes of spotting the language problems (Zeng, 2017, p. 268).

Finally, six studies (out of 18) (Baralt & Gurzynski-Weiss, 2011; Boonsue, Jansem, & Srinaowaratt, 2015; Lai & Zhao, 2006; Loewen & Isbell, 2017; Warschauer, 1996; Yuksel & Inan, 2014) agreed that FTF and text-SCMC interactions provided L2 learners with opportunities for language learning but in different ways. As Boonsue, Jansem, and Srinaowaratt (2015) pointed out, "FTF learners could benefit from the sharing physical space and availability of audio-visual for they could immediately indicate their non-understanding during the discussions" (pp. 106-107). As a result, FTF promoted more negotiations and language production than SCMC. On the other hand, compared to FTF, SCMC promoted more noticing due to longer processing time, self-editing capacity, and greater saliency of errors (Lai & Zhao, 2006; Yuksel & Inan, 2014). Furthermore, text-SCMC resulted in more

equal participation, more accuracy, and use of lexically and syntactically more formal and complex language (Boonsue et al., 2015; Warschauer, 1996). Also, Baralt and Gurzynski-Weiss (2011) observed that compared to FTF, anxiety was lower in text-SCMC. However, no significant difference in anxiety level were found between the two modes, suggesting that both modes should be used. Based on the different contributions of both modes, this group of studies supports the conclusion that FTF and SCMC should supplement each other.

In sum, twelve studies measured the impact of interactions in SLA and found that grouping type, CF, and the unique features the communication modes, especially of text-SCMC, facilitated learners' L2 development. Most (n = 23) studies claimed that FTF and CMC interactions contributed to L2 development as a result of grouping types or a combination of interactional features, such as negotiation of meaning and CF.

Discussion

This systematic literature review examined 35 comparative studies on FTF and CMC environments in order to identify to what extent grouping type, CF, and learner's uptake impact (a) the frequency and type of negotiation episodes and (b) adult learners' L2 development in FTF and CMC task-based interactions.

This review supports previous review studies (e.g., Ziegler, 2016) indicating that there is a positive connection between CMC and FTF interactions and SLA. However, this review cannot conclude which mode of communication (i.e., FTF or CMC) better develops SLA through task-based interactions. Instead, this review's findings suggest that both modes complement each other in creating opportunities for L2 development. The Interaction Hypothesis (Long, 1996) argues that interactions can facilitate L2 development by promoting negotiations, comprehensible input, pushed output, and noticing. Compared to text-SCMC,

FTF interactions are faster paced, involve immediate responses, and provide paralinguistic cues (e.g., facial expressions). As a result, FTF interactions promote more negotiation episodes (especially of meaning), input, language production, modified output, CF, and successful uptake (Hamano-Bunce, 2010; Kim, 2014; Knight, 2005; Rouhshad et al., 2016). On the other hand, text-SCMC's unique features include visibility of text, accessibility to previous text, time delay, overlapping turns, and lack of the physical presence of the interlocutor. Therefore, text-SCMC interactions promote more accuracy, attention to form, noticing, and more balanced participation among interlocutors (e.g., Kim, 2017; Nguyen & White, 2011; Warschauer, 1996; Zeng, 2017). In short, the unique features of FTF and text-SCMC allow for both modes to complement each other in promoting opportunities for language learning.

Although this review's findings indicate that FTF interactions result in more negotiation episodes and language production, they also show that SCMC produces better quality output. Studies (e.g., Lai & Zhao, 2006; Warschauer, 1996) showed that the features of text-SCMC (e.g., lack of paralinguistic cues, extra processing time) forced learners to rely on the L2 to express themselves. As a result, L2 learners used a higher level of language complexity (Warschauer, 1996), applied a wider range of vocabulary (Fitze, 2006), were more accurate (Kim, 2017), and applied more self-corrections (Lai & Zhao, 2006) in text-SCMC than FTF environment. This finding corroborates Golonka et al.'s (2014) review, which discovered that language complexity significantly increased in chat, indicating strong support for the use of text-SCMC in language learning. In the current study, the fact that learners were able to use better quality output in text-SCMC shows that they might have linguistic knowledge that they may not always apply in FTF interactions. By not applying their

linguistic knowledge, L2 learners "may fail to expand their interlanguage" (Kim, 2017, p. 231). This finding suggests that interactions in SLA should not only focus on promoting negotiations but also good quality output so that learners develop their L2 skills based on knowledge they already have.

It is important to point out that as technology advances, it may facilitate or inhibit L2 learning through text-CMC. For example, text-CMC's spelling and grammar check features not only alert L2 learners to spelling and grammatical errors, but they can also provide definitions and correct learners' linguistic errors. Another new text-CMC feature is the automatic choices of responses. For instance, Gmail provides three options of possible short responses at the bottom of emails. This advancement in technology is beneficial to L2 development in terms of providing learners with input. However, it can inhibit L2 development as it does not encourage learners to engage in negotiations of meaning or form, produce pushed output, correct, or reflect on their linguistic errors. None of the studies included in this review used those new text-CMC's features. Therefore, the implementation of the advancement in technology may change this review's findings with regards to CMC producing better quality output.

Practical Implications

This review provides implications for teachers and researchers who want to better understand L2 development through FTF and CMC interactions in order to improve the L2 teaching and learning process.

The findings of this review invite teachers to incorporate FTF and CMC interactions as part of their teaching practices. Interactions can contribute to L2 learning because they can promote language negotiation, CF, noticing of interlanguage gaps, and pushed output. In

particular, teachers should implement both FTF and text-SCMC task-based interactions because their unique features complement each other in promoting language learning opportunities. It is also important for teachers to ensure that learners have typing skills in order to prevent typing issues from negatively affecting the quality and quantity of students' text-SCMC interactions. By incorporating task-based interactions in their teaching practices, teachers prepare learners to be active language learners in and out of the classroom.

The findings of this review present implications to researchers regarding research gaps in the field of SLA through interactions. First, as the findings revealed, there is a need for further investigation on learner uptake and CF. Future studies on CF should consider feedback timing (i.e., immediate and delayed feedback) as an additional variable which may influence the impact of CF on SLA. Second, the reduced number of studies (n = 35) comparing FTF and CMC interactions—especially utilizing similar tasks and the same participants—calls for further investigation. More researchers should investigate the implementation of similar tasks with the same participants in both FTF and CMC environments. By controlling for these two variables, researchers reduce the study variables and, therefore, may advance the knowledge of how each communication mode facilitates SLA and complements the other. Third, this review's findings call for further research on L2 learning of target grammatical forms through FTF and CMC interactions. Out of the 35 included studies, only five (e.g., Kim, 2017) investigated interactions focusing on particular target forms. Finally, despite most included studies (n = 23) claiming that FTF and CMC interactions facilitate SLA, less than half of the studies (n = 12) measured learners' L2 development through interactions. This finding indicates that more researchers should measure learners' L2 development when examining the effectiveness of FTF and CMC interactions in SLA.

Limitations

Different from narrative literature reviews or meta-analyses, systematic literature reviews follow a specific methodology that allows for the inclusion of all relevant studies—qualitative, quantitative, and mixed-methods—through standardized search and screening procedures. However, the nature of this study may lead to some limitations such as the lack of quantitative support since a systematic literature review does not allow for effect size comparison. Another limitation is that not all existing studies in this field may have been captured during the search process due to the key terms used in the methodology. Including other synonyms and potential relevant key terms during the literature search process might yield a greater number of studies that could possibly fit the inclusion criteria. Moreover, the fact that this review focused only on studies published in peer-reviewed journals is another limitation. Other studies, such as unpublished dissertations and theses, were excluded to avoid overrepresentation of findings since those studies often become subsequent peer-reviewed articles. Despite these limitations, this review can strengthen the findings of existing and future meta-analysis on FTF and CMC interactions.

Conclusion

This systematic literature review examined how FTF and CMC interactions among adult L2 learners (a) affect frequency and type of negotiation episodes and (b) promote L2 development considering three moderating variables: grouping type, CF, and uptake. Based on 35 comparative studies, this review's findings suggest that both FTF and CMC interactions have the potential to contribute to SLA. Grounded in the Interaction Hypothesis (Long, 1996), this review indicates that both FTF and CMC modes complement each other in creating opportunities for L2 development. Moreover, despite FTF interactions resulting in more

negotiations episodes and language production, text-SCMC interactions tend to produce better quality output. Regarding the moderating variables, this review suggests that the presence of a teacher, a NS, or a higher proficiency learner contributes to learners' L2 development through FTF and CMC interactions by promoting negotiations, providing input, and encouraging output modifications. Moreover, interlocutors implement CF, especially implicit CF, more often in FTF than in CMC mode. Although more CF occurs in FTF, text-SCMC promotes more noticing of CF and interlanguage gaps because of its unique features (e.g., visibility of the messages). The few studies that investigated uptake indicate that due to the disruptive turn adjacency found in text-SCMC mode, CF is more likely to be followed by a successful uptake in FTF than in text-SCMC interactions. This systematic literature review is significant because there is no recent systematic literature review on comparative studies that examines FTF versus CMC interactions in SLA. Furthermore, this study provides several recommendations and implications for educators and researchers to improve the L2 teaching and learning process.

CHAPTER III

EFFECTS OF EXPLICIT AND IMPLICIT CORRECTIVE FEEDBACK IN FACE-TO-FACE VERSUS COMPUTER-MEDIATED INTERACTIONS

Introduction

Face-to-face (FTF) and computer-mediated interactions can facilitate second language acquisition (SLA) because they promote interactional features, such as corrective feedback (CF) (Zeigler, 2016). CF is crucial for language learning because in addition to alerting second language (L2) learners to the existence of a linguistic error, CF also has the potential to promote other essential interactional features, such as comprehensible input, modified output, and noticing of interlanguage gaps (Long, 1996). The Interaction Hypothesis (Long, 1996) argues that comprehensible input, output, and noticing are essential for interactions to contribute to SLA.

CF can be categorized into two types: explicit and implicit (Ellis, 2012). In explicit CF (e.g., metalinguistic feedback), "the corrective force is made clear to the learners" (Ellis & Shintani, 2014, p. 265), whereas in implicit CF (e.g., clarification request), "the corrective force remains covert" (Ellis & Shintani, 2014, p. 265). There is a body of research (e.g., Monteiro, 2014; Rassaei, 2017) in task-based interactions that suggests that both CF types facilitate SLA. However, there are different findings in terms of which CF type is more effective in SLA. Some studies (e.g., Monteiro, 2014) found no differences in the impact of explicit or implicit CF in SLA. For example, using voice-based synchronous computer-mediated communication (SCMC), Monteiro (2014) found that both implicit (i.e., recast) and explicit CF (i.e., metalinguistic feedback) were effective in assisting learners to develop

knowledge of the regular simple past over time. Other studies (e.g., Hosseini, 2012) identified differences in the impact of the two CF types on learners' L2 development. For instance, using asynchronous computer-mediated communication (ACMC), Hosseini (2012) discovered a significant increase in the correct use of prepositions for L2 learners who received explicit CF compared to learners who received implicit CF. In another study, Yilmaz (2012) investigated both CF types in researcher-learner FTF versus text-SCMC interactions. Focusing on the acquisition of two Turkish morphemes, Yilmaz found that, regardless of the communication mode, the explicit CF group (i.e., explicit correction) outperformed the implicit CF group (i.e., recast) in the oral production and comprehension tasks on immediate and delayed posttests. Besides Yilmaz's study, there are no other studies that have investigated or compared the effectiveness of explicit versus implicit CF strategies in FTF and text-based SCMC environments.

Text-SCMC is different from FTF interactions in that "reading and composing messages takes longer than coding and decoding them orally" (Fernandez-Garcia & Arbelaiz, 2003, p. 119). Nevertheless, text-SCMC interactions share similarities with FTF interactions. When describing text-SCMC, Fernandez-Garcia and Arbelaiz (2003) pointed out that "there exists some pressure to keep the conversation going and thus, the resulting flow of the turn-taking sequence resembles that of an oral conversation" (p. 119). Furthermore, both text-SCMC and FTF modes involve real-time communication, short turns, and informal discourse (Yilmaz, 2012).

Having in mind the important role that CF plays in L2 learning through interactions, to better understand the effectiveness of explicit and implicit CF in L2 development in different environments, this study compares FTF versus text-SCMC task-based interactions in terms of

the (a) frequency of explicit and implicit CF; (b) effect of explicit and implicit CF on subsequent L2 development; and (c) participants' perceptions of CF in task-based FTF and text-SCMC interactions in SLA.

Theoretical Framework

This study is grounded in the Interaction Hypothesis (Long, 1996), which supports the connection between interaction and SLA. During interaction, interlocutors employ comprehension and communication strategies (e.g., clarification requests, confirmation checks) to reach mutual understanding resulting in language modifications that benefit L2 acquisition (Long, 1996). In L2 instructional contexts, teachers are encouraged to engage learners in interaction because it "assists incidental language acquisition by providing input and opportunities for output that facilitate L2 development" (Ellis & Shintani, 2014, p. 209). For example, interaction draws learners' attention to linguistic forms and provides learners with opportunities to produce modified output (Ellis & Shintani, 2014).

According to the Interaction Hypothesis, interactions contribute to SLA because they have the potential to promote negotiations of meaning (Long, 1996) and negotiations of form (Lyster, 2001). Negotiation episodes are important in L2 development because they can promote comprehensible input, noticing of interlanguage gaps, pushed output, and interactional modifications, such as CF (Long, 1996).

CF is an important aspect of interaction that facilitates L2 development. When learners receive CF on their errors or when learners produce modified output in response to CF, focus on form and noticing can happen (Ellis, 2012). CF facilitates the process of SLA by providing L2 learners with negative and positive evidence (Ellis & Shintani, 2014). CF provides negative evidence through an indication that "there is a problem in the [L2 learner's]

production because of an error or a perceived difficulty in communication" (Yilmaz, 2011, p. 122). Such negative evidence encourages learners to self-correct errors, modify their output, and notice their interlanguage gaps (Sotillo, 2005). CF can also provide positive evidence, serving as an input-provider because it models target language forms (Ellis & Shintani, 2014). Some CF strategies can provide either negative or positive evidence to L2 learners. For example, a clarification request provides negative evidence as it indicates to L2 learners that there is an issue in their output that needs to be corrected. On the other hand, recast and explicit correction contain positive and negative evidence because these CF strategies not only indicate that there is an error in learners' utterances but also correct the errors.

CF strategies can be categorized into two types: explicit and implicit (Ellis, 2012). As Ellis and Shintani (2014) pointed out, the difference between the two types of CF is that in explicit CF, "the corrective force is made clear to the learners" (p. 265); in contrast, in implicit CF, "the corrective force remains covert" (p. 265). Examples of explicit CF are explicit corrections, metalinguistic feedback, and elicitations, whereas recasts, repetitions, and clarification requests are examples of implicit CF.

Furthermore, CF timing plays an important role in SLA because it might impact L2 learners' noticing and incorporation of the CF received. CF timing can be immediate or delayed; in other words, L2 learners may receive CF immediately after the occurrence of their linguistic errors or some turns later. Immediate CF requires less working memory than delayed; therefore, it is easier for L2 learners to notice immediate feedback (Lai, Fei, & Roots, 2008). Noticing CF is important because "noticing is the necessary and sufficient condition for converting input to intake" (Schmidt, 1990, p.129). When learners notice CF, they are

more likely to incorporate it into their language production; consequently, it contributes to their L2 development (Sotillo, 2005).

Salience also plays a role in determining the effectiveness of CF. Salience refers to "how easy it is to hear or perceive a given structure" (Goldschneider & DeKeyser, 2001, p. 22). More salient CF is easier for L2 learners to notice than less salient CF (Yang & Lyster, 2010). For example, explicit CF (e.g., explicit correction) tends to be more salient than implicit CF (e.g., recast) because explicit CF makes the error and the correct form clearer to the learner. As Yang and Lyster (2010) pointed out, the research context, input features (e.g., length of the target structure, intonational stress), and target forms may enhance the salience of CF. When CF (e.g., recast) is consistently provided to L2 learners by a researcher in a laboratory setting, it is considered as more salient than when CF is provided to learners by a teacher in a classroom setting because they tend to pay more attention to the CF they receive in the former setting (e.g., Lyster & Izquierdo, 2009). The input features involved in the provision of a CF may also impact its effectiveness (Yang & Lyster, 2010). For example, the salience of CF can be enhanced when its input features involve minimal and short corrections, and provide emphasis on the error and correct form (Yang & Lyster, 2010). Different target forms may also vary in terms of degrees of saliency. For instance, compared to irregular past tense, regular past tense is considered to be less salient than irregular past tense because regular past tense is formed by the addition of only one or two sounds represented by the letters *-ed*. On the other hand, irregular past tense is formed by a new word (Yang & Lyster, 2010). CF can be enhanced in both FTF and text-SCMC modes (Ellis, 2015). The use of stress and intonation can make CF more salient in the FTF mode, while the use of capitalization, italics, and bold fonts can make CF more salient in the text-SCMC mode (Ellis, 2015).

Below is an example of a negotiation episode with CF that occurred in an FTF interaction between two learners.

> Learner 1: one day the mother make (…) have make
> Learner 2: made
> Learner 1: made some jam and put it (…) put them into (…) into (…) bowl?
> [Adapted from Zeng, 2017, p. 275]

The example above shows that the word 'make' triggered a negotiation episode. Even though there was no problem with message comprehensibility, learner 2 indicated to learner 1 that there was an error in her language production by providing implicit CF immediately after the error occurred. The CF used (i.e., recast) provided positive and negative evidence to learner 1 because learner 2 pointed out the error and provided input by modeling the correct L2 form. Learner 1 incorporated the correct form into her subsequent turn, indicating that she noticed the correction.

In sum, based on the Interaction Hypothesis (Long, 1996), CF is an important interactional feature in SLA because CF can (a) provide comprehensible input; (b) call attention to language structure; (c) facilitate noticing of interlanguage gaps; and (d) promote opportunities for language production.

Literature Review

The Interaction Hypothesis (Long, 1996) ascribes an important role for CF in interaction because of its potential to help learners notice the mismatch between their nontargetlike production and the target form. The role of CF in promoting SLA has been investigated in studies either on FTF or computer-mediated interactions or studies comparing these two modes. This literature review discusses two types of empirical studies that have

investigated explicit versus implicit CF in promoting SLA: noncomparative and comparative studies. Noncomparative studies (e.g., Monteiro, 2014) are those that did not compare FTF versus computer-mediated communication (CMC) interactions while investigating implicit and explicit CF in SLA. Instead, noncomparative studies examined CF types focusing only on one communication mode, either FTF or CMC. Comparative studies (e.g., Rassaei, 2017), on the other hand, are studies that investigated implicit and explicit CF types in SLA by comparing their occurrences in FTF versus CMC interactions.

Corrective feedback in noncomparative studies

Noncomparative studies are studies that have not compared FTF versus CMC while investigating implicit and explicit CF in SLA. Previous noncomparative studies on CF have presented varying findings when it comes to which CF type (i.e., implicit or explicit) is more conducive for L2 development. This literature review section presents nine studies (all focused on adult L2 learners) based on the communication mode used in their investigations. Most of these studies focused on either FTF (n = 3) or text-SCMC (n = 4) contexts. One study targeted voice-SCMC and another text-ACMC. The studies that were conducted in the FTF and voice-SCMC contexts focused on immediate CF due to the nature of such communication modes. The studies that used the text-SCMC mode considered immediate and delayed CF because of overlapping turns allowed in this context. Finally, the study conducted in the text-ACMC context focused on delayed CF because ACMC does not allow for real-time conversations.

In FTF, Sheen's (2010) study found that explicit CF was more effective than implicit CF. Sheen investigated CF types in FTF interactions where the teacher provided immediate CF to intermediate-level learners on their misuse of English definite and indefinite articles.

Based on pre- and posttests, she discovered that, compared to implicit, explicit CF led to more subsequent L2 learning of articles because it promoted noticing of errors. Yang and Lyster (2010), and Sato and Lyster (2012) also investigated CF provided to intermediate and advanced English learners immediately after they made linguistic errors. Both studies found that CF is related to accuracy L2 development. Focusing on the number of errors in the use of past tense, CF moves, and learners' immediate self-repair, Yang and Lyster discovered that both indirect and direct CF provided by a teacher were similarly effective on increasing accuracy in the use of irregular past tense forms. However, recast, a particular type of implicit CF, was not as effective as the other implicit (i.e., repetition, clarification request) or explicit CF moves (i.e., metalinguistic feedback, elicitation) in increasing accuracy in regular past tense forms. Yang and Lyster suggested that the fact that recasts were more effective in the accuracy of irregular than regular past tense forms can be explained by the degree of saliency of recasts. Different from irregular, regular past tense forms require the addition of only an extra sound(s) (represented by *–ed*), making it more difficult for learners to notice the correction of regular past tense than irregular past tense. Nevertheless, as the researchers suggest, the saliency of recasts can be enhanced through intonational stress, for instance.

Different from the previous studies, Sato and Lyster (2012) did not focus on a target form while examining the effectiveness of CF types. The researchers investigated peer-interactions where the learners were trained to provide CF immediately after their peers made a linguistic error. Sato and Lyster found no significant difference between implicit and explicit CF. Results of pre- and posttests revealed that both CF types used in peer interactions were positively connected to accuracy development because they facilitated monitoring, which led to accuracy and fluency.

Most of the studies that investigated CF types through SCMC focused on interactions via text. Studies on CF through text-SCMC have varying findings. Chen and Eslami's (2013) study indicated that explicit CF is more effective than implicit CF in native speaker (NS)-learner interactions. Based on posttests, the researchers discovered that different from implicit, explicit CF was a significant predictor for L2 grammatical and lexical development of intermediate English learners in text-SCMC environment. The researchers explained that the communication mode might have encouraged the implementation of explicit CF. On the other hand, Dekhinet's (2008) study showed that both CF types facilitated intermediate English learners noticing their interlanguage gaps in text-SCMC interactions with NSs who were trained to provide CF. NSs provided CF either immediately or a few turns after their partners made linguistic errors during the interaction. Despite both CF types contributing to L2 development, implicit CF seemed to have benefited learners' L2 learning more possibly because implicit CF encouraged learners to produce more output as they reacted to the CF. According to Dekhinet, implicit CF also served as a scaffolding tool that NSs used to assist L2 learners in composing meaning and form.

In another study on CF through text-SCMC, Sauro (2009) investigated interactions between NSs and learners whose English proficiency level ranged from intermediate to advanced. The NSs were trained to provide their partners with immediate implicit (i.e., recast) or explicit (i.e., metalinguistic feedback) CF on omission of the English zero article with abstract noncount nouns (e.g., globalization as opposed to *the* globalization). According to pre- and posttest results, there was no significant difference between explicit and implicit CF types; both of them contributed to supported gains in the target form. This finding provided evidence "regarding the effectiveness of computer-mediated corrective feedback that alerts

learners to the nature of their errors for developing short-term knowledge of L2 grammar" (p.113). Furthermore, Loewen and Erlam's (2006) study found no difference in the impact of CF types in promoting L2 learning of regular simple past. Pre- and posttest results revealed that neither implicit nor explicit CF facilitated learning of regular simple past through text-SCMC interactions between a researcher and beginner English learners. According to Loewen and Erlam, a possible explanation for their results might be that a great deal of the CF was not received immediately due to overlapping turns between interlocutors. Additionally, the researchers explained that neither CF type might have facilitated the learning of the target form because of learners' low proficiency level, which might have prevented them from noticing the CF received.

Regarding voice-SCMC, Monteiro's (2014) study found no statistically significant difference between the effectiveness of explicit (i.e., metalinguistic feedback) and implicit (i.e., recast) CF in SCMC interactions between intermediate English learners and a researcher. In her study, both CF types, which were provided to learners immediately after an error occurred, positively impacted L2 learning. Pre- and posttests' results indicated that both CF types were effective in developing learners' knowledge of regular simple past through voice-SCMC interactions. According to Monteiro, the lack of significant difference between explicit and implicit CF might be explained by "the fact that dyadic video-conferencing interactions are similar to laboratory interactions where feedback is controlled and individualized, making the corrective force of recast as much evident as that of metalinguistic feedback" (p. 69).

Finally, in the text-ACMC context, where CF provision is delayed due to the nature of the communication mode, Hosseini's (2012) study has suggested that explicit CF is more effective than implicit CF. Based on posttests' results, she discovered that explicit CF was

significantly more effective than implicit CF in the correct use of prepositions in ACMC interactions between a researcher and beginner English learners. Hosseini pointed out that the explicit CF group might have outperformed the implicit CF group in preposition use because learners tend to expect explicit error correction by their instructors.

In sum, as illustrated in Table 3-1, the majority of the studies (eight out of nine) indicated that CF leads to L2 development in FTF and CMC contexts. Moreover, eight (out of nine) studies suggested that immediate CF was effective in communication modes that used oral modality (i.e., FTF and voice-SCMC) and both immediate and delayed CF was effective in the mode that applied text modality (i.e., text-SCMC).

Table 3-1 Description of Noncomparative Studies on CF

Study	Mode	Dyadic type	Learners' proficiency level**	Measurement instrument	CF timing	Target form	More effective CF type
Sheen (2010)	FTF	Teacher-learner	I	Pretest, posttests	Immediate	Definite & indefinite articles	Explicit
Yang & Lyster (2010)	FTF	Teacher-learner	I & A	immediate self-repair	Immediate	Regular & irregular past tense	Both (regular past tense); explicit (irregular past tense)
Sato & Lyster (2012)	FTF	Learner-learner*	I & A	Pretest, posttests	Immediate	None	Both
Chen & Eslami (2013)	Text-SCMC	Researcher-learner	I	Posttests	Immediate & delayed	None	Explicit
Dekhinet (2008)	Text-SCMC	NS-learner*	I	Interactional moves	Immediate & delayed	None	Implicit

Table 3-1 Continued

Study	Mode	Dyadic type	Learners' proficiency level**	Measurement instrument	CF timing	Target form	More effective CF type
Sauro (2009)	Text-SCMC	NS-learner	I & A	Pretest, posttests	Immediate & delayed	Article zero	Both
Loewen & Erlam (2006)	Text-SCMC	NS-learner*	B	Pretest, posttests	Immediate & delayed	Regular past tense	None
Monteiro (2014)	Voice-SCMC	Researcher-learner	I	Pretest, posttests	Immediate	Regular simple past	Both
Hosseini (2012)	Text-SCMC	Researcher-learner	B	Posttests	Delayed	Preposition	Explicit

*Note: Learner-learners: learners were trained to provide CF to each other; NS-learners: NSs were trained to provide CF to their partner.
**Note: Learners' proficiency level: B – Beginner; I – Intermediate; A – Advanced.

Regardless of the communication mode used, the results of seven studies (out of nine) suggested that either both CF types or explicit CF resulted in L2 learning because the learners noticed the CF received. Out of the six studies that investigated a target form, two studies (i.e., Monteiro, 2014; Sauro, 2009) resulted in no significant difference between both CF types, two (i.e., Hosseini, 2012; Sheen, 2010) indicated that explicit CF was more effective than implicit CF, and one study (i.e., Yang & Lyster, 2010) showed that both CF types were effective in the development of regular past tense, while explicit CF was more effective in the development of irregular past tense than implicit CF (i.e., recast). Despite the varying results, no studies have found that implicit CF is more effective than explicit CF in the development of a L2 target form. According to the studies abovementioned (e.g., Hosseini, 2012; Sheen, 2010), the nature of explicit CF facilitated L2 learning of a target form more than implicit CF in both FTF and CMC modes. Since explicit CF makes corrections clearer to the learners, it was easier for

them to notice their interlanguage gaps and feedback received. It is also important to mention that when examining the effectiveness of explicit versus implicit CF, only two studies investigated beginner L2 learners. While one study suggested that explicit CF led to L2 development (Hosseini, 2012), the other study indicated that neither CF type was effective with beginner learners (Loewen & Erlam, 2006). Therefore, it is unclear if learners' proficiency level impacts the effectiveness of explicit or implicit CF.

Corrective feedback in comparative studies

Comparative studies are studies that investigated implicit and explicit CF types in SLA by comparing their occurrences in FTF versus CMC interactions. As shown in Table 3-2, this literature review section presents seven studies; six of them examined CF in FTF versus text-SCMC and one investigated CF in FTF versus voice-SCMC. The studies are presented based on the number of CF types examined. One study (Yilmaz, 2012) compared both explicit and implicit CF types, four studies (e.g., Kim, 2014) focused on implicit CF (e.g., clarification request, confirmation check), and two studies (e.g., Rassaei, 2017) investigated only one particular implicit CF type (i.e., recast).

Table 3-2 Description of Comparative Studies on CF

Study	Modes compared	CF type investigated	Target L2	Dyadic type	Learners' proficiency level*	CF timing*	Target form	Mode that benefited L2 learning more
Yilmaz (2012)	FTF vs text-SCMC	Explicit vs implicit	Turkish	Researcher-learner	B	I	Plural & locative morpheme	Text-SCMC
Kim (2014)	FTF vs text-SCMC	Implicit	English	Learner-learner	I	I & D	None	FTF
Fitze & McGarrell (2008)	FTF vs text-SCMC	Implicit	English	Teacher-learner	I & A	I & D	None	FTF

Table 3-2 Continued

Study	Modes compared	CF type investigated	Target L2	Dyadic type	Learners' proficiency level*	CF timing*	Target form	Mode that benefited L2 learning more
Tam et al. (2010)	FTF vs text-SCMC	Implicit	English	Learner-learner	B & I	I & D	None	FTF
Yuksel & Inan (2014)	FTF vs text-SCMC	Implicit	English	Learner-learner	I	I & D	None	FTF
Rassaei (2017)	FTF vs voice-SCMC	Implicit (recast only)	English	Teacher-learner	I	I	Definite & indefinite articles	Both
Yilmaz & Yuksel (2011)	FTF vs text-SCMC	Implicit (recast only)	Turkish	Researcher-learner	B	I	Plural & locative morpheme	Text-SCMC

*Note: Learners' proficiency level: B – beginner, I – intermediate, A – advanced; CF timing: I – immediate; D – delayed.

There is relative lack of research on the effectiveness of explicit and implicit CF in promoting SLA in FTF versus CMC studies. Yilmaz's (2012) work is the only study that has investigated both CF types in researcher-learner FTF versus text-SCMC interactions. Focusing on the acquisition of two Turkish morphemes (i.e., plural morpheme /-lAr/ and locative case morpheme /-DA/), Yilmaz found that, regardless of the communication mode, the explicit CF group (i.e., explicit correction) outperformed the implicit CF group (i.e., recast) in the oral production and comprehension tasks on immediate and delayed posttests. According to the researcher, explicit CF facilitated noticing of CF on both target morphemes and allowed learners to make a comparison of the target and nontarget forms. In terms of the communication mode, regardless of the CF used, text-SCMC was more effective than FTF, specifically on oral production and recognition tasks. Learners performed better in text-SCMC than in FTF mode because text-SCMC allowed for greater processing time and rereading of

the messages, which facilitated noticing of CF and language use. There was no statistically significant difference between text-SCMC and FTF for the comprehension task. Yilmaz reported that the measurement instruments might have been a factor in these results. While in the oral production and recognition tasks, the learners were asked to select the potential correct answer, which depended on information presented to them during the tasks, in the comprehension task, the learners had to show knowledge of the meaning of the morphemes. Therefore, the unique features of text-SCMC (e.g., rereading of the messages) did not play an important role in the comprehension task as they did in the other tasks.

A few comparative studies have examined the occurrences of CF in promoting SLA without comparing the effect of the CF type (explicit versus implicit). For example, Kim (2014) and Fitze and McGarrell (2008) examined the role of implicit CF in FTF and text-SCMC interactions. Kim explored interactions to identify strategies that learners applied when interacting with peers and dealing with difficulties in expressing themselves due to linguistic issues. Kim observed that learners used only implicit CF as they requested clarifications while performing tasks through FTF and text-SCMC modes.

While Kim (2014) focused on learner-learner interactions, Fitze and McGarrell (2008) focused on teacher-learner interactions in FTF and text-SCMC settings. Fitze and McGarrell's study showed that the teacher only used implicit CF by mainly clarifying learners' utterances. The researchers indicated that the teacher's preference for implicit feedback might be explained by his focus on content rather than on language issues. Fitze and McGarrell also explained that the teacher might have applied implicit CF more often in FTF than in text-SCMC because the former mode requires learners to understand the interlocutors' pronunciation to know what they are saying. On the other hand, in the text-SCMC context,

learners are not required to understand the interlocutors' pronunciation because learners can understand the input by having visual access to the language being used. Having said that, Fitze and McGarrell reported that the teacher implemented implicit CF more in FTF than in text-SCMC because the learners had difficulty understanding their peers' pronunciation. Therefore, the teacher used implicit CF to clarify their peers' utterances.

Some studies (e.g., Tam, Kan, & Ng, 2010) have investigated the impact of implicit CF in FTF versus SCMC interactions on potential L2 development. For example, Tam, Kan, and Ng (2010) and Yuksel and Inan (2014) found that implicit CF occurred more often in FTF than in text-SCMC due to the nature of FTF communication; that is, the fact that the FTF mode requires listening comprehension for learners to understand the conversation encouraged them to implement implicit CF. Therefore, learners tended to rely more on clarification requests, and comprehension and confirmation checks in FTF than in text-SCMC setting to understand the input received. On the other hand, the text-SCMC encouraged less use of implicit CF because this mode provides learners with extra processing time and visibility of messages, which allow learners to clarify and confirm any needed information without having to request clarifications or check for comprehension or confirmation. In both studies, implicit CF facilitated L2 development. The exchange of implicit CF encouraged learners to modify their output in both modes (Tam et al., 2010) and notice lexical and grammatical gaps in their language output, especially in text-SCMC (Yuksel & Inan, 2014).

Other studies (e.g., Rassaei, 2017) focused only on the effectiveness of a particular type of implicit CF (i.e., recast) in FTF versus SCMC interactions. In Rassaei's (2017) study, results of pre- and posttests indicated that recasts provided through voice-SCMC (video-chat) and FTF teacher-learner interactions were effective in developing learners' correct use of

articles in L2. The teacher was trained to apply recast to correct the learners' errors on the use of articles during the interactions. No statistically significant difference was found between the two modes in terms of the effectiveness of recasts applied on the use of articles in L2. Also, stimulated recall interviews suggested that learners were able to notice recast corrections in both modes, with no statistically significant difference between the communication modes.

In another study, Yilmaz and Yuksel (2011) examined the effects of communication mode and salience on recasts in the development of the plural and locative morphemes in Turkish. This study operationalized salience based on its three components: perceptual salience, morphophonological regularity, and similarity between the L2 and the first language (L1)" (Yilmaz & Yuksel, 2011, p. 1146). Perceptual salience was defined as "how easy it is to hear (auditory salience) or see (visual salience) a given structure" (Yilmaz & Yuksel, 2011, p. 1146). Auditory salience referred to number of phones, syllabicity, and sonority, whereas visual salience referred to suffix length (Yilmaz & Yuksel, 2011). Morphophonological regularity was the number of phonological alternations (Yilmaz & Yuksel, 2011). Similarity between the L2 and L1 was defined as "whether L1 and L2 morphemes shared the bound/free status" (Yilmaz & Yuksel, 2011, p. 1146). According to the researchers, based on the three components of salience, the plural was found to be more salient than the locative morpheme. The researchers discovered that recasts through text-SCMC resulted in better oral production performance of L2 plural and locative morphemes than FTF interactions between beginner learners and a researcher. The features of text-SCMC, such as rereadability of messages and greater processing time, might have facilitated learners to notice the CF. Despite the difference in the level of saliency between the two target structures, no statistically significant

difference between the scores on the plural versus locative recasts was found between FTF and text-SCMC modes. This finding is significant because recasts tend to be more effective on the target structures that are more salient than the ones that are less salient (Yilmaz & Yuksel, 2011). However, this study's results suggested that recasts can be effective in the development of target structures (i.e., plural and locative morphemes) with different levels of saliency.

In short, studies (e.g., Chen & Eslami, 2013) have suggested that both explicit and implicit CF types have the potential to contribute to SLA by encouraging language production, promoting noticing of interlanguage gaps, and providing comprehensible input. However, noncomparative studies have indicated conflicting findings in terms of the role of explicit and implicit CF in promoting SLA. Some studies found no differences in the impact of CF types in SLA (e.g., Monteiro, 2014) either due to the communication mode or learners' L2 proficiency. On the other hand, other studies identified differences between implicit and explicit CF regarding their impact on L2 development (e.g., Hosseini, 2012). Most of those studies suggested that, compared to implicit CF, explicit CF was more effective because it facilitated learners' noticing of interlanguage gaps.

In addition to conflicting findings, out of the few comparative studies that have examined the role of CF in FTF versus CMC interactions, most of them focused only on implicit CF. No studies have investigated the effectiveness of implicit versus explicit CF in the development of English as a L2 in task-based interactions between adult learners and NSs in FTF and CMC environments. Considering the importance of CF in promoting SLA, this study addresses the literature gap by comparing the effects of both CF types in text-SCMC versus FTF task-based interactions with adult learners and NSs of English.

Research Questions

This study will be guided by the following research questions:

1. Is there a significant difference in the frequency of explicit and implicit corrective feedback in face-to-face interactions compared with text-synchronous-computer-mediated interactions?
2. Is there a significant difference in the effect of explicit and implicit corrective feedback on subsequent L2 development in face-to-face interactions compared with text-synchronous-computer-mediated interactions?
3. What are the participants' perceptions of corrective feedback in task-based face-to-face interactions compared with text-synchronous-computer-mediated interactions?

Methods

The current study employs a comparative design as it compares two experiments. One experiment focuses on the provision of explicit CF and the other experiment involves the provision of implicit CF to L2 learners. Both experiments consist of three NS-learner dyads who engage in task-based FTF and text-SCMC interactions. Convenient and purposeful sampling was used to select the participants in this study. The participants went through a screening in order to be determined if they fit the required criteria for this research in terms of language proficiency and background knowledge in SLA.

Quantitative data (i.e., numerical coding from the interactions) and qualitative data (i.e., a questionnaire) were collected and analyzed. The qualitative data were collected to support the quantitative data by providing "information that can elucidate a trend, exemplify any variation in the data, or provide insights into results that turn out to be different from what was predicted" (Mackey & Gass, 2016, p. 356).

Participants

The current study included six NSs and six L2 learners. All the participants were recruited through research advertisements (i.e., flyers displayed on campus). After recruiting six NSs and six L2 learners and obtaining their written consent to participate in the study, learners' L2 proficiency was measured and all participants filled out a background questionnaire.

All the participants were females. The NSs were American undergraduate students majoring in Education at a university in the United States with the age range of 21 to 31. They had background knowledge on L2 learning and planned on becoming certified to teach English language learners in K-12 settings. A background questionnaire revealed that five of the six NSs already had some experience working with L2 learners in schools. According to the questionnaire, the NSs studied a foreign language in high school and reported being able to communicate in Spanish. In terms of their computer literacy, they had online written chat experience in English. Moreover, based on a scale that ranged from beginner to proficient level (i.e., beginner, intermediate, advanced, and proficient), the NSs' typing skills ranged from intermediate to proficient.

The L2 learners had an intermediate level of English proficiency. Their English proficiency level was measured through the Oxford Online English Level Test, which assessed listening, vocabulary, grammar, and reading skills. Five of the L2 learners were from Japan and one was from South Korea. They ranged in age from 34 to 43 and their level of education varied from high school to PhD degree. They had studied English in their home countries for seven to 27 years.

The background questionnaire also indicated that the length of time they had been living in the United States ranged from two to 12 years. According to their self-rated computer skills, in a scale from beginner to proficient level (i.e., beginner, intermediate, advanced, and proficient), two L2 learners rated their computer keyboard typing abilities as beginner, two considered their typing skills intermediate, and two rated themselves as advanced. All learners indicated having online oral and written chat experience in their first language, and some experience with written chat in English.

Data collection

The data were collected through the following five instruments: a background questionnaire, an FTF context task, a text-SCMC context task, a questionnaire, and a tailor-made posttest.

Background questionnaire

All participants completed a background questionnaire. The purpose of this questionnaire was to elicit some basic and relevant information about the participants. Based on the background questionnaire used by Loewen and Reissner (2009), the questionnaire items (see Appendix B) addressed (a) general information about the participants such as their age, schooling, and in the case of L2 learners, their first language and length of time in the U.S.; (b) their English or foreign language learning background and skills; (c) computer keyboard typing skills; and (d) online chat experiences.

FTF and text-SCMC context tasks

All six NS-learner dyads performed two spot-the-difference tasks: one in the FTF context and the other in the SCMC context. The FTF task was performed orally and the SCMC task was carried out using Skype text-messaging.

Spot the difference is a jigsaw task, which has been used extensively by researchers (e.g., Kim, 2014; Lai & Zhao, 2006). Research findings (e.g., Pica, Kanagy, & Falodun, 2009) show that jigsaw task encourages negotiations because it is a convergent task; that is, jigsaw task contains a single outcome, forcing participants to share their sets of information to reach the common goal. To encourage more language production and CF episodes within the dyads, there was no time limitation for the participants to complete the tasks. Furthermore, before performing the tasks, the NSs were trained to provide CF in order to promote provision of CF in interactions. Three of the NSs were trained to provide implicit CF and the other three NSs were trained to give explicit CF to their partners.

The NSs were trained individually by the researcher. Regardless of the target CF type, the training followed the same format for all NSs. First, the researcher told the NS that while interacting with a L2 learner, she needed to correct the learner's linguistic errors by using the target CF strategies (i.e., the NSs from the explicit group were asked to use explicit CF strategies and the NSs from the implicit group were asked to use implicit CF strategies). Second, using the definitions presented in Table 3-7, the researcher provided the NS with a definition of CF and of either explicit or implicit CF, depending on to which CF group the NS was assigned. Next, the researcher explained the strategies used in the NS's target CF type. Thus, the NSs from the explicit group received explanations solely on explicit correction, metalinguistic explanation, and elicitation, whereas the NSs from the implicit group received explanations solely on recast, repetition, clarification request, and confirmation check. The researcher provided a description and an example for each target CF strategy (see Table 3-8). After that, using spot-the-difference task-based interaction, the NS practiced applying the target CF strategies with the researcher, who intentionally made linguistic errors to be

corrected. It should be mentioned that the pictures used in the training were different from the ones used in the intervention. Finally, the researcher clarified any questions that the NS had and provided her with a handout containing all the information presented in the training. The NS was asked to review and practice the target CF strategies at home before the intervention. On the day of the intervention, the NSs received the same handout to remind them of the target CF strategies that they were prompted to use. None of the L2 learners were told that the NSs were trained or instructed to use specific CF strategies during the interactions with them.

To complete the tasks, the participants were prompted to find the differences between two pictures. The participants received the same instructions to complete the tasks in both modes; however, the set of pictures used in each mode was different (see Appendix C). One set of pictures showed a table with clothing accessories and photographs, and the other set illustrated a vegetable stand.

The NSs and L2 learners were asked to provide CF to each other during the interactions. By encouraging the participants to provide CF to each other, it was expected that they would pay more attention not only to their partners' input but also to their own language output. Additionally, the participants would feel more comfortable correcting each other's errors. Research (e.g., Bower & Kawaguchi, 2011; Sotillo, 2005) indicates that both learners and NSs tend not to provide CF because they do not want to be seen as rude or more knowledgeable than their partners.

A counterbalanced design (Table 3-3) was used to control for communication mode and task order effect (e.g., Lai & Zhao, 2006; Zeng, 2017). In other words, half of the dyads completed the FTF task first, whereas the other half performed the text-SCMC task first.

Table 3-3 Counterbalanced Design Controlling for Communication Mode

CF Group*	Dyad	Task 1 Context	Task 2 Context
	1	FTF	Text-SCMC
Implicit	3	Text-SCMC	FTF
	5	FTF	Text-SCMC
	2	FTF	Text-SCMC
Explicit	4	Text-SCMC	FTF
	6	Text-SCMC	FTF

*Note: There were two CF groups: implicit and explicit. The implicit CF group was the one in which the NSs were trained to provide implicit CF. The explicit CF group was the one in which the NSs were trained to provide explicit CF.

The counterbalanced design was also implemented to control for picture sequence effect. As shown in Table 3-4, all dyads used both sets of picture scenes (i.e., a table with clothing accessories and photographs, and a vegetable stand). However, the picture scenes alternated within each CF group.

Table 3-4 Counterbalanced Design Controlling for Picture Sequence Effect

CF Group	Dyad	FTF Picture Scenes*		Text-SCMC Picture Scenes*	
		NS	L2 Learner	NS	L2 Learner
	1	1B	1A	2A	2B
Implicit	3	2B	2A	1A	1B
	5	2A	2B	1B	1A
	2	1B	1A	2A	2B
Explicit	4	2B	2A	1A	1B
	6	1A	1B	2B	2A

*Note: 1A: table with accessories and photographs with the saying "visit portrait;" 1B: table with accessories and photographs without the saying "visit portrait;" 2A: vegetable stand with a bucket handle; 2B: vegetable stand without a bucket handle.

The FTF interactions were audio-recorded and transcribed, and the SCMC chat logs were saved in a Word file.

Questionnaire

The participants were provided with a questionnaire immediately after the task-based interactions. The purpose of the questionnaire was to elicit learners' and NSs' perspectives and attitudes toward CF in task-based FTF and text-SCMC interactions. Adapted from Zeng's (2017) and Baralt and Gurzynski-Weiss's (2011) works, the questionnaire included six open-ended and six closed questions (see Appendix D). The open-ended questions asked the participants to reflect on CF that they may have provided to and received from their partners during the interactions. The other questions were either Likert type or multiple-choice questions. The first two questions asked the participants to rate the difficulty of each interaction (i.e., FTF and text-SCMC). The next two questions addressed the amount of learning acquired from the interactions. The other two questions were about which language skills the L2 learners might have developed through the interactions. Two other researchers in the field of SLA examined the questionnaire items and agreed that the items were aligned with the purpose of the questionnaire.

Tailor-made posttest

A tailor-made posttest was designed to measure learners' L2 development. A tailor-made posttest was selected because it "allows researchers to assess the specific linguistic items targeted in spontaneous FFEs [focus on form episodes]" (Loewen, 2005, p. 367), referred to as language negotiations. A pretest was not used since it was not possible to predict learners' prior knowledge of the linguistic items that would be targeted in the CF episodes

(Loewen, 2005). The CF episodes served as a type of pretest suggesting that learners had difficulty with certain vocabulary and linguistic structures (Loewen, 2005).

A tailor-made posttest was designed for each learner based on the target items corrected by the NSs. In other words, a posttest was designed for each learner from the implicit group with test items generated from negotiation episodes containing implicit CF. The same was done for each learner from the explicit group. The posttest included vocabulary and grammatical structure items. Pronunciation or spelling skills were not measured because the participants did not use those skills in the FTF or in the text-SCMC context.

The posttest was administered seven days after the task-based interactions. The test items followed two templates: suppliance and correction (Loewen, 2005). The researcher read aloud the test items generated from the FTF tasks as a way to replicate as closely as possible the oral nature of the negotiations (Loewen, 2005). The learners answered the test items orally and each testing session was audio-recorded. As for the test items generated from the text-SCMC tasks, the learners answered the test items following a paper-and-pencil format test.

The suppliance test items addressed vocabulary-related CF episodes. These items required the learners to provide a word or phrase that corresponded to a given meaning, definition, or illustration (see Table 3-5, example 1). The first letter of the target word was given to reduce the chances from the learner to provide an answer different from the expected one (Loewen, 2005). The correction test items used sentences that learners produced incorrectly and triggered CF episodes (see Table 3-5, example 2).

Table 3-5 Sample of the Test Item Types Included in the Posttests and the Corresponding CF Episodes

Example Number	Test Item Type	Test Item	Corresponding CF Episode
1	Suppliance	Look at the picture.  What do you see? It begins with the letter S.	66. L2: I'm not sure, it's has a four circle-something. 67. NS: **It has like four little screws and-** 68. L2: Oh, yes. (Dyad 1, text-SCMC context, implicit CF)
2	Correction	The following sentence is incorrect. Please correct the sentence. *I have a pair of glove.*	31. NS: Oh okay, 32. Do you have two gloves? 33. L2: No, I don't. I have a pair of glove. the color is white. 34. NS: **You should have said, I have a pair of white gloves.** 35. L2: OK, thanks. Do you have a postcard? (Dyad 4, text-SCMC context, explicit group)

Note: Bold and italic fonts were added for emphasis.

The posttest responses were coded as (a) correct (i.e., the learner's answer correctly matched the target linguistic item in the CF episode); (b) partially correct (i.e., the learner's answer showed some improvement on the target linguistic item but was not entirely accurate); or (c) incorrect (i.e., the learner's answer did not correctly match the target linguistic item in the CF episode).

Test reliability and validity

It was not possible to follow the traditional means of establishing reliability (e.g., test-retest) for tailor-made posttest. The suitability of the test items was judged by their construct validity (Loewen, 2005). Construct validity refers to "the extent to which we can interpret a given test score as an indicator of the ability(ies) or construct(s) we want to measure"

(Bachman & Palmer, 1996, p. 21). Since this study used tailor-made posttests to measure learners' skills to produce the linguistic information that the learners were given in the CF episodes, the construct validity indicated how well the test items were related to the episodes. Two other researchers in the field of SLA examined the validity of the test templates to determine if they appropriately reflected the CF episodes in the data. The other researchers were provided with transcripts of a random sample of 20% of the CF episodes and the corresponding test items in FTF and text-SCMC interactions. The researchers were asked to rate the test items on a 4-point scale (1 being highly appropriate and 4 inappropriate). Finally, Cohen's Kappa was used to determine the interrater reliability. The interrater reliability was 71% for the FTF posttest items and 81% for the text-SCMC posttest items. Based on the raters' feedback, the researcher improved the test items and both raters rerated them. The final interrater reliability was 100% for both FTF and text-SCMC posttest items.

Data collection procedures

Upon the institutional review board (IRB) approval to collect data for the study, the participants were recruited. Purposeful sampling was used to select the participants in this study. After recruiting six NSs and six L2 learners and obtaining their written consent to participate in the study, the learners' L2 proficiency was measured and all participants filled out a background questionnaire. Three NSs were trained to provide implicit CF and three NSs were trained to provide explicit CF. Then each NS was randomly paired up with a L2 learner to form six dyads. The dyads were equally divided into two groups: implicit CF and explicit CF.

Next the researcher met with each dyad one at a time at a public library, where two study rooms were reserved. Once the participants received instructions on how to complete

the spot-the-difference tasks, they performed them through FTF and SCMC interactions. The participants completed the FTF task facing each other at a table in the same room. Having in mind that facial expressions and gestures are inherent features of FTF interactions, the participants were able to see each other's faces. However, they were not able to see each other's pictures; a file folder was placed on the table between them. The FTF interactions were audio-recorded. As for the text-SCMC task, the participants were in different rooms and thus they could not see each other. They received a computer to complete the SCMC task using Skype text-messaging. The participants were not allowed to use the video or audio features of Skype since the purpose of this study is to investigate CF occurrences in oral FTF interactions versus SCMC interactions that use only text-messaging. After they completed the text-SCMC task, their chat logs were saved in a Word file. To ensure that the participants followed the task instructions, the researcher monitored them while working on the tasks. During the FTF task, the researcher stayed in the room with them. During the text-SCMC task, the researcher monitored the participants' interactions by alternating visits to their rooms. Immediately after completing both tasks, the participants filled out a questionnaire. Finally, seven days later, each learner took the tailor-made posttest. Table 3-6 shows an overview of the data collection procedures.

Table 3-6 Overview of Data Collection Procedures

Meeting	Activity	Participants
1	▪ Obtain the consent forms. ▪ Ask participants to fill out the background questionnaire. ▪ Measure learners' L2 proficiency. ▪ Train NSs on how to provide the target CF type.	Learners and NSs*

Table 3-6 Continued

Meeting	Activity	Participants
2	▪ Explain the instructions of the spot-the-difference tasks. ▪ Have participants perform spot-the-difference tasks in FTF and text-SCMC. ▪ Ask participants to answer the questionnaire.	Learners and NSs
3	▪ Administer the tailor-made posttest.	Learners

*Note: The researcher met with each learner and NS individually.

Coding

The following was done for each dataset (i.e., FTF and text-SCMC interactions). Similar to previous studies (e.g., Rouhshad, Wigglesworth, & Storch, 2016), (a) the number of words produced by each dyad and each participant was counted, and (b) the time on task for each dyad was determined. Time on task was the time from when the participants started working on the assigned task until they completed it. The number of words and time on task were used to standardize the frequency of CF episodes to compare the two communication modes. Some comparative studies (e.g., Loewen & Reissner, 2009) have controlled for time (i.e., ratio of negotiation episodes per total minutes spent on task), while others (e.g., Zeng, 2017) have controlled for number of words (i.e., ratio of negotiations per 100 words).

In this study, time and number of words were controlled for a more comprehensive and reliable data analysis. Time was controlled by calculating the ratio of total number of explicit CF episodes per total minutes spent on task in the FTF mode. The same was done for implicit CF episodes in the FTF mode. Time was controlled the same way using the SCMC dataset. The number of words was controlled by calculating the ratio of explicit CF episodes per 100 words in the FTF mode. The same was done for implicit CF episodes in the FTF

mode. The number of words was controlled the same way using the SCMC dataset. The number of words included all the words that the dyads produced during the time on task; that is, the time from when the participants started working on each task until they completed it.

Based on the definitions provided in Table 3-7, the negotiation episodes that occurred during the task-based interactions were identified. Next, the negotiations that contained a CF were identified; these negotiations were called CF episodes—the focus of this study. After that, as illustrated in Table 3-8, each CF episode was coded for type (i.e., explicit or implicit) (Sotillo, 2005).

Table 3-7 Definitions of Coding Categories

Coding Category	Definition
Negotiation episodes	Negotiations of meaning and form. A negotiation of meaning is "an interactional sequence that arises when a problem in understanding occurs and there is a temporary communication breakdown leading to attempts to remedy it" (Ellis & Shintani, 2014, p. 342). A negotiation of form is "an interactional sequence where attention to form occurs even though there is no communication difficulty (i.e., when the problem is entirely linguistic)" (Ellis & Shintani, 2014, p. 342).
Corrective feedback (CF)	"information given to learners which they can use to revise their interlanguage" (Ellis, 2015)
CF episodes	Instances of corrective feedback in a negotiation episode
CF types	
Explicit	Direct feedback in which "the corrective force is made clear to the learners" (Ellis & Shintani, 2014, p. 265). Explicit CF strategies are: explicit correction, metalinguistic explanation, elicitation (Ellis, 2015).
Implicit	Indirect feedback in which "the corrective force remains covert" (Ellis & Shintani, 2014, p. 265). Implicit CF strategies are: recast, repetition, clarification request, and confirmation check (Ellis, 2015).

Table 3-8 CF Strategies*

CF strategy	Description	Example	CF Type
Clarification request	an utterance that elicits clarification of the preceding utterance	220. L2: Sorry, I don't- Not strict. So- Sorry. Do you see a picture do you see a man's picture who has strict face in the left side of the bottom? 221. NS: **Can you repeat that one more time?** 222. L2: Sorry. Do you see there- Do you see the picture- a man's picture who has strict face? 223. NS: He has a strict face. 224. L2: Yeah. 225. NS: Yes, like he looks mad? 226. L2: Yeah. (Dyad 2, FTF context)	Implicit
Confirmation check	an utterance immediately following the previous speaker's utterance intended to confirm that the utterance was understood	18. How many picture of- your your picture inside? 19. **NS: How many picture?** 20. L2: Yes. 21. NS: Five. 22. L2: Ok, we got- found it. I got the four pictures. 23. NS: Ok. 24. L2: Ok. Three more. (Dyad 6, FTF context)	Implicit
Recast	an utterance that rephrases the learner's utterance by changing one or more components (subject, verb, object) while still referring to its central meaning (Long, 1996)	63. NS: Ok. Do you see a watering can hanging from the window? 64. L2: Yes, I see that. 65. I see the box with handle front of left window. 66. **NS: I can also see the box with a handle in front of the left window** (Dyad 1, text-SCMC context)	Implicit
Repetition	an utterance that repeats the learner's erroneous utterance highlighting the error	Learner: Yesterday we visit my aunt. NS: **Yesterday we *visit* his aunt.** (Sauro, 2009)	Implicit

Table 3-8 Continued

CF strategy	Description	Example	CF Type
Metalinguistic feedback	an utterance that provides comments, information, or questions related to the well-formedness of the learner's utterance	78. Is there two tomatoes on each basket on the floor? 79. L2: I have two tomato in basket right on the floor 80. beside I have basket with two cabbage 81. NS: **Since there are two tomatoes, do not forget the "s" at the end of the word tomato.** 82. L2: ok 83. cabbages (Dyad 6, text-SCMC context)	Explicit
Elicitation	a question aimed at eliciting the correct form after a learner has produced an erroneous utterance	116. NS: The brown water can is on the left side above the carrots on the floor. A small tomato is also sitting on the end of the can. 117. L2: my picture show the brown water tin hang on the window lelft side 118. same as small tomato sitting on end of can on the wall 119. NS: **Try that sentence again using the -ing form in hanging.** 120. L2: the brown water tin hangings on the window (Dyad 6, text-SCMC context)	Explicit
Explicit correction	an utterance that provides the learner with the correct form while at the same time indicating an error was committed	44. L2: Maybe. Do you have 5 differences? Do you have a pin with a small stone that color is gold? 45. I'm sorry. The pin's color is gold, and stone is white. 46. NS: Yes, I have a one, but **you should say, do you have a small gold pin with a white stone in the middle.** 47. L2: TH 48. Thanks. Do you have a budge with a small face and four circles...? (Dyad 4, text-SCMC context)	Explicit

*Note: The CF strategies, descriptions, and CF types were taken from Ellis (2015, p. 150).

Finally, each posttest was examined for raw frequencies of correct, partially correct, and incorrect responses.

Reliability of coding

A second rater, familiar with SLA research, was trained in coding the data and asked to code 20% of SCMC chat logs and transcriptions of the FTF interactions. Percentage agreement between the two raters was 93%. Disagreements in coding results were discussed until a consensus was reached.

Data analysis

A chi-square test of independence was used to analyze the quantitative data and content analysis was applied to examine the qualitative data.

Quantitative analysis

A chi-square test of independence—a nonparametrict test—was used due to the small sample size and the nature of the data being categorical (Mackey & Gass, 2016). The target data used to answer the first research question is categorical because the occurrences of the CF types were coded into two categories: implicit or explicit. A chi-square (X^2) statistic compares the frequency counts of categorical responses (i.e., dependent variables) between two (or more) independent groups (i.e., independent variables) to determine whether distributions of categorical variables differ from one another (Sullivan, 2016). In this study, the distribution of observed frequencies of the explicit CF and implicit CF episodes across the dyads in FTF and text-SCMC modes (comparison groups) were examined. The dependent variable was the CF types, whereas the independent variable was the communication mode. The chi-square test of independence was performed to determine if there was a significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC (research question 1).

The nonparametric chi-square test of independence was also used to answer the second research question because of the small sample size of this study and the nature of the data being categorical. The target data is categorical because the posttest responses were coded into three categories: correct, partially correct, or incorrect. The chi-square test of independence was performed to determine if there was a significant difference in the frequency of correct posttest responses in terms of explicit and implicit CF in FTF versus SCMC modes (research question 2). In this case, the independent variable was the communication mode, whereas the dependent variable was the posttest responses.

Qualitative analysis

Content analysis was used to answer the third research question—What are the participants' perceptions of CF in task-based FTF interactions compared with text-SCMC? Content analysis is a research method used to "study documents and other forms of communication to learn about a person's or group's attitudes, values, and ideas" (Slavin, 2007, p. 143).

A grid-based scheme was used to prepare the qualitative data for content analysis (Mackey & Gass, 2016). According to Mackey and Gass (2016), "the grid is designed to both reflect the participant's input as well as to uncover further information" (p. 103). Two grids were created to compile NSs' and L2 learners' answers to the questionnaire.

After creating the grids, NSs' and L2 learners' responses were carefully analyzed to identify frequencies of occurrences of views across the participants on providing and receiving CF in task-based FTF and text-SCMC interactions. The content of participants' responses was also analyzed to identify "information that can elucidate a trend, exemplify any variation in the data, or provide insights into results that turn out to be different from what

was predicted" (Mackey & Gass, 2016, p. 356) in terms of CF. The content analysis was combined with the quantitative data to provide triangulation for the conclusion of the study (Slavin, 2007).

Results

Research question 1

The first research question asked whether there is a significant difference in the frequency of explicit and implicit CF in text-SCMC compared to the FTF mode. Tables 3-9 and 3-10 show the time on task, the number of words, and the number of CF episodes in FTF and text-SCMC interactions.

Table 3-9 Time on Task, Number of Words, and CF Episodes in FTF Interactions

CF Group*	Dyad	Number of words		Number of words per dyad	Number of words per CF group*	Time on task per dyad (min.)	Time on task per CF group* (min.)	Number of CF episodes per dyad	Number of CF episodes per CF group*
		NS	L2 Learner						
	1	1224	484	1708		20		17	
Implicit	3	517	338	855	3223	13	40	10	33
	5	253	407	660		7		6	
	2	1161	1528	2689		41		4	
Explicit	4	420	632	1052	5196	26	85	1	6
	6	753	702	1455		18		1	

*Note: CF group refers to two groups of dyads: one in which the NSs were trained to provide implicit CF and the other in which the NSs were trained to provide explicit CF to L2 learners.

Table 3-10 Time on Task, Number of Words, and CF Episodes in Text-SCMC

CF Group*	Dyad	Number of words		Number of words per dyad	Number of words per CF group*	Time on task per dyad (min.)	Time on task per CF group* (min.)	Number of CF episodes per dyad	Number of CF episodes per CF group*
		NS	L2 Learner						
	1	762	419	1181		88		5	
Implicit	3	321	211	532	2215	91	205	10	20
	5	219	283	502		26		5	
	2	535	337	872		70		5	
Explicit	4	276	202	478	2786	67	234	5	22
	6	921	515	1436		97		12	

*Note: CF group refers to two groups of dyads: one in which the NSs were trained to provide implicit CF and the other in which the NSs were trained to provide explicit CF to L2 learners.

Time on task refers to the time from when the participants started working on each task until they completed it. Overall the time on task was greater in the text-SCMC than in the FTF setting. Based on the overall time on task that the six dyads spent completing the FTF task (125 minutes) and the text-SCMC task (439 minutes), each dyad spent an average of 20.83 minutes to complete the FTF task, while in text-SCMC each dyad spent an average of 73.16 minutes on the task. In FTF, the time on task average of the explicit CF group (M = 28.33) was more than double of the time on task average of the implicit CF group (M = 13.30). In text-SCMC, the time on task average of the explicit CF group (M = 78.00) was higher than the time on task average of the implicit CF group (M = 68.33).

Altogether the dyads generated more language in the FTF than in the text-SCMC mode, and the explicit CF group generated more language than the implicit group in both modes. In FTF, the six dyads produced an average of 1,403.17 words, whereas in text-SCMC they produced an average of 833.5 words. In FTF, the amount of language production of the explicit CF group (M = 1,732.00) was higher than the implicit CF group (M = 1,074.33). In

text-SCMC, the amount of language production of the explicit CF group (M = 928.67) was also greater than the implicit CF group (M = 738.33).

In terms of the number of CF episodes, overall the implicit CF group produced more CF episodes (n = 53) than the explicit CF group (n = 28). In FTF, the implicit CF group promoted five times more CF episodes (M = 11.00) than the explicit group (M = 2.00). In contrast, in text-SCMC, the explicit CF group produced slightly more CF episodes (M = 7.30) than the implicit CF group (M = 6.60).

The number of CF episodes across the two modalities was standardized due to the great differences in the time on task and the amount of language production in FTF and text-SCMC interactions. The CF episodes standardization was done by controlling for number of words produced (i.e., ratio of the target CF episodes per 100 words) and time spent on task (i.e., ratio of the target CF episodes per total minutes spent on task). After controlling for time and number of words, the ratio of CF episodes produced was similar in the two communication modes. However, the ratio of CF episodes was higher in the implicit than in the explicit group, especially in the FTF mode. As Tables 3-11 and 3-12 illustrate, in FTF, the implicit CF group produced a ratio of CF episodes at least eight times higher (controlled for time = 0.83; controlled for words = 1.02) than that in the explicit CF group (controlled for time = 0.07; controlled for words = 0.12). In text-SCMC, despite the implicit CF group also promoting a greater ratio of CF episodes than the explicit CF group, the difference between ratios was slight (implicit CF group: controlled for time = 0.10, controlled for words = 0.90; explicit CF group: controlled for time = 0.09; controlled for words = 0.79).

Table 3-11 Ratio of CF per Total Minutes Spent on Task

		FTF		Text-SCMC	
CF group	Dyad	Ratio per dyad	Ratio per CF group	Ratio per dyad	Ratio per CF group
	1	0.85		0.06	
Implicit	3	0.77	0.83	0.11	0.10
	5	0.86		0.19	
	2	0.10		0.07	
Explicit	4	0.04	0.07	0.07	0.09
	6	0.06		0.12	

Table 3-12 Ratio of CF per 100 Words

		FTF		Text-SCMC	
CF Group	Dyad	Ratio per dyad	Ratio per CF group	Ratio per dyad	Ratio per CF group
	1	1.00		0.42	
Implicit	3	1.17	1.02	1.88	0.90
	5	0.91		1.00	
	2	0.15		0.57	
Explicit	4	0.10	0.12	1.05	0.79
	6	0.07		0.84	

A chi-square test of independence was performed on the frequencies of explicit and implicit CF episodes FTF versus SCMC groups produced. Results indicated statistically significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC, $X^2(1, N=81) = 10.6$, $p = .001$.

Corrective feedback strategies

As presented earlier (see Table 3-8), the explicit CF strategies are: explicit correction, metalinguistic feedback, elicitation, whereas the implicit CF strategies are: recast, repetition,

clarification request, and confirmation check (Ellis, 2015). Altogether, occurrences of 133 CF strategies were identified. Seventy-nine percent (n = 105) of the strategies were implicit CF and 21% (n = 28) were explicit CF. Most of the implicit CF strategies were applied in the FTF context (n = 75, 71%), whereas the majority of the explicit CF ones were implemented in the text-SCMC context (n = 22, 79%). As illustrated in Table 3-13 and Table 3-14, although the explicit group was asked to provide explicit CF only, they applied 56% (n = 42) and 33% (n = 10) of implicit CF strategies in FTF and text-SCMC, respectively. On the other hand, the implicit CF group did not implement any explicit CF strategies in neither mode. The following results present the implicit strategies applied by the implicit CF group and the explicit strategies applied by the explicit CF group.

Table 3-13 Frequency of Implicit CF Strategies in FTF and Text-SCMC

Implicit CF strategy	FTF				Text-SCMC			
	Implicit group		Explicit group		Implicit group		Explicit group	
	n	%	*n*	%	*n*	%	*n*	%
Recast	13	39	13	31	10	50	5	50
Clarification request	8	24	10	24	1	5	3	30
Confirmation check	-	-	1	2	-	-	-	-
Confirmation check + Recast	12	36	14	33	5	25	-	-
Clarification request + Recast	-	-	4	10	4	20	2	20
Total	33	100	42	100	20	100	10	100

Table 3-14 Frequency of Explicit CF Strategies in FTF and Text-SCMC

Explicit CF strategy	FTF				Text-SCMC			
	Implicit group		Explicit group		Implicit group		Explicit group	
	n	%	*n*	%	*n*	%	*n*	%
Explicit correction	-	-	4	67	-	-	13	59
Metalinguistic explanation	-	-	1	17	-	-	7	32
Elicitation	-	-	1	17	-	-	2	9
Total	-	-	6	100	-	-	22	100

Implicit CF strategies

The implicit CF group implemented implicit strategies in both communication modes, especially in FTF. In the FTF and text-SCMC contexts, recast was the most frequently used strategy (FTF - *n* = 13, 39%; text-SCMC - *n* = 10, 50%), followed by a combination of confirmation check and recast (FTF - *n* = 12, 36%; text-SCMC - *n* = 5; 25%). This CF group also applied clarification request in both contexts (FTF - *n* = 8, 24%; text-SCMC - *n* = 1, 5%) and a combination of clarification request and recast in the text-SCMC mode (*n* = 4, 20%).

As mentioned above, the NSs combined two implicit CF strategies, forming two unique implicit CF strategies: a combination of confirmation check and recast, and a combination of clarification request and recast. The following CF episode illustrates how the NS from dyad 1 applied the combination of confirmation check and recast in the FTF context to provide CF on syntax. In line 24, the learner asked if the NS could see the white gloves "at both side of picture." The NS replied with a question that not only served as a confirmation check but also a recast. By asking "On both sides of the picture?" (line 25), the NS checked if she understood the content of the learner's previous question correctly and provided the accurate structure of the sentence. That is, the NS corrected the use of the preposition before

the word “both” (*on* instead of *at*), changed “side” to its plural form, and added the definite article before the word “picture.”

24. L2: Do you see the mash white glove- gloves both side- at both side of picture?
25. NS: **On both sides of the picture?***
26. L2: Uh-huh.
27. NS: Yes, I see two white mashed gloves. And also I see like a pearl. What is it like? Like a collar I guess. Looks like a pearl collar going through the picture. Is that what you see?

[*Note: The bold font was added here for emphasis.]

The NSs also used a combination of clarification request and recast. The CF episode below shows how the NS from dyad 5 combined those two implicit strategies to provide CF in the text-SCMC context. In line 38, the learner referred to the size of the necklace she saw in the picture by saying, “The size of neckless.” Noticing that the learner omitted the article before the word “neckless,” in line 42, the NS requested for clarification by using “Did you mean” in her question and rephrased the learner’s utterance including the correct form. In this case, the NS also emphasized the correct form by capitalizing it.

38. L2: I realized that my pic actually looks like two pair of pearl neckless. The size of neckless on the right is a little bit bigger than the left one. What did you get about the pearl neckless in your picture?

[…]

42. NS: **I’m sorry, I’m having a little trouble understanding your previous text. Did you mean, “The size of THE neckless on the right is a little bit bigger than the left one?”***
43. L2: Sorry. Yes. You are right.

[*Note: The bold font was added here for emphasis.]

Explicit CF strategies

The explicit CF group implemented explicit strategies in both communication modes; however, the occurrences of explicit CF in the FTF context were very limited (FTF - *n* = 6, 21%; text-SCMC - *n* = 22, 79%). In the FTF and text-SCMC contexts, explicit correction was the most frequently used strategy (FTF - *n* = 4, 67%; text-SCMC - *n* = 13, 59%), followed by metalinguistic feedback (FTF - *n* = 1, 17%; text-SCMC - *n* = 7; 32%) and elicitation (FTF - *n* = 1, 17%; text-SCMC - *n* = 2; 17%).

Below is an example that shows how the NS from dyad 6 applied the three explicit CF strategies in the text-SCMC context. Based on the learner's incorrect use of a verb in line 117 ("hang" instead of "hanging"), the NS prompted her to add "ing" to the verb "hang" in line 119 (elicitation). Although the learner incorporated the CF in her following output, she incorrectly added "s" to the word "hanging." Noticing the error, in line 121 the NS explained that the "s" was not needed in that case (metalinguistic feedback) and provided the learner with the correct form of the target verb (explicit correction).

116. NS: The brown water can is on the left side above the carrots on the floor. A small tomato is also sitting on the end of the can.
117. L2: my picture show the brown water tin hang on the window lelft side
118. same as small tomato sitting on end of can on the wall
119. NS: **Try that sentence again using the -ing form in hanging.***
120. L2: the brown water tin hangings on the window
121. NS: **Almost correct, you do not need the s in "hanging". You should have said the brown water tin can hanging on the window.***
122. My water can is also hanging right under the window.
123. L2: found it
124. I have no tin can right on the side

[*Note: The bold font was added here for emphasis.]

In short, after controlling for time and number of words, the ratio of CF episodes produced was similar in the two communication modes. The ratio of CF episodes was higher in the implicit than in the explicit CF group, especially in the FTF context. Results also indicated a statistically significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC. In terms of CF strategies, both explicit and implicit CF strategies were identified in FTF and text-SCMC contexts. However, the frequency of implicit CF was higher in FTF and the frequency of explicit CF was higher in text-SCMC. In both modes, recast was the strategy mostly used by the implicit CF group and explicit correction was the strategy mostly implemented by the explicit CF group.

Research question 2

The second research question asked whether there is a significant difference in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC. The descriptive statistics of the learners' test responses are shown in Table 3-15. The L2 learners from the implicit FTF group correctly recalled and reproduced slightly more test items than the L2 learners from the explicit FTF group. The learners from the implicit FTF CF group generated 56% (n = 19) of the test responses correctly, 12% (n = 4) of the test responses partially correctly, and 32% (n = 11) of the test responses incorrectly. The learners from the explicit FTF CF group produced 50% (n = 3) of the correct test responses, 33% (n = 2) of the test responses partially correctly, and 17% (n = 1) of the test responses incorrectly.

On the other hand, in text-SCMC, the L2 learners from the explicit group correctly recalled and reproduced slightly more test items than the L2 learners from the implicit group. The learners from the explicit group generated 55% (n = 11) of the test responses correctly,

20% (*n* = 4) of the test responses partially correctly, and 25% (*n* = 5) of the test responses incorrectly. The learners from the implicit group produced 50% (*n* = 3) of the test responses correctly, 33% (*n* = 2) of the test responses partially correctly, and 17% (*n* = 1) of the test responses incorrectly.

Table 3-15 Descriptive Statistics of the Learners' Test Responses

CF group	Test response	FTF		Text-SCMC	
		n	%	*n*	%
Implicit	Correct	19	56	11	50
	Partially Correct	4	12	7	32
	Incorrect	11	32	4	18
Explicit	Correct	3	50	11	55
	Partially Correct	2	33	4	20
	Incorrect	1	17	5	25

The results of the percentage of correct test responses are aligned with the participants' questionnaire responses. According to the questionnaire results, 67% (two out of three) of the learners in the implicit group shared that the FTF mode led to more learning. In contrast, 67% (two out of three) of the learners in the explicit group shared that the text-SCMC mode contributed more to their L2 learning. The questionnaire responses also revealed that 67% (two out of three) of the NSs from the implicit group shared that although completing the task in the FTF mode was more difficult, FTF might have contributed to their partners' L2 learning more than in text-SCMC. Although most of the NSs from the implicit group found it more difficult to complete the task in the FTF mode, all three NSs from this group preferred interacting in the FTF environment. They reported it was because the FTF mode allowed them

to see their partners' facial expressions, receive immediate responses, and use gestures, which facilitated their interactions. On the other hand, 67% (two out of three) of the NSs from the explicit group expressed that despite completing the task in the text-SCMC mode being more difficult, the text-SCMC context might have led to more L2 development than the FTF context. The three NSs from the explicit group preferred the FTF mode because they could hear their partners and use gesture, making it easier to give explanations and to understand their partners' messages.

To examine if there was a significant difference in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC, chi-square analyses were performed. The results revealed statistically significant difference in the distribution of correct test responses between the two communication modes, $X^2(1, N=44) = 5.13$, $p = .02$. While explicit CF was more effective in the text-SCMC mode, implicit CF was more effective in the FTF mode.

Linguistic focus

Overall both modes contained 17 items on lexicon and 65 on syntax. Most of the items on lexicon occurred in the FTF mode ($n = 14$, 82%), compared to that in text-SCMC ($n = 3$, 18%). On the other hand, most of the items on syntax occurred in the text-SCMC mode ($n = 39$, 60%), compared to that in FTF ($n = 26$, 40%). The majority of the posttest items on lexicon were generated by the implicit group in the FTF mode ($n = 13$, 76%). Moreover, in both modes, the implicit group produced more posttest items on syntax than the explicit group. Out of 65 items on syntax, 42 (65%) items were generated from the implicit FTF and text-SCMC interactions.

The percentage of correct responses suggests that while the L2 learners from the implicit group recalled and reproduced lexical items better in the FTF mode (*n* = 8, 42%; text-SCMC - *n* = 0, 0%), the L2 learners from the explicit group recalled and reproduced lexical items better in the text-SCMC mode (*n* = 1, 9%; FTF - *n* = 0, 0%). Regarding syntax, the L2 learners from the implicit group achieved a higher percentage of correct responses in the text-SCMC mode (*n* = 11, 100%; FTF - *n* = 11, 58%), whereas the L2 learners from the explicit group obtained a higher percentage of correct responses in the FTF mode (*n* = 3, 100%; text-SCMC - *n* = 10, 91%). Overall, in both modes, the implicit and explicit groups recalled more L2 syntactic than lexical items from the CF episodes. Tables 3-16 and 3-17 show the posttest item distribution in both communication modes.

Table 3-16 Posttest Item Distribution in FTF Interactions

	Total items	Total items in the posttests of the L2 learners from the implicit group		Total items in the posttests of the L2 learners from the explicit group		Correct responses of the L2 learners from the implicit group		Correct responses of the L2 learners from the explicit group	
		n	%	*n*	%	*n*	%	*n*	%
Lexicon	14	13	38	1	17	8	42	0	0
Syntax	26	21	62	5	83	11	58	3	100

Table 3-17 Posttest Item Distribution in Text-SCMC

	Total items	Total items in the posttests of the L2 learners from the implicit group		Total items in the posttests of the L2 learners from the explicit group		Correct responses of the L2 learners from the implicit group		Correct responses of the L2 learners from the explicit group	
		n	%	*n*	%	*n*	%	*n*	%
Lexicon	3	1	5	2	10	0	0	1	9
Syntax	39	21	96	18	90	11	100	10	91

In sum, in the FTF mode, the L2 learners from the implicit group produced a higher frequency of correct test responses than the learners from the explicit group. On the other hand, in the text-SCMC mode, the L2 learners from the explicit group generated a higher frequency of correct test responses than the learners from the implicit group. This study's results revealed a statistically significant difference in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC. Regarding the linguistic focus, in both communication modes, implicit and explicit CF led to more L2 syntactic than lexical development.

Research question 3

Research question three inquired about the participants' perceptions of CF in task-based FTF interactions compared with text-SCMC interactions. Using the questionnaire responses, this section presents the learners' and NSs' perceptions separately.

L2 learners

According to the questionnaire responses, 67% (two out of three) of the L2 learners from the implicit group shared that they did not receive any CF in the FTF or text-SCMC setting. They reported that they probably did not receive any CF because the NSs were able to understand what they said or were focused on completing the task. However, one of the learners from the implicit group stated that her NS partner provided her with some CF on lexicon and spelling (in text-SCMC). For example, this particular learner shared the following about the CF she received in FTF, "She [her NS partner] told me a better expression for me to use like 'The onion ties on the stick.' Also, she told me a new word like 'slanted.'" This learner shared that the corrections she received were helpful because they taught her something new.

Interestingly, 67% (two out of three) of the L2 learners from the explicit group reported that they did not receive any CF in the FTF setting. They believed it was because the NSs were focused on the task or were able to understand them. One learner from the explicit group, however, expressed that she received some explicit CF on syntax in the FTF setting. Although she felt disappointed with herself for making language mistakes, she was happy for being corrected. When asked if the corrections were helpful, she stated, "Yes, because I don't have confidence in my English. So I always want someone [to] correct my English." In contrast, all three learners from the explicit group reported that they received explicit CF, mainly on syntax, during the text-SCMC interactions. One of the learners stated, "She [her NS partner] asked me to fix the sentences. For example, she asked me to use 's' at the end of the words that referred to more than one." Although the learners felt either embarrassed or disappointed with themselves when they received CF, they reported that the corrections were helpful. As the learners explained, the corrections were helpful because they helped them remember the correct L2 form and pay close attention to their English when typing.

Native speakers

The questionnaire responses indicated that the NSs from the implicit group provided implicit CF, mainly on syntax, in both FTF and text-SCMC modes. While they reported that they used multiple CF strategies in FTF, they stated that they applied only recast in the text-SCMC. For example, when asked how she corrected her partner's mistakes in FTF, the NS from dyad 1 stated, "I corrected my partner's mistakes implicitly. Sometimes I asked for clarification. I also repeated her response with a correction, and a few times I did a confirmation check." When referring to text-SCMC, the same NS said, "I rewrote the sentence with the correction."

With the exception of one NS, two of the NSs from the implicit group did not indicate any discomfort in correcting the L2 learners at any time in either FTF or text-SCMC because the corrections were not applied directly. As the NS from dyad 3 explained, "I felt it was like a regular conversation" (referring to the FTF interaction). Additionally, the NS from dyad 5 expressed the following about both modes, "I felt good about it [correcting] because I was helping her improve her English." One NS from the implicit group shared that, in the FTF setting, she felt "A little uncomfortable at first." She added, "As the conversation progressed, I felt more comfortable. Also, the corrections were not too bad since I did them implicitly."

The NSs from the explicit group indicated that they provided CF as well. In both modes, two of the three participants reported that the CF was on syntax, and one of them reported it was on vocabulary. According to the questionnaire results, all three NSs shared that they provided explicit CF in FTF and text-SCMC. For example, the NS from dyad 6 stated the following about the text-SCMC, "I corrected my partner's spelling as well as her sentence structure. I also corrected her form of -ing in words and when to add the letter 's' at the end of something you are talking about when there is more than one." However, when referring to FTF interaction, one NS shared that she also applied implicit feedback (i.e., recast). She said, "One time I simply told her there was a mistake and she worded her thoughts differently. Other times, I would just repeat her phrase but in the correct way."

When asked how they felt about correcting their partner's language mistakes, two of the NSs from the explicit group expressed discomfort in doing so in both modes. However, since they could not see their partners or be heard, providing explicit CF in text-SCMC did not make them feel as uncomfortable as providing it in FTF. For instance, referring to FTF context, the NS from dyad 4 stated, "I felt weird correcting her mistakes because I didn't want

to make her feel bad by correcting her mistakes. I didn't want to hurt her feelings by the way I was correcting her answers." Regarding text-SCMC, the NS from dyad 2 shared, "Through Skype, I felt worried that she might think I'm being rude or correcting her on purpose. Since she didn't hear the tone of my voice, I was hoping she wouldn't take any correcting too serious." The NS from dyad 4 stated, "I didn't feel too comfortable correcting her mistakes, but felt more confidence to type the correction since I wasn't looking at her expressions when I told her." One NS from the explicit group did not express being uncomfortable. Instead, she felt it was challenging to correct because she was not used to providing CF during FTF interactions. In terms of text-SCMC, she focused on the fact that she helped and made a difference because she saw her partner applying the CF received.

In sum, most of the L2 learners from the implicit group shared that they did not receive any CF in the FTF or text-SCMC setting. On the other hand, while most of the L2 learners from the explicit group reported that they did not receive any CF in FTF, all of them shared that they received CF in text-SCMC. Despite feeling embarrassed or disappointed with themselves when they received CF, the learners from the explicit group shared that the corrections helped and made them more aware of their language use. The NSs reported that they provided the target CF, mainly on syntax, in both modes. Since they did not have to explicitly correct their partners, most of the NSs from the implicit group did not indicate any discomfort in correcting the L2 learners at any time. However, most of the NSs from the explicit group expressed discomfort in doing so, especially in FTF.

Discussion

This study compares FTF versus text-SCMC task-based interactions in terms of the (a) frequency of explicit and implicit CF; (b) effect of explicit and implicit CF on subsequent L2

development; and (c) participants' perceptions of CF in task-based FTF and text-SCMC interactions in SLA.

Frequency of explicit and implicit CF

The first research question addressed the frequency of explicit and implicit CF. Results of chi-square test of independence indicated statistically significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC interactions. After controlling for time and number of words, the implicit group produced more CF than the explicit group, especially in the FTF mode.

In this study, in the FTF context, the implicit CF group produced a ratio of CF episodes at least eight times higher than that in the explicit group. In the text-SCMC context, although the implicit CF group also promoted a greater ratio of CF episodes than the explicit group, the difference between the two groups was slight. These results add support to studies (e.g., Kim, 2014; Zeng, 2017) that have investigated CF in both modes. For example, Zeng (2017) examined interactions between L2 learners and identified more implicit CF than explicit CF in both modes, especially in FTF. Focusing only on implicit CF, Tam et al. (2010) and Yuksel and Inan (2014) also found that implicit CF occurred more often in FTF than in text-SCMC. A possible reason for a higher frequency of implicit CF in FTF than in text-SCMC might be the nature of FTF interactions (e.g., Yuksel & Inan, 2014; Zeng, 2017). Compared to text-SCMC, FTF interactions provide interlocutors with limited amount of time to reflect on the input received and output produced because this type of interaction is faster paced and involves immediate responses. Therefore, FTF interactions promote more implicit CF such as clarification requests, confirmation checks, and recasts. In contrast, the slow pace, and visibility and durability of text in SCMC interactions allow the interlocutor to have more

time to reflect on the input received and revisit the chats as needed. As a result, CF could be easily provided without necessarily having to request clarification or use a confirmation check.

Another plausible reason for the NSs from the implicit group to have provided more CF than the ones from the explicit group might be because implicit CF strategies, such as confirmation checks, recasts, and clarification requests, could be naturally embedded in the conversation. The nature of FTF interactions, concerns for politeness and face-related issues, and the desire not to embarrass their interlocutors might have encouraged the NSs from the implicit group to unconsciously correct their partners through implicit CF, increasing the implicit CF frequency in FTF. As illustrated in the questionnaire responses, since implicit CF could be naturally embedded in the conversation, the NSs from the implicit group felt comfortable correcting their partners' language errors. Sotillo (2005) investigated SCMC interactions between L2 learners and NSs, and also found that NSs provided a higher frequency of implicit than explicit CF due to politeness reasons. In her study, the NSs mostly corrected the learners' language errors implicitly because they did not want to interrupt the conversation flow or to feel uncomfortable by explicitly correcting their partners.

Kim (2014) and Fitze and McGarrell (2008) investigated learner-learner and teacher-learner interactions, respectively. Similar to this study, they found instances of implicit CF in both FTF and text-SCMC. However, Kim, and Fitze and McGarrell identified no occurrences of explicit CF in neither mode. As Fitze and McGarrell explained, there were probably no instances of explicit CF because the focus of the interaction was on content rather than on language issues. The difference between those studies' and the current study's results might be explained by the fact that in their research the participants were not instructed to provide

either implicit or explicit CF. On the other hand, the NSs from the explicit group in this study were instructed and trained to use explicit CF strategies to correct their partners' language issues. As a result, the NSs from the explicit group applied explicit CF, especially in text-SCMC. This study's findings showed that after controlling for language production, the ratio of explicit CF was almost seven times higher in text-SCMC than that in FTF. As the NSs from the explicit group explained in the questionnaire, they provided more CF in text-SCMC because its features minimized their discomfort in directly correcting the L2 learners' errors. Therefore, politeness and face-related issues are additional factors for not providing explicit CF to the learners in the FTF context.

The fact that the NSs from the explicit group were concerned about politeness and face-related issues shows that the lack of explicit correction was not because these NSs did not know how to correct their partners. Instead, it was because they did not feel comfortable to provide explicit CF. In other words, the training that they received on CF did not affect the provision of explicit CF in the FTF mode. The lack of explicit correction was mostly due to the fact that these preservice teachers believed that feedback was not needed because they were able to understand their partners and the communication was flowing. Also, they did not feel comfortable interrupting the conversation to provide CF, especially in the FTF mode.

In sum, this study's results revealed that there is a relationship between communication modes and CF type. Two main factors impacted such relationship. First, the FTF context encouraged more implicit CF because of the nature of FTF interactions. Due to the fast speed of communication in FTF oral mode and the physical presence of the speaker, which could add to more discomfort in providing explicit feedback, the NSs relied on more implicit CF strategies such as clarification requests and confirmation checks. Second, the

implicit CF was applied more often in the FTF mode than in the text-SCMC mode because this CF type can be naturally embedded in the conversation, making the NSs feel more comfortable providing it. On the other hand, explicit CF occurred more often in text-SCMC because its features (e.g., lack of paralinguistic cues such as being able to see facial expressions and hear each other's tone of voice) minimized the NSs' discomfort in directly correcting the L2 learners' errors.

Subsequent L2 development

The second research question addressed the possibility of L2 development in relation to provision of CF in different communication modes. Results of chi-square analysis indicated statistically significant differences in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC interactions. In other words, the communication mode had an impact on the learners' L2 development. In FTF, the L2 learners from the implicit group produced a higher frequency of correct test responses than the learners from the explicit group. On the other hand, in text-SCMC, the L2 learners from the explicit group generated a higher frequency of correct test responses than the learners from the implicit group.

The results reported above are partially different from Yilmaz's (2012) study, which has investigated both CF types in FTF versus text-SCMC modes. Yilmaz focused on the acquisition of two Turkish morphemes and found that explicit CF outperformed the implicit CF in the oral production and comprehension tasks. Moreover, she found that text-SCMC was more effective than the FTF mode regardless of the CF type used. The current study, however, discovered that the explicit CF group outperformed the implicit CF group only in the text-SCMC context. As Yilmaz explained, the explicit CF learners performed better than the

implicit CF learners in text-SCMC due to the unique features of this communication mode. In the text-SCMC, the visibility of text, greater processing time, and rereading of the messages facilitated noticing of the explicit CF and allowed learners to make a comparison of the nontarget and target L2 forms.

Other studies did not compare the performance of participants in different communication modes; however, they indicated that in the CMC mode, explicit CF was more effective than implicit CF because the text visibility and greater processing time enabled learners to notice the corrective (e.g., Chen & Eslami, 2013). Chen and Eslami (2013) investigated learner-learner interactions in text-SCMC and found that, different from implicit CF, explicit CF was a significant predictor for L2 development. The researchers explained that explicit CF facilitated L2 learning because its strategies (e.g., explicit correction, elicitation) promoted "clear signals or instruction to raise learners' awareness to the core problems" (p. 155) and encouraged learners to use their L2. In another study, Hosseini (2012) observed that explicit CF was significantly more effective than implicit CF in the accurate preposition use in teacher-learner ACMC interactions. Hosseini pointed out that explicit CF group outperformed implicit CF group because the L2 learners were concerned with their preposition use in the L2 and expected the teacher to correct their linguistic errors. The current study suggests that explicit CF was more effective than implicit CF in text-SCMC due to the explicit nature of CF and learners' expectations to be corrected. The learners expected to receive CF because the task instructions prompted the participants to provide CF. As a result, the explicit nature of CF and learners' expectations to be corrected might have encouraged the learners to notice the deviations in their language use, which is essential for L2 development

(Schmidt, 1990). In fact, in the questionnaire, the L2 learners from the explicit group did report noticing CF in text-SCMC.

The findings in this study show that while explicit CF was more effective in text-SCMC, implicit CF was more effective in FTF. The effectiveness of implicit CF in FTF is not aligned with previous studies' results (e.g., Rassaei, 2017) that investigated implicit CF type in both modes. Yilmaz and Yuksel (2011) and Rassaei (2017) examined the effects of communication mode on one particular implicit CF strategy (i.e., recast). Both studies focused on teacher-learner interactions in which the teacher was trained to use recast to correct the learners' misuse of a target L2 form. Yilmaz and Yuksel found that the learners scored significantly higher after receiving recasts through the text-SCMC than the FTF mode. The researchers explained that the unique features of text-SCMC (e.g., rereadability of messages, greater processing time) might have facilitated the learners to notice the CF and reflect on their language use. On the other hand, Rassaei did not find any statistically significant difference between video-chat-SCMC and FTF interactions regarding the effectiveness of recasts on the accurate use of articles in the L2. Stimulated recall interviews indicated that the learners noticed corrections in the form of recasts in both modes. Despite only focusing on FTF interactions, Sheen (2010) compared the effects of CF types in teacher-learner interactions in which the teacher provided the target CF. The researcher found that explicit CF resulted in more L2 learning of articles because it facilitated more noticing of error correction than implicit CF.

This study, different from other studies' findings, showed that compared to explicit CF, implicit CF was more effective in FTF than in text-SCMC. A possible reason for this finding could be the limited occurrences of explicit CF in the FTF mode. Similar to other

studies (e.g., Rassaei, 2017; Sheen, 2010; Yilmaz & Yuksel, 2011), the CF providers in this study were instructed and trained to implement the target CF during the task-based interactions. However, in the current study, the interlocutors did not have a teacher-learner relationship. Instead, the CF providers were preservice teachers who did not know their L2 learner partners. Although they were trained and reminded to provide explicit CF during the FTF task, they avoided correcting their partners' errors through explicit strategies because they felt uncomfortable to do so, as evidenced in the questionnaire. As suggested in previous studies (e.g., Yilmaz & Yuksel, 2011), the NSs would probably have felt more comfortable and, therefore, provided more explicit CF if they were engaged in teacher-learner interactions.

Another noteworthy finding of this study was that in both communication modes, implicit and explicit CF led to more L2 learning in syntax than lexical development. No other studies have investigated the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC. Furthermore, most of the studies that have examined and measured the effect of CF types on L2 development, focused on a particular target form (e.g., Monteiro, 2014; Sheen, 2010). Chen and Eslami's (2013) study, which focused on text-SCMC, is the only study that examined CF types without focusing on a specific target form. Different from the current research, Chen and Eslami found that, compared to implicit CF, explicit CF led to more accurate grammatical and lexical knowledge in text-SCMC.

In this study, however, implicit and explicit CF led to more accurate grammatical than lexical knowledge recall in both modes probably because of the learners' prior experience as L2 learners in their home countries. English classes in a foreign language context tend to put heavy emphasis on grammatical structures (Kikuchi & Browne, 2009). It is, therefore,

possible that regardless of CF type or communication mode, when receiving input from the NSs, the learners' attention might have been drawn more to syntax than to lexicon-related aspects.

It is important to mention that research studies (e.g., Lai & Zhao, 2006; Loewen & Erlam, 2006) that investigate interactions in SLA consider negotiation episodes a tool used to indicate learners' lack of L2 knowledge. As Gass and Mackey (2012) pointed out, negotiations may "direct learner's attention to something new, such as a new lexical item or grammatical construction, thus promoting the development of the L2" (p. 186). Despite the fact that negotiations have been used in many empirical studies (e.g., Loewen & Reissner, 2009; Zeng, 2017) on interactions in SLA as indications of lack of competency and knowledge, one could argue that negotiations could be due to learners' lack of attention as opposed to lack of L2 knowledge. While this may be true in some situations where negotiations happen, since lack of attention and lack of knowledge cannot be easily distinguished or captured, researchers have taken negotiation episodes as an indication of lack of knowledge.

In sum, this study's results showed that the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC interactions was significantly different. While explicit CF was more effective in text-SCMC, implicit CF was more effective in FTF. The explicit CF learners performed better than the implicit CF learners in text-SCMC, probably due to a combination of factors that facilitated noticing of the CF: text-SCMC's unique features, the explicit CF nature, and learners' expectations to be corrected. The fact that the implicit group outperformed the explicit group in FTF might be explained by the limited occurrences of explicit CF in the FTF setting. The reduced frequency

of explicit CF in FTF could be related to the relationship of the participants (lack of familiarity) and face-related issues. This study also found that in both communication modes, implicit and explicit CF led to more L2 syntactical than lexical development. This could be related to learners' prior learning experiences in their home countries where more emphasis is put on grammatical structures than vocabulary and content.

Participants' perceptions of CF in interactions

The third research question addressed the participants' perceptions of CF in task-based FTF interactions compared with text-SCMC interactions. Analyses of the questionnaire responses revealed that the learners appreciated being provided with CF by their NS partners. Despite feeling disappointed and embarrassed with themselves for making linguistic errors, the learners reported that the corrections were useful. According to the learners, the corrections contributed to their L2 development by helping them remember the accurate L2 form and pay close attention to their English language production. This finding supports previous studies' findings regarding CF and learners' perceptions (e.g., Dekhinet, 2008). For example, Donaldson and Kotter (1999) and Dekhinet (2008) examined text-SCMC interactions between learners and NSs, who were trained to provide CF. In both studies, the L2 learners indicated that they appreciated the CF received and believed that CF helped them improve their L2, especially regarding vocabulary. Moreover, learners from Hsu, Wang, and Comac's (2008) study expressed the CF they obtained from their teacher through voice-ACMC interactions contributed to their L2 learning because it improved their listening and speaking skills, and increased their confidence in speaking English.

The findings of this study also revealed that the NSs' attitudes toward providing different CF types impacted their frequency of CF use. Most of the NSs from the implicit

group did not indicate any discomfort in correcting the L2 learners at any time during their FTF and text-SCMC interactions. Accordingly, they reported providing the target CF to their partners in both modes. The nature of implicit CF might explain why the NSs from this group felt comfortable, and, therefore, used different strategies to indirectly correct the learners' language use issues. As Ellis and Shintani (2014) stated, in implicit CF, "the corrective force remains covert" (p. 265) because it involves strategies that do not interrupt the conversation flow or clearly point out the learners' linguistic errors.

On the other hand, most of the NSs from the explicit group expressed discomfort in providing the target CF, especially in FTF. As pointed out in previous studies (e.g., Sotillo, 2005), a possible reason for the NSs from this group to feel uncomfortable to provide CF might be the nature of explicit CF. In this CF type, "the corrective force is made clear to the learners" (Ellis & Shintani, 2014) and it mainly involves strategies that interrupt the conversation flow. Furthermore, explicit strategies, such as explicit correction and metalinguistic feedback, are usually used in teacher-learner interactions and familiar relationships as opposed to interactions between people who do not know each other, which was the case in this study. This finding is supported by other studies on CF. For example, Bower and Kawaguchi's (2011) and Sotillo's (2005) studies investigated SCMC interactions between NSs and learners and found that the NSs provided a limited amount of explicit CF to the learners. The researchers reported that the NSs were probably reluctant to correct the learners' errors because they did not want their partners to perceive them as someone playing the role of a teacher rather than a communication partner. According to the researchers, the NSs may also have felt uncomfortable to provide CF because they did not want to interrupt the conversation or felt it was rude to do so. Moreover, Sotillo believed that the NSs avoided

providing CF because they did not want to discourage learners from learning or using their L2.

An interesting finding in this study was that the NSs in the explicit CF group indicated more positive attitude toward providing CF in text-SCMC than in FTF. The unique features of the text-SCMC mode reduced their discomfort in explicitly correcting their partners' errors. According to the NSs, the fact that text-SCMC did not allow the interlocutors to hear or see each other encouraged them to provide more CF in the SCMC than in the FTF context. This finding explains why NSs provided more explicit CF in text-SCMC than in FTF. No other studies have investigated NSs' perspectives of CF in task-based FTF interactions compared with text-SCMC. Therefore, this finding sheds light on how the communication mode may influence NSs' attitudes toward providing explicit CF and their actual use of CF in each mode.

In sum, there is a mismatch between learners' and NSs' perspectives on CF. The learners' attitudes on CF showed that they expected and appreciated receiving explicit and implicit CF and did not worry about interruption of the conversation flow or face-related issues. They recognized the importance of being provided with CF in their L2 development and appreciated being corrected because it helped them improve their L2. On the other hand, despite being preservice teachers and having background knowledge on SLA, the NSs seemed to be more concerned about learners' confidence, face-related issues, and not interrupting the conversation flow. As suggested by different researchers, CF is an important interactional feature in SLA (Long, 1996) and L2 learners would probably benefit more from interactions if the NSs' attitudes toward CF were more aligned with theirs.

Conclusion

This study has compared FTF versus text-SCMC task-based interactions concerning the (a) frequency of explicit and implicit CF; (b) effect of explicit and implicit CF on subsequent L2 development; and (c) participants' perceptions of CF in task-based FTF and text-SCMC interactions.

This study's results revealed a statistically significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC interactions. The FTF setting encouraged more implicit CF due to different features of FTF interactions. FTF interactions are fast pace and transient, and do not provide access to previous text. In contrast, explicit CF occurred more often in text-SCMC because the NSs felt more comfortable directly making corrections in a setting where they could not see or hear their partners, and face-related issues were not as prominent.

This study also found a statistically significant difference in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC interactions. In the FTF mode, the L2 learners from the implicit group recalled and reproduced a higher frequency of test items than the learners from the explicit group. However, in the text-SCMC mode, the L2 learners from the explicit group generated a higher frequency of correct test responses than the learners from the implicit group. Furthermore, in both settings, implicit and explicit CF led to more L2 development in syntax rather than lexical-related aspects of language use.

Furthermore, the current research discovered that there is a mismatch between learners' and NSs' perspectives on providing CF. The learners' attitudes on receiving CF indicated that they were eager to receive feedback and recognized the importance of receiving

CF in L2 development. In contrast, despite being preservice teachers and having background knowledge on SLA, the NSs appeared to be more concerned about learners' confidence, face, and smooth conversation flow. Knowing that CF is an important interactional feature in SLA (Long, 1996), L2 learners would probably benefit more from interactions if the NSs' attitudes toward CF were more aligned with theirs.

Overall this study's findings indicated that the nature of CF, the communication mode's features, and the CF provider impact the subsequent L2 development through task-based interactions. Text-SCMC seems to be more conducive in providing explicit CF. The direct nature of explicit CF, visibility of messages available in text-SCMC, and possibility to revisit their language use and CF provided by their partners tend to facilitate learners' noticing of the correct language use. Furthermore, the fact that interlocutors cannot see or hear each other encourages NSs to provide explicit CF. On the other hand, the FTF mode seems to be more conducive in providing implicit CF. The nature of implicit CF allows it to be embedded in the interaction in a natural way, without interrupting the conversation flow or making the NSs feel uncomfortable in providing corrections to learners' language errors.

The findings of this study have some pedagogical implications. First, this study found that despite understanding the importance of receiving CF during interactions, the learners did not always notice implicit CF. Having in mind that noticing is essential in SLA, teachers should consider explaining to L2 learners the CF types and strategies, and use stress, intonation, and other means to make their implicit CF noticeable. Being aware of CF types and strategies would encourage learners to provide CF to peers and to notice their own interlanguage gaps when exchanging CF during interactions. Second, this study's findings showed that FTF was more conducive for providing implicit CF, while text-SCMC was more

conducive and effective for explicit CF. Teachers should, therefore, implement task-based interactions in the FTF and text-SCMC modes where learners are encouraged to exchange explicit and implicit CF. As a result, the learners would have the potential to develop their L2 through the provision of both CF types. Finally, this study's findings suggested that despite being preservice teachers and having background knowledge on SLA, the NSs seemed to be more concerned about learners' confidence, face-related issues, and not interrupting the conversation flow. Having in mind that CF is an important interactional feature in SLA (Long, 1996), preservice teachers should be taught about the role of CF types in L2 development. As a result, preservice teachers' perspectives on providing CF would possibly shift from being concerned about face-related issues and breaking the conversation flow to contributing to learners' L2 development.

Some limitations of the current study should be noted and used to direct future research. First, this study included a small sample size (six dyads). Further studies should include a larger number of dyads to examine the effectiveness of implicit and explicit CF in L2 development in task-based interactions and add to this study's insights on the role of CF in different modalities. Second, this study used only a questionnaire to understand the participants' perceptions of receiving and providing CF. Other studies may apply the stimulated recall tool with the NSs and learners to better understand the perceptions and the effectiveness of CF types on L2 development in different environments. Finally, the current study did not consider the age difference between the NSs and the L2 learners. The NSs' age ranged from 21 to 31 while the L2 learners' age ranged from 34 to 43. Future research should consider age difference in the groups being investigated to identify if it affects NSs' provision of feedback and L2 learners' response to feedback. Future studies should, therefore, compare

NS-L2 learner dyads consisted of interlocutors who are younger and older adults versus dyads in which interlocutors are similar in age to determine if their age difference has an impact on the CF provided and reactions to CF received.

This study brings great significance to the existing literature on interactions involving CF in SLA. Although there is a growing number of empirical studies on FTF and CMC interactions in SLA, the effects of CF types in text-SCMC versus FTF task-based interactions with adult learners and NSs of English need further investigation.

CHAPTER IV

FACE-TO-FACE VERSUS COMPUTER-MEDIATED INTERACTIONS AND SECOND LANGUAGE DEVELOPMENT: DYADIC TYPE AND LANGUAGE PROFICIENCY

Introduction

Language negotiations facilitate second language acquisition (SLA) in both face-to-face (FTF) and computer-mediated interactions (Ellis, 2015). According to the Interaction Hypothesis (Long, 1996), negotiations can facilitate SLA by potentially promoting comprehensible input, pushed output, and noticing of interlanguage gaps. Research (e.g., Kung & Eslami, 2015) shows that quantity and quality of negotiations can be impacted by the dyadic type; that is, the interlocutor with whom second language (L2) learners interact. The matching in dyadic types can be based on language proficiency level of the learners to form mixed-L2 proficiency or same-L2 proficiency learner-learner (L-L) dyads (e.g., Tam, Kan, & Ng, 2010). The matching in dyadic types can also be based on interlocutors who are native speakers (NSs) and learners of the target language to form NS-L dyads (e.g., Sotillo, 2005). Research findings (e.g., Sotillo, 2005) have shown that dyadic types play an important role in SLA in FTF interactions and computer-mediated communication (CMC), especially because learners' L2 proficiency and the presence of a NS may affect the quantity and quality of negotiations and potential L2 development.

In terms of learner's L2 proficiency, research findings have indicated that FTF and CMC interactions between mixed-L2 proficiency level learners can be conducive to L2 development. For example, Sotillo (2005) compared high proficiency learners (HPL)-low proficiency learners (LPL) versus NS-LPL interactions in CMC. She found that compared to

NS-LPL dyads, HPL-LPL dyads produced more negotiations, providing more opportunities for L2 development. Kung and Eslami (2015) investigated CMC interactions across three dyadic types: NS-LPL, NS-HPL, and HPL-LPL. The researchers discovered that interactions were effective in facilitating L2 development in all three dyadic types. However, when interacting with HPLs, LPLs benefited more than their counterparts as LPLs produced more language-related episodes. Research indicates that the presence of a NS is also beneficial to SLA in FTF and CMC interactions with L2 learners. For example, Fernandez-Garcia and Arbelais (2003) compared L-L, NS-NS, and NS-L dyadic types in FTF and CMC interactions and found that NS-L produced more negotiations than the other dyadic types. The presence of a NS in a dyad was conducive to L2 development because the NS provided feedback and encouraged L2 output (Yang, Gamble, & Tang, 2012; Zhao & Bitchener, 2007). These findings show that language proficiency and interlocutor (NS versus L2 learner) may influence the quantity and quality of negotiations, and subsequent L2 development.

In short, research findings have shown that dyadic types do play a role in SLA in FTF and CMC interactions, especially because learners' L2 proficiency and the presence of a NS may affect the quantity and quality of negotiations and potential L2 development. Despite the growing number of empirical studies on FTF and CMC interactions in SLA, it is still not clear how different dyadic types—NS-LPL, NS-HPL, and HPL-LPL—impact L2 development in FTF versus CMC task-based interactions. To fill this gap in the literature, this study investigates interactions between (a) NS-LPL; (b) NS-HPL; and (c) HPL-LPL in both FTF and CMC interactions. The purpose of this study is to compare FTF versus text-synchronous-computer-mediated communication (SCMC) task-based interactions in terms of the (a) effect of three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) on the frequency of negotiation

episodes; (b) effect of negotiation episodes on subsequent L2 development; and (c) participants' perceptions of L2 learning through task-based interactions.

Theoretical Framework

This study is grounded in the Interaction Hypothesis, which supports the link between interactions and SLA (Long, 1996). Interactions promote opportunities for L2 development through negotiation episodes. Negotiations are important for SLA because they draw on learners' attention to meaning and form, provide comprehensible input, encourage modified output, and facilitate noticing of interlanguage gaps.

Negotiations can occur in CMC and FTF interactions. The FTF and CMC modes, specifically text-SCMC, have their own unique features. Compared to FTF, text-SCMC involves accessibility of previous text, visibility of text, time delay between turns, overlapping turns, and lack of the physical presence of the interlocutor. Due to these features, research has indicated that text-SCMC promotes more accuracy, attention to form, noticing, and more balanced participation among interlocutors than FTF interactions (e.g., Nguyen & White, 2011; Warshauer, 1996). On the other hand, FTF interactions are fast paced, involve immediate response, and provide paralinguistic cues (e.g., facial expressions, tone of voice). Consequently, the FTF mode promote more negotiation episodes, language production, input, modified output, and corrective feedback than the text-SCMC mode (e.g., Hamano-Bunce, 2010; Rouhshad, Wigglesworth, & Storch, 2016).

Despite the unique features of each mode, both FTF and CMC interactions can promote negotiations as the interlocutors attempt to solve communication and linguistic problems (Ellis, 2015). According to Ellis (2015), communication problems are solved

through negotiations of meaning, whereas linguistic problems are solved through negotiations of form.

Negotiations of meaning and form are accomplished through different strategies, categorized as output-prompting and input-providing strategies (Ellis, 2015). Output-prompting strategies push L2 learners to modify their problematic utterances, whereas input-providing strategies "help to solve problems by supplying learners with the correct target language form" (Ellis, 2015, p. 149). Examples of negotiation strategies used for output-prompting are clarification requests and elicitations (Ellis, 2015). Confirmation checks, recasts, and explicit corrections are input-providing strategies used in negotiations (Ellis, 2015). Below is an example of a negotiation episode between a teacher and a L2 learner.

> Learner: Yeah, I'm a patriost.
> Teacher: A patriot.
> Learner: Yeah. I'm a patriot.
>
> [Adapted from Ellis, Basturkmen, & Loewen, 2001]

The example above shows a negotiation episode where the teacher used an input-providing strategy (i.e., recast) to correct the learner's linguistic error. The learner noticed the input he received and applied the correct target form ("patriot") in his following utterance. Through an input-providing negotiation strategy, the teacher contributed to the learner's potential L2 learning.

In short, FTF and CMC interactions may lead to L2 development by promoting negotiation episodes, involving output-promoting and input-providing strategies. Negotiation strategies have the potential to "direct learners' attention to something new, such as a new

lexical item or grammatical construction, thus promoting the development of the L2" (Gass & Mackey, 2015, p. 186).

Literature Review

Research on SLA has examined the effect of dyadic types on interactions, negotiation episodes, and L2 learning in FTF and CMC environments. Previous studies (e.g., Tam et al., 2010) have shown that dyadic types do play a role in SLA in FTF and CMC interactions. Interlocutors' language proficiency and interaction with NS versus L2 learner speakers may affect the quantity and quality of negotiation episodes, and learners' potential L2 development. This literature review focuses on how language proficiency and the presence of a NS in a dyad may affect interactions, negotiation episodes, and L2 development in FTF and CMC environments.

Language proficiency

Learners' L2 proficiency is found to be a variable that may affect FTF and CMC interactions and subsequent L2 development. Research findings indicate different ways that language proficiency (HPL versus LPL) impacts interactions in SLA. First, Nassaji (2010) found that learners' L2 proficiency was strongly related to the amount, type, and effectiveness of focus on form episodes (i.e., "attention to linguistic forms that arise incidentally during meaningful communication" Nassaji, 2010, p. 907). Nassaji investigated FTF interactions and observed that learners benefited differently from different types of focus on form depending on their L2 proficiency level. He investigated preemptive and reactive focus on form. Preemptive focus on form episodes occur when a teacher, a NS, or a learner asks questions or makes comments about anticipated linguistic issues (Nassaji, 2010). For example, before using the word "blind" in an interaction with a L2 learner, the teacher asks him or her, "Do

you know what *blind* means?" After making sure that the learner knows the meaning of "blind," the teacher continues the conversation. On the other hand, reactive focus on form episodes happen when a teacher, a NS, or a learner uses a corrective feedback in response to a learner's utterance (Nassaji, 2010). For instance, a L2 learner says to the teacher, "I was *tired do* homework." The teacher responds by providing the learner with corrective feedback to correct the linguistic error: "I was *tired of doing* homework." According to Nassaji's research findings, compared to preemptive focus on form, reactive focus on form was more effective with HPLs. The researcher concluded that HPLs benefited more from reactive focus on form than LPLs. Since reactive focus on form is less explicit in nature (compared to preemptive focus on form), it may be more difficult for LPLs to notice this type of feedback (Nassaji, 2010).

Second, when interacting with LPLs, HPLs play a similar role as NSs, thus, facilitating SLA. For instance, in Huong's (2007) study, both LPL-LPL and HPL-LPL small groups produced about the same amount of language during a task completion in the FTF environment. However, compared to LPL-LPL dyads, HPL-LPL ones produced better quality of interactions and used more L2 because of the presence of the HPLs. The HPLs helped LPLs with unknown vocabulary, provided feedback, and encouraged L2 output and negotiations. In another study, Kung and Eslami (2015) found that text-SCMC interactions were effective for L2 development in three dyadic types: NS-LPL, NS-HPL, and HPL-LPL. Additionally, Kung and Eslami discovered that when interacting with LPLs, HPLs played a similar role as NSs because HPLs served as experts and provided scaffolding to LPLs when needed. As a result, LPLs improved their L2 skills. However, Kung and Eslami observed that compared to the LPLs, the HPLs did not produce many language-related episodes. This

finding suggests that HPLs did not have similar levels of opportunities to improve their L2 during text-SCMC interaction compared with LPLs.

Another important issue related to how language proficiency impacts interactions in SLA is the fact that HPLs have experienced the process of SLA themselves and thus may provide more corrective feedback to the LPLs. Sotillo (2005) investigated NS-LPL versus HPL-LPL dyads in SCMC interactions. An important finding in Sotillo's study was that, compared to NS-LPL, SCMC interactions between HPL-LPL resulted in more potential for L2 improvement due to the higher number of corrective feedback and successful uptake instances. HPLs' high use of corrective feedback suggested that HPLs (compared to NSs) focused more on LPLs' output errors while still focusing on the interaction content. Sotillo explained that HPLs probably used more corrective feedback than NSs because HPLs themselves went through the same language learning process. Therefore, they understood the positive impact of feedback on L2 learning.

Finally, the interlanguage gap between HPLs and LPLs promotes opportunities for L2 development through interactions. Some researchers (e.g., Kung & Eslami, 2015) have shown that mixed-L2 proficiency dyads can be more conducive for L2 development than same proficiency dyads, especially for LPLs, because the interlanguage gap between the learners creates more opportunities for L2 learning. For example, Tam, Kan, and Ng's (2010) investigated FTF and text-SCMC interactions between high and low proficiency learners and found that LPLs benefited from interactions with HPLs in both communication modes. The proficiency gap between the interlocutors promoted opportunities for SLA through negotiations of meaning, corrective feedback, and output modifications from both proficiency levels.

Presence of a NS in a dyad

The presence of a NS in a dyad is also found to be a variable that may affect FTF and CMC interactions and subsequent L2 development. Some studies (e.g., Fernandez-Garcia & Arbelais, 2003) have indicated that NS-L dyads can be more beneficial to L2 development than L-L dyads because of the presence of a NS. In their study, Fernandez-Garcia and Arbelais (2003) compared L-L, NS-NS, and NS-L dyadic types and found that NS-L dyads produced more negotiations than the other dyads, especially in the FTF mode (as opposed to the text-SCMC mode). In another study, Yang, Gamble, and Tang (2012) found that the presence of the NS was highly beneficial for L2 development in voice-SCMC interactions when comparing L-L dyads versus NS-L ones. NS-L dyads outperformed the L-L dyads as the NS provided more feedback, modeled the target forms, and encouraged learners to practice the L2. As a result, the NS contributed to learners' improvement of L2 pronunciation, vocabulary, and sentence structure. Furthermore, Zhao and Bitchener's (2007) findings revealed a significant difference between NS-L and L-L FTF interactions in terms of reactive and preemptive focus on form episodes. More reactive focus on form episodes were found in interactions between NS-L than in L-L.

In summary, research findings have shown that dyadic types do play a role in SLA in FTF and CMC interactions as learners' L2 proficiency (e.g., Tam et al., 2010) and the presence of a NS (e.g., Fernandez-Garcia & Arbelais, 2003) may affect the quantity and quality of negotiations and potential L2 development. Although both L-L (same or mixed-L2 proficiency) and NS-L dyadic types interactions have shown to be beneficial to SLA, it is still unclear what dyadic type (i.e., NS-LPL, NS-HPL, and HPL-LPL) is more effective to L2 development in FTF and CMC interactions. To fill this literature gap, this study compares

FTF versus text-SCMC task-based interactions in terms of the (a) effect of three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) on the frequency of negotiation episodes, (b) effect of negotiation episodes on subsequent L2 development, and (c) participants' perceptions of L2 learning through task-based interactions.

Research Questions

This study will be guided by the following research questions:

1. Is there a significant difference in the frequency of negotiation episodes in face-to-face interactions compared with text-synchronous-computer-mediated interactions among the following three dyadic types: NS-LPL, NS-HPL, and HPL-LPL?
2. Is there a significant difference in the effect of negotiation episodes on subsequent L2 development in face-to-face interactions compared with text-synchronous-computer-mediated interactions in the following three dyadic types: NS-LPL, NS-HPL, and HPL-LPL?
3. What are the participants' perceptions of L2 learning through task-based face-to-face interactions compared with text-synchronous-computer-mediated interactions?

Methods

This study employs a comparative design because it compares the following three dyadic groups as they engage in task-based FTF and text-SCMC interactions: NS-LPL, NS-HPL, and HPL-LPL. Convenient and purposeful sampling was used to select the participants in this study. The participants went through a screening in order to be determined if they fit the required criteria for this research in terms of language proficiency.

Quantitative (i.e., numerical coding from the interactions) and qualitative data (i.e., a questionnaire) were collected and analyzed in this study. The qualitative data supported the

quantitative data by providing "information that can elucidate a trend, exemplify any variation in the data, or provide insights into results that turn out to be different from what was predicted" (Mackey & Gass, 2016, p. 356).

Participants

The current study involved four NSs and eight L2 learners. All the participants were recruited through research advertisements (i.e., flyers displayed on campus). After recruiting four NSs and eight L2 learners and obtaining their written consent to participate in the study, the learners' L2 proficiency was measured and all participants filled out a background questionnaire.

All the participants were females. The NSs were American undergraduate students with a major in education from a university in the United States. Their age ranged from 21 to 31. A background questionnaire revealed that they had not taken any English as a second language (ESL) or bilingual education courses or had any experience working with L2 learners. These participants reported that they studied a foreign language in high school; however, none of them reported being proficient in a language other than English. In terms of their computer literacy, they had online oral and written chat experience in English. Furthermore, based on a scale that ranged from beginner to proficient level (i.e., beginner, intermediate, advanced, and proficient), the NSs' typing skills ranged from intermediate to proficient.

Out of eight L2 learners, four were low proficiency learners (LPL) and four were high proficiency learners (HPL). Their English proficiency level was measured by Oxford Online English Level Test, which measures listening, vocabulary, grammar, and reading skills. Results of each target skill test could yield one of the following levels: pre-intermediate,

intermediate, upper-intermediate, or advanced. Based on the learners' test results, they were classified into either LPL or HPL. Table 4-1 shows LPLs' and HPLs' proficiency levels of each language skill assessed.

Table 4-1 Learners' English Language Proficiency Levels

Language skill	Low proficiency learners (LPLs)	High proficiency learners (HPLs)
Listening	Pre-intermediate or Intermediate	Upper-intermediate
Vocabulary	Pre-intermediate	Intermediate
Reading	Intermediate	Upper-intermediate or Advanced
Grammar	Pre-intermediate	Intermediate

All eight L2 learners, with the age range of 39 to 47, were from Japan, had a bachelor's degree, and studied English in their home country for six to 15 years. Based on a background questionnaire, the length of time that they had been living in the United States ranged from one to five years. According to their self-rated computer skills, in a scale from beginner to proficient level (i.e., beginner, intermediate, advanced, and proficient), one L2 learner rated her computer keyboard typing ability as beginner, four considered their typing skills intermediate, and three rated it advanced. All learners indicated having online oral and written chat experience in Japanese. None of them had online oral experience in English; however, they indicated having some experience with written chat in English.

Data collection

The data were collected through the following five instruments: a background questionnaire, an FTF context task, a text-SCMC context task, a questionnaire, and a tailor-made posttest.

Background questionnaire

All participants completed a background questionnaire. The purpose of this questionnaire was to elicit some basic and relevant information about the participants. The questionnaire items (see Appendix B) asked (a) general information about the participants such as their age, and in the case of learners, their first language and length of time in the U.S.; (b) their English or foreign language learning background and skills; (c) computer keyboard typing skills; and (d) online chat experiences.

FTF and text-SCMC context tasks

All six dyads performed two spot-the-difference tasks: one in the FTF context and the other in the SCMC context. The FTF task was performed orally and the SCMC task was carried out using Skype text-messaging.

Spot the difference is a jigsaw task, which has been used extensively by researchers (e.g., Kim, 2014; Lai & Zhao, 2006). Research findings (e.g., Pica, Kanagy, & Falodun, 2009) show that jigsaw task encourages negotiations because it is a convergent task; that is, jigsaw task contains a single outcome, forcing participants to share their sets of information to reach the common goal. To encourage more language production and negotiations within the dyads, there was no time limitation for the participants to complete the tasks.

To complete the spot-the-difference tasks, the participants had to find the differences between two pictures. The participants received the same instructions to complete the tasks in both modes; however, the set of pictures used in each mode was different (see Appendix E). One set of pictures showed a park scene and the other set illustrated a kitchen scene. These sets of pictures have shown to facilitate negotiations among the participants during interactions (e.g., Machey & Gass, 2016).

The participants were encouraged to provide feedback to each other because by doing so, they would probably initiate more negotiation episodes and pay more attention not only to their partners' input, but also to their own language output. Additionally, the participants would feel more comfortable correcting each other's errors. Research (e.g., Bower & Kawaguchi, 2011; Sotillo, 2005) has indicated that both L2 learners and NSs tend not to provide corrective feedback because they do not want to be seen as rude or more knowledgeable than their partners.

A counterbalanced design (see Table 4-2) was used to control for communication mode and task order effect (e.g., Lai & Zhao, 2006; Zeng, 2017). In other words, half of the dyads conducted the FTF tasks first and the other half performed the text-SCMC task first.

Table 4-2 Counterbalanced Design Controlling for Communication Mode

Dyad	Dyadic Type	Task 1 Context	Task 2 Context
1	HPL-LPL	FTF	Text-SCMC
2		Text-SCMC	FTF
3	NS-HPL	FTF	Text-SCMC
4		Text-SCMC	FTF
5	NS-LPL	Text-SCMC	FTF
6		FTF	Text-SCMC

Note: NS: native speaker; HPL: high proficiency learner; LPL: low proficiency learner.

The counterbalanced design was also used to control for picture sequence effect. As shown in Table 4-3, all dyads used both sets of picture scenes (i.e., park and kitchen). However, within each dyadic type, one dyad used one set of a picture scene in a context, while the other dyad used another set of a picture scene in a different context.

Table 4-3 Counterbalanced Design Controlling for Picture Sequence Effect

Dyad	Dyadic Type	FTF Picture Scenes			Text-SCMC Picture Scenes		
		NS	LPL	HPL	NS	LPL	HPL
1	HPL-LPL	-	1A	1B	-	2A	2B
2		-	2B	2A	-	1B	1A
3	NS-HPL	2B	-	2A	1B	-	1A
4		1A	-	1B	2A	-	2B
5	NS-LPL	2A	2B	-	1A	1B	-
6		1B	1A	-	2B	2A	-

Note: 1A: park with merry-go-round; 1B: park without merry-go-round; 2A: kitchen with dog bowl; 2B: kitchen without dog bowl.

The FTF interactions were audio-recorded and transcribed, and the SCMC chat logs were saved in a Word file.

Questionnaire

The participants were provided with a questionnaire immediately after the task-based interactions. The purpose of the questionnaire was to elicit learners' and NSs' perspectives and attitudes toward L2 learning through task-based FTF and text-SCMC interactions. Based on Zeng's (2017) and Baralt and Gurzynski-Weiss's (2011) studies, the questionnaire included six open-ended and six closed questions (see Appendix F). The open-ended questions asked the participants to reflect on the FTF and SCMC interactions in terms of language learning. The other questions were either Likert type questions or multiple-choice questions. The first two questions asked the participants to rate the difficulty of each interaction. The next two questions addressed the amount of learning acquired from the interactions. The other two questions were about which language skills the L2 learners might have developed through the interactions. Two other researchers in the field of SLA examined

the questionnaire items and agreed that the items were aligned with the purpose of the questionnaire.

Tailor-made posttest

A tailor-made posttest was designed to measure learners' L2 development. A tailor-made posttest was selected because it "allows researchers to assess the specific linguistic items targeted in spontaneous FFEs [focus on form episodes]" (Loewen, 2005, p. 367), referred to as negotiations episodes. A pretest was not used because it was not possible to predict learners' prior knowledge of the linguistic items that would be targeted in the negotiation episodes (Loewen, 2005). The negotiation episodes served as a type of pretest suggesting that learners had difficulty with certain vocabulary and linguistic structures (Loewen, 2005).

A tailor-made posttest was designed for each learner based on the target items that each dyad negotiated. The posttest included vocabulary and grammatical structure items. Pronunciation or spelling skills were not measured because the participants did not use those skills in the FTF or in the text-SCMC mode.

The posttest was administered seven days after the task-based interactions. The test items followed two templates: suppliance and correction (Loewen, 2005). The researcher read aloud the test items generated from the FTF tasks and the learners answered the test items orally as a way to replicate as closely as possible the oral nature of the negotiations (Loewen, 2005). Each testing session was audio-recorded. As for the test items generated from the text-SCMC tasks, the learners answered the test items following a paper-and-pencil format test.

The suppliance test items addressed vocabulary-related negotiations. These items required learners to provide a definition for the problematic word choice, idiom, or phrase (see

Table 4-4, example 1). The suppliance test items could also require the learners to provide a word or phrase that correspond to a given meaning or definition (see Table 4-4, example 2). The first letter of the target word was given to reduce the number of different alternatives that learners could use as a response and increase scoring reliability (Loewen, 2005). The correction test items used sentences that learners produced incorrectly and triggered negotiations (see Table 4-4, example 3). Learners were required to correct those sentences in terms of their grammatical structure.

Table 4-4 Sample of the Test Item Types Included in the Posttests and the Corresponding Negotiation Episodes

Example Number	Test Item Type	Test Item	Corresponding Negotiation Episode
1	Suppliance	What is the meaning of **cross**?	19. HPL: The window has flame like ***cross***. 20. LPL: What mean ***cross***? 21. I think simple flame. 22. HPL: Maybe flame is also difference. 23. ***Cross*** means add mark in Math. 24. LPL: We can find 2 difference. 25. HPL: Yes! 26. LPL: I have no ***cross***! (Dyad 1, text-SCMC context)

Table 4-4 Continued

Example Number	Test Item Type	Test Item	Corresponding Negotiation Episode
2	Suppliance	Complete the sentence. The place where you plug in a charger in the wall or your computer is called ____. It begins with the letter O.	13. NS: Do you have an ***outlet*** on the wall? 14. It is a rectangle with 2 circles on it. 15. HPL: My picture has a mountain and a river. 16. NS: Yay! We spotted a difference! 17. HPL: What is the ***outlet***? 18. NS: To the right of the table on the wall. 19. Above the dog food bowl 20. HPL: I don't have dog food bowl. Is that on the floor? […] 24. NS: That is the second difference! Did you have the ***outlet*** on the wall? 25. HPL: I don't get the meaning of ***outlet***. Is that a curtain? 26. NS: It is the place where you plug in a charger in the wall or your computer. 27. HPL: I don't have ***outlet***. 28. NS: Ok, that is another difference. (Dyad 4, text-SCMC context)
3	Correction	The following sentence is incorrect. Please listen and tell me how you could correct the sentence: *I see two wine glass.*	37. LPL: Yes. Two wine ***glass***. 38. NS: Yes. I see- I have two wine ***glasses*** in the chest on the- 39. LPL: Left- 40. NS: top left. 41. LPL: Left side. Same thing. (Dyad 5, FTF context)

Note: Bold and italic fonts were added for emphasis.

The posttest responses were coded as (a) correct (i.e., the learner's answer correctly matched the target linguistic item in the negotiation); (b) partially correct (i.e., the learner's answer showed some improvement on the target linguistic item but was not entirely accurate); or (c) incorrect (i.e., the learner's answer did not correctly match the target linguistic item in the negotiation). Table 4-5 shows an example of a correct, a partially correct, and an incorrect response.

Table 4-5 Sample of the Posttest Responses

Posttest Coding	Test Item	Learner's Response	Expected Response	Corresponding Negotiation Episode
Correct	When you want to charge your cell phone battery, you use a ____ to charge it. It begins with the letter P.	plug	plug	95. HPL: Ok, so I can't find- Sorry, I find something. So, I'm not sure how to say that but when I charge the battery for cell phone, always I use a- 96. NS: Oh, like a ***plug***? 97. HPL: Uh-huh. Is there a plug? 98. NS: There is no plug that I see. So I guess that's our eighth difference. (Dyad 3, FTF context)
Partially correct	Look at the picture and complete the sentence.  The kids are _____. The word begins with the letter S.	sweing	swinging	19. LPL: Three chirdlen are swing. 20. NS: I don't have three children ***swinging*** in my picture. There are only two children. Our second difference! (Dyad 5, text-SCMC context)
Incorrect	The following sentence is incorrect. Please listen and tell me how you could correct the sentence using the word 'with.' *I see the median girl hair.*	I see with the median girl hair.	I see the girl with median hair.	137. NS: Ok. And is she by herself or is she playing with someone else? 138. LPL: The median girl? 139. NS: ***The girl with the median hair***, is she she by herself? 140. LPL: She's just walking. (Dyad 6, FTF context)

Note: Bold and italic fonts were added for emphasis.

Test reliability and validity

It was not possible to follow the traditional means of establishing reliability (e.g., test-retest) for tailor-made posttests. The suitability of the test items was judged by their construct validity (Loewen, 2005). Construct validity refers to "the extent to which we can interpret a given test score as an indicator of the ability(ies) or construct(s) we want to measure"

(Bachman & Palmer, 1996, p. 21). Since this study used tailor-made posttests to measure learners' skills to produce the linguistic information that learners were given in the negotiations, the construct validity indicated how well the test items were related to the negotiations. Two other researchers in the field of SLA examined the validity of the test templates to determine if they appropriately reflected the negotiated linguistic items. The other researchers were provided with transcripts of a random sample of 20% of the negotiated episodes and the corresponding test items in FTF and text-SCMC interactions. The researchers were asked to rate the test items on a 4-point scale (1 being highly appropriate and 4 inappropriate). Finally, Cohen's Kappa was used to determine the interrater reliability. The interrater reliability was 89% for the FTF posttest items and 78% for the text-SCMC posttest items. Based on the raters' feedback, the researcher improved the test items and both raters rerated them. The final interrater reliability was 100% for both FTF and text-SCMC posttest items.

Data collection procedures

Upon the institutional review board (IRB) approval to collect data for the study, the participants were recruited. Purposeful sampling was used to select the participants in this study. After recruiting four NSs and eight L2 learners and obtaining their written consent to participate in the study, the learners' L2 proficiency was measured and all participants filled out a background questionnaire. The participants were paired up to form the following dyadic types: two NS-LPL, two NS-HPL, and two HPL-LPL.

Next the researcher met with each dyad one at a time at a library, where two study rooms were reserved. Once the participants received instructions on how to complete the spot-the-difference tasks, they performed them through FTF and text-SCMC interactions. The

participants completed the FTF task facing each other at a table in the same room. Having in mind that facial expressions and gestures are inherent features of FTF interactions, the participants were able to see each other's faces. However, they were not able to see each other's pictures because a file folder was placed on the table to serve as a barrier between them. The FTF interactions were audio-recorded. As for the SCMC task, the participants were in different rooms and thus they could not see each other. They received a computer to complete the SCMC task using Skype text-messaging. The participants were not allowed to use the video or audio functions of Skype because the purpose of this study is to investigate negotiation episodes in oral FTF interactions versus SCMC interactions that use only text-messaging. FTF and audiovisual SCMC interactions share similar features (e.g., prosody, stress, speed of interaction, and facial cues). Written and spoken SCMC interactions may facilitate SLA differently due to their different features. Having said that, this study focuses on FTF and text-SCMC interactions because they share different features, which benefit learners in unique ways.

After the participants completed the SCMC task, their chat logs were saved in a Word file. To ensure that the participants followed the task instructions, the researcher monitored them while they worked on the tasks. During the FTF task, the researcher stayed in the room with them. During the SCMC task, the researcher monitored the participants' interactions by alternating visits to their rooms. Immediately after completing both tasks, the participants filled out a questionnaire. Finally, seven days later, each HPL and LPL took the tailor-made posttest. Table 4-6 shows the data collection procedures.

Table 4-6 Overview of Data Collection Procedures

Meeting	Activity	Participants
1	▪ Obtain the consent forms. ▪ Ask participants to fill out the background questionnaire. ▪ Measure learners' L2 proficiency.	NSs and learners
2	▪ Explain the instructions of the spot-the-difference tasks. ▪ Have participants perform spot-the-difference tasks in FTF and text-SCMC. ▪ Ask participants to answer the questionnaire.	NSs and learners
3	▪ Administer the tailor-made posttest.	Learners (both LPLs and HPLs)

Coding

Similar to previous studies (e.g., Rouhshad et al., 2016), the number of words produced by each dyad and individual participant was counted. The time on task (i.e., time from when the participants started working on the assigned task until they completed it) for each dyad was determined. The number of words and time on task were used to standardize the frequency of negotiation episodes to compare the two communication modes. Some comparative studies (e.g., Loewen & Reissner, 2009) have controlled for time (i.e., ratio of negotiation episodes per total minutes spent on task), while others (e.g., Rouhshad et al., 2016) have controlled for number of words (i.e., ratio of negotiations per 1,000 words).

In this study, time and number of words were controlled for a more comprehensive and reliable data analysis. Time was controlled by calculating the ratio of total number of negotiation episodes in each dyad per total minutes spent on task in each mode. The number of words was controlled by calculating the ratio of negotiation episodes in each dyadic type per 100 words in each mode. The number of words included all the words the dyads produced

during the time on task; that is, the time from when the participants started working on each task until they completed it.

The number of negotiation episodes that occurred in each dyad and dyadic type were identified and coded. As Ellis (2015) stated, "Negotiation is accomplished by means of interactional strategies" (p. 149). Therefore, knowing that comprehensible input and output are essential for interactions to facilitate SLA (Long, 1996), input-providing and output-prompting strategies (Ellis, 2015) were used to identify and code the negotiation episodes. Table 4-7 illustrates the negotiation strategy types used.

Table 4-7 Negotiation Strategy Types (Ellis, 2015, p. 150)

Negotiation strategy	Description	Example	Type
Request for clarification	an utterance that elicits clarification of the preceding utterance	NS: Do you see a dog bowl? LPL: Dog bowl? Dog bowl? **What do you mean?** NS: There is a bowl by the table in the floor. LPL: I don't- I don't- I can't see. NS: You don't see that? LPL: Yes. (Dyad 5, FTF context)	Output-prompting
Confirmation check	an utterance immediately following the previous speaker's utterance intended to confirm that the utterance was understood	NS: I have the same. I have a girl next to the birds playing with the balloon. HPL: **Balloon?** NS: On the ground. HPL: I don't have any balloon on the picture. NS: Ok, four. (Dyad 4, FTF context)	Input-providing

Table 4-7 Continued

Negotiation strategy	Description	Example	Type
Recast	an utterance that rephrases the learner's utterance by changing one or more components (subject, verb, object) while still referring to its central meaning (Long, 1996)	HPL: My picture has not have dog food bowl. NS: **"My picture does not have a dog food bowl."** (Dyad 4, SCMC context)	Input-providing
Repetition	an utterance that repeats the learner's erroneous utterance highlighting the error	Learner: Yesterday we visit my aunt. NS: **Yesterday we *visit* his aunt.** (Sauro, 2009)	Output-prompting
Metalinguistic feedback	an utterance that provides comments, information, or questions related to the well-formedness of the learner's utterance	Learner: Yesterday we visit my aunt. NS: **There's a mistake. It's past tense. Did you use the past tense?** (Sauro, 2009)	Output-prompting
Elicitation	a question aimed at eliciting the correct form after a learner has produced an erroneous utterance	Learner: Yesterday we visit my aunt. NS: **Try that again. How do we say that in the past tense? Yesterday we …** (Sauro, 2009)	Output-prompting
Explicit correction	an utterance that provides the learner with the correct form while at the same time indicating an error was committed	Learner: Yesterday we visit my aunt. NS: **You should say visited.** (Sauro, 2009)	Input-providing

Note: Bold and italic fonts were added for emphasis.

Although each negotiation focused on one target item, the negotiations could consist of one or multiple input-providing and output-prompting strategies. For example, the negotiation episode below shows that the HPL used two strategies while negotiating the words "little kids." First, in line 11 the HPL applied an output-prompting strategy to request for

clarification and then in line 13 she applied an input-providing strategy to confirm the utterance she heard.

10. LPL: Little kids.
11. HPL: Uh?
12. LPL: Little kids.
13. HPL: Little kids?
14. LPL: Yes.

Finally, each tailor-made posttest was examined for frequencies of correct, partially correct, and incorrect responses.

Reliability of coding

A second rater, familiar with SLA research, was trained in coding of the data and asked to code 20% of SCMC chat logs and transcriptions of the FTF interactions. The percentage agreement between the two raters was 90%. Disagreements in coding results were discussed until a consensus was reached.

Data analysis

Chi-square test of independence was used to analyze the quantitative data, and content analysis was applied to examine the qualitative data.

Quantitative analysis

The chi-square test of independence—a nonparametrict test—was used due to the small sample size, and the nature of the data being categorical (Mackey & Gass, 2016). The following was determined for FTF and SCMC datasets: the raw frequencies of (a) negotiation episodes that each dyad and dyadic type produced and (b) correct posttest responses of each proficiency level group (i.e., HPL and LPL).

The chi-square test of independence was used to determine if there was a significant difference in the frequency of negotiation episodes among the three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) in FTF versus text-SCMC. The independent variable was the communication mode and the dependent variable was the number of negotiation episodes by dyadic type. The results of the chi-square test of independence was used to answer research question 1— *Is there a significant difference in the frequency of negotiation episodes in FTF interactions compared with text-SCMC interactions among the following three dyadic types: NS-LPL, NS-HPL, and HPL-LPL?*

The nonparametric chi-square test of independence was also used to answer the second research question because of the small sample size of this study and the nature of the data being categorical. The second research question examined if there is a significant difference in the effect of negotiation episodes on subsequent L2 development in FTF interactions compared with text-SCMC interactions. The target data was categorical because the posttest responses were coded into three categories: correct, partially correct, or incorrect. The chi-square test of independence showed if there was a significant difference in the frequency of correct posttest responses of high and low proficiency learners in FTF and SCMC modes. In this case, the independent variable was the communication mode, whereas the dependent variable was the correct posttest responses.

Qualitative analysis

Content analysis was used to answer the third research question which addressed the participants' perceptions of L2 learning through task-based FTF interactions compared with text-SCMC interactions. Content analysis is a research method used to "study documents and

other forms of communication to learn about a person's or group's attitudes, values, and ideas" (Slavin, 2007, p. 143).

A grid-based scheme was used to prepare the qualitative data for content analysis (Mackey & Gass, 2016). According to Mackey and Gass (2016), "the grid is designed to both reflect the participant's input as well as to uncover further information" (p. 103). Grids were created to compile NSs' and L2 learners' answers to the questionnaire.

After creating the grids, NSs' and L2 learners' responses were carefully examined for frequencies of occurrences of views across the participants on L2 learning through task-based FTF interactions compared with text-SCMC interactions. The content of participants' responses was also analyzed to identify "information that can elucidate a trend, exemplify any variation in the data, or provide insights into results that turn out to be different from what was predicted" (Mackey & Gass, 2016, p. 356) in terms of L2 learning through interactions. The content analysis was combined with the quantitative data to provide triangulation for the conclusion of the study (Slavin, 2007).

Results

Research question 1

The first research question asked whether there is a significant difference in the frequency of negotiation episodes in FTF interactions compared with text-SCMC interactions in the following dyadic types: NS-HPL, NS-LPL, and HPL-LPL. Tables 4-8 and 4-9 present the time on task, the number of words, and the number of negotiation episodes in FTF and text-SCMC for each dyadic type.

Table 4-8 Time on Task, Number of Words, and Negotiation Episodes in FTF Interactions

Dyadic type	Dyad	Number of words			Time on task per dyad (min.)	Time on task per dyadic type (min.)	Number of words per dyad	Number of words per dyadic type	Number of negotiation episodes per dyad	Number of negotiation episodes per dyadic type
		NS	LPL	HPL						
HPL-LPL	1	-	710	856	25	32	1566	2487	20	35
	2	-	511	410	7		921		15	
NS-HPL	3	508	-	302	7	13	810	1249	9	13
	4	194	-	245	6		439		4	
NS-LPL	5	357	216	-	7	31	573	2638	14	43
	6	1439	626	-	24		2065		29	

Table 4-9 Time on Task, Number of Words, and Negotiation Episodes in Text-SCMC

Dyadic type	Dyad	Number of words			Time on task per dyad (min.)	Time on task per dyadic type (min.)	Number of words per dyad	Number of words per dyadic type	Number of negotiation episodes per dyad	Number of negotiation episodes per dyadic type
		NS	LPL	HPL						
HPL-LPL	1	-	128	237	38	154	365	1290	4	7
	2	-	318	607	116		925		3	
NS-HPL	3	265	-	136	22	44	401	773	2	8
	4	208	-	164	22		372		6	
NS-LPL	5	594	254	-	66	142	848	1553	8	10
	6	269	436	-	76		705		2	

Overall, in FTF the six dyads spent an average of 12.66 minutes to complete the task, while in text-SCMC they spent an average of 56.66 minutes on the task. In FTF, the average time on task for both NS-LPL (M = 15.50) and HPL-LPL (M = 16.00) dyadic types was more than double of the average time on task for the NS-HPL dyadic type (M = 6.50). In text-SCMC, the average time on task for both NS-LPL (M = 71.00) and HPL-LPL dyadic types (M

= 77.00) was more than triple of the time on task average of the NS-HPL dyadic type (*M* = 22.00).

In FTF, the six dyads altogether produced an average of 1,062.33 words, whereas in text-SCMC, they produced an average of 602.66 words. In FTF, the amount of language production of both NS-LPL (*M* = 1,319.00) and HPL-LPL (*M* = 1,243.50) dyadic types was twice as much as the language production of the NS-HPL dyadic type (*M* = 624.50). In text-SCMC, the amount of language production of NS-LPL (*M* = 776.50) and HPL-LPL (*M* = 645.00) dyadic types was also greater than the NS-HPL dyadic type (*M* = 386.50).

Regarding the number of negotiation episodes, all six dyads generated three times more negotiation episodes in FTF (*M* = 15.17) than in text-SCMC (*M* = 4.17). In FTF, the number of negotiation episodes of both NS-LPL (*M* = 21.50) and HPL-LPL (*M* = 17.50) dyadic types was at least twice as many as that generated by the NS-HPL dyadic type (*M* = 6.50). In text-SCMC, the three dyadic types produced a roughly similar average of negotiation episodes (HPL-LPL, *M* = 3.50; NS-HPL, *M* = 4.00; NS-LPL, *M* = 5.00).

Due to the great differences in the time on task and the amount of language production in FTF and text-SCMC, the number of negotiation episodes across the two modalities was standardized by controlling for number of words produced (i.e., ratio of negotiations per 100 words) and time spent on task (i.e., ratio of negotiation episodes per total minutes spent on task).

After controlling for time and number of words, the ratio of negotiation episodes produced similar results. As Table 4-10 and Table 4-11 show, in FTF the NS-LPL dyadic type produced the highest (controlled for time = 1.39; controlled for words = 1.63) and NS-HPL (controlled for time = 1.00; controlled for words = 1.04) produced the lowest ratio of

negotiation episodes. On the other hand, in text-SCMC the NS-HPL dyadic type generated the highest (controlled for time = 0.18; controlled for words = 1.03) and HPL-LPL the lowest (controlled for time = 0.05; controlled for words = 0.54) ratio of negotiation episodes.

Table 4-10 Ratio of Negotiation Episodes per Total Minutes Spent on Task

		FTF		Text-SCMC	
Dyadic type	Dyad	Ratio per dyad	Ratio per dyadic type	Ratio per dyad	Ratio per dyadic type
HPL-LPL	1	0.80	1.09	0.11	0.05
	2	2.14		0.03	
NS-HPL	3	1.29	1.00	0.09	0.18
	4	0.67		0.27	
NS-LPL	5	2.00	1.39	0.12	0.07
	6	1.21		0.03	

Table 4-11 Ratio of Negotiation Episodes per 100 Words

		FTF		Text-SCMC	
Dyadic type	Dyad	Ratio per dyad	Ratio per dyadic type	Ratio per dyad	Ratio per dyadic type
HPL-LPL	1	1.28	1.41	1.10	0.54
	2	1.63		0.32	
NS-HPL	3	1.11	1.04	0.50	1.03
	4	0.91		1.61	
NS-LPL	5	2.44	1.63	0.94	0.64
	6	1.40		0.28	

A chi-square test of independence was performed on the frequencies of negotiation episodes that each dyadic type produced. Results revealed no statistically significant

difference in the frequency of negotiation episodes in FTF interactions compared with text-SCMC among the three dyadic types, $X^2(2, N=116) = 4.2, p = .12$.

Negotiation strategies

The negotiation episodes were examined by the input-providing and output-prompting strategies that NSs and L2 learners applied in the interactions (see Table 4-7). Although each negotiation focused on one target item, the negotiations could consist of one or multiple input-providing and output-prompting strategies. Overall 166 strategies were identified in both communication modes. Most of the strategies occurred in FTF (n = 138, 83%) compared to text-SCMC (n = 28, 17%). Out of 166 strategies, 113 were input-providing (FTF n = 97, 86%; text-SCMC n = 16, 14%) and 53 were output-prompting (FTF n = 41, 77%; text-SCMC n = 12, 23%).

Input-providing strategies

As illustrated in Table 4-12, two types of input-providing strategies occurred in FTF mode, with confirmation checks (n = 77, 79%) being more used than recasts (n = 17, 18%). In FTF interactions, most of the input-providing strategies took place between a NS and a LPL. To be specific, 56% of the confirmation checks occurred between NS-LPL, 38% between HPL-LPL, and 7% between NS-HPL. Recasts were also identified in the three dyadic types but were only used by the interlocutors with the higher English proficiency level. Similar to confirmation checks, recasts mostly occurred in NS-LPL (65%), followed by HPL-LPL (29%), and then by NS-HPL (6%) dyadic type.

Table 4-12 Frequency of Input-providing Strategies in FTF and Text-SCMC Interactions

		FTF								Text-SCMC			
Dyadic type	Interlocutors	Confirmation check		Recast		Confirmation check + Recast		Total per dyadic type		Recast		Total per dyadic type	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
HPL-LPL	HPLs	18	23	5	29	1	33	35	36	4	25	4	25
	LPLs	11	14	-	-	-	-			-	-		
NS-HPL	NSs	1	1	1	6	-	-	6	6	6	38	7	44
	HPLs	4	5	-	-	-	-			1	6		
NS-LPL	NSs	19	25	11	65	2	67	56	58	5	31	5	31
	LPLs	24	31	-	-	-	-			-	-		
Total		77	100	17	100	3	100	97	100	16	100	16	100

A third type of input-providing strategy was identified in FTF interactions: a combination of confirmation check and recast (*n* = 3, 3%), which was applied by a NS and a HPL (both interacting with a LPL). In the following example, the NS (from dyad 6) used a combination of confirmation check and recast when negotiating the word "flowers." The negotiation episode shows that after the LPL said, "Four flower" in line 68, the NSs did not use a confirmation check by simply asking, "Flower?" Instead, in line 69 the NS asked, "Flowers?" Her question not only served to confirm that the LPL's previous utterance was understood but also to correct her partner's mistake. Therefore, the NS applied a strategy that combines two input-providing strategies: confirmation check and recast.

66. LPL: Yes, and- Under, under the front palm tree, there are four flower.
67. NS: There are what?
68. LPL: There are four flower. Four, four, four. One, two, three, four. Four flower.
69. NS: **Flowers?***
70. LPL: Yes.

[*Note: The bold font was added here for emphasis.]

Different from FTF interactions, in text-SCMC interactions, there were no occurrences of confirmation checks. Recast was the only input-providing strategy applied and was mostly used in interactions between NSs and HPLs. Recasts were identified in the three dyadic types, however, out of the 16 instances of recasts, 15 of them were implemented only by the interlocutors with higher English proficiency level. Specifically, 44% of the recasts occurred between NS-HPL, 31% between NS-LPL, and 25% between HPL-LPL.

Explicit correction did not occur in either communication mode. Although both NSs and L2 learners were instructed to correct each other's language mistakes, none of them did so explicitly. Based on the questionnaire answers, most L2 learners (75%) indicated that they did not correct their partners' mistakes because they either did not find any mistakes or want to interrupt the conversation. As for the NSs, they reported that they explicitly corrected only a few mistakes, mainly in the text-SCMC mode. The NSs suggested that their focus was more on collaborating with their partners to complete the tasks than correcting their language mistakes. Moreover, the NSs did not want to overwhelm the L2 learners since they already had to concentrate on the language needed to complete the tasks. As the NS from dyad 6 explained, "I didn't have to [correct my partner's English mistakes] a lot. I may have a few times, but I don't believe I did about grammar. There were times that her grammar wasn't 'perfect,' but it was perfectly understandable, in that case, I let it slide. She already had a main task [being able to complete the task]."

Output-prompting strategies

Regarding output-prompting strategies, repetition or metalinguistic feedback did not occur in either communication mode. The participants used some other output-prompting strategies (see Table 4-13). In the FTF context, request for clarification (n = 39, 95%) and

elicitation (n = 2, 5%) strategies were applied. In FTF interactions, most of the output-prompting strategies took place between a NS and a LPL. To be specific, 56% of the requests for clarification occurred between NS-LPL, 26% between HPL-LPL, and 18% between NS-HPL. Elicitations were also identified but only in the NS-LPL dyadic type. In the text-SCMC context, request for clarification was the only output-prompting strategy identified. Both NS-LPL and HPL-LPL dyadic types applied the same frequency of request for clarification (42%), followed by the NS-HPL dyadic type (17%).

Table 4-13 Frequency of Output-prompting Strategies in FTF and Text-SCMC Interactions

		FTF						Text-SCMC			
Dyadic type	Interlocutors	Request for clarification		Elicitation		Total per dyadic type		Request for clarification		Total per dyadic type	
		n	%	*n*	%	*n*	%	*n*	%	*n*	%
HPL-LPL	HPLs	4	10	-	-	10	24	1	8	5	42
	LPLs	6	15	-	-			4	33		
NS-HPL	NSs	6	15	-	-	7	17	-	-	2	17
	HPLs	1	3	-	-			2	17		
NS-LPL	NSs	15	39	-	-	24	59	3	25	5	42
	LPLs	7	18	2	100			2	17		
Total		39	100	2	100	41	100	12	100	12	100

According to Ellis (2015), the main purpose of output-prompting strategies is to have an interlocutor (usually with a higher level of language proficiency) "push learners to modify their problematic utterances" (p. 149). Careful analyses of the interactions indicated that interlocutors, who were L2 learners, did not apply two output-prompting strategies— request for clarification or elicitation. Instead, they applied those two strategies to obtain the target

item or to understand the meaning of an unknown word. Fifteen of the instances of request for clarification (FTF *n* = 9, 23%; text-SCMC *n* = 6, 50%) and two of elicitation strategies (FTF *n* = 2, 100%) were implemented by a learner. The following two examples illustrate how they applied request for clarification and elicitation in their interactions.

The example below shows a LPL and a HPL negotiating the word "cross" in the text-SCMC context. In line 19, the HPL correctly used the word "cross." Not understanding what it meant, in line 20 the LPL requested for clarification: "*What mean cross?*" By doing so, the LPL prompted output that provided her with the meaning of the unknown word in line 23: "*Cross means add mark in Math*".

19. HPL: The window has flame like cross.
20. LPL: **What mean cross?***
21. I think simple flame.
22. HPL: Maybe flame is also difference.
23. Cross means add mark in Math.
24. LPL: We can find 2 difference.
25. HPL: Yes!
26. LPL: I have no cross!

[*Note: The bold font was added here for emphasis.]

The following example presents how elicitation was used by a LPL in the FTF context. In line 54, without uttering the word "adults," the LPL confirmed that she saw two adults and one child at the picnic table in the picture. In line 55, the NS stated "Two adults. Yeah." Since it is common for interlocutors to complete each other's utterances in the FTF context, this example could be interpreted as the NS simply completing her partners' utterance. However, it was not the case. As the researcher monitored the FTF interactions, it was noticed that the LPL was not interrupted by the NS during her turn. There was a short pause between the LPL's and the NS's turns (lines 54 and 55). By stating "One child, two…" and then pausing,

the LPL suggested that she used elicitation to prompt output from the NS to obtain the target item—"adults."

51. NS: So, there is a picnic table with three people-
52. LPL: Yes.
53. NS: Two adults and one child?
54. LPL: **Yes. One child, two...***
55. NS: Two adults. Yeah. Ok.

[*Note: The bold font was added here for emphasis.]

In short, after controlling for time and number of words, the ratio of negotiation episodes indicated that, in FTF, the NS-LPL dyadic type produced the highest frequency of negotiations, while, in text-SCMC, the NS-HPL dyadic type generated the highest frequency of negotiations. However, no statistically significant difference was found in the frequency of negotiation episodes in FTF interactions compared with text-SCMC among the three dyadic types.

Regarding input-providing strategies, FTF interactions differed from text-SCMC interactions in two ways. First, in the FTF context, both confirmation check and recast occurred, whereas, in the text-SCMC context, recast was the only strategy that took place. Second, the NS-LPL dyadic type applied most of the input-providing strategies in FTF context, whereas these strategies were mostly implemented by the NS-HPL dyadic type in text-SCMC context. As for output-prompting strategies, FTF interactions differed from text-SCMC interactions in two ways. First, in FTF both request for clarification and elicitation occurred, whereas, in text-SCMC, request for clarification was the only strategy identified. Second, the NS-LPL dyadic type applied most of the output-prompting strategies in FTF,

whereas these strategies were mostly implemented by both NS-LPL and HPL-LPL dyadic types in text-SCMC.

Results also showed that interlocutors implemented output-prompting strategies not only to push their partners (who were L2 learners) to modify their problematic utterances, but the L2 learners also used them to obtain the target item or to understand the meaning of an unknown word.

Research question 2

The second research question asked whether there is a significant difference in the effect of negotiation episodes on subsequent L2 development in FTF interactions compared with text-SCMC. The descriptive statistics of the learners' test responses are displayed in Table 4-14. In FTF, the L2 learners generated 69% (n = 49) of the test responses correctly, 12% (n = 11) of the test responses partially correctly, and 12% (n = 11) of the test responses incorrectly. The LPLs produced 55% of the correct test responses, whereas the HPLs produced 45% of the correct test responses. The LPLs from the HPL-LPL dyads generated a higher percentage of correct test responses (75%) than the LPLs from the NS-LPL dyads (52%). The HPLs from the NS-HPL dyads correctly recalled and reproduced slightly more test items than the HPLs from the HPL-LPL dyads (86% and 84%, respectively).

In text-SCMC, the L2 learners generated 35% (n = 8) of the test responses correctly, 30% (n = 7) of the test responses partially correctly, and 35% (n = 8) of the test responses incorrectly. The LPLs produced 38% of the correct test responses, whereas the HPLs produced 63% of the correct test responses. The LPLs from the HPL-LPL dyads generated a higher percentage of correct test responses (33%) than the LPLs from the NS-LPL dyads

(14%). The HPLs from the NS-HPL dyads correctly recalled and reproduced more test items than the HPLs from the HPL-LPL dyads (56% and 0%, respectively).

Table 4-14 Descriptive Statistics of the Learners' Test Responses

Interlocutors and Dyadic Types	Test Response	FTF		Text-SCMC	
		n	%	*n*	%
LPLs from HPL-LPL dyads	Correct	12	75	2	33
	Partially Correct	1	6	2	33
	Incorrect	3	19	2	33
LPLs from NS-LPL dyads	Correct	15	52	1	14
	Partially Correct	8	28	2	29
	Incorrect	6	21	4	57
HPLs from HPL-LPL dyads	Correct	16	84	0	0
	Partially Correct	2	11	0	0
	Incorrect	1	5	1	100
HPLs from NS-HPL dyads	Correct	6	86	5	57
	Partially Correct	0	0	3	33
	Incorrect	1	14	1	11

The results of the percentage of correct test responses are aligned with the L2 learners' questionnaire answers. All HPLs reported that text-SCMC facilitated their L2 development more than FTF, and 75% of them indicated that they learned more through text-SCMC than FTF. According to these learners, since they could visualize the text, they could notice and correct their own mistakes. Moreover, text-SCMC required them to produce more language to express themselves. One HPL explained that she learned more through the text-SCMC than the FTF mode by sharing the following: "Because I saw the sentences, after I posted the messages, I noticed where is my mistakes."

Seventy-five percent of the LPLs, on the other hand, indicated in the open-ended questions that FTF facilitated their L2 development more than text-SCMC. However, the LPLs' report in the open-ended questions contradicted their responses to the closed questions. In the closed questions, 75% of the LPLs reported no difference between the two communication modes regarding how much they learned. The LPLs' contradictory responses might mean that they did not notice much difference between both modes in terms of the effects each mode had on their L2 development.

In order to examine if there was a significant difference in the effect of negotiation episodes on subsequent L2 development in FTF interactions compared with text-SCMC, chi-square analyses were performed. The results revealed no statistically significant difference in the subsequent language learning (correct responses to test items) between the two communication modes, $X^2(1, N=57) = .29$, $p = .58$.

Linguistic focus

Overall, in both interaction modes there were 67 items on lexicon and 27 on syntax. Most of the items on lexicon were part of the FTF interactions (n = 58, 87%) compared to that in text-SCMC (n = 9, 13%). Interactions in both modes contained approximately the same number of negotiations on syntax (FTF n = 13, 48%; text-SCMC n = 14, 52%).

The percentage of correct responses suggested that the LPLs and the HPLs recalled and reproduced lexical items and syntactic issues negotiated in FTF interactions better than the ones negotiated in text-SCMC. The HPLs reached a higher percentage of correct responses than the LPLs in both modes. Tables 4-15 and 4-16 show the analysis of posttest items distribution in both communication modes. The LPLs recalled 67% of the lexical items

and 42% of the syntactic items negotiated in FTF interactions and the HPLs recalled 84% of the lexical items and 100% of the syntactic items negotiated in the FTF mode.

Table 4-15 Description of Posttest Item Distribution in FTF Interactions

	Total items	Total items in LPLs' posttests		Total items in HPLs' posttests		LPLs' correct responses		HPLs' correct responses	
		n	%	*n*	%	*n*	%	*n*	%
Lexicon	58	33	57	25	43	22	67	21	84
Syntax	13	12	92	1	8	5	42	1	100

In contrast, the HPLs recalled 67% of the lexical items and 43% of the syntactic items negotiated in the text-SCMC mode correctly, while the LPLs recalled 33% of the lexical items and 14% of the syntactic ones negotiated in text-SCMC.

Table 4-16 Description of Posttest Item Distribution in Text-SCMC

	Total items	Total items in LPLs' posttests		Total items in HPLs' posttests		LPLs' correct responses		HPLs' correct responses	
		n	%	*n*	%	*n*	%	*n*	%
Lexicon	9	6	67	3	33	2	33	2	67
Syntax	14	7	50	7	50	1	14	3	43

In sum, the LPLs produced a higher frequency of correct test responses than the HPLs when engaged in FTF interactions. On the other hand, the HPLs generated a higher frequency of correct test responses than the LPLs when engaged in text-SCMC interactions. However, the results of this study revealed no statistically significant difference in the distribution of

correct test responses between the two communication modes. In terms of the linguistic focus, the percentage of correct responses indicated that both proficiency level groups recalled and reproduced better when involved in FTF interactions than in text-SCMC. The HPLs reached a higher percentage of correct responses than the LPLs in both modes.

Research question 3

Research question three inquired about the participants' perceptions of L2 learning through task-based FTF interaction compared with text-SCMC. Based on the questionnaire, all the NSs reported that they preferred interacting with the L2 learners in the FTF context mainly because being able to see their partners' facial expressions facilitated the communication, which allowed the interaction to flow faster than in the text-SCMC context. For instance, the NS from dyad 5 expressed, "I preferred face-to-face communication because I was better able to understand exactly what she was trying to tell me by looking at her." As for the L2 learners, most of them (75%) indicated that they also preferred interacting in the FTF context for two main reasons. First, the FTF context allowed for faster interaction since the FTF mode allows for short responses and does not require much wait time between the interlocutors' turns. For example, the HPL from dyad 4 stated that she preferred FTF interaction "because that is easy to get the answers. Short answer in FTF is OK because of our facial expressions. In Skype, I needed more time to think, find the right word and think of its spelling." Second, the L2 learners shared that they preferred FTF interactions because they could see their partner's facial expressions and hear their partners' tone of voice, making it easier to understand each other.

Seventy-five percent of the NSs agreed that FTF interactions can contribute to L2 development by providing L2 learners with input and body language to help learners

understand it. Two of the NSs expressed that FTF interactions are also beneficial to L2 development by encouraging learners to practice the English language. As the NS from dyad 5 explained, “FTF helps people learn more because they are applying the knowledge. This interaction requires learners to think on their toes as well as practice saying the word and hearing it being said.” The learners’ perspectives on how FTF interactions can help L2 development varied based on their proficiency level. The LPLs emphasized that the FTF mode is beneficial to L2 development because it encourages learners to produce output, regardless of accuracy. On the other hand, the HPLs highlighted the fact that the FTF mode can contribute to L2 development because it helps with fluency. For example, the HPL from dyad 2 shared, “It [FTF interaction] needs more speedy communication. But if we make a mistake in the FTF conversation, we were going away. FTF doesn’t help to learn correct grammar. FTF helps with fluency.”

Seventy-five percent of the NSs reported that text-SCMC also facilitated L2 development (specifically in terms of grammatical structures and spelling) through the input that learners received. Different from the FTF mode, the text-SCMC allowed learners to visualize and reread the input received. As the NS from dyad 6 explained, text-SCMC helps L2 learner by “allowing [them] to go back and read what was said previously.” Moreover, one NS pointed out that text-SCMC helps L2 learning by encouraging learners to produce language. As for the L2 learners, while they emphasized that the FTF mode helps the development of speaking skills, they also highlighted that the text-SCMC mode helps the development of writing skills, specifically grammatical structures and spelling. According to the L2 learners, text-SCMC develops writing skills because it allows learners to visualize and revise the text, giving them the chance to notice and learn from their own mistakes.

In short, compared to text-SCMC, all the NSs and most of the L2 learners preferred completing the task in the FTF context because its unique features made it easier for them to communicate. Despite most participants preferring the FTF context, the qualitative findings indicated that the NSs and the learners were aware of the benefits of the unique features of each communication mode and how FTF and text-SCMC could facilitate SLA. While the participants expressed that text-SCMC features could mainly contribute to L2 writing skills and grammatical accuracy, they reported that the FTF features could improve speaking skills and fluency.

Discussion

Frequency of negotiation episodes

This study compared (a) the frequency of the negotiation episodes in FTF versus text-SCMC task-based interactions in three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL); (b) how negotiation episodes are related to subsequent L2 development in each mode and each dyadic type; and (c) participants' perceptions of L2 learning through task-based interactions in two different modes.

The first research question addressed the frequency of negotiation episodes in FTF versus text-SCMC in three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL). In order to answer the first research question, the amount of talk elicited in both communication modes was calculated, negotiation episodes were identified, and then their ratios per time on task and per 100 words were calculated to determine the difference in frequency between the two modes. Moreover, the negotiation strategies were categorized as input-providing and output-prompting to better understand the features of the negotiation episodes.

The results of this study showed that FTF produced more language output in a shorter time than text-SCMC. Similar to other studies, the ratio of negotiations to the amount of language production and time on task per dyadic type revealed that negotiation episodes were also more frequent in FTF than in text-SCMC (Loewen & Reissner, 2009; Roudshad et al., 2016). The difference in the ratio of negotiations between FTF and text-SCMC might be explained by the nature of each mode that encourages the use of certain negotiation strategies thus generating negotiation episodes. As supported by previous studies (e.g., Kim, 2014; Roudshad et al., 2016), since the features of the FTF mode do not include slow pace, visibility of text, or accessibility to previous text, the FTF context encourages interlocutors to apply negotiation strategies that they may not apply as often (or not at all) in the text-SCMC context (Yuksel & Inan, 2014). For example, in this study, out of 166 negotiation strategies identified, 77 (46%) of them were confirmation checks, which only occurred in the FTF mode. Another negotiation strategy that was noticeably higher in FTF than in text-SCMC in this study was request for clarification. The frequency of request for clarification was three times higher in the FTF (n = 39, 23%) than in the text-SCMC (n = 12, 7%) mode. Similar findings were reported in Yuksel and Inan's (2014) and Kim's (2014) comparative studies on L-L interactions. Yuksel and Inan found that confirmation checks were dominant in FTF interactions. The researchers found a significant difference in the means of confirmation checks in FTF and text-SCMC. Kim's results indicated a higher frequency of requests for clarification in FTF than in text-SCMC. Kim argued that learners might have applied fewer requests for clarification in text-SCMC as a way to avoid creating negotiations since they would be more time-consuming than in the FTF mode. The finding of this study supports

those of previous research: compared to text-SCMC, FTF creates more instances of negotiations.

Although the three dyadic types generated more negotiations in FTF than in text-SCMC interactions, the ratio of negotiations in the three dyadic types varied. In FTF, the NS-LPL dyadic type produced the highest and NS-HPL dyads produced the lowest ratio of negotiation episodes. In contrast, in text-SCMC, the NS-HPL dyadic type generated the highest and HPL-LPL dyads produced the lowest ratio of negotiation episodes. No study has investigated the frequency of negotiations among NS-HPL, NS-LPL, and HPL-LPL dyadic types in FTF versus text-SCMC modes. Nevertheless, some previous studies that have compared the occurrences of negotiations between NS-L and L-L have found similar results. For example, Fernandez-Garcia and Arbelais (2003) compared L-L, NS-NS, and NS-L dyadic types and found that NS-L produced more negotiations than the other dyadic types in both modes, especially in FTF. The researchers explained that NS-L interactions might have led to more negotiations due to learners' unfamiliarity with NSs' pronunciation. In their investigation on FTF interactions, Zhao and Bitchener (2007) also identified a significantly higher frequency of negotiation episodes in NS-L compared to L-L interactions. The fact that the NS was a teacher might have impacted the higher number of negotiations in NS-L than in L-L dyads where learners shared similar proficiency levels.

Contrary to previous studies' findings and this study, in SCMC settings, Sotillo (2005) found that HPL-LPL dyads produced more negotiations than NS-LPL dyads because HPLs provided more feedback to LPLs than NSs. Sotillo argued that HPLs might have provided more feedback than NSs because they had empathy for the LPLs and understood the process of L2 development. The difference between Sotillo's and this study's findings might be

explained by the fact that she investigated different-first-language (L1) learners, whereas this study examined same-L1 learners. Bueno Alastuey (2011) found that, compared to same-L1 speakers, interactions between different-L1 speakers facilitated SLA more because they promoted more time on task, more L2 use, fewer L1 switches, and significantly higher language proficiency achievement. Having different L1 could encourage more negotiation episodes because the speakers do not share social and linguistic background (Bueno Alastuey, 2011; Fernandez-Garcia & Arbelais, 2003).

In the current study, the fact that NS-LPL and NS-HPL produced the highest ratio of negotiation episodes in FTF and text-SCMC settings, respectively, suggests that, when interacting with a NS, LPLs seem to benefit more from FTF interactions, whereas HPLs might benefit more from text-SCMC in terms of generating negotiation episodes. The results of the questionnaire provided further evidence to support this finding. Most of the LPLs reported that they learned more through the FTF communication mode because it was easier to express themselves since they could use body language and see their partners' facial expressions. All HPLs indicated that they believed text-SCMC facilitated their L2 development more than FTF because they could see and access the text, making it easier for them to notice and correct their own mistakes. In Zeng's (2017) study, intermediate L2 learners also reported that, compared to the FTF mode, the text-SCMC mode provided more time for reflection and promoted more opportunities for noticing language issues.

Although the ratio of negotiations was higher in FTF than in text-SCMC, no statistically significant difference was found in the frequency of negotiation episodes in FTF interactions compared with text-SCMC among the three dyadic types. This finding differs from previous studies. For example, Roudshad et al.'s (2016) study's results indicated that

FTF generated significantly more negotiations of meaning than text-SCMC. On the other hand, Zeng's (2017) findings revealed that the text-SCMC setting produced significantly more negotiations than the FTF setting. The difference between this study's and Roudshad et al.'s and Zeng's results can be explained by the fact that, in contrast to this study, their research involved only one dyadic type (i.e., L-L) and the learners had the same proficiency level (i.e., intermediate).

Subsequent L2 development

The second research question addressed the effect of negotiation on subsequent L2 development in FTF interactions compared with text-SCMC. To answer this research question, tailor-made posttests were designed and used to measure the learners' L2 development. Results revealed no statistically significant difference in the LPLs' and HPLs' L2 learning between the two communication modes.

To the best of our knowledge, no other study has measured L2 learning based on interactions between NS-LPL, NS-HPL, and HPL-LPL in both communication modes. Nevertheless, Kung and Eslami (2015) investigated negotiations and subsequent L2 development in text-SCMC interactions in the same three dyadic types as this study and did not find any significant difference in the test performance of the learners of different proficiency levels either. Similar to Kung and Eslami's research, both proficiency levels in this study developed their L2 through the text-SCMC mode because they had more time to process the input and to turn it to intake, and were able to have visual access to text—greater processing time and visibility of text are two text-SCMC features that help learners focus their attention not only on content but on grammatical aspects as well.

Although the FTF mode did not allow learners to use text-SCMC's features, such as more processing time and text visibility, the features of the FTF mode (e.g., verbal and non-verbal cues) encouraged the implementation of negotiation strategies (138 out of 166). As stated by Gass and Mackey (2015), negotiation strategies have the potential to "direct learners' attention to something new, such as a new lexical item or grammatical construction, thus promoting the development of the L2" (p. 186). Furthermore, the FTF context encouraged the use of input-providing strategies (97 out of 138). According to Ellis (2015), input-providing strategies facilitate L2 development because they "provide learners with the correct target form" (p. 149). Having said that, the implementation of negotiation strategies, especially input-providing ones, could have assisted the subsequent L2 learning by both proficiency level learners in the FTF mode.

Despite the lack of statistically significant differences, the frequency of correct responses suggests that the FTF mode benefited LPLs' learning more than HPLs', whereas text-SCMC facilitated HPLs' learning more than LPLs'. These differences can be interpreted by referring to the number of negotiation episodes generated in the interactions and the unique features of both communication modes. In this study, in the FTF context, NS-LPL and HPL-LPL dyadic types produced a higher ratio of negotiation episodes than NS-HPL dyads. Moreover, compared to the HPLs, the LPLs obtained a higher percentage of correct responses in the posttest items generated from the FTF interactions. The FTF mode might have benefited the LPLs more than the HPLs because FTF interactions allow the use of paralinguistic cues (e.g., tone of voice, facial expressions), which may immediately indicate the interlocutors' non-understanding. As previous studies have found (e.g., Boonsue, Jansem, & Srinaowaratt, 2015; Kim, 2014), unique features of FTF (e.g., fast pace, paralinguistic cues) can encourage

more language production and negotiations. Boonsue, Jansem, and Srinaowaratt, (2015) and Kim (2014) investigated FTF and text-SCMC interactions between L2 learners and found that the communication mode had an impact on the learners' behavior in terms of language production and how they solved communication issues. For example, in Kim's study, intermediate level learners initiated more negotiations in the FTF than in the text-SCMC mode because they were aware that negotiations would be time-consuming in the latter mode.

In contrast, in the text-SCMC context, NS-HPL generated the highest ratio of negotiation episodes among the three dyadic types. Also, compared to the LPLs (38%), the HPLs (63%) produced a higher percentage of correct responses in the posttest items generated from text-SCMC negotiations. Kung and Eslami (2015), however, found that LPLs and HPLs produced similar percentage of correct responses (59% and 60%, respectively). The difference between their findings and this study's findings could be due to the number of dyads and negotiation episodes identified. They identified 828 negotiations in 30 dyads, whereas this study identified 25 negotiations in six dyads. Knowing that the number of posttest items were based on the number of negotiations, if a higher number of negotiations were present in this study, the results could have been different.

The unique features of text-SCMC may explain why the HPLs produced a higher percentage of correct responses in the posttest items. Comparative studies have confirmed the benefits of text-SCMC in facilitating intermediate L2 proficiency level learners' noticing and self-editing (Lai & Zhao, 2006; Yuksel & Inan, 2014). Lai and Zhao's (2006) comparison of FTF and text-SCMC interactions indicated that text-SCMC promoted more self-correction and noticing due to longer processing time, self-editing capacity, and greater saliency of errors. Furthermore, Yuksel and Inan (2014) found that both FTF and text-SCMC interactions

promoted a high number of negotiations of meaning. However, the text-SCMC mode led to more instances of noticing of lexical and grammatical negotiations than the FTF mode. Such findings support Schmidt's (1990) argument: "noticing is the necessary and sufficient condition for converting input to intake" (p. 129).

The learners' language proficiency might also explain why text-SCMC benefited the HPLs' learning more than the LPLs'. Loewen and Erlam (2006) investigated text-SCMC interactions with beginner level learners and found no evidence of learning. The researchers explained that text-SCMC did not facilitate beginners' L2 learning probably because their low proficiency level did not allow them to notice interlanguage gaps or corrections they might have received. Therefore, in this study, interactions in text-SCMC mode might have contributed more to HPLs' learning than to LPLs' because the former learners had a wider lexicon and syntax knowledge in L2 which might have led them to notice more corrections and understand the input received (Loewen & Erlam, 2006).

In addition to posttest results, the L2 learners' responses to the questionnaire also support the finding that, in this study, the FTF mode benefited LPLs' learning more than HPLs', whereas text-SCMC facilitated HPLs' learning more than LPLs'. In the questionnaire, all HPLs indicated that they learned more through text-SCMC interactions and 75% of the LPLs suggested that they learned more through FTF interactions.

Linguistic focus

Another noteworthy result was the difference in linguistic focus (i.e., lexicon and syntax) on the posttest items. Based on the percentage frequency of correct responses, compared to text-SCMC, FTF led to more lexicon and syntax learning no matter if the learners had a low or high language proficiency level.

In terms of lexicon, in the FTF mode, the LPLs and HPLs reached 67% and 84% of correct responses to test items, respectively, whereas, in the text-SCMC mode, LPLs and HPLs had 33% and 67% correct responses on posttest items, respectively. Although no comparative studies have measured learners' L2 development in FTF and text-SCMC interactions, previous studies (Lai & Zhao, 2006; Yuksel & Inan, 2014; Zeng, 2017) have found that learners had more opportunities to improve L2 lexicon through FTF interactions because they focused more on content in that mode than in text-SCMC. As supported by other studies (Lai & Zhao, 2006; Yuksel & Inan, 2014; Zeng, 2017), FTF interactions may have led to more lexicon than syntax learning due to the (a) fact that lexicon affects communication of meaning more than syntax and (b) unique features of the FTF mode. As Yuksel and Inan (2014) explained, because FTF is fast pace and lacks visibility of text, it tends to generate more focus on lexicon through negotiations of meaning.

Regarding syntax, in the FTF mode, the LPLs and HPLs correctly responded to 42% and 100% of the posttest items, respectively; whereas in the text-SCMC mode, LPLs and HPLs correctly responded to 14% and 43% of the posttest items, respectively. Despite the lower number of correct responses to the test items in the text-SCMC mode, the fact that both proficiency level learners recalled and reproduced more correct items in the FTF mode was surprising. It was a surprising finding because most studies (Lai & Zhao, 2006; Yuksel & Inan, 2014; Zeng, 2017) that have compared task-based FTF versus text-SCMC interactions in SLA have indicated that the unique features of the text-SCMC mode created more opportunities for learners to develop syntax. Lai and Zhao (2006), Yuksel and Inan (2014), and Zeng (2017) investigated L-L interactions in the FTF and text-SCMC contexts and found that learners noticed more language errors, including syntactic errors, in SCMC than in FTF.

As Lai and Zhao explained, the greater processing time and accessibility of text are two unique features of text-SCMC that might have contributed to learners noticing more linguistic errors. In contrast, Loewen and Reissner (2009) examined L-L interactions in the FTF and text-SCMC contexts and found that the former mode generated more opportunities for syntax learning. The researchers explained that the presence of a teacher might have encouraged learners to increase the frequency of negotiations involving syntax and to pay closer attention to accuracy in the FTF mode. Different from Loewen and Reissner's research, the learners in this study were not monitored by a teacher. However, the presence of the researcher during the FTF interactions may have encouraged them to pay closer attention to accuracy.

Participants' perceptions of L2 learning through interactions

The third research question inquired about the participants' perceptions of L2 learning through task-based FTF interactions compared with text-SCMC. To address the third research question, the participants answered different items in a questionnaire. Analyses of their answers revealed that all the NSs and most of the L2 learners (75%) preferred completing the task in the FTF context because it was easier to communicate in FTF than in the text-SCMC context. According to these participants, the features of FTF interactions facilitated the communication between interlocutors because FTF provides access to facial expressions, tone of voice, and has a faster pace. This finding is supported by Baralt and Gurzynski-Weiss (2011). In their study, learners were asked to choose words to indicate the advantages of using the FTF mode. They also indicated that being able to rely on tone of voice and facial expressions were features of the FTF mode that facilitated communication when compared to text-SCMC.

Despite most participants preferring the FTF context, the findings from the questionnaire revealed that the NSs and the learners were aware of the benefits of the unique features of each communication mode and how FTF and text-SCMC could facilitate SLA. According to the participants, text-SCMC interactions can contribute to the development of writing skills, specifically grammatical structures and spelling, because it provides learners with the opportunity to access the text and reflect on the input received and the output produced and interact on their own pace. Previous empirical studies (e.g., Lai & Zhao, 2006; Zeng, 2017) also reported that these features of text-SCMC contributed to noticing. For example, in Zeng's (2017) study, most learners favored text-SCMC because it was more helpful for noticing language issues. According to the learners, language errors were more likely to be ignored in FTF than in text-SCMC because the latter mode allowed them time to reflect on the input received and their output, and to have more opportunities to notice language issues.

While the participants expressed that text-SCMC features mainly contribute to L2 writing skills and grammatical accuracy, they reported that the FTF features improve speaking skills and fluency. The participants pointed out that FTF interactions facilitate L2 speaking skills and fluency because of the fast-paced interactions and paralinguistic cues (e.g., body language, facial expressions). This finding is supported by Kim's (2014) comparative study. She investigated L-L interactions in the FTF and text-SCMC settings and reported that learners were aware of the benefits of FTF interactions in encouraging more language production and enhancing fluency.

It can be concluded that based on the participants' views, both modes of communication complement each other in creating opportunities for L2 development.

Conclusion

This study has addressed questions comparing FTF versus text-SCMC task-based interactions in terms of the (a) effect of three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) on the frequency of negotiation episodes; (b) effect of negotiation episodes on subsequent L2 development; and (c) participants' perceptions of L2 learning through task-based interactions.

Although the results of this study revealed no statistically significant difference in the frequency of negotiation episodes in FTF interactions compared with text-SCMC among the three dyadic types, the ratio of negotiations was higher in FTF than in text-SCMC. While NS-LPL dyadic type produced the highest ratio of negotiation episodes in FTF, NS-HPL dyadic type generated the highest ratio of negotiation episodes in text-SCMC. As far as negotiations and subsequent L2 learning, the results did not show statistically significant difference in the LPLs' and HPLs' L2 learning between the two communication modes. However, the L2 learners in the FTF interaction group had more correct responses to posttest items than the group interacting in the text-SCMC mode. The LPLs obtained a higher percentage of correct responses in the posttest items generated from the FTF interactions, whereas the HPLs produced a higher percentage of correct responses in the posttest items generated from text-SCMC.

Despite the lack of statistically significant results, overall, this study's findings indicated that the dyadic type, communication mode's features, and learners' proficiency level impacted the subsequent L2 development through task-based interactions. This study's findings suggested that in both communication modes the L2 learners benefited more from interacting with a NS than another L2 learner. The fact that the learners shared different social

and linguistic background with NSs might have promoted more negotiation episodes in their interactions. Furthermore, interactions in FTF mode benefited LPLs' learning more than HPLs', whereas text-SCMC interactions facilitated HPLs' learning more than LPLs'. The unique features of each communication mode might have impacted learners' L2 development. The FTF mode might have benefited the LPLs more than the HPLs because FTF interactions allow for the use of paralinguistic cues (e.g., tone of voice, facial expressions), which may immediately indicate the interlocutors' meaning and form related challenges and create language negotiation. The text-SCMC mode might have facilitated the HPLs' learning more than the LPLs' because text availability, rereadability of messages, and greater processing time drew the HPLs' attention to the input received and helped them notice their interlanguage gaps and correct their own language mistakes (Lai & Zhao, 2006). Moreover, the HPLs' wider L2 linguistic knowledge may have helped them notice more corrections and understand the input received more than the LPLs.

Although the NSs and the learners seemed to be unaware of the crucial role that language negotiations play in SLA, their perceptions on L2 learning through interactions indicated that they are aware of the importance of interaction in L2 development. The participants also suggested that FTF and text-SCMC complement each other in creating opportunities for L2 development since each mode has its own unique features.

Pedagogical implications can be offered from the present study. First, to encourage negotiations, teachers should consider pairing up learners with a NS or a learner of a different L1 and cultural background if possible. Second, teachers should include both FTF and text-SCMC interactions in the classroom to foster L2 development in different aspects of language. FTF interactions might be more conductive to improving fluency due to the fast

pace of interactions and paralinguistic cues; text-SCMC interactions might provide more opportunities for noticing grammatical gaps due to accessibility of the text and more time for language processing.

This research, as any other research, has some limitations. First, all the learners shared the same L1. More negotiation episodes might have been generated in the HPL-LPL dyadic type if the learners had different L1 and cultural backgrounds. Second, this study investigated a small number of dyads in each dyadic type. Therefore, caution is needed in generalizing from a small sample to a wider population. Finally, the results were limited by the particular type of collaborative task. To achieve a deeper understanding of how FTF and text-SCMC interactions impact L2 development among NS-HPL, NS-LPL, and HPL-LPL dyadic types, further studies need to involve more dyads in each dyadic type and include L2 learners of different L1 backgrounds. Future research should also consider including more types of tasks (e.g., decision-making, text-reconstruction) to provide further information about the differences across different communication modes.

This study makes significant contributions to the existing literature on interactions in SLA. Despite the growing number of empirical studies on FTF and CMC interactions in SLA, it is still not clear how different dyadic types—NS-LPL, NS-HPL, and HPL-LPL—impacts L2 development in both communication modes. Therefore, this study is a significant step in this direction because it sheds light on which dyadic type creates more opportunities for SLA in FTF versus text-SCMC and which proficiency level learners benefit more as shown in their subsequent L2 development.

CHAPTER V

CONCLUSION

Summary

The purpose of this dissertation was to explore face-to-face (FTF) interactions and computer-mediated communication (CMC) in second language acquisition (SLA) by (a) analyzing findings of comparative studies that have investigated SLA through task-based interaction in FTF versus CMC environments; (b) examining the effectiveness of corrective feedback (CF) in both communication modes; and (c) investigating the role of interlocutors in FTF versus CMC interactions. Grounded in the Interaction Hypothesis (Long, 1996), this dissertation explored interactions in SLA through a systematic literature review and two empirical studies.

The systematic literature review (Chapter II) examined 35 comparative studies examining FTF and CMC interactions in order to identify to what extent grouping type, CF, and learner's uptake impact (a) the frequency and type of negotiation episodes and (b) adult learners' second language (L2) development in FTF and CMC task-based interactions. The systematic literature review's findings support previous review studies (e.g., Ziegler, 2016) indicating that there is a positive connection between CMC and FTF interactions and SLA. Nevertheless, the review could not conclude which communication mode (i.e., FTF or CMC) better develops SLA through task-based interactions. Instead, the review's findings suggested that both modes complement each other in creating opportunities for L2 development. FTF interactions result in more negotiations episodes and language production, whereas text-synchronous-computer-mediated communication (SCMC) interactions tend to produce better

quality output. In terms of the moderating variables, the review suggested that the presence of a teacher, a native speaker (NS), or a higher proficiency learner contributes to learners' L2 development through FTF and CMC interactions by promoting negotiations, providing input, and encouraging output modifications. Furthermore, interlocutors implement CF, especially implicit CF, more often in FTF than in CMC mode. Though more CF occurs in FTF, text-SCMC promotes more noticing of CF and interlanguage gaps because of its unique features (e.g., visibility of the messages). Also, based on the few studies that examined uptake, CF is more likely to be followed by a successful uptake in FTF than in text-SCMC interactions because of the disruptive turn adjacency found in text-SCMC mode.

The first empirical study (Chapter III) compared FTF versus text-SCMC task-based interactions in terms of the (a) frequency of explicit and implicit CF; (b) effect of explicit and implicit CF on subsequent L2 development; and (c) participants' perceptions of CF in task-based FTF and text-SCMC interactions in SLA. The participants were six NSs who were American undergraduate students with background knowledge on L2 learning and six adult L2 learners who had an intermediate level of English proficiency. Three NSs were trained to provide implicit CF and three NSs were trained to provide explicit CF. Each NS was randomly matched with a L2 learner to form six dyads. The dyads were equally divided into two groups: implicit CF and explicit CF. Using the counterbalanced designed for communication mode and picture sequence, all six NS-learner dyads performed two spot-the-difference tasks: one in the FTF context and the other in the SCMC context using Skype text-messaging. The FTF interactions were audio-recorded and later transcribed and the SCMC chat logs were saved in a Word file. Immediately after completing both tasks, the participants responded to the items in a questionnaire and seven days later each learner took a tailor-made

posttest. The FTF and text-SCMC interactions were coded for CF episodes, which were coded for CF type (i.e., explicit or implicit). The CF episodes were standardized by controlling them for number of words produced and time spent on task. Each posttest was examined for raw frequencies of correct, partially correct, and incorrect responses. A chi-square test of independence was used to analyze the quantitative data and content analysis was applied to examine the qualitative data.

Results of chi-square analysis indicated statistically significant difference in the frequency of explicit and implicit CF in FTF interactions compared with text-SCMC. The FTF setting encouraged more implicit CF as this CF type can be naturally embedded in the conversation. Results of chi-square analysis also revealed statistically significant difference in the effect of explicit and implicit CF on subsequent L2 development in FTF interactions compared with text-SCMC. In the FTF context, the L2 learners from the implicit group answered correctly to a higher frequency of test items than the learners from the explicit group. However, in the text-SCMC mode, the L2 learners from the explicit group had higher frequency of correct test responses than the learners from the implicit group. Implicit and explicit CF from both settings led to more L2 development in syntax rather than lexical aspects of language. Results of content analysis suggested that there is a mismatch between learners' and NSs' perspectives on CF. The learners' attitudes on CF suggested that they expected and appreciated receiving explicit and implicit CF and did not worry about interruption of the conversation flow. On the other hand, despite being preservice teachers and having background knowledge on SLA, the NSs seemed to be more concerned about learners' confidence, face-related issues, and not interrupting the conversation flow.

In sum, the first empirical study's findings suggested that the nature of CF, the communication mode's features, and the CF provider impact the subsequent L2 development through task-based interactions. Text-SCMC seems to be more conducive in providing explicit CF. The direct nature of explicit CF, visibility of messages available in text-SCMC, and possibility to revisit their language use and CF provided by their partners tend to facilitate learners' noticing of the correct language use. Furthermore, the fact that interlocutors cannot see or hear each other encourages NSs to provide explicit CF. On the other hand, the FTF mode seems to be more conducive in providing implicit CF. The nature of implicit CF allows it to be embedded in the interaction in a natural way, without interrupting the conversation flow or making the NSs feel uncomfortable in providing corrections on learners' language errors.

The second empirical study (Chapter IV) compared FTF versus text-SCMC task-based interactions in terms of the (a) effect of three dyadic types (i.e., NS-LPL, NS-HPL, and HPL-LPL) on the frequency of negotiation episodes; (b) effect of negotiation episodes on subsequent L2 development; and (c) participants' perceptions of L2 learning through task-based interactions. The participants were four NSs who were American undergraduate students without background knowledge on L2 learning and eight adult L2 learners. Four of the learners were low proficiency learners (LPLs) and the other four were high proficiency learners (HPLs). The participants were paired up to form the following dyadic types: two NS-LPL, two NS-HPL, and two HPL-LPL. Using the counterbalanced design for mode and picture sequence, all six dyads performed two spot-the-difference tasks: one in the FTF setting and the other in the SCMC setting using Skype text-messaging. The FTF interactions were audio-recorded and later transcribed and the SCMC chat logs were saved in a Word file.

Immediately after completing both tasks, the participants responded to items in a questionnaire related to their perceptions of the task-related interaction in each mode and a week later each learner took the tailor-made posttest. The FTF and text-SCMC interactions were coded for negotiation episodes and negotiation strategy types. The negotiation episodes were standardized by controlling for amount of language and time spent on task. Each posttest was examined for raw frequencies of correct, partially correct, and incorrect responses. A chi-square test of independence was used to analyze the quantitative data and content analysis was applied to examine the qualitative data.

The second empirical study found no statistically significant difference in the frequency of negotiation episodes in FTF interactions compared with text-SCMC among the three dyadic types. However, compared to text-SCMC, FTF created more instances of negotiations and encouraged negotiation strategies, especially confirmation checks. Moreover, the NS-LPL and NS-HPL dyadic types produced the highest ratio of negotiation episodes in FTF and text-SCMC settings, respectively. This finding suggested that, when interacting with a NS, LPLs benefited more from FTF interactions, whereas HPLs benefited more from text-SCMC in terms of generating negotiation episodes. The HPL-LPL dyads may not have negotiated as much as the other dyadic types because the learners shared similar social and linguistic background.

Results revealed no statistically significant difference in the LPLs' and HPLs' L2 learning in the two communication modes. Nevertheless, descriptive frequency suggested that the FTF mode benefited LPLs' learning more than HPLs', whereas text-SCMC facilitated HPLs' learning more than LPLs'. Interactions in the FTF mode might have benefited the LPLs more than the HPLs because FTF interactions allow the use of paralinguistic cues (e.g.,

tone of voice, facial expressions). Such features may immediately indicate the interlocutors' challenges with meaning and form, which promotes more language production and negotiations. The text-SCMC mode might have facilitated the HPLs' learning more than the LPLs' because the accessibility of text, rereadability of messages, and greater processing time draw the HPLs' attention to the input received, help them notice their interlanguage gaps, and encourage them to correct their own language mistakes. Also, text-SCMC might have also contributed more to HPLs' learning because of their higher proficiency level, which might have led them to notice more corrections and better understand the input received.

Compared to text-SCMC, FTF led to more learning of lexical items and syntactic constructs regardless of the learners' proficiency level. FTF may have led to more learning of lexical items because it affects communication of meaning more than syntax. As for syntax, FTF may have led to more learning of syntax than text-SCMC because the presence of the researcher during the FTF interactions may have encouraged the learners to pay closer attention to accuracy.

Finally, the second empirical study's findings revealed that the NSs and the learners were aware of the importance of the unique features of each communication mode and how interactions in FTF and text-SCMC could facilitate SLA. According to the participants, text-SCMC can contribute to the development of writing skills, specifically grammatical structures and spelling, because this mode provides learners with the opportunity to access the text and reflect on the input received and the output produced, access the previous messages, and interact at their own pace. As a result, text-SCMC allows learners to notice language issues and learn from their own mistakes as they engage in language negotiations. On the other hand, the FTF features improve speaking skills and fluency. The participants pointed out that FTF

facilitates L2 speaking skills and fluency because FTF is fast pace and allows for paralinguistic cues (e.g., body language, facial expressions), which encourage language production.

Overall, based on the Interaction Hypothesis (Long, 1996), this dissertation's findings provide further evidence that shows that FTF and text-SCMC interactions facilitate L2 development through negotiation episodes. Both modes complement each other as they have unique features that facilitate L2 development in different ways. Based on this dissertation's findings, the nature of CF, the communication mode's features, the dyadic type, and the learner's proficiency level are important components to consider when teaching and learning a L2 through interactions.

Pedagogical Implications

Based on the systematic literature review and the two empirical studies, this dissertation provides the following suggestions for educators:

1. Teachers should incorporate FTF and CMC interactions as part of their teaching practices. Interactions can contribute to L2 learning because they can promote language negotiation, CF, noticing of interlanguage gaps, and pushed output. In particular, teachers should implement both FTF and text-SCMC task-based interactions because the unique features of each mode complement each other in promoting language learning opportunities.
2. When implementing text-SCMC in the classroom, it is important for teachers to ensure that learners have typing skills in order to prevent typing issues from negatively affecting the quality and quantity of learners' text-SCMC interactions.

3. Having in mind that noticing is essential in SLA, teachers should consider explaining to L2 learners the CF types and strategies, and use stress, intonation, and other means to make their implicit CF noticeable. Being aware of CF types and strategies would encourage learners to provide CF to peers and to notice their own interlanguage gaps when exchanging CF during interactions.
4. Teachers should implement task-based interactions in the FTF and text-SCMC modes where learners are encouraged to exchange explicit and implicit CF. As a result, the learners would have the potential to develop their L2 through the provision of both CF types.
5. Having in mind that CF is an important interactional feature in SLA (Long, 1996), preservice teachers should be taught about the role of CF types in L2 development.
6. To encourage negotiations, teachers should consider pairing up learners with a NS or learners of different L1 and cultural backgrounds.
7. Teachers should explicitly teach learners the importance of language negotiations in SLA and encourage them to take active roles in learning the L2 by creating negotiation episodes in FTF and text-SCMC interactions. By doing so, teachers enhance learners' awareness and knowledge of the opportunities they can gain to improve their communicative skills and linguistic knowledge through interactions. Consequently, learners will feel more confident in interacting with more competent interlocutors, which will in turn contribute to their L2 development.

Limitations and Further Research

Limitations of this dissertation should be noted and used to direct future research. In terms of the systematic literature review, it may not have captured all relevant studies during

the search process due to the key terms used in the methodology. Including other synonyms and potential relevant key terms during the literature search process might yield a greater number of studies that could possibly fit the inclusion criteria. Moreover, the fact that the review focused only on studies published in peer-reviewed journals was another limitation.

The empirical studies presented in this dissertation also have some limitations that should be addressed. Regarding the study on CF, one of its limitations was the small sample size (six dyads). Further studies should include a larger number of dyads to examine the effectiveness of implicit and explicit CF in L2 development in task-based interactions and add to this study's insights on the role of CF in different modalities. Finally, the study on CF used only a questionnaire to understand the participants' perceptions of receiving and providing CF. Other studies may apply the stimulated recall tool with the NSs and learners to better understand the perceptions and the effectiveness of CF types on L2 development in different environments.

The study on dyadic types also presented some limitations. First, all the learners shared the same L1. More negotiation episodes might have been generated in the HPL-LPL dyadic type if the learners had a different L1. Second, this study included a small number of dyads in each dyadic type. Therefore, caution is needed in generalizing from a small sample to a wider population. Finally, the results were limited by the particular type of collaborative task. To achieve a deeper understanding on how FTF and text-SCMC interactions impact L2 development among NS-HPL, NS-LPL, and HPL-LPL dyadic types, further studies need to involve more dyads in each dyadic type and include L2 learners of different L1 and use different collaboration tasks. Future research should consider including more task types (e.g.,

decision-making, text-reconstruction) to provide further information about the differences across both communication modes.

Despite the limitations, this dissertation makes significant contributions to the existing literature on the role of task-based interactions in SLA. There is a growing number of empirical studies on FTF and CMC interactions in SLA, however, no study has investigated the effectiveness of implicit versus explicit CF in the development of English as a L2 in task-based interactions between adult learners and NSs in FTF and CMC environments. Moreover, this study provided further evidence showing that FTF and text-SCMC interactions facilitate SLA.

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APPENDIX A

DESCRIPTION AND MAIN FINDINGS OF THE INCLUDED STUDIES[1]

Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Abrams	2011	QUAN	FL	US	German	Text	FTF, SCMC & ACMC	96	learner-learner	jigsaw	I	N	Y	Y	The L2 learners who participated in the text-SCMC group outperformed the FTF and text-ACMC groups in oral production. The SCMC group produced more output, which increased their fluency. In terms of the quality of language produced, there was no significant differences among the three groups either lexically or syntactically.
Baralt	2013	QUAN	FL	US	Spanish	Text	FTF & SCMC	84	learner-T/R	storytelling	I	Y	Y	Y	Results suggested that increases in task complexity led to more learning, however, in only the FTF mode. In other words, task-based interactions in which L2 learners were engaged in intentional reasoning and receiving recasts from a researcher resulted in more L2 development of a target form (i.e., Spanish past subjunctive) in the FTF mode. In contrast, the text-SCMC mode led to more L2 learning of the target form when learners performed a cognitively simple task.

[1] *Note: N/A: Data is not available from the study; MET: Methodology (QUAN: Quantitative; QUAL: Qualitative; MX: Mixed methods); SET: Setting (FL: Foreign language; SL: Second language); COUN: Country; LANG: Language; MODAL: Modality of CMC interaction; Mode: Mode of communication (ACMC: Asynchronous computer-mediated communication; SCMC: Synchronous computer-mediated communication; FTF: Face-to-face interaction); SAM: Sample size; GROU: Grouping type(s) (NS: Native speaker; T: Teacher; R: Researcher); L2P: Second language proficiency (A: Advanced; I: Intermediate; B: Beginner); TF: Target form; IL: Incidental learning; ML: Measured second language learning.*

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Baralt & Gurzynski-Weiss	2011	MX	FL	US	Spanish	Text	FTF & SCMC	25	learner-T/R	information-gap	I	N	Y	N	Based on analyses of questionnaire responses, learners' state anxiety levels during and immediately after tasks performed with their teachers were similar in both FTF and text-SCMC. Compared to FTF, anxiety was lower in SCMC. However, there was no significant difference in anxiety level between the two modes. Results suggested that text-SCMC and FTF were comparable in terms of state anxiety.
Blake	2009	QUAN	SL	N/A	English	Text	FTF & SCMC	34	learner-T/R	opinion-gap	I	N	Y	Y	Results indicated that text-based SCMC interactions can improve L2 learners' oral fluency. However, L2 learners should be monitored by an instructor, have focused discussion, and be encouraged to participate.
Bohlke	2003	QUAN	FL	US	German	Text	FTF & SCMC	27	learner-learner	opinion-gap	I	N	Y	N	This study compared small group interactions in FTF and text-SCMC modes. Results indicated that compared to FTF, text-SCMC led to more evenly distributed participation among the learners. Also, groups with four members benefited more from the equalizing effect of SCMC than the groups with five members. It was also found that, in terms of language stages, the less difficult stage (i.e., stage 3, verb separation) was the one that the L2 learners used correctly the most.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Boonsue et al.	2015	MX	FL	Thailand	English	Text	FTF & SCMC	12	learner-learner	problem-solving	N/A	N	Y	N	Both FTF and text-SCMC interactions provided L2 learners with opportunities for language learning. However, the context shaped the interactions in terms of language use, interactional stages, and social interactions.
Bueno Alastuey	2011	MX	FL	Spain	English	Voice	FTF & SCMC	48	learner-learner	jigsaw	I	N	Y	Y	Voice-based CMC interactions between different L1 speakers could facilitate SLA because, compared to same L1 speakers' interactions, it promoted more time on task, more L2 use, fewer L1 switches, and significantly higher language proficiency achievement. Also, having different L1 speakers interact through voice-based CMC reduced speaking anxiety and made the task more authentic. As a result, voice-based CMC interactions between different L1 speakers led to more enjoyment, satisfaction, feeling of improvement and fulfillment, and increased students' interest in L2 learning.
De la Fuente	2003	MX	FL	US	Spanish	Text	FTF & SCMC	20	learner-learner	information-gap	B	N	Y	Y	Results indicated that both FTF and text-SCMC modes were effective in developing written receptive and productive acquisition and retention of L2 vocabulary. Nevertheless, FTF was more effective in promoting oral acquisition of L2 target words than text-SCMC.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Fernandez-Garcia & Arbelaiz	2003	QUAN	FL	US	Spanish	Text	FTF & SCMC	54	learner-learner; NS-learner; NS-NS	information-gap	I	N	Y	N	Compared to L-L and NS-NS dyads, NS-L negotiated significantly more, especially in the FTF mode (as opposed to text-SCMC). According to the researchers, NS-L dyads negotiated the most probably because learners' lack of familiarity with the NSs' pronunciation triggered communication breakdowns.
Fitze	2006	QUAN	SL	Canada	English	Text	FTF & SCMC	27	learner-learner	opinion-gap	I & A	N	Y	N	Compared to FTF, text SCMC discussions among L2 learners promoted a wider range of vocabulary use, a similar or more balanced participation, and more language functions use, giving learners more control when using English.
Fitze & McGarrell	2008	QUAN	SL	Canada	English	Text	FTF & SCMC	28	learner-T/R	opinion-gap	I & A	N	Y	N	During group discussions, the teacher played a more significant role in FTF than in text-SCMC environment in terms of input. Compared to text-SCMC, the teacher contributed more in FTF interactions, including exposing L2 learners to more syntactically complex language, due to the nature of text-SCMC mode. Different from text-SCMC, which does not require oral skills and has a more balanced participation, most of the teacher's contributions in the FTF environment were to clarify students' opinions (due to their pronunciation) and

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
															to motivate them to participate. Results also indicated that the teacher's participation promoted inequality in students' participation in FTF, but not in SCMC discussions.
Freiermuth	2001	MX	SL	US	English	Text	FTF & SCMC	24	NS-learner	decision-making	I & A	N	Y	N	Compared to FTF, the SCMC text-based context provided L2 learners with more opportunities to participate and focus on language production when interacting with NSs. That was because learners felt more comfortable; they did not have to worry about their pronunciation and could revisit the content and edit their text.
Gurzynski-Weiss & Baralt	2014	MX	FL	US	Spanish	Text	FTF & SCMC	24	learner-T/R	information-gap	I	N	Y	N	Results revealed that L2 learners accurately perceived feedback received in FTF and text-SCMC in most of the instances. In both modes, learners were correct in their perception for most of the feedback targets, especially feedback targeting lexis and semantics. There was a significant difference between the modes in terms of the number of opportunities learners had for modified output and the frequency with which they took advantage of these opportunities to modify their output. Learners modified their output after receiving

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
															feedback targeting errors in lexis, morphosyntax, and phonology or spelling significantly more in FTF than in text-SCMC mode.
Gurzynski-Weiss & Baralt	2015	MX	FL	US	Spanish	Text	FTF & SCMC	24	learner-T/R	information-gap	I	N	Y	N	In both FTF and text-SCMC modes, L2 learners' production of partial modified output significantly indicated how well they noticed the feedback received. Moreover, learners' production of full and partial modified output predicted correct noticing in FTF; however, this was not found in text-SCMC.
Hamano-Bunce	2010	MX	FL	United Arab Emirates	English	Text	FTF & SCMC	16	learner-learner	jigsaw & opinion-gap	B	N	Y	N	Even though SCMC brought some benefits, FTF interactions were more effective for language learning. In terms of socio-cognitive perspective, FTF interactions resulted in more input, language production, negotiation episodes, pushed output, and corrective feedback. Moreover, in terms of sociocultural perspective, FTF interactions led to more students' participation and collaboration. As a result, SCMC interactions should not replace FTF interactions, but it should be applied as a supplement (especially in reading and writing development) and as a tool for real-world use.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Kim	2014	QUAL	SL	US	English	Text	FTF & SCMC	20	learner-learner	jigsaw, decision-making, & story-sequencing	I	N	Y	N	L2 learners' interactions suggested that the mode of communication (i.e., FTF and text-SCMC) used had an impact on their behavior in terms of language production, attention to linguistic forms, and how they solved communication issues. It was based on the mode that learners selected which strategies, if any, to implement in their interactions. For example, they used more strategies that involved negotiations in FTF than in SCMC because they were aware that negotiations are time-consuming, especially through text messages.
Kim	2017	QUAN	SL	N/A	English	Text	FTF & SCMC	20	learner-learner	jigsaw, decision-making, & story-sequencing	I	Y	Y	N	Text-SCMC and FTF interactions differed from each other as the former mode led L2 learners to pay closer attention to form. In the text-SCMC mode, learners used articles more accurately and higher levels of question formation. Results also indicated that task type did not interact with the mode of communication in affecting question formation. However, task type affected the accuracy rate for articles. Spot-the-difference and story-sequencing tasks led to a more accurate use of articles than the decision-making task.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Knight	2005	MX	SL	England	English	Text	FTF & ACMC	24	learner-learner	decision-making	I	N	Y	N	Several turn-taking and negotiation of meaning happened in task-based FTF, but not in ACMC (emails) interactions. Task modifications were required in ACMC in order for negotiation of meaning to occur. Compared to an unmodified task, the ACMC modified task (i.e., task required multiple steps) resulted in more turn-taking, procedural language, and negotiation of meaning. Therefore, the ACMC modified task potentially benefited L2 development.
Lai & Zhao	2006	MX	SL	US	English	Text	FTF & SCMC	12	learner-learner	jigsaw	I	N	Y	N	The comparison of FTF and SCMC task-based interactions indicated that SCMC promoted more self-correction and noticing. FTF led to more negotiation of meaning but fewer noticing instances. Neither FTF nor SCMC promoted much noticing of recasts. Due to longer processing time, self-editing capacity, and greater saliency of errors, SCMC had more benefits than FTF in terms of facilitating noticing.
Loewen & Isbell	2017	QUAN	SL	US	English	Voice	FTF & SCMC	30	learner-learner	jigsaw, decision-making, & compare-contrast	I	N	Y	N	Results indicated that about 15% of language-related episodes (LREs) during FTF and audio-only SCMC interactions were pronunciation focused. There was no statistically significant difference within same-L1 and

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
															different-L1 dyads, mode of communication, or task conditions. However, the consensus task promoted about two times as many pronunciation LREs as the other tasks.
Loewen & Reissner	2009	QUAN	SL	New Zealand	English	Text	FTF & SCMC	44	learner-learner	decision-making	I	N	Y	N	Focus on form episodes (FFEs) were found in FTF and text SCMC interactions. However, the mode of communication and presence of a teacher may have affected the occurrence of FFEs.
Moreno-Lopez & Miranda-Aldaco	2013	QUAN	FL	US	Spanish	Voice & text	FTF, SCMC & ACMC	155	learner-learner; NS-learner	information-gap	B & I	N	Y	Y	Compared to traditional classes, where no technology was applied, CMC classes helped beginning and intermediate Spanish learners improve reading and listening skills. The learners from the CMC classes, which involved SCMC and ACMC activities, had significant higher scores in reading and listening tests than the learners from the traditional classes. Being actively engaged in using acquired knowledge and negotiation of meaning might have helped learners enhance their reading and listening skills.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Nguyen & White	2011	MX	FL	Vietnam	English	Text	FTF & SCMC	60	learner-learner	compare-contrast	N/A	N	Y	N	Although both FTF and text-SCMC groups of L2 learners worked on the same task, they engaged differently as they used different discourse behaviors depending on the mode used. When compared to FTF, the SCMC groups produced less language, but they were more motivated to participate and had a more equal participation. Moreover, the SCMC groups interacted, negotiated their discussion, and co-constructed knowledge more than the FTF groups. Thus, the SCMC groups created a more learning-oriented, as opposed to product-oriented experience.
Payne & Whitney	2002	QUAN	FL	N/A	Spanish	Text	FTF & SCMC	58	learner-learner	opinion-gap, role-play	I	N	Y	Y	Results indicated a significant difference between text-SCMC and FTF groups in the development of oral proficiency. L2 learners from the text-SCMC group obtained higher scores than the learners from the FTF group. The results showed that text-SCMC unique features (e.g., visibility of text, greater processing time) may benefit L2 learners in developing oral skills. Text-SCMC requires less working memory and allows learners to time to plan their output.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Rassaei	2017	QUAN	FL	Iran	English	Voice	FTF & SCMC	60	learner-T/R	storytelling	I	Y	Y	Y	Results of pre- and post-tests indicated that recasts provided through SCMC video-chat and FTF modes were effective. No statistically significant difference was found between the two modes in terms of the effectiveness of recasts applied to correct the use of articles in the L2. Also, stimulated recall interviews suggested that L2 learners were able to notice recast corrections in both SCMC video-chat and FTF modes, with no statistically significant difference between the modes.
Rouhshad et al.	2016	QUAN	SL	Australia	English	Text	FTF & SCMC	24	learner-learner	decision-making	I	N	Y	N	The frequency and quality of negotiations were influenced by the mode of interaction. Overall, negotiations were scant. However, compared to text-SCMC, FTF interactions between L2 learners promoted more opportunities for language learning because they resulted in more negotiations for meaning, successful uptake, and modified output.
Sykes	2005	MX	FL	US	Spanish	Text & Voice	FTF & SCMC	27	learner-learner	opinion-gap, role-play	I	N	Y	Y	This study compared the following three groups in pragmatic development: FTF, text-SCMC, and voice-SCMC. Learners from all three groups performed more like native Spanish speakers in the formal situation than in the informal situation.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
															However, the text-SCMC group outperformed the other groups in terms of variety and complexity of strategies used.
Tam et al.	2010	QUAN	SL	Malaysia	English	Text	FTF & SCMC	32	learner-learner	decision-making	B & A	N	Y	N	Both FTF and text-SCMC environments provided low proficiency level L2 learners with opportunities for SLA through negotiation of meaning. Text-SCMC allowed for varied syntactic and semantic modifications from both proficiency levels, which gave low proficiency level learners more opportunities for negotiations and noticing the L2 form.
Warschauer	1996	MX	SL	US	English	Text	FTF & SCMC	16	learner-learner	opinion-gap	A	N	Y	N	The comparison of FTF and text-based SCMC interactions indicated that SCMC promoted more equal participation, and more formal and complex language. However, SCMC promoted fewer negotiations than in FTF interactions. Based on the different contributions of both modes, FTF and SCMC should supplement each other. For example, SCMC can scaffold L2 learners' written composition and oral discussions.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Yanguas	2012	MX	FL	US	Spanish	Voice	FTF & SCMC	47	learner-learner	jigsaw	N/A	N	Y	Y	Results suggested a link between negotiated learner-learner interaction and L2 acquisition in terms of recognition of target words. However, this study did not find evidence to support the claim that negotiated interaction through FTF, video CMC, or audio CMC leads to full acquisition of new vocabulary. L2 learners from the three different communication modes were not able to retain the capacity to reproduce or understand (through listening) the target words after two weeks. The only significant difference across the three modes was in the listening comprehension measure. Probably due to the lack of visual cues, the audio CMC group significantly outperformed the audio CMC and FTF group.
Yanguas & Flores	2014	MX	FL	US	Spanish	Voice	FTF & SCMC	31	learner-learner	decision-making	N/A	N	Y	N	Willingness to communicate (WTC) varied depending on the communication mode used. L2 learners produced more words and significantly more turns in audio-CMC than in the FTF mode. Results indicated a positive linear relationship between WTC and FTF in terms of number of words and turns. But, this relationship did not hold in the audio-CMC context. Audio-CMC might have yielded a

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
															greater WTC due to affective variables. Compared to FTF, learners were probably less anxious and more motivated in the audio-CMC context because of factors such as anonymity and positive attitudes towards technology.
Yilmaz	2012	QUAN	FL	Canada	Turkish	Text	FTF & SCMC	48	learner-T/R	information-gap	B	Y	Y	Y	Focusing on the acquisition of two Turkish morphemes, this study found that, regardless of the communication mode, the explicit CF group (i.e., explicit correction) outperformed the implicit CF group (i.e., recast) in the oral production and comprehension tasks on immediate and delayed posttests. According to the researcher, explicit CF facilitated noticing of CF and allowed learners to make a comparison of the target and nontarget forms. In terms of the communication mode, regardless of the CF used, text-SCMC was more effective than FTF mode, specifically on oral production and recognition tasks. Learners performed better in text-SCMC than in FTF mode because the text-SCMC allowed for greater processing time and rereading of the messages, which facilitated noticing of CF and language use.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Yilmaz & Yuksel	2011	QUAN	FL	N/A	Turkish	Text	FTF & SCMC	24	learner-T/R	information-gap	B	Y	Y	Y	Recasts through text-based SCMC resulted in better oral production performance of L2 plural and locative morphemes than FTF interactions between L2 learners and the researcher. The features of text-SCMC, such as rereadability of messages and greater processing time, might have facilitated learners to notice the corrective. Despite the difference in the level of saliency between the two target structures, no statistically significant difference between the scores on the plural versus locative recasts was found between FTF and text-SCMC modes.
Yuksel & Inan	2014	QUAN	FL	Turkey	English	Text	FTF & SCMC	64	learner-learner	jigsaw	I	N	Y	N	Both FTF and SCMC text-based interactions promoted a high number of negotiations of meaning. However, the FTF mode promoted a better environment for the production of negotiation of meaning, whereas the text-based SCMC mode led to more instances of noticing of lexical and grammatical negotiations.

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Authors	Year	MET	SET	COUN	LANG	MODAL	Mode	SAM	GROU	Task type	L2P	TF	IL	ML	Main findings
Zeng	2017	MX	FL	China	English	Text	FTF & SCMC	32	learner-learner	jigsaw & dictogloss	I	N	Y	N	There was a higher frequency of LREs in text-SCMC than in FTF interactions. Results showed that students focused more on language use in text-SCMC because of the text-SCMC nature, such as visibility of text, accessibility to previous text, and not being able to see the interlocutor. Results also indicated significant difference between both modes in terms of orthographical, correct, incorrect, request for assistance, and self-correction LREs due to the difference in nature of both modes.

APPENDIX B

BACKGROUND QUESTIONNAIRE

Participant: L2 Learner

Part I: Demography

1. How old are you?
2. Where are you originally from?
3. What is your first language?
4. Do you speak any other languages? *Yes --- No*
   If so, what language(s)?
5. Have you ever lived in a country (other than the United States) where English was spoken as the first language? *Yes --- No*
   If so, where? How long did you live there? How long have you been in the United States?
6. What is your highest educational degree?
7. Do you work? *Yes --- No*
   If so, what's your profession?

Part II: English Literacy

8. Did you formally (i.e., through classes) study English in your home country? *Yes --- No*
   If so, how long did you formally study English?
9. Did you informally (i.e., through TV, radio, friends, etc.) study English in your home country? Yes --- No
   If so, how long did you informally study English?
10. How much time do you use (i.e., watch TV, read a book, write emails, text friends, etc.) English per day?
11. Who do you communicate in English with?
12. How would you rate your English speaking ability?
    beginner --- intermediate --- advanced --- proficient
13. How would you rate your English listening ability?
    beginner --- intermediate --- advanced --- proficient
14. How would you rate your English writing ability?
    beginner --- intermediate --- advanced --- proficient
15. How would you rate your English reading ability?
    beginner --- intermediate --- advanced --- proficient

Part III: Computer Literacy

16. How would you rate your computer keyboard typing ability?
    beginner --- intermediate --- advanced --- proficient
17. Do you have online oral chat experience in a language other than English?
    Yes --- Not much --- No
18. Do you have online oral chat experience in English?
    Yes --- Not much --- No
19. Do you have online written chat (using instant messaging) experience in a language other than English?
    Yes --- Not much --- No

20. Do you have online written chat (using instant messaging) experience in English?
Yes --- Not much --- No

Participant: Native English Speaker

Part I: Demography

1. How old are you?
2. Where are you originally from?
3. Have you ever lived in a country other than the U.S.? *Yes --- No*
   If so, where? How long did you live there?
4. What is your highest educational degree? Do you have any experience working with English language learners (ELLs)? Are you seeking an English as a second language (ESL) or bilingual certification? Have you taken any courses on ESL or bilingual education?
5. Do you work? *Yes --- No*
   If so, what's your profession?

Part II: Foreign Language Literacy

6. Did you ever study a foreign language? *Yes --- No (if no, move on to question 7)*
   If so, which language?
   Where did you study it?
   How long did you study it?
7. Do you speak any other languages? *Yes --- No (if no, move on to question 8)*
   If so, what language(s)?
8. How would you rate your foreign language speaking ability?
   beginner --- intermediate --- advanced --- proficient
9. How would you rate your foreign language listening ability?
   beginner --- intermediate --- advanced --- proficient
10. How would you rate your foreign language writing ability?
    beginner --- intermediate --- advanced --- proficient
11. How would you rate your foreign language reading ability?
    beginner --- intermediate --- advanced --- proficient

Part III: Computer Literacy

12. How would you rate your computer keyboard typing ability?
    beginner --- intermediate --- advanced --- proficient
13. Do you have online oral chat experience in a language other than English?
    Yes --- Not much --- No
14. Do you have online oral chat experience in English?
    Yes --- Not much --- No
15. Do you have online written chat (using instant messaging) experience in a language other than English?
    Yes --- Not much --- No
16. Do you have online written chat (using instant messaging) experience in English?
    Yes --- Not much --- No

APPENDIX C

FTF & SCMC CONTEXT TASKS

The following pictures were used in the spot-the-difference FTF and SCMC context tasks. Below are the instructions that the participants received.

Instructions: *You and your partner are going to work together to complete two spot-the-difference tasks. You will complete one task by exchanging text-messages through Skype. You will complete the other task by communicating with one another face-to-face. To complete each task, both of you have to alternate turns to find five differences between the pictures that you receive. Please provide corrective feedback on language and content to your partner during your face-to-face and computer-mediated (i.e., Skype) interactions as necessary. When completing the tasks, you cannot show or point to the pictures, take notes, use a dictionary, or visit any website.*

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APPENDIX D

QUESTIONNAIRE ON CORRECTIVE FEEDBACK

FTF: face-to-face; SCMC: synchronous computer-mediated communication (Skype)

Part I:

Participants: L2 learners and Native English Speaker

1. Which mode of communication did you prefer: FTF or SCMC? Why?

Answer the following questions based on your experience in the FTF interaction.

2. Did you correct your partner's language mistakes?
   If yes…
   a. What mistakes did you correct?
   b. How did you correct your partner's mistakes?
   c. How did you feel correcting your partner's language mistakes?
   If no…
   d. Why didn't you correct your partner's language mistakes?

3. Did your partner correct your language mistakes?
   If yes…
   a. What mistakes did he or she correct?
   b. How did he or she correct your mistakes?
   c. How did you feel being corrected by your partner?
   d. Were the corrections helpful? Why?
   If no…
   e. Why do you think you did not receive any corrections from your partner?

Answer the following questions based on your experience in the SCMC interaction.

4. Did you correct your partner's language mistakes?
   If yes…
   a. What mistakes did you correct?
   b. How did you correct your partner's mistakes?
   c. How did you feel correcting your partner's language mistakes?
   If no…
   d. Why didn't you correct your partner's language mistakes?

5. Did your partner correct your language mistakes?
   If yes…
   a. What mistakes did he or she correct?
   b. How did he or she correct your mistakes?
   c. How did you feel being corrected by your partner?
   d. Were the corrections helpful? Why?
   If no…
   e. Why do you think you did not receive any corrections from your partner?
6. Add any comments you may have about this experience.

Part II:

Participant: L2 Learner

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. How difficult was the **FTF** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

2. How difficult was the **text-SCMC** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

3. How much did you learn from the **FTF** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

4. How much did you learn from the **text-SCMC** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

5. What did the **FTF** interaction help you learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

6. What did the **text-SCMC** interaction help you learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

Participant: Native English Speaker

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. How difficult was the **FTF** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

2. How difficult was the **text-SCMC** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

3. In your opinion, how much did your partner learn from the **FTF** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

4. In your opinion, how much did your partner learn from the **text-SCMC** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

5. In your opinion, what did the **FTF** interaction help your partner learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

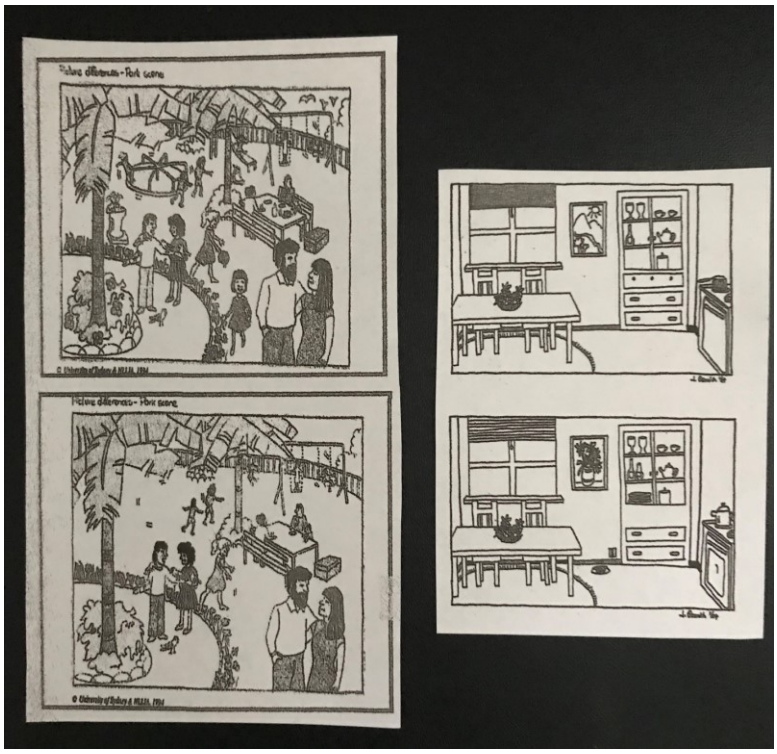
6. In your opinion, what did the **text-SCMC** interaction help your partner learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

APPENDIX E

FTF & SCMC CONTEXT TASKS

The following sets of pictures were used in the spot-the-difference tasks. Below are the instructions that the participants received.

Instructions: *You and your partner are going to work together to complete two spot-the-difference tasks. You will complete one task by exchanging text-messages through Skype. You will complete the other task by communicating with one another face-to-face. To complete each task, both of you have to alternate turns to find eight differences between the pictures that you receive. Please provide corrective feedback on language and content to your partner during your face-to-face and computer-mediated (i.e., Skype) interactions as necessary. When completing the tasks, you cannot show or point to the pictures, take notes, use a dictionary, or visit any website.*



Sources: The pictures on the right side were designed by and printed with permission of Jane Ozanich. The pictures on the left side were from the National Languages and Literacy Institute of Australia, which no longer exists.

APPENDIX F

QUESTIONNAIRE ON SECOND LANGUAGE LEARNING THROUGH INTERACTIONS

Participant: L2 Learner

Part I:
FTF: face-to-face; SCMC: synchronous computer-mediated communication (Skype)

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. Which mode of communication did you prefer: FTF or SCMC? Why?
2. Through which mode of communication (i.e., FTF or text-SCMC) do you think you learned more English vocabulary and/or grammatical structures? Why do you think you learned more English through that mode of communication?
3. In your opinion, how would FTF interactions help people who want to learn or improve their English?
4. In your opinion, how would text-SCMC interactions help people who want to learn or improve their English?
5. Which mode of communication (i.e., FTF or text-SCMC) would you recommend to people who want to learn or improve their English? Why?
6. Add any comments you may have about learning English through FTF or text-SCMC interactions.

Part II:

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. How difficult was the **FTF** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

2. How difficult was the **text-SCMC** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

3. How much did you learn from the **FTF** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

4. How much did you learn from the **text-SCMC** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

5. What did the **FTF** interaction help you learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

6. What did the **text-SCMC** interaction help you learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

Participant: Native English Speaker

Part I:
FTF: face-to-face; Text-SCMC: synchronous computer-mediated communication (Skype)

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. Which mode of communication did you prefer: FTF or SCMC? Why?
2. Through which mode of communication (i.e., FTF or text-SCMC) do you think your partner learned more English vocabulary and/or grammatical structures? Why do you think your partner learned more English through that mode of communication?
3. In your opinion, how would FTF interactions help people who want to learn or improve their English?
4. In your opinion, how would text-SCMC interactions help people who want to learn or improve their English?
5. Which mode of communication (i.e., FTF or text-SCMC) would you recommend to people who want to learn or improve their English? Why?
6. Add any comments you may have about learning English through FTF or text-SCMC interactions.

Part II:

Answer the following questions based on your experience in the FTF and SCMC interactions you just had.

1. How difficult was the **FTF** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

2. How difficult was the **text-SCMC** interaction?
   1 (not difficult at all)
   2 (a little)
   3 (somewhat)
   4 (difficult)
   5 (very difficult)

3. In your opinion, how much did your partner learn from the **FTF** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

4. In your opinion, how much did your partner learn from the **text-SCMC** interaction in terms of English skills?
   1 (not at all)
   2 (a little)
   3 (somewhat)
   4 (more than somewhat)
   5 (a lot)

5. In your opinion, what did the **FTF** interaction help your partner learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation

6. In your opinion, what did the **text-SCMC** interaction help your partner learn or improve in terms of English? Mark all the answers that apply.
   __ reading skills
   __ writing skills
   __ listening skills
   __ speaking skills
   __ grammar
   __ vocabulary
   __ pronunciation