

AAUSC Issues in Language  
Program Direction

Internet-mediated Intercultural Foreign  
Language Education

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Julie A. Belz  
Steven L. Thorne  
**Editors**



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## Chapter 5

# Morphological Development in Spanish-American Telecollaboration

Paola E. Dussias

### ***Abstract***

*The present study examines the linguistic consequences of computer-mediated communication between foreign language (L2) learners of Spanish and native Spanish speakers. In particular, it investigates whether the benefits attributed to intercultural computer-mediated interactions are transferable to face-to-face communication by examining whether e-mail and chat-room interactions that took place over a period of three months resulted in increased linguistic gains. L2 learners of Spanish were assigned to either an experimental group or a control group. Participants in the experimental group engaged in computer-mediated interactions with native speakers of Spanish residing in Almería, Spain. The learners in the control group interacted electronically with other learners of Spanish of similar proficiency. Linguistic gains were assessed by examining the transcriptions of OPI interviews that were conducted immediately before the learners began the computer-mediated communication sessions and after the last session ended three months later. The results reveal that learners in the experimental group showed increased linguistic control in the use of overt-null subjects in Spanish as well as greater communicative fluency, relative to learners in the control group. These findings suggest the beneficial role of telecollaborative interactions between native speakers and nonnative speakers with respect to linguistic competence.*

### **Introduction**

It has been suggested (e.g., Kern and Warschauer 2000; Kern, Ware, and Warschauer 2004) that computer-mediated communication (CMC) provides an ideal forum for language learners to benefit from interaction with native speakers (NS) to enhance foreign language (L2) development. This is because the written nature of the discourse may provide a private, stress-free environment with access to input, self-paced practice, feedback, and opportunities for negotiation of meaning (e.g., Blake 2000; Nagata 1993; Nagata and Swisher 1995; Neri, Cucchiarini, Strik, and Boves 2002; Pellettieri 2000; Rosa and Leow 2004; Smith 2003), while it, at the same time, affords learners with greater opportunities to notice and to reflect on the form and content of the input.<sup>1</sup>

Despite the appeal of CMC as a potential tool to enhance L2 learning, research studies assessing the effects of online interaction on language development and language use are only recently beginning to emerge. The findings reported under this rubric have produced conflicting results, with some studies suggesting that computer-mediated interaction does not result in the development of greater syntactic complexity and lexical richness in the L2 (e.g., Abrams 2003; Blake 2000) and other studies reporting a positive relationship between synchronous and asynchronous interactions and L2 language development (e.g., Belz and Kinginger 2003, Pellettieri 2000; Sotillo 2000). To shed light on the potential benefits of computer-mediated interactions, the present study investigates the role of telecollaboration, defined as the use of Internet-based communication for *intercultural* interactions, on the development of *oral* proficiency in L2 learners of Spanish. The participants were part of a larger group of L2 language learners who were enrolled in fourth-semester college-level foreign language courses. Participants were assigned to either an experimental group (i.e., telecollaboration group) or a control group (i.e., non-telecollaboration group). Learners in the experimental group participated in e-mail and chat-room interactions with NSs of Spanish (i.e., *intercultural* CMC), whereas learners in the control group interacted electronically with other learners of Spanish of similar proficiency (i.e., *intracultural* CMC). Linguistic gains were assessed by examining the language samples obtained from *transcriptions* (not the ultimate ratings) of Oral Proficiency Interviews (OPI). These were conducted immediately before the learners began CMC sessions and immediately after the last session ended three months later. To anticipate the outcomes, the findings of four participants reveal that learners in the experimental group showed increased linguistic control in the use of overt-null subjects in Spanish, as well as greater communicative fluency, relative to learners in the control group.

In what follows, an overview of the most recent findings on the relationship between native speaker-nonnative speaker (NS-NNS) interactions and the role of CMC on language outcomes is provided. Next, the present study is discussed, the goal of which was to assess the potential benefits of NS-NNS interactions carried out through synchronous and asynchronous online tools. Finally, we provide a discussion of the potential implications of the role of CMC in L2 development.

## NS-NSS Interactions and Language Outcomes

According to the *Interactionist Hypothesis* for second language acquisition (SLA), two aspects of L2 learner interaction have been identified as fostering grammatical development. One is form-focused negotiation. For instance, Swain (1985, 1995) has argued that negotiation of meaning “pushes” learners from the kind of semantic processing characteristic of language comprehension to a more syntactic sort of processing, because the interlocutors work cooperatively to determine the source of the communicative problem, which often arises as a result of the non-targetlike use of lexical, syntactic, or semantic features by L2 learners (see also Swain and Lapkin 1995; Varonis and Gass 1985). The cognitive processes (e.g.,

awareness, detection, and noticing) that underpin the identification of the root of the misunderstanding have been argued to be necessary for grammatical development to occur (Schmidt 1990; Gass and Varonis 1994). The second characteristic of interaction that has been found to be beneficial for language development is feedback on error. Feedback on error can be explicit, where the learner is provided with overt information about the impossibility of certain linguistic structures in the target language, or implicit, as in the use of recasts and text enhancement. Because extensive exposure to L2 input that excludes focus on formal linguistic features does not provide all that students need for the attainment of grammatical accuracy, feedback on error is viewed as a type of pedagogical intervention that can allow learners to maintain the overall goal of language for communication as well as to notice structural regularities and to create or test hypotheses about the target language.

The benefits of negotiation of meaning were first demonstrated for NS-NSS oral exchanges by Long (1981, 1983). For example, Long (1983) found greater occurrences of modifications of the interactional structure of conversation in NS-NNS interactions vis-à-vis NS-NS exchanges. According to Long, such interactional modifications crucially enhance L2 development because they provide learners with opportunities to access second language form and meaning and encourage learners to modify their own non-targetlike output. While subsequent literature has confirmed these findings (e.g., Gass 1997; Long 1996; Mackey 1999; Mackey, Oliver, and Leeman 2003; Pica 1994), additional investigations show that the benefits conferred by interactional modifications hold true for NNS-NNS exchanges as well. For example, Gass and Varonis (1994) examined NS-NS, NS-NNS, and NNS-NNS conversations, noting that negotiation of meaning was most prevalent among NNS-NNS pairs of different language backgrounds and different proficiency levels. Similarly, Shehadeh (1999) found that a greater amount of extended negotiation work took place in NNS-NNS interactions than in NS-NNS interactions. These findings suggest that NNSs could benefit more from interactions with other NNSs than with NSs. However, because negotiation can occur in response to targetlike and non-targetlike utterances alike, it is necessary to conduct research that focuses only on responses to non-targetlike output to better assess the effect of interaction on L2 development. This was precisely the aim of Mackey, Oliver, and Leeman (2003), who analyzed the effect of NS versus NNS interlocutor on the amount of feedback, opportunities for modified output, and immediate incorporation of feedback. The findings revealed no significant differences with respect to production of modified output between NS-NNS and NNS-NNS exchanges, although it was also observed that NS interlocutors provided more feedback than NNSs in response to non-targetlike utterances. This result partially corroborates teachers' intuitions that "NNSs provide significantly less feedback than NSs" (Mackey, Oliver and Leeman, 2003, p. 56). However, given that the relative value of communicative exchanges between NNS-NNS and NS-NNS is not well known, further research is needed to examine whether interactions between NS-NNS and NNS-NNS promote increased linguistic control. The present study addresses this issue in a telecollaborative environment.

## CMC and L2 Development

Two recent studies have analyzed the advantages of CMC within the context of the Interaction Hypothesis, focusing on the role of the negotiation of meaning in terms of either modified input or modified output. In Blake (2000), L2 learners of Spanish participated in jigsaw, information-gap, and decision-making tasks during synchronous networked discussions in pairs. The findings revealed that of the three types of activities, jigsaw tasks were the most effective in promoting negotiations, suggesting that CMC can provide many of the linguistic benefits attributed to interaction. In another study, Pellettieri (2000) examined the dyads of English-speaking learners of Spanish while they were engaged in synchronous computer-based interactions. An analysis of the modifications made by learners in response to negotiation moves and corrective feedback suggests that computer-mediated interactions can be an effective tool in helping learners to achieve higher levels of meta-linguistic awareness (see also, Lee, 2001, 2002a, 2002b, 2004).

The benefits of online co-operative exchanges as a means to direct learners' attention to the gaps that exist in their interlanguage grammar have also been reported in Kitade (2000), who analyzed the transcripts from the chat sessions produced by learners of Japanese. Kitade found that learners self-corrected their ungrammatical utterances either because they noticed an error themselves or in response to corrective feedback provided by other members of the chat group. In addition to this type of productive repair, Kitade also reports that learners used strategies such as negotiation of meaning and collaboration to exploit the interactional features of online chatting, concluding that "task-based L2 interaction facilitates comprehensible and meaning-making interaction, awareness raising, as well as collaborative learning" (2000, p. 162). Linguistic gains resulting from network-based communication have also been reported by Belz (2004) in her analysis of the corpora that resulted from telecollaborative correspondence between eleven English learners of German and fourteen expert German interlocutors. The findings revealed that during the eight-week telecollaborative period, the learners moved along individual pathways with respect to range, frequency of use, and syntax in their development of the German *da*-compounds, pronominal adverbs that are considered to signal advanced levels of linguistic proficiency given both the complex syntactic environments in which they occur and their function as elements that create semantic cohesion in the discourse structure.<sup>2</sup>

Additional studies have found that computer-based interactions can facilitate L2 learning in a manner comparable to that obtained during face-to-face classroom interactions. For example, Salaberry (2000a) found that text-based CMC was more effective than oral face-to-face interactions in the development of the Spanish present tense verbal inflection by L2 learners. Salaberry suggests that written communication may confer an advantage over face-to-face interactions because it increases the saliency of the distinctions among verb forms. In a related study, Sotillo (2000) examined the asynchronous and synchronous discussions of two groups of university-level English-as-a-second-language learners enrolled in academic writing classes. Analysis of the syntactic complexity and discourse functions in the samples produced by the learners revealed that the delayed nature of

asynchronous discussions provided learners with more opportunities to produce syntactically complex language, and that the discourse functions found in synchronous interactions resembled the types of interactional modifications found in informal face-to-face conversations. Sotillo suggests that both types of network-based tools offer advantages in that they can be used “to enhance the language acquisition process by encouraging interaction among participants, collaborative text construction, and the formation of electronic communities of learners” (2000, p. 82). Finally, Abrams (2003) investigated whether CMC could help learners improve their oral proficiency. She compared the performance of a synchronous CMC group, an asynchronous CMC group, and a control group on three oral discussion tasks over the course of a semester. The results suggest that the practice effect of learners in the synchronous CMC group, who produced more output during CMC interactions, transferred to face-to-face communication.

The findings reviewed above are particularly significant as they suggest that the use of online tools to promote negotiation of meaning between second and foreign language learners and proficient speakers of the target language affords learners the opportunity to be exposed to interactional modified input and to engage in the sorts of form-focused communication that have been claimed to be facilitative of the development of second language competencies. To further understand the role of CMC on second language development, the present study compares NS-NNS interaction to NNS-NNS interactions in an attempt to answer the following research question: Do telecollaborative interactions have a positive effect on oral performance in foreign language learners of Spanish?

In the present study, a positive effect on oral performance is operationalized in terms of linguistic gains and communicative fluency. Linguistic gains here refer to the occurrence of a particular grammatical structure at an accuracy level of 90% or above in spontaneous production. Ninety percent was chosen as the cut-off given that a vast majority of studies investigating acquisition in the L1 domain consider that acquisition of a particular grammatical feature has taken place when the learner produces that feature at 90% accuracy or above (e.g., Echeverría 1978). Although there are no accepted operationalizations of fluency, Foster and Skehan define it as “continued performance and repair avoidance” during real-time language production (1996, p. 305). Therefore, in this study, evidence suggesting the existence of lexical retrieval difficulties, lexical gaps, and the use of lexical innovations will be interpreted as signaling non-fluent speech.

## Method

### Participants

Participants were selected from a pool of students who took part in a federally funded research project<sup>3</sup> from 2000 to 2002 that aimed at investigating the impact of telecollaboration on foreign language acquisition and teaching. During this time, native English speakers enrolled in a fourth-semester college-level Spanish foreign language course at a large American institution were paired with native Spanish speakers residing in Almería, Spain, who were learning English as a

foreign language. Each student pair engaged in semester-long weekly electronic interaction via e-mail and chat for the duration of the project. A control group of native English speakers enrolled in a similar fourth-semester Spanish language course at the same institution also completed the computer-mediated tasks and activities, but without the NS interaction. In other words, they corresponded with NNS peers via e-mail and chat but they did not participate in telecollaboration because telecollaboration, by definition, entails intercultural interaction. Each year, a different group of students participated in the telecollaborative interactions. For the present study, gains in oral performance of four learners from the first year of the project are reported, two from the experimental group (identified via pseudonyms as Nick and Susan) and two from the control group (referred to as Michelle and Erica). The learners were between the ages of 18 and 22; they were Spanish majors; and they had studied Spanish for at least four semesters.

### Tasks and Assessment

Throughout the 15-week semester, students in the experimental and control groups participated in a series of CMC tasks with their respective interlocutors, which ranged in type from discussions of one another's career paths, current events in the press and differences in the educational systems of the two countries, to views and critiques on elements of popular culture. To assess the effects of telecollaborative interactions on oral performance, oral speech samples were collected using the OPI instrument. Numerous researchers have critiqued the OPI as an assessment measure on a number of grounds (e.g., Salaberry 2000b) and indeed in years two and three of the larger research project an alternative oral assessment measurement was employed because the OPI did not prove to be sensitive enough to capture changes in learner proficiency over the relatively short period of the telecollaborative exchanges. It is important to emphasize here, however, that the learners' OPI *scores* are not used as a measure of their linguistic gains in telecollaboration *per se*, but rather the *transcripts* of the OPI interviews themselves are utilized as oral speech samples. In other words, the OPI instrument has been re-purposed as a data source in the framework of this study in order to paint a picture of the way in which any gains the learners may have experienced in L2 proficiency in the course of participation in text-based telecollaboration may have transferred to their oral proficiency in another context. The interviews were carried out via telephone by testers with current ACTFL OPI tester certification, immediately before beginning the CMC exchanges (henceforth pre-treatment) and after the last session ended three months later (henceforth post-treatment).

For the present study, the language samples of eight learners (four from the experimental group and four from the control group), for whom pre-treatment and post-treatment interviews were available, were analyzed for the following seven language features: (1) determiner-noun and adjective-noun gender and number agreement errors; (2) subject-verb agreement; (3) tense/aspect; (4) Spanish *por/para*; (5) Spanish *ser/estar*; (6) use of overt pronoun in cases where a null pronoun is pragmatically appropriate; and (7) communicative fluency. These language features were chosen for analysis because much has been written about

their development in L1 and L2 Spanish acquisition studies (e.g., Andersen 1990; Guntermann 1992; Lafford and Ryan 1995; López-Ornat, Fernández, Gallo, Mariscal 1994; Montrul and Salaberry 2003; Morales 1986; Ryan and Lafford 1992; Salaberry 2002, 2003; Silva-Corvalán 1982; VanPatten 1987) and because learners demonstrate difficulty with these features at this stage in their L2 development.

In order to determine the occurrence of language gains in oral production, it was first necessary to match learners from the control group with learners from the experimental group on linguistic ability prior to the treatment. To do this, an examination of the pre-treatment speech samples for each of the seven language features listed previously was conducted. The findings revealed that the eight learners were at disparate levels of grammatical development for each of these seven features. In this respect, some learners produced over 60% subject-verb agreement errors, *por/para* errors and *ser/estar* errors in their pre-treatment sample, whereas other learners exhibited over 85% accuracy on the same linguistic features. Additionally, the pre-treatment and post-treatment samples were characterized by inconsistencies and mismatches in the type of grammatical features elicited by the OPI interviewers. For example, whereas a learner may have discussed a particular past event with relatively high linguistic accuracy during the pre-treatment interview, the same linguistic feature was not elicited by the interviewer conducting the post-treatment interview for that same learner. Therefore, for some learners, the data in the pre- and post-treatment samples did not uniformly contain the same type of linguistic features. Given these limitations, only one learner from the control group (Michelle) and one learner from the experimental group (Nick) could be matched on the basis of similar pre-treatment performance (between 35% and 70% accuracy) on two of the seven features investigated (i.e., agreement processes and communicative fluency), and two other learners (Erica from the control group and Susan from the experimental) could be matched at 70% or more accuracy on the use of null-overt subject pronouns and agreement processes in Spanish (Table 1). Therefore, these language features constitute the core of the analysis presented below.

**Table 1**

Pre- and Post-Treatment Results Provided in Percentage of Incorrect Responses for the Four Focal Learners

	Pre-treatment Scores				Post-treatment Scores			
	Nick	Michelle	Susan	Erica	Nick	Michelle	Susan	Erica
Subject-verb agreement errors	64%	40%	9%	8%	63%	38%	8%	11%
Gender Agreement errors	32%	32%	7%	10%	29%	33%	8%	9%
Null/overt subject use	N/A	N/A	30%	35%	N/A	N/A	9%	30%

## Results

Overall, there was much variability in the incidence of linguistic inaccuracies in the learners' language, and some students struggled more than others to answer the questions addressed during the interview. Below, the findings for each participant are presented, beginning with the learners in the experimental group.

### Nick

In his pre-telecollaboration OPI interview, Nick spent a significant amount of time formulating his responses and exhibited disfluent speech, as evidenced by the occurrence of lexical gaps, lexical innovations, and lexical retrieval difficulties caused by the inaccessibility of lexical information, which required additional time for the planning of the spoken utterances in the second language. Suggestive evidence for this comes from the frequent use of statements such as *¿cómo se dice?* "how do you say . . .?," *¿qué (sic) es la palabra?* "what is the word for," and *no sabe (sic) la palabra* "I don't know the word" preceding the syntactic position where a noun is required. Additional evidence also comes from the occasional use of English nouns and verbs in the course of the interview, the use of lexical innovations (i.e., words composed of English stems and Spanish inflections) and of repetitions of articles and prepositions before the production of Spanish nouns. Examples 1 through 3 below illustrate lexical gaps; 4 through 6 exemplify lexical innovations<sup>4</sup>; and 7 to 9 demonstrate repetition of articles and prepositions before nouns.<sup>5</sup>

#### (1)

Si, estoy en estudiante de um, de uh, de, hmm, uh, estoy estudiante de *accounting*; no, no sabe la palabra.

"Yes, I am a student of um, of uh, of, hmm, uh, I am a student of *accounting*; I, don't, don't know the word."

#### (2)

. . . y después de esto voy a la, a trabajar, uh, (incomprehensible) de, uh, de, uh,

no, no, no conoso (sic) la, uh, la palabra para *insurance*.

". . . and after this I go to the, to work, uh, (incomprehensible) of, uh, of, uh, I don't, I don't, I don't know the, uh, the word for insurance."

#### (3)

Pero yo tengo un cosa con mi, uh, con me, uh; no sabe la palabra para *legs*.

"But I have a thing with my, uh, with my, uh; I don't know the word for legs."

#### (4)

Me gusta estudio en la universidad de Alicante en uh, cuatro más *monthos*.

"I would like to study at the University of Alicante in, uh, four more months."

(5)

Si, eh, uh, no lo *understande*.

“Yes, eh, uh, I don’t understand you.”

(6)

No, es, es más de otras cosas, cosas de porque me quiero hablar con *costumumbres, costum* . . .

“No, it is, it is more about other things; reasons why I need to talk to customers . . .”

(7)

Somos, uh, cerca de Philadelphia, so, pues, es dos horas en, en, en la dirección de East.

“We are, uh, near Philadelphia, so, well, it is two hours, in, in, in the direction toward East.”

(8)

Estoy haciendo la estudiante que estudiando aquí en un, en, en, en poco semanas.

“I am a student who will be studying here in, a, in, in, in a few weeks.”

(9)

¿Cómo es la, la, um, como es la, la día allí?

“How is the, the, um, how is the, the day there?”

Nick’s pre-telecollaborative speech was also characterized by a lack of control of agreement processes, both within noun phrases (e.g., determiner-noun and adjective-noun agreement), and between grammatical subjects and their corresponding verbs. Adjectives and determiners in Spanish must agree in gender (masculine or feminine) and number (singular or plural) with the noun they modify. Grammatical and semantic gender in Spanish is normally marked with *-o* at the end of masculine nouns, and *-a* at the end of feminine nouns. In addition, nouns that end with a consonant can be masculine or feminine. Plural forms are marked by adding *-s* to singular nouns that end in *-o* and *-a*, and *-es* to those that end in consonant.

Of the 81 nouns preceded by a determiner in Nick’s pre-telecollaborative sample, 32% contain gender agreement errors, although only 1% shows mistakes in number agreement. The difference in error rates between the two agreement types may be a consequence of positive transfer of number marking processes between English and Spanish. Both languages use a consonant to mark plurality and in both cases the consonant is orthographically represented with the letters {*-s*} or {*-es*}; this overlap may confer an advantage to the learner when computing number agreement during real-time language production in the L2.

Most determiner-noun agreement errors occurred when the noun endings did not provide a cue to its grammatical gender. For instance, the italicized nouns in examples 10 through 15 are masculine; however, in such cases, Nick used the feminine article.

**(10)**

Durante *la día* cuando, cuando estoy estudiando . . .

“During the day, when I am studying . . .”

**(11)**

Voy a la, vamos a *la parque*

“I go to the, we go to the park”

**(12)**

Cuando voy a este restaurante y, uh, a *la menú*

“When I go to this restaurant and, uh, to the menu”

**(13)**

No sabe la nombre

“I don’t know the name”

**(14)**

No estoy bien a *la golf*

“I am not good at golf”

**(15)**

Es *nombre vieja*

“It’s an old name”

Gender agreement errors also occurred when the gender of the noun was morphologically transparent. That is, nouns such as *baño* “bathroom,” *semana* “week,” and *familia* “family,” which are unambiguously marked for masculine or feminine gender, surfaced with determiners whose gender marking was morphologically incongruent (i.e., *la baño* instead of *el baño*; *el semana* instead of *la semana*; *los familias* instead of *las familias*). Finally, only a negligible amount of agreement errors occurred with nouns that were semantically marked for gender. For example, Nick used the phrase *la estudiante* (“the student, feminine”) instead of *el estudiante* (“the student, masculine”) to refer to himself.

Lack of agreement between grammatical subjects and verbs was also evident in Nick’s pre-telecollaborative speech. Of the 108 verb tokens that appeared in the data set, 48% were correct forms of the Spanish copula *ser/estar*. The vast

majority of these, however, were instances of the present singular first person form or of formulaic expressions (i.e., *estoy (sic) estudiante* “I am a student,” *¿qué (sic) es la palabra?* “what is the word,” *es buena cosa (sic)* “it’s a good thing”). If one excludes these cases, 64% of the remaining verbs appeared with incorrect verbal affixes or as entirely uninflected. In examples (16) and (17) below, Nick uses *me levanta* “she/he wakes me up” and *se levántame* (an illicit phrase in Spanish) instead of *me levanto* “I wake up,” *báñame* “bathe me” instead of *me baño, vas* “you go” instead of *voy* “I go,” and *trabajar* “to work” instead of *trabajo* “I work.”

## (16)

**Interviewer:** *¿Cuál es, em, cuál es su rutina diaria en estos días? ¿Qué hace usted en estos días?*

“What’s, em, what’s your daily routine these days? What are you doing these days?”

**Nick:** Uh, cuando *me levanta* de la mañana, tomo un ban, ban, voy a la baño y, y, *báñame*, uh. *¿Qué es la palabra?* Uh, *se levántame*, y uh, tomo la ropa y, *vas* a las clases por la mañana (unintelligible), nueve o ocho por la mañana, y tengo clases a la cuatro, y después de esto voy a la, a trabajar, uh, (incomprehensible) de, uh, de, uh, no, no, no conozo la, uh, la palabra para insurance.

“Uh, when I wake up in the morning, I take a ba, ba, I go to the bathroom, and, and, I take a bath, uh. What’s the word? Uh, I wake up, and uh, I get dressed and, I go to my classes in the morning (unintelligible), nine or eight in the morning, and I have classes at four, and after this I go to the, to work, uh (incomprehensible) for, uh, for, uh, I don’t, I don’t, I don’t the, uh, the word for insurance.”

## (17)

**Interviewer:** . . . pero *¿qué pasa entonces los fines de semana?*

“. . . but what goes on then on weekends?”

**Nick:** Trabajar por el fin de semana.

“I work on the weekends.”

To determine the impact of the telecollaborative experience on Nick’s oral production and linguistic development, an analysis of the OPI transcripts obtained from the post-telecollaboration interview was performed to establish the existence, if any, of gains in the lexical or morphosyntactic domains discussed above. Perhaps the most perceptible improvement in Nick’s speech was a decline in disfluency. This is evidenced by the disappearance of lexical innovations from Nick’s speech, as well an increased control of vocabulary previously absent from his repertoire. In 18 and 19, for example, Nick uses words (e.g., accountant and insurance company) that were unfamiliar to him at the time of his pre-telecollaboration experience.

**(18)**

Ah!, Estoy en la, uh, en State College, que es a la universidad de Penn State, uh, dónde me estudiando, uh, soy estudiando negocios internacionales y uh, cuent, uh (tisk) contable.

“Ah! I am at the, uh, in State College, which is at Penn State University, uh, where I study, uh, I am studying international business and, uh, account, uh, (tisk) accounting.”

**(19)**

Sí, uh, trabajo en una, una compañía de seguros, para cinco, diez años, uh, horas.

“Yes, uh, I work in an, an insurance company, for five, ten years (self-corrects), uh, hours.”

Additionally, Nick’s speech exhibits signs of the emergence of manipulations of the linguistic form of his utterances to more precisely convey meaning. In the examples below, the learner is indeed attending to the form of his output and corrects himself as he “pushes” to produce semantically (20) and morpho-syntactically (21–22) accurate utterances. In 20, Nick self-corrects by substituting *años* “years” for *horas* “hours.” In 21, he corrects a tense/aspect error, by replacing *preguntaré* “I will ask” for *preguntaba* “I was asking.” Finally, in 22 he changes the incorrect person/number marker in *quiero* “I want” for the correct *quieres* “you want” and, at the same time, relocates the pronoun (*me*).

**(20)**

Sí, uh, trabajo en una, una compañía de seguros, para cinco, diez años, uh, horas.

“Yes, uh, I work in an, an insurance company, for five, ten years (self-corrects), uh, hours.”

**(21)**

Sí, preguntaré, preguntaba sí tendrían algunas um peticiones para empleo.

“Yes, I will ask, (self-corrects), I asked if they had some um employment forms.”

**(22)**

Está bien. ¿Dónde me quiero a pongo? um ¿dónde quieres me pongo?

“That will be fine. Where do I want myself to put (corrects himself)? Um, where do you want me to put myself?”

Not all characteristics of Nick’s speech show signs of improvement, however. Agreement is one of them. Sixty-three percent of the verbs that appeared in Nick’s post-telecollaborative interview surfaced with subject-verb agreement errors. In addition, of the 93 nouns in the post-telecollaborative sample, 29% contained

determiner-noun or adjective-noun agreement errors, as compared to 32% in his pre-telecollaborative sample. As with the pre-telecollaboration sample, these errors occurred with nouns that were transparent for gender (e.g., *la mercado* “the market,” *la teatro* “the theater,” *la gimnasio* “the gym,” *la teléfono* “the telephone,” and *la trabajo* “work”) as well as with nontransparent nouns (e.g., *la cine* “the movies,” *la avión* “the airplane,” and *la nombre* “the name”).

## Susan

In her pre-telecollaborative sample, Susan displays the type of linguistic control characteristic of learners with a higher level of proficiency in Spanish as a second language. For example, Susan is able to narrate events in some detail and discuss topics dealing with personal interests using general vocabulary. In grammatical terms, she shows competency in subject-verb agreement processes, employs clitics in syntactically and discursively appropriate environments, links sentences together smoothly, uses complex structures (e.g., embedding), and shows some command of tense/aspects distinctions as seen in examples 23 and 24.

### (23)

Um, hmm, no sé (risa). Pienso que lo que, ah, pasó es que los padres de las chicas pagaban un poco más para las chicas que no podían pagar, um, porque eramos todos una familia grande, y todos saben todos y todos ayudan todos.

“Um, hmm, I don’t know (laughs). I think that what happened is that the girls’ parents paid a little more for the girls that could not pay, um, because we were all a big family, and everyone knew everyone, and everyone helped everyone.”

### (24)

Ahm, es un grupo de servicio para los estudiantes que viven en los dormitorios; sí, so, pues organizamos uh actividades para ellos y uh. . . .

“Ahm, it is a service group for students that live in the dorms; yes, so we organize uh activities for them, and uh . . .”

Nonetheless, one type of sentence-level error in Susan’s speech is in the domain of agreement. Of the total number of determiner-noun combinations used in her 1586-word sample, 9% contained subject-verb agreement errors, and 7% exhibited gender agreement errors between the determiner and the noun. Approximately 60% of the gender-agreement errors involved nouns whose gender was non-transparent, such as *fin* “end,” *clase* “class,” *actividad* “activity,” *calle* “street,” and *coche* “car.” The remaining 40% of the errors occurred with nouns whose inflection provided the incorrect cue to gender (i.e., nouns are masculine that despite ending in *-a* such as *problema* “problem”) or with feminine nouns that surfaced with masculine determiners (*los cosas* “the things,” *el cama* “the bed,” and *los ruedas* “the wheels”).

At the discourse level, there is evidence that null subjects are part of Susan's interlanguage competence, although overt subjects continue to appear in environments where null subjects are required.<sup>6</sup> One hundred sixty-three tensed verbs appeared in Susan's pre-telecollaboration sample. Following Cameron (1992; see also, Flores-Ferrán 2004; Silva-Corvalán 1994), verbs that required the obligatory omission of subjects were excluded from the analysis conducted in order to determine the pattern of null/overt subject use by Susan. These cases, 42% in the data, included instances in which the learner used verbs with non-personal pronouns (*eso es por qué quieran, um, implementar los uniformes* "that is why they want to, um, implement uniforms"), existential verbs (*había como dieciseis chicas en el equipo* "there were about sixteen girls on the team"), verbs with subjects referring to time expressions (*hace mucho tiempo* "a long time ago"), and verbs referring to atmospheric conditions (*hacía calor* "it was hot"). Environments in which the grammatical subject needed to be obligatorily expressed for semantic reasons were omitted from the analysis. Subjects accompanying verbs in constructions of contrast with *pero*, as shown in 25, were also excluded because the learner's use of the overt pronoun is mandatory to preserve the meaning of the utterance. In other words, by overtly using the pronoun *él* in the phrase *él estaba allí*, the speaker makes it clear that the subjects of *quería* and *estaba* refer to different entities.

## (25)

Quería hacer, uh, la derecha, pero él estaba allí, entonces nos chocamos.

"(I) wanted to turn, uh, right but he was there so (we) crashed."

In addition, cases in which the grammatical subject was expressed to avoid ambiguity created by the underspecificity of verbal morphology or to indicate switch reference<sup>7</sup> (Ávila-Jiménez 1995, 1996; Bayley and Pease Álvarez 1997; Cameron 1992; Flores-Ferrán 2002; Morales 1986; Silva-Corvalán 1982, 1994) were also excluded from the analysis. In example (26), for instance, a null subject in place of the pronoun *yo* would signal to the hearer that the first noun phrase functions as the subject of both verbs. In 27, when one compares the target noun phrase of the verb *organiza* "to organize" to the noun phrase of the trigger *no permiten* "they do not allow," one finds that there has been a switch in reference from *él* to *los adultos*. Therefore, the noun phrase accompanying *organiza* was coded as a switch in reference, and was excluded from the analysis.

## (26)

Mi familia fue cuando yo tenía como tres años.

"My family went when I was about three years."

## (27)

Es muy similar a, a la película de Footloose, sobre un chico que vivía en Chicago y . . . se movía a Tejas, a una ciudad muy muy pequeño, y los adultos no permiten bailar, y él organiza ahm a los estudiantes . . .

“It is very similar to, to the movie *Footloose*, about a boy who lived in Chicago, and . . . moved to Texas, to a very very small city, and the adults do not allow dancing, and he organizes ahm the students . . .”

Subjects that required obligatory expression for the reasons explained above accounted for 12% of the data. The remaining 73 verbs (44% of the total number of verbs) were analyzed to calculate the incidence of subjectless sentences in Susan’s speech. Of these, 51 verbs (70%) were correctly produced with a null subject, and the remaining 22 verbs (30%) incorrectly surfaced with overt subjects.

Susan’s post-telecollaborative sample, however, showed a marked decrease in the use of overt subjects where null subjects were required. A total of 180 tensed verbs appeared in Susan’s 1690-word sample. As in the previous case, verbs that obligatorily required null subjects (16% in the data) and overt subjects (14% in the data) were excluded from the analysis. Of the remaining 127 verbs, only 12 verbs (approximately 9% of the data) were incorrectly used with an overt subject, thus signaling an increase in accuracy for this particular feature at 28.5%. Despite Susan’s linguistic progress in the use of subject expressions in Spanish, determiner-noun and subject-verb agreement errors continued to be areas that resisted improvement. Eight percent of the nouns used by Susan during the interview contained errors in which there was a mismatch between the gender of the determiner and that of the noun, compared to 7% in the pre-telecollaboration sample.

Overall, the evidence discussed above suggests that increasing learner opportunity for engaging in interactions with NSs via network-based tools may enhance second language acquisition processes with regard to particular linguistic features. To shed further light on this finding, the next section presents the results of the two participants in the control group, who engaged in a similar telecollaborative experience, but with native English-speaking peers learning Spanish.

## Michelle

In her pre-collaborative interview, Michelle struggled to communicate in Spanish with the interviewer. Her speech was disfluent and characterized by long and frequent signs of hesitation scattered throughout in her 458-word sample. She exhibited difficulty producing simple utterances, and the construction of basic conversational sentence units was hindered as she strived to create appropriate language forms. This is exemplified below, where Michelle repeats strings of words to produce the correct verbal form, although she is sometimes not successful in her attempts, as shown in example 28.

### (28)

El día, um, uh, *bace* um, *bazo* edificios y uh, muy uh, comprar con mis amigas.

“During the day, um, uh, he does um, I do buildings and, uh, very, uh, to buy with my friends.”

## (29)

OK, sí. Uh, *limpi*, uh, *limpial*, uh, *limpio* el, uh, el pool?

“OK, yes. Uh. I clean, uh, I clean, I clean the, uh, the pool?”

Michelle was able to respond to simple statements but in a highly restricted manner and with much linguistic inaccuracy. For example, approximately 40% of the verbs used in her pre-telecollaborative interview contained errors in subject-verb agreement (30–31), surfaced in their infinitival form (32–33), and appeared in the incorrect tense or with missing auxiliaries (34–35).

## (30)

*Tiene* una amiga que *viva* con mi.

“I have a friend who lives with me.”

## (31)

Yo *tienen*, uh, las fiesta, fiestas grandes, um . . .

“I have, uh, parties, big parties, um . . .”

## (32)

OK, uh, *levantar* mi cama, uh, a las siete y uh, voy, uh, uh, a mi, um, casa a las, um, ocho para clase español.

“OK, uh, to wake my bed up, uh, at seven and uh, I go, uh, uh, to my, um, house at, um, eight for my Spanish class.”

## (33)

¿Me quiera, um, tú, um, *caminar* a, um, *y dar*, dar las cartas del día?

“Do you want, um, you, um, to walk to, um, and to give, the letters of the day?”

## (34)

Uh, um mi otro hermana uh, uh, tiene um, 28 años y um, um, *casada* en noviembre.

“Uh, um, my other sister uh, uh, is um, 28 years old and um, um will be married in November.”

## (35)

Uh, *estudiando* español y uh, business, uh, como, accounting, uh . . .

“Uh, I am studying Spanish and uh, business, uh, like, accounting, uh . . .”

Michelle’s speech was also characterized by a lack of control of gender agreement processes (32% error rate in her pre-treatment sample). In addition, she demonstrated strong interference from English both at the level of sentence

structure and at the lexical level. For example, in 36 she incorrectly ends the sentence with a preposition, and in 37 she uses English nouns while attempting to communicate in Spanish.

## (36)

El um, que, um, el, um, que tu nadas en?

“The um, that, um, the, um, that you swim in?”

## (37)

Y mi final hermano Kevin es un artist.

“And my last brother Kevin is an artist.”

After the computer-mediated interactions with her native English peer learning Spanish, Michelle exhibited many of the same linguistic and lexical difficulties. Thirty-three percent of the determiner-noun combinations that occurred in her post-treatment sample appeared with gender agreement errors, and 38% percent of subject-verb combinations contained agreement errors (e.g., *Tiene tres hermanos y una hermana* “I have three bothers and a sister,” *viajará a España* “I will travel to Spain”), in infinitival forms (*asistir la universidad de Salamanca* “I will attend the university of Salamanca”), with tense errors (*en el verano [pasado]* . . . *tiene una programa pequeño* “Last summer . . . it has a small program”), or without auxiliaries (*um, fui um, a la universidad en el verano y um, tenido, um, que asiste* . . . “um, I went um, to the university last summer and um, I had, um, to attend . . .”), compared to 40% in her pre-telecollaborative speech.

As in the pre-telecollaboration interview, Michelle continued to experience difficulties accessing lexical information and necessitated hesitation to create appropriate language forms in her post-CMC sample:

## (38)

Uh, me gusta, um, (pause) me gusta, um, ir de compras, uh, ir al cine, um, visitar mis amigas, um, viajar a otros ciudades, um, uh, *jug, juga, jugar, jugo* al volleyball.

“Uh, I like to, um, (pause) I like to, um, go shopping, uh, go to the movies, um, visit my friends, um, travel to other cities, um, uh, play, play, play, I play volleyball.”

## (39)

Y uh, mi hermano Kevin um, es un *artist*.

“And uh, my bother Kevin um, is an artist.”

## (40)

Él tiene un, um, (pause) una *wife*.

“He has a, um, (pause) a wife.”

In 38, she launches several attempts to produce the correct form of *jugar* “to play” before failing; 39 and 40 are instances of the use of English words during the interview, which suggest a limited command of more basic vocabulary. Particularly revealing is that fact that in 39 Michelle experiences the very same lexical gap as in her pre-telecollaborative interview shown in example 37.

## Erica

Erica’s pre-telecollaborative sample shows that she is able to handle most uncomplicated communicative tasks and successfully sustain the conversations initiated by the interviewer. She is able to narrate complicated events, and makes effective use of familiar vocabulary with sufficient lexical and grammatical accuracy to participate effectively in informal conversations with her interlocutor. For example, Erica used 70 different nouns to describe and narrate events in a number of content areas; of these, the vast majority (90%) exhibited correct gender agreement between the determiner and the noun. This was true even for cases where the noun endings did not provide an obvious cue to gender (*una población* “a town,” *una conexión* “a connection,” *una ciudad* “a city,” *una region* “a region,” *un día* “a day,” and *un lugar* “a place”) or where the nouns employed by the learner were low in frequency (e.g., not commonly needed to complete communicative tasks that appear in fourth-semester Spanish textbooks) and therefore not normally encountered by fourth-semester language learners (*el castillo* “a castle,” *el mar* “the sea,” and *la costa* “the coast”). By and large, Erica was also able to supply the correct subject-verb agreement throughout her pre-telecollaboration interview. Of the 103 verbs present in her sample, only 8% contained subject-verb agreement errors. To illustrate, Erica uses the first person form *llamaré* “I will call” instead of the third person plural form *llamaron* “they called” in example 41; in 42 *estudia* “she studies” is used instead of *estudio* “I study”; finally, in 43, Erica uses *contesta* “she answers” in place of *contesto* “I answer.”

(41)

Muchas personas llamaré.  
“Many people called.”

(42)

Estudia español.  
“I studied Spanish.”

(43)

Yo contesta.  
“I answer.”

Tense/aspect distinctions and the use of overt/null subjects are among the linguistic characteristics that appear to occur with some vacillation in Erica's pre-CMC sample. For example, of the 69 verbs that Erica produced while narrating past events, 39% displayed tense/aspect errors, as illustrated in examples 44 and 45.

## (44)

*Uh, yo tenía cerca de 6 años y una amiga mía era, uh, su padre, um, era un instructor de básquetbol y, uh, por eso yo aprendía uh, baloncesto . . .*

"Uh, I was about 6 years old and a friend of mine was, uh, her father, um was a basketball instructor and, uh, that's why I was learning, uh, basketball . . ."

## (45)

*Um, un amiga mio, um, ella trabajaba allí, y um, ella tenía, um, más años que yo y, um, ella estoy, está estudiando a Penn State también, y, um, y ella me dijo de este trabajo y, um, cuando, um, iba allí, um, una, un mujer, um, me preguntó si um, quiero trabajar como recepcionista, y por eso yo encuentro el trabajo.*

"Um, a friend of mine, um, she was working there, and um, she was, um, older than I was and, um, she was, was studying at Penn State as well, and, um, and she told me about this job and, um, when, um, I went there, um, a, a woman, um, asked me if um, I wanted to work as a receptionist, and that's how I found the job."

Erica also shows an emergent grasp of the environment that license null and overt subjects in Spanish. Seventy-six of the 103 verbs in Erica's pre-CMC sample were analyzed for the presence or absence of grammatical subjects. Twenty-five verbs were omitted because they required the obligatory presence or absence of an overt subject. Of the remaining 78 verbs, approximately 35% surfaced with overt subjects, although by target language standards, their environment licenses null subjects. Three of the four instantiations of the pronoun *ella* in 45 represent a case in point. An additional example is provided in 46:

## (46)

*Había una conexión entre el castillo y mi mente porque, um, cuando tenía pocos años y era una niña, um, tenía sueños con el príncipe en el caballo blanco, y, um, yo imaginaba un castillo y cuando, uh, yo entré en el castillo, um, yo pensaba um, . . . como el castillo era mi hogar.*

"There was a connection between the castle and my mind because, um, when I was younger and I was a girl, um, I used to dream of a prince on a white horse, and, um, I used to imagine a castle and when, uh, I entered the castle, um, I thought um, . . . that the castle was my home."

Given the developing nature of the tense/aspect distinctions and overt-null subjects in Erica's interlanguage, these two linguistic aspects will become the main focus of the post-telecollaboration analysis.

First, there is no improvement after the semester-long synchronous or asynchronous interactions with her NNS peer in the accuracy with which Erica marks tense/aspect distinctions. Of the 140 verbs that appear in her post-CMC sample, 51 verbs occur while narrating and describing past events. Of these, 43% appeared with the incorrect marker for tense or aspect, compared to 39% in her pre-CMC sample. An example is provided below:

## (47)

Um, sí, um, tenía, cuantos años, 8 años quizás, y um, estaba cantando para, um, mi coro y, *escoge* um, Noche de Paz, y um, la primera vez *yo cantaba* la canción en inglés y entonces en español y la tercera um, tiempo, *canto*, *cantaba* en alemán, y um, cuando estaba cantando en alemán, no recordaba las palabras, pues, uh, (risa), yo *canto* en palabras que *tienen* sonido en alemán, pero no *sé* que cantaba en eso momento, pero nadie, um, nadie *daba cuento* a eso, pero a mi *tiene*, uh, muy nerviosa y, pero no nadie, nadie conto.

"Um, yes, um, I was, how old, maybe 8 years old, and um, I was singing for, um, my choir and, I chose um, Holy Night, and um, the first time, I sang the song in English, and then in Spanish, and the third um, time, I sang in German, and um when I was signing in German, I could not remember the words, so, uh (laughs), I sang words that sound like German, but I didn't know what I was singing at that moment, but nobody, um, nobody realized it, but I was, uh, very nervous, and, but, nobody realized it."

The use of overt-null subjects seems to have remained roughly the same as well. That is, in 30% of the cases in which a null subject would have been appropriate, Erica employed an overt subject, in comparison to 35% in her pre-CMC sample as seen in example 48:

## (48)

Muchas tardes *yo*, uh, trato hacer mi tarea para mis clases, pero, uh, no paso todavía, um, pero um, en las noches tengo muchas actividades; um, *yo canto* en un coro de a capella.

"Many afternoons I, uh, try to do my homework for my classes, but, uh, I don't still don't pass, um, but, um, in the evenings I have many activities; um, I sing in a choir of a cappella."

Accuracy in subject-verb agreement and gender-agreement processes remained largely unchanged. Eleven percent of the 140 verbs in the post-CMC sample appeared with errors in subject-verb agreement in comparison to 8% in the pre-CMC sample; also, 9% of the determiner-noun combinations surfaced with gender-agreement errors. Finally, the use of lexical innovations, which was absent from Erica's first interview, is now present in her speech. In 49, Erika uses the

word *instructó* instead of *enseñó*, and in 50, she uses *arribe* (from the English word *arrive*) in place of its Spanish equivalent *llegar*:

(49)

Era muy diverte cuando, um, ella *instructó*, um, la clase.

“It was a lot of fun when she taught the class.”

(50)

Sí, sí, había mucho tráfico y no podía um, *arribe*.

“Yes, yes, there is a lot of traffic and I could not arrive.”

Overall, the experience of ongoing e-mail and chat communications in Spanish with English-speaking peers does not seem to have provided learners in the control group with the benefits that were observable during spontaneous oral production for the experimental group.

## Discussion and Conclusion

The present study aimed at investigating whether synchronous and asynchronous intercultural interactions foster the development of grammatical competency in learners of Spanish as a second language. In past research, evidence for effectiveness of network-based communications on the development of second language competency has been mixed. Contrary to some past research (Abrams, 2003; Blake, 2000), in the present study, the learners in the experimental group showed improvement in some areas of syntactic development, whereas the learners in the control group did not. Perhaps the most significant gains were obtained by Nick, whose post-telecollaboration speech sample showed an emergent ability to attend to the form of his utterances, and a decrease in the number of pauses, hesitations, and lexical interference from English, which signaled shortcomings in his L2 language abilities. Interactions with NSs of the target language also enhanced Erica's grammatical competence. In particular, her increased use of null-overt subjects in Spanish subsequent to her telecollaborative experience indicates an understanding of native-like discourse strategies.

It is important to note, however, that these findings cannot be taken as an indication that the learners in the control group did not experience improvement in their language abilities or that there is a direct causal relationship between participation in telecollaboration and linguistic gains in the experimental group. In fact, there is ample evidence to support the claim that the types of pedagogical intervention and classroom instruction which allow learners to maintain the overall goal of language for communication while at the same time helping learners to notice structural regularities and to create hypotheses about the target language, are able to assist learners in the attainment of grammatical accuracy (e.g., Doughty and Varela 1998). In short, the language classroom can provide learners

with input-rich environments that draw attention to form without compromising processing for meaning. What these findings suggest, however, is that the gains obtained from NS-NNS interactions via the use synchronous and asynchronous tools seem to readily transfer to spontaneous language production. Hence, our finding lends support to the claim made in Sotillo (2000, p. 102) that the type of language elicited in synchronous and asynchronous discussions between NS and NSS reflects the complexity and characteristics of face-to-face interactions. In addition, the results of the present study provide further suggestive evidence that chat interactions and chat logs can be valuable linguistic material for helping students to reflect on their interlanguage (Belz, this volume; Toyoda and Harrison 2002; Tudini 2003).

Naturally, the descriptive nature of the present study warrants caution when generalizing the results presented here to other populations of learners. Further research needs to explore the advantages conferred by network-based communication to larger populations of learners, and should examine the types of input, feedback, and self-repair that may lead to the development of grammatical competence. Future research should also include additional posttests to determine whether the gains observed in this study are sustained long after the telecollaborative interactions have ended. Future studies should also examine how computer-mediated interactions fair with different types of grammatical structures and with learners at different stages of developmental readiness.<sup>8</sup> This is particularly important because not all grammatical forms may be equally amenable to improvement<sup>9</sup> (see, for example, Doughty and Williams 1998 and the articles therein) nor are all learners similarly ready in developmental terms to acquire particular structures (Mackey and Philp 1998). These and other studies should lead to a better understanding of the short- and long-term effects of network-based intercultural interactions in the development of second language competencies.

## Notes

1. Recent research indicates, however, that CMC is not as stress-free as has been suggested, and that learners in such interactions may actually experience considerable intercultural tensions (see Belz, 2001, 2003, 2005a; Schneider and von der Emde, this volume)
2. For work on German investigating grammatical development in a telecollaborative environment, the reader is referred to Belz 2004; Belz and Kinginger, 2003; Belz and Vyatkina (in press).
3. This project was funded by a United States Department of Education International Research and Studies Program Grant (CFDA No.: 84.017A) to the *Center for Language Acquisition*, Pennsylvania State University.
4. In examples 4 through 6, Nick uses the word *monthos* in place of the Spanish *meses*, *understande* in place of *entiendo*, and *costumumbre* instead of *clientes*.
5. Examples presented throughout are given exactly as they were produced by the learners. No errors are corrected. Translations are provided for the intended meaning rather than the literal meaning. Non-targetlike forms in the examples are italicized throughout.
6. Spanish is a null-subject language; that is, a language whose grammar licenses sentences with non-overt subjects.

7. Silva-Corvalán (1982, 1994; see also Flores-Ferrán, 2002; Morales, 1986) has shown that there is a higher frequency for the use of overt subjects in a switch reference environment.
8. Belz and Vyatkina (in press) have suggested that pronouns of address seem more amenable to unassisted development in telecollaboration than do modal discourse markers which require considerable pedagogical intervention.

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