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Telecollaboration and Linguistic Gains in Postsecondary Non-Native Portuguese Learning

Telecolaboração e ganhos linguísticos na aprendizagem de Português de falantes não-nativos no Ensino Superior

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ABSTRACT

This study sought to investigate linguistic gains and crosslinguistic influence (CLI) from English and Spanish on the oral production of postsecondary L3 Portuguese learners, comparing the effects of two pedagogical approaches: oral synchronous telecollaboration between Portuguese learners and native speakers (Teletandem), and group work among learners in the L2 classroom. Participants met weekly for eight weeks, after which gains in oral proficiency were measured using an Elicited Imitation Task (EIT) and a listening comprehension test (LCT). Linguistic development was also measured by various indices of oral complexity, accuracy, and fluency (CAF). Results showed significant improvement in proficiency and all CAF measures over time, but no differences between groups. Spanish CLI was significantly higher than English CLI for both groups and the only type of CLI to significantly decrease. Participants' perceptions and beliefs, and the lack of differential performance across groups is discussed, considering different pedagogical and theoretical approaches to telecollaboration.

Keywords: *Portuguese, Telecollaboration, Teletandem, CAF, Crosslinguistic influence*

RESUMO

O presente estudo se propôs a investigar ganhos linguísticos e influência crosslinguística (CLI) na produção oral de aprendizes de português como terceira língua, comparando os efeitos de duas abordagens pedagógicas centradas na interação: telecolaboração entre aprendizes e falantes nativos de português (Teletandem) e trabalhos de produção oral em grupo em sala de aula. Após uma série de oito sessões, o desenvolvimento de competência linguística foi medido através de um teste de elicitação por imitação (EIT) e teste de compreensão oral. Também foram utilizadas medidas de complexidade sintática, precisão e fluência (CAF). Os resultados mostram um aumento significativo de competência linguística e índices de CAF para ambos os grupos. Foi também identificada a predominância de CLI do espanhol, única a se reduzir de forma significativa. Percepções dos aprendizes quanto sua

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participação nas atividades de interação, assim como a ausência de diferenças entre os grupos experimentais são discutidas levando-se em conta modelos pedagógicos de prática telecolaborativa.

Palavras-Chave: *Português, Telecolaboração, Teletandem, CAF, Influência crosslinguística*

1. Telecollaboration, Teletandem, and Linguistic Development

Since easy access to the Internet and new digital technologies made it possible to readily communicate with people across the globe, learners and instructors were quick to recognize their potential for language learning and teaching. As a result, collaborative learning practices gradually made their way into higher education, guided by a multiplicity of pedagogical approaches and applications (O'DOWD, 2013). This multiplicity is captured by Guth and Helm (2010), who define telecollaboration as an "Internet-based intercultural exchange between people of different cultural/national backgrounds, set up in an institutional context with the aim of developing both language skills and intercultural communicative competence" (p. 14). Among the existing telecollaboration models today, Teletandem has been, without a doubt, the most prevalent model employed in the context for Portuguese as a second language (DOOLY, 2017). Vassallo and Telles (2006) describe the Teletandem model as synchronous oral interactions between student pairs using communication tools with video-conferencing functionality, such as Windows Live Messenger and Skype, chat, and a white board tool. Central to the Teletandem practice is that learners engage in free conversation, with autonomy to choose their own topics and that they alternate practicing each other's target language for equal amount of time. A typical one-hour Teletandem lesson, also involves about 20 minutes reserved for peer-to-peer feedback, and 10 minutes for a reflection. Importantly, learners participate in an initial orientation to learn intercultural communication strategies and the instructor mediates their learning.

The adoption of telecollaborative practice into the language curriculum appeals to instructors for many reasons. It allows language learners to engage in real-world communication and authentic use of language, creating opportunities for the development of receptive, productive, and literacy skills, and the development of overall communicative competence, which in many cases are not available otherwise (BELZ, 1993; ORTEGA, 1997; PAYNE; WHITNEY, 2002). However, as pointed out by Ware and Rivas (2012) although computer-mediated communication (CMC) research was already prolific at that time, most studies they reviewed had employed a qualitative approach, a trend that continues today, with fewer studies focusing on the investigation of linguistic gains in CMC or, more specifically, in telecollaborative models of instruction. Some of these studies examined the effectiveness of feedback and found overall positive results (PELLETTIERI, 2000; SAURO, 2009; BARALT, 2013). Other studies found evidence of lexical (DE LA FUENTE, 2003; SMITH, 2004; YANGUAS, 2012) and pragmatic (CUNNINGHAM; VYATKINA, 2012) development after CMC practice. A handful of studies sought to

estimate developments in language proficiency and found mixed results after written CMC practice (DUSSIAS, 2005; HIROTANI, 2005; KOST, 2004; PAYNE; WHITNEY, 2002, SEQUEIRA, 2009). Many of these studies were analyzed in a meta-analysis conducted by Ziegler (2016), who compared the effectiveness of synchronous CMC (SCMC) and face-to-face interactions, finding a small relative effect size in favor of SCMC for overall L2 outcomes, particularly on production. One of the only studies to investigate the effect of oral telecollaboration was Bueno-Alastuey (2011), whose participants scored significantly higher on a proficiency test and a classroom oral presentation compared to students who engaged in face-to-face interaction.

Proficiency has also been investigated in CMC from a multicomponent perspective, such as complexity, accuracy, and fluency (CAF) (HOUSEN; KUIKEN, 2009; LARSEN-FREEMAN, 2009, and HOUSEN; CLERCQ; KUIKEN; VEDDER, 2019). Most these studies sought to describe the linguistic characteristics of learner language in different CMC settings, finding that it differed from the language produced in face-to-face environments (HERN, 1995; SOTILLO, 2000; WARSCHAUER, 1996). Looking at linguistic development, researchers were able to show advantages for SCMC compared to face-to-face written communicative practice (ABRAMS, 2003; ENGLISH; CONIAM; WONG, 2004; SOTILLO, 2000). Even fewer studies attempted to estimate linguistic gains using CAF measures in oral SCMC. Jin (2013) let students choose between using email, chat, or Skype, and found inconclusive results. Akiyama and Saito (2016) examined gains in L2 Japanese comprehensibility and different CAF measures (including lexical richness, lexical appropriateness, speech rate, and morphological accuracy) after participation in video-based eTandem oral interactions. Their results indicated that significant gains in vocabulary, but results in comprehensibility and grammar were not conclusive. Finally, Saito, Susuki, Oyama, and Akiyama (2019) investigated developments in L2 English oral proficiency for learners at different L2 levels participating in story telling videoconferencing. They found that while all participants improved in overall oral proficiency, the development of less experienced learners was best captured by measures of lexicogrammar and fluency, and the development of more experienced learners was best captured by gains in phonological accuracy.

Despite the prolific scientific production on telecollaboration interaction involving Portuguese speakers and learners (BUZATTO; NUNES; MARTINS, 2021), barely any has investigated L2 Portuguese development. This was accomplished in Zapata and Cabrera (2015), who compared gains in listening comprehension for two experimental task-based conditions involving L1 Spanish L2 Portuguese learners: A synchronous videoconferencing/ chat group and a face-to-face group. Results showed a significantly greater improvement in performance for the SCMC group. Together, these results suggest that computer-mediated oral interaction may have beneficial effects on different aspects of linguistic development, including for non-native Portuguese. Zapata and Cabrera's (2015) study also

highlights specific sociocultural and linguistic dynamics between tandem partners that speak closely related languages, such as Portuguese and Spanish. The unique situations created by this specific language pair is addressed in (e.g., CARVALHO; RAMOS, 2020; GOMEZ; DINIZ, 2017; KFOURI-KANEOYA, 2013; RAMOS; CARVALHO, 2019). Ramos, Carvalho and Messias (2013), for instance, observe a high number of language related episodes and negotiation of meaning centered on the contrast between the two languages. They also point out that the interaction between Portuguese and Spanish speakers creates notably advantageous opportunities for learning due to high levels of mutual intelligibility. Silva-Oyama (2010) reported the case of Spanish speakers learning Portuguese via videoconferencing and chat and found that they tended to rely more on certain communicative strategies, such as lexical inventions, overextended explanation, semantic approximation, syntactic simplification, among others. None of these studies, however, provide data on the effects of telecollaborative interaction between L1 and L2 Portuguese speakers. The current study, therefore, seeks to contribute to telecollaboration research by gauging gains in Portuguese proficiency, complexity, accuracy, and fluency, using a variety of CAF measures, and focusing on the comparison of oral SCMC and face-to-face interaction. We also focus on the interface of closely related languages (KELLERMAN, 1977; RINGBOM, 2002), looking at L1 English /L2 Spanish/ L3 Portuguese learners, and examining how patterns of crosslinguistic influence (CLI) from both Spanish and English develops overtime in L3 Portuguese oral production with and without telecollaborative practice. More specifically, we ask the following questions: (1) Does telecollaborative oral communication between learners and native speakers facilitate the development of L3 Portuguese proficiency and listening comprehension skills? If so, how do these effects compare to oral communication practice in face-to-face settings? (2) Does telecollaborative oral communication between L3 Portuguese learners and native speakers facilitate the development of linguistic complexity, accuracy, and fluency? If so, how do these effects compare to oral communication practice in face-to-face settings? (3) What CLI effects of English and Spanish can be found on L3 Portuguese oral production? Do these CLI effects vary over time? If so, does telecollaboration lead to smaller amounts of CLI? And (4) What are the perceptions and beliefs of L3 Portuguese learners regarding the benefits of telecollaborative oral interaction?

2. Methods

Participants were 39 postsecondary Portuguese learners enrolled in first-semester Portuguese courses designed for Spanish speakers in an American university. They were assigned to two groups, the Teletandem Group (N=16) and the Control Group (N=25). No participants had prior formal instruction in Portuguese or lived in Portuguese-speaking countries, but 9 reported visiting a Portuguese-speaking country on vacation for 1 to 20 days (M=7.44). The course met for 50 minutes three times per week for

16 weeks and covered the first 15 units of the textbook "Ponto de Encontro" (JOUËT-PASTRÉ; KOBLUKA; SOBRAL; MOREIRA; HUTCHINSON, 2007). Participants were English-Spanish bilinguals. There were 26 L1 English – L2 Spanish speakers, 10 L1 Spanish-L2 English speakers, and three Spanish heritage speakers. There were 21 males and 18 females. Six were graduate students and 33 were undergraduate students. Their ages ranged from 18 to 32 years old (M=20.74). Participants who identified as L1 English – L2 Spanish speakers were all born in the U.S. and self-assessed their knowledge of Spanish from high-intermediate (N=14) to advanced (N=14). They reported having studied Spanish in formal settings from 5.5 to 20 semesters (M=9.18), including middle school, high school, and college courses. They also participated in study away programs or lived abroad in Spanish-speaking countries from 1 to 86 weeks (M=18.1). Participants who identified as L1 Spanish speakers were born in Colombia (N=3), Mexico (N=2), Puerto Rico (N=4), and Dominican Republic (N=1). All L1 Spanish speakers had been living in the U.S. for 1 to 3 years.

Participants in the Teletandem Group attended eight Teletandem sessions, one session per week. In each session, they interacted synchronously with an L1 Brazilian Portuguese speaker. Each session lasted 60 minutes and was conducted on Skype using the camera, audio, and chat features. Before treatment, participants attended an orientation session and received information about the technology and the format and purpose of the sessions. The L1-Portuguese speakers were postsecondary students from a Brazilian university, studying to become ESL teachers. In each session, participants spoke Portuguese for 30 minutes, and then switched to English for another 30 minutes. The Teletandem sessions were held at a university lab in both the Brazilian and American universities, with the supervision of teaching assistants. The participants in the Control Group met as a group for a 30-minutes once a week for eight weeks and engaged in Portuguese conversation sessions in pairs. They were supervised by a teaching assistant and were allowed to use classroom materials, such as the assigned textbook and printed dictionaries. Both groups were assigned conversation topics for their weekly session, based on the textbook content covered the week before each session. The sequence of topics included university life, family, leisure activities, travel plans, health and emergencies, clothes and personal style, sports, and favorite holidays and celebrations.

Demographic information and data about the participants' exposure to Portuguese and Spanish were collected using a language background survey with 18 items, delivered through SurveyMonkey. To assess participants' Portuguese proficiency levels, they completed a Portuguese Elicited Imitation Task (EIT) (MAYMONE; ZACH, in preparation) before and after treatment. The Portuguese EIT consisted of 30 Portuguese grammatical sentences ranging from 7 to 19 syllables, which were recorded

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with AudioMid, following the guidelines in Ortega, Iwashita, Norris, and Rabie (2002)[3] and Bowden (2016). After listening to each sentence, participants were asked to repeat it as accurately as possible after hearing a beep and had their answers recorded using QuickTime. Oral speech samples were collected in pre- and post- oral production tasks to assess participants' oral complexity, accuracy, and fluency measures. Task 1 comprised the presentation of a short silent video with the Mr. Bean animated character. After watching the video, participants were asked to recount the story while looking at a 12-screenshot picture storyline to facilitate recall. The video used in pre-task 1 was "Cooking Turkey" (MR. BEAN, 2009) and was 2min 34s long. The video used in post-task 1 was "Beach Day with Goldfish" (MR. BEAN, 2012) and was 2min 38s long. Task 2 consisted of a prompt presented to participants and that elicited an open-ended response. They were instructed to answer to the prompts in the target language as naturally as possible and to speak for a maximum of 5 minutes. The prompt used as pre-task 2 asked participants to describe a recent vacation in detail and the prompt used as post-task 2 asked participants to describe what they did for their favorite birthday celebration. Their answers for all tasks were recorded using QuickTime. Both tasks were designed to elicit narrative speech samples. However, while Task 1 was guided and combined elements of description, Task 2 was meant to generate less controlled performance.

Listening comprehension was assessed by computer-mediated pre- and posttests built on Google Forms, each consisting of three short videos (1min to 1min20s long) recorded by L1 Portuguese speakers and created for the "Portuguese Communication Exercises," as part of the advanced level course (KELM, 2021). Participants listened to the videos twice and answered three to five multiple-choice questions per video, for a maximum of 15 points per test. The questions in the listening task were progressively more difficult, asking for the texts' main idea, specific details, chronological sequence, and inferencing. The videos in the pretest included topics such as the worst date, current events, and life before becoming a student. In the posttest, the topics included were business, registering for a course, and childhood house. Participants completed the language background survey and the pretests prior to treatment in a 60-minute session during the fourth week of classes. After treatment, which took place once a week over eight weeks, participants attended one final 60-minute session in which they completed the posttests and a Perceptions & Beliefs Questionnaire. The questionnaire assessed the participants' perceptions regarding improvements in their self-confidence, motivation, self-assessment skills, language awareness, and language learning. It consisted of one open-ended questions and 16 questions in a 5-point Likert Scale from 1 (=strongly disagree) to 5 (=strongly agree).

[3] EIT and protocols from Ortega, Washita, Norris and Rabie (2002) can be found in the IRIS database (https://www.iris-database.org/)

Results for the listening comprehension tests were coded binarily. Recordings from the pre- and post- EITs were transcribed and coded using the protocol in Ortega, Iwashita, Norris and Rabie (2002). Each of the 30 sentences of the EIT pre- and posttests were scored from 0 (minimal repetition) to 4 (exact repetition) for a total of 120 points, following Ortega, Iwashita, Norris and Rabie (2002). Responses to the Likert scale question in the Perceptions and Beliefs Questionnaire were averaged for each group. The construct of proficiency was also assessed from a multi-componential perspective using CAF measures (ORTEGA, 2003; IWASHITA; BROWN; MCNAMARA; O'HAGAN, 2008; HOUSEN; KUIKEN, 2009). Speech samples from the oral production tasks were transcribed and coded for CAF using the Analysis Speech Unit (AS-Unit) as the basic ratio denominator. An AS-unit consists of an independent clause or subclause unit and any subordinate clauses that are associated with it, which are believed to capture the nature of oral discourse more accurately by including independent sub-clausal units (FOSTER; TONKYN; WIGGLESWORTH, 2000, p. 365-366).

Following the recommendations of Norris and Ortega (2009), complexity was measured at three levels: global, subordinate, and subclausal levels. Complexity at the global level was operationalized as mean length of AS-unit (total number of words by the total number of AS-units), following Michel, Kuiken, and Vedder (2007) and Bulté and Roothooft (2020). Complexity at the subordinate level was operationalized as the total number of subordinate clauses divided by the total number of AS-units, as in De Clercq and Housen (2017). Complexity at the subclausal level was operationalized as mean length of clause, or total number of intelligible words divided by the sum of clauses or independent sub-clauses (SKEHAN; FOSTER, 2008). Fluency was operationalized as the total number of words per minute.

Global and local metrics were used to measure accuracy. To avoid the issue related to ratios based on error-free clauses, where the distinction between one error or multiple errors in the same clause is lost, global accuracy was operationalized as total number of errors per AS-units (as in HOUSEN; KUIKEN, 2009, and TONKYN, 2007). Multiple local measures of accuracy were used to avoid a binary approach to error, as suggested by Foster and Wigglesworth (2016). For example, lexical errors were captured by both inaccurate lexical choice per AS-units and morphological errors per AS-units, with lexical choice including both content and functional words, and morphology errors including pronunciation deviations that resulted in change of meaning. Morphosyntactic errors were operationalized as noun-verb agreement errors per AS-units, subject-verb agreement errors per AS-units, and inaccurate choice of tense, mood, or aspect per AS-units. Finally, crosslinguistic influence (CLI) was operationalized as the total number of CLI errors by the total number of AS-units. Both CLI from Spanish and from English were counted in each task at both points in time. Any evidence of borrowings from either English or Spanish were counted as instances of CLI errors. For example: Borrowings, such *nature* (ENG) for *natureza* "PORT-nature," Spanish morphological transfer such as

sueño "SPN-dream" for *sonho* "PORT-dream," lexical inventions such as *sartona* (from *sartén* "SPN-pan," meaning *panela* "PORT-pan"), etc. If the same CLI error appeared more than once in the same speech sample, it was counted as only one instance.

3. Results

The analysis of data using Repeated Measures (RM) ANOVA in this study all indicated, through a Mauchly's test, that the assumption of sphericity had been violated, $\chi2(0) = .000$, $p < .001$. Therefore degrees of freedom were corrected using Huyn-Feldt ($\varepsilon > 0.75$) for each model. Our first research question asked whether oral communication in telecollaboration facilitated the development of L3 Portuguese proficiency and listening comprehension, and if telecollaborative interaction with Portuguese native-speakers was more effective than face-to-face interaction with same-level learners. Results from a RM ANOVA showed that EIT scores significantly improved over time, $F(1,37)=495.711$, $p<.000$, $\eta2=.931$. There were no significant differences between groups, $F(1,37)=.622$, $p<.038$, $\eta2=.017$, and no significant interaction between Time and Group, $F(1,37)=.622$, $p<.435$, $\eta2=.017$. Results from a RM ANOVA for listening comprehension showed that there was no significant main effect for Time, $F(1,37)=.3.267$, $p<.079$, $\eta2=.081$, showing no measurable changes in listening comprehension skills. There was also no significant interaction between Time and Group, $F(1,37)=.2.654$, $p=.285$, $\eta2=.184$.

Table 1: Descriptive Statistics of the EIT and Listening Comprehension Measures in Pre- and Posttests

	Time	Teletandem Group (N=16)		Control Group (N=23)	
		M	SD	M	SD
Elicited Imitation Task (EIT)	Pretest	46.06	20.47	51.42	13.49
	Posttest	71.16	16.49	79.44	2.54
Listening Task	Pretest	9.81	1.47	10.61	2.06
	Posttest	9.56	1.79	9.61	1.73

N= number of participants; M= mean; SD= standard deviation

To answer the question whether oral communication between learners and native speakers of Portuguese yielded superior gains in oral speech CAF compared to face-to-face interaction between learners, RM ANOVAs were conducted for each complexity measure separately. The comparison of pre- and posttest global complexity scores revealed a main effect for Time, $F(1,37)=56.836$, $p<.001$, $\eta2=.606$, and for Task, $F(1,37)=85.092$, $p<.001$, $\eta2=.697$. It also showed a significant interaction

between Time and Task, $F(1,37)=4.290$, $p=.045$, $\eta 2=.104$, but no interaction between Time and Group, $F(1,37)=.000$, $p=.996$, $\eta 2=.000$, meaning that performance between groups was similar over time, but varied by task. For both groups together, a Paired-Samples T-test showed that the performance on the story retelling task (M=7.01, SD=1.52) was significantly higher than the performance on the open-ended responses (M=8.09, SD=2.08) in the pretest, $t(38)=-3.863$, $p<001$, $d=0.59$. Significant differences were also found between the retelling task (M=8.07, SD=1.75) and the open-ended responses (M=10.35, SD=1.79) in the posttest, $t(38)=-6.074$, $p<001$, $d=1.29$.

Table 2: Descriptive Statistics of Global Complexity in Pre- and Posttests

	Time	Teletandem Group (N=16)		Control Group (N=23)	
		M	SD	M	SD
Story Retell Task	Pretest	7.10	1.63	6.96	1.46
	Posttest	8.22	2.06	7.96	1.53
Open-Ended Task	Pretest	8.23	2.67	7.98	1.53
	Posttest	10.43	2.16	10.29	1.52

N= number of participants; M= mean; SD= standard deviation

The comparison of pre- and posttest scores for subordinate complexity also showed a main effect for Time, $F(1,37)=35.652$, $p<.001$, $\eta 2=.491$, and a main effect for Task, $F(1,37)=5.297$, $p=.027$, $\eta 2=.125$, indicating overall improvement overtime and superior performance in the open-ended task. There was a significant interaction between Time and Task, $F(1,37)=4.227$, $p=.047$, $\eta 2=.103$, indicating that performance was different across tasks depending on Time, but no interaction was found between Time and Group, $F(1,37)=.188$, $p=.667$, $\eta 2=.005$ or Task and Group, $F(1,37)=.140$, $p=.710$, $\eta 2=.004$. Paired-Sample T-tests were conducted to investigate interaction effects. Results showed that, for both groups combined, there was no difference in subordinate complexity between story retelling (M=0.16, SD=0.18) and open-ended responses (M=0.17, SD=0.14) in the pre-test, $t(38)=-.179$, $p=859$, $d=0.06$, but that participants scored significantly higher in the open-ended task (M=0.38, SD=0.20) than in the story retelling (M=0.27, SD=0.19) in the posttest, $t(38)=-2.811$, $p=008$, $d=0.56$. When looking at improvements over time, a significant increase in performance was found for both story retelling, $t(38)=-3.137$, $p=003$, $d=0.59$, and open-ended responses, $t(38)=-5.690$, $p<001$, $d=1.22$.

Table 3: Descriptive Statistics of Subordinate Complexity in Pre- and Posttests

	Time	Teletandem Group (N=16)	Control Group (N=23)

		M	SD	M	SD
Story Retell Task	Pretest	0.17	0.19	0.16	0.17
	Posttest	0.28	0.16	0.26	0.20
Open-Ended Task	Pretest	0.20	0.15	0.15	0.14
	Posttest	0.39	0.24	0.38	0.24

N= number of participants; M= mean; SD= standard deviation

The comparison of pre- and posttest scores for subclausal complexity found a main effect for Time, $F(1,37)=33.326$, $p<.001$, $\eta 2=.474$, and a main effect for Task, $F(1,37)=31.240$, $p<.001$, $\eta 2=.458$, indicating overall improvement overtime and superior performance in the open-ended task. There was no significant interaction between Time and Task, $F(1,37)=2.801$, $p=.103$, $\eta 2=.07$, between Time and Group, $F(1,37)=.188$, $p=.667$, $\eta 2=.005$ or between Task and Group, $F(1,37)=.290$, $p=.278$, $\eta 2=.601$. This shows groups performed similarly at all points in time, irrespective of task type.

Table 4: Descriptive Statistics of Subclausal Complexity in Pre- and Posttests

	Time	Teletandem Group (N=16)		Control Group (N=23)	
		M	SD	M	SD
Story Retell Task	Pretest	5.57	1.34	5.64	1.39
	Posttest	6.94	1.75	6.85	1.30
Open-Ended Task	Pretest	6.80	1.85	6.96	1.10
	Posttest	7.52	0.94	7.42	0.97

N= number of participants; M= mean; SD= standard deviation

Results from a RM ANOVA for fluency scores showed a main effect for Time, $F(1,37)=61.716$, $p<.001$, $\eta 2=.625$, and for Task, $F(1,37)=9.428$, $p=.004$, $\eta 2=.203$, indicating fluency gains overall, but greater gains in the open-ended speaking task. No effects were found for the interaction between Time and Group, $F(1,37)=.3.279$, $p=.078$, $\eta 2=.081$, Task and Group, $F(1,37)=.409$, $p=.526$, $\eta 2=.011$, and Time and Task, $F(1,37)=.248$, $p=.622$, $\eta 2=.007$, indicating that both groups improved in both tasks in all points in time.

Table 5: Descriptive Statistics of Fluency in Pre- and Posttests

	Time	Teletandem Group (N=16)	Control Group (N=23)

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		M	SD	M	SD
Story Retell Task	Pretest	33.34	12.89	38.05	15.34
	Posttest	45.63	9.13	52.26	14.19
Open-Ended Task	Pretest	39.23	12.87	38.09	12.15
	Posttest	48.10	11.07	57.71	13.07

N= number of participants; M= mean; SD= standard deviation

Variation in accuracy scores was calculated for each task separately. The results for the story retelling task revealed a main effect for Time, $F(1,37)=24.098$, $p<.001$, $\eta 2=.394$, with observed power of 0.99, showing that the overall number of errors significantly decreased from pre- to posttest. There was also a main effect for Type of Error, $F(1,37)=241.281$, $p<.001$, $\eta 2=.867$ (observed power=1). No interactions were found between Time and Group, $F(1,37)=.002$, $p=.966$, $\eta 2=.000$ (observed power=1), or Type of Error and Group, $F(1,37)=.580$, $p=.500$, $\eta 2=.015$ (observed power=.126), indicating that both groups performed similarly at all points in time. A significant interaction was found between Time and Error, $F(1,37)=25.442$, $p<.001$, $\eta 2=.407$ (observed power=1). Post hoc Paired-Samples T-tests indicated that the only significant improvement in accuracy over time related to total number of errors, $t(38)=5.499$, $p<001$, $d=0.96$, and morphological errors, $t(38)=5.660$, $p<001$, $d=0.93$.

Results for the open-ended speaking task showed a main effect for Time, $F(1,37)=4.126$, $p=.049$, $\eta 2=.100$ (observed power of .51), showing that the overall number of errors significantly decreased from pre- to posttest. There was also a main effect for Type of Error, $F(1,37)=147.533$, $p<.001$, $\eta 2=.799$ (observed power=.05). No interactions were found between Time and Group, $F(1,37)=.001$, $p=.978$, $\eta 2=.000$ (observed power=.17), or Type of Error and Group, $F(1,37)=.531$, $p=.752$, $\eta 2=.014$ (observed power=.17), indicating that also for this measure both groups performed similarly at all points in time. A significant interaction was found between Time and Error, $F(1,37)=7.405$, $p=.01$, $\eta 2=.167$ (observed power=.76). Post hoc Paired-Samples T-tests indicated that participants in both groups significantly improved accuracy in two measures: Total number of errors, $t(38)=2,304$, $p=.027$, $d=0.41$, and morphological errors, $t(38)=2.934$, $p=.006$, $d=0.52$.

Research question 3 looked at CLI effects from English and Spanish in L3 Portuguese oral production and if there were changes in CLI over time (Table 7). To compare the number of CLI errors from Spanish and English by group, a RM ANOVA was performed. Results showed a main effect for Source of CLI, $F(1,37)=74.627$, $p<.001$, $\eta 2=.669$, indicating that CLI from Spanish and English was not equal. Significant interactions were found between Time and Source of CLI, $F(1,37)=16.220$, $p<.001$, $\eta 2=.305$, and Source of CLI and Task, $F(1,37)=25.371$, $p<.001$, $\eta 2=.407$, but no interaction was found between Source of CLI and Group, $F(1,37)=.049$, $p=.826$, $\eta 2=.001$. This shows that the experimental

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groups did not perform differently in terms of Type of CLI at any point in time. A Post Hoc Paired-Samples T-test with the combined pretest indices from both groups further showed that the amount of Spanish CLI (M=1.61, SD=1.21) in the story retelling task was significantly greater than English CLI (M=0.05, SD=0.09), $t(38)=-7.745$, $p<.001$, $d=1.82$. Spanish CLI (M=1.17, SD=1.01) was also significantly higher than English CLI (M=0.03, SD=0.06) in the open-ended task, $t(38)=-7.023$, $p<.001$, $d=1.59$. Similar results were found for the posttest for both groups combined. The amount of Spanish CLI (M=1.01, SD=0.61) in the story retelling task was significantly greater than English CLI (M=0.03, SD=0.06), $t(38)=-10.00$, $p<.001$, $d=2.26$. The amount of Spanish CLI (M=0.69, SD=0.60) in the open-ended task was also significantly greater than English CLI (M=0.027, SD=0.01), $t(38)=-7.375$, $p<.001$, $d=1.56$. A Post Hoc Paired-Samples T-test showed that, although CLI from both Spanish and English diminished overall over time, the decrease in CLI effects from pre- to posttest was only significant for Spanish CLI errors in the story retelling task, $t(38)=4.055$, $p<.001$, $d=0.46$, and in the open-ended task, $t(38)=3.825$, $p<.001$, $d=0.58$.

Table 7: Descriptive Statistics of Spanish and English CLI Error Indices

	Time	Teletandem Group (N=16)		Control Group (N=23)	
		SPAN CLI (SD)	ENG CLI (SD)	SPAN CLI (SD)	ENG CLI (SD)
Story Retell Task	Pretest	1.59 (1.47)	0.07 (0.11)	1.61 (1.03)	0.04 (0.07)
	Posttest	1.14 (0.71)	0.03 (0.05)	0.92 (0.53)	0.03 (0.08)
Open-Ended Task	Pretest	1.06 (1.30)	0.02 (0.05)	1.24 (0.77)	0.03 (0.06)
	Posttest	0.85 (0.83)	0.05 (0.13)	0.58 (0.35)	0.01 (0.02)

N= number of participants; M= mean; SD= standard deviation

This question examined the participant's perceptions and beliefs about oral interaction practice. Participants reported the perceived benefits of telecollaboration for self-confidence, motivation, self-assessment skills, language awareness, and language learning using a 5-point Likert scale. Due to loss of data, we report results from only seven participants in the Teletandem Group and four participants in the Control Group. Participants in both groups reported increased confidence and less anxiety communicating in the L2 after treatment, with the scores from the Teletandem Group being slightly higher. The most salient difference between groups referred to their willingness to communicate in the classroom.

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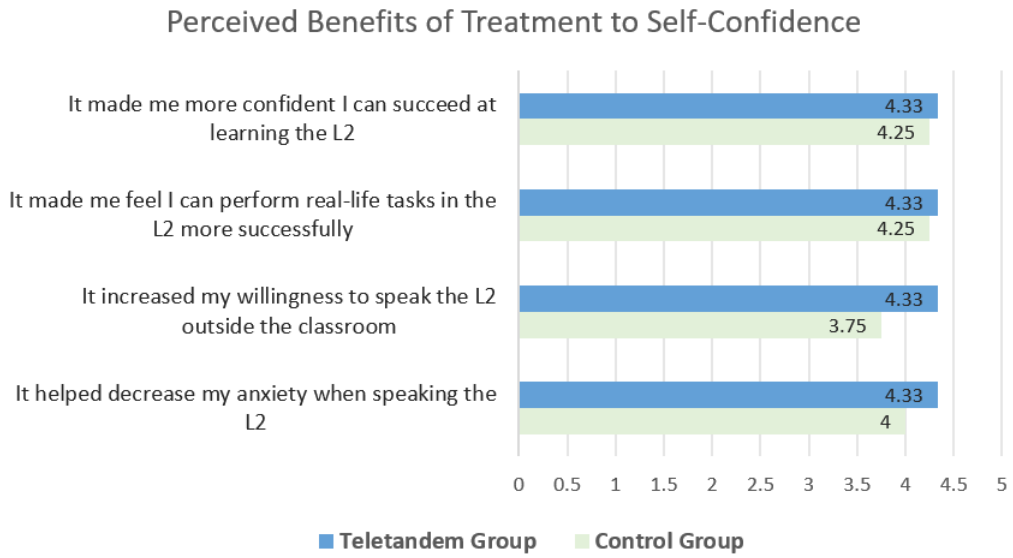
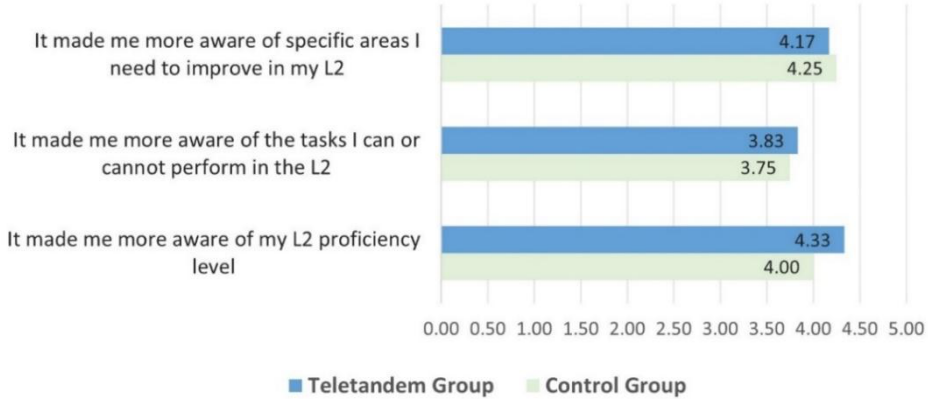
Figure 1: Perceived Benefits of Telecollaboration to Learners' Self-Confidence

Reported benefits for learners' motivation were more varied. Participants in the Teletandem



Group showed overall higher levels of perceived confidence, particularly in respect to their language course and feelings of connection with Portuguese-speaking cultures (Figure 2).

Figure 2: Perceived Benefits of Telecollaboration to Learners' Self-Assessment



When asked how their participation in the Teletandem or communicative sessions helped them improve their self-assess skills or increased their language awareness, average scores were again high for both groups, as shown below.

Figure 3: Perceived Benefits of Telecollaboration to Learners' Language Awareness

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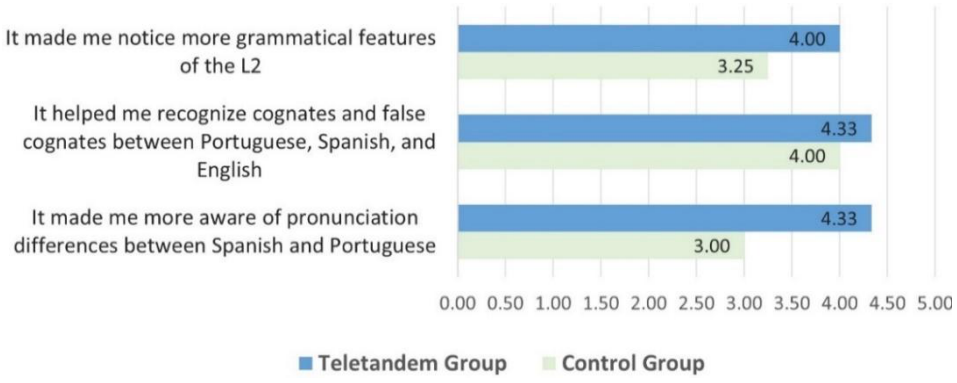
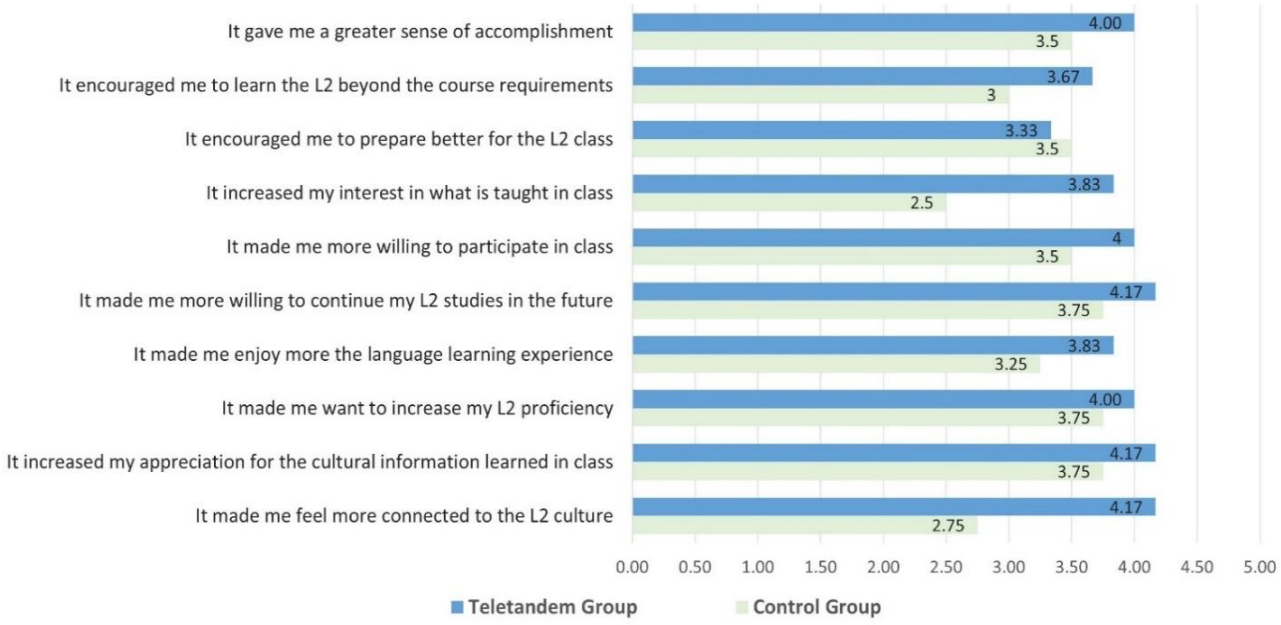


Figure 4: Perceived Benefits of Telecollaboration to Learners' Motivation



Finally, as illustrated in Figure 5, perceptions of gains in vocabulary, grammar, pronunciation, and cultural knowledge were noticeably higher for the Teletandem Group.

Figure 5: Perceived Benefits of Telecollaboration Linguistic Development

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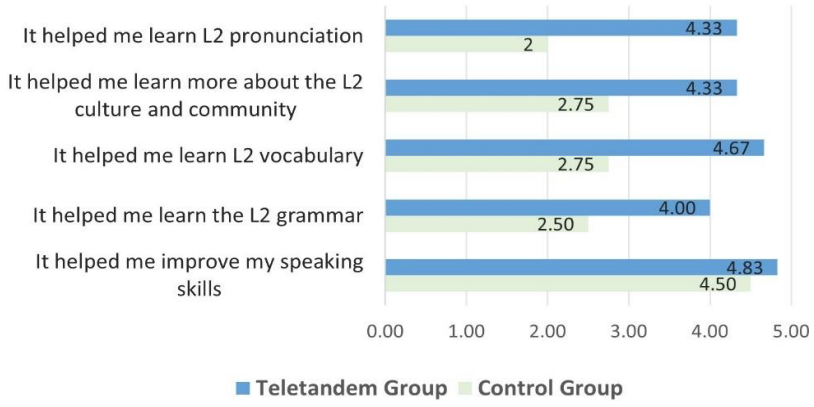

5. Discussion

Results showed significant improvements in L3 Portuguese proficiency for both groups over the course of one semester of formal instruction, as measured by the Portuguese EIT, with a large effect size, η2=.931. However, there were no significant differences between groups before or after treatment, indicating that telecollaborative practice did not have any special impact on overall linguistic development. These results differ from Payne and Whitney (2002) and Bueno-Alastuey (2011), who found greater gains for SCMC conditions compared to face-to-face. Although Payne and Whitney's (2002) also adopted a naturalistic conversation model, in their study participants met 21 times over 15 weeks and engaged in written SCMC that involved role plays, discussions of videos and cultural texts or video, and other communicative activities. In Bueno-Alastuey (2011), both groups also met for 15 weeks and engaged in jigsaw activities during treatment. In both studies, the SCMC practice seemed more integrated to the curriculum, complemented with online quizzes, input-based activities, or classroom reflections. Therefore, their participants not only had more exposure time but completed higher involvement tasks. It is possible that in this study, eight communicative sessions were not enough time for students to benefit from the telecollaborative interaction with native speakers of Portuguese in the development of CAF measures.

Results from the Listening Comprehension Test (LCT) showed no significant improvements over time or differences across groups at any points in time. These results could be explained by the fact that the pretest scores were already very high, with an average of 67% accuracy for both groups, which might be a consequence of participants' prior knowledge of Spanish, known to facilitate Portuguese listening comprehension due to the language's typological proximity (JENSEN, 1989; GOOSKENS; VAN HEUVEN; GOLUBOVIĆ; SCHÜPPERT; SWARTE; VOIGT, 2018). Novice learners of Portuguese with prior knowledge of Spanish are in fact not considered true beginners (CARVALHO; FREIRE; SILVA, 2010). Therefore, even though the materials used in the LCT were

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designed for the advanced level, they may still have been too easy for participants, when considering their language background. Despite these results, we believe that the linguistic development shown by the EIT is an indication that participants' listening comprehension did improve for both groups, since performance in the EIT is reliant on comprehension of oral input. It is likely, then, that the LCT instrument we adopted was not able to capture these gains.

Results for complexity showed significantly syntactic complexification for both groups in global complexity, $p<.001$, $\eta2=.606$, subordinate complexity, $p=.047$, $\eta2=.103$, and subclausal complexity, $p<.001$, $\eta2=.458$. The fact that the effect size for subclausal scores was the lowest, agrees with Norris and Ortega's (2009) prediction that this measure is more sensitive to linguistic gains at advanced levels of proficiency. The largest effect sizes for both global and subclausal complexity also align with their claims that these two measures better capture development in beginner and intermediate learners, respectively, which seems to reflect the nature of Portuguese learners with prior knowledge of Spanish. We attribute the lack of difference in accuracy scores across groups to the same factors discussed for overall proficiency. In addition, the pedagogical approach adopted in the Teletandem sessions may not have been conducive to the development of oral complexity. For example, the interactions during treatment were designed to be informal. It is possible, then, that native speakers of Portuguese used simpler constructions perceived as more sympathetic (considering the learners' ability) and friendly. The suggested themes for conversation were also basic, typical of a first semester course, meaning that the interaction did not require specialized vocabulary or complex communicative functions, such argumentation, theorizing and hypothesizing, or engagement in more intricate narratives. Not that beginners do not have opportunities to use and develop complex language, but for greater advancements to occur in such a short time, instruction may have had to be purposefully designed to foster the development of specific language structures. Another aspect to consider is that the higher levels of mutual intelligibility between Spanish and Portuguese speakers may facilitate communication to the point that little attention to form is needed, as suggested by Færch and Kasper (1987). According to them, the learning process involving perceived similarity across languages is linked to excessive confidence, which results in the overuse of conscious and unconscious strategies from the learners' L1, triggering a process of overgeneralization that leads to the oversight of formal characteristics of the language input and hindering the acquisition of contrastive forms. This reinforces the need for guided activities and tasks in telecollaboration practice to raise linguistic awareness and increase attention to form.

Results showed that only for the story retelling task accuracy scores significantly reduced over time, measured by the total amount of errors per AS-Unit, $p<001$, $d=0.96$, and by morphological errors per AS-Unit, $p<001$, $d=0.93$. Similar results were found for the open-ended speaking task, with a

reduction in total amount of errors per AS-Unit, p=.027, d=0.41, and the ratio of morphological errors by AS-Units, p=.006, d=0.52. Lexical errors and noun agreement errors did decrease over time for both groups, but not statistically. Scores on subject-agreement mostly remained the same. This type of error was especially low already in the pre-test, which may indicate the facilitative effect of Spanish at that point. The lack of advances in this area may be due to the little time learners had (only one academic semester) to acquire and systematize this more complex morphosyntactic feature. The use of tense, mood, and aspect generated slightly more errors in the posttest, but only for the open-ended speaking task. These results were not surprising, considering that this task was less guided, and learners relied more on their own resources and used the language more creatively morphologically, syntactically, and semantically. Again, there were no significant differences for any measure of accuracy between groups. These results were unexpected for lexical choice and morphology, which we hoped would be facilitated by input from Portuguese native-speakers, following Yanguas (2012). The fact that telecollaborative interaction did not seem to have an enhanced effect on accuracy may be a result of the communicative environment, where learners seem to pay less attention to accuracy and focus on achieving communicative goals, on socializing, and show personal involvement, as suggested by Hanna and De Nooy (2003). It may also be a result of task design; which in this study only involved the pre-selection of topic and free conversation. Finally, in terms of fluency, results showed significant gains overall, greater gains on the open-ended speaking task, and no differences between groups. The superior gains in fluency for the open-ended task could be explained by the greater freedom learners had to control their narratives choose the vocabulary used. We recognize that the use of a single measure of fluency constitutes a limitation in this study. Future research would benefit from including local measures to assess length of run, number and quality of pauses, and discourse markers to better understand qualitative and quantitative developments in fluency across groups.

Looking at CLI effects from English and Spanish we found that Spanish CLI were prevalent in the speech of both groups in both the pre- and posttest. Also, while Spanish CLI significantly decreased after treatment, English CLI did not. Since Spanish was either the participants' L1 or L2, the prevalence of Spanish CLI in L3 Portuguese speech offers support to theories of psychotypology (KELLERMAN, 1977) and the Typological Proximity Model (ROTHMAN, 2015). Our last research question explored the perceptions and beliefs of learners participating in the telecollaboration and face-to-face sessions. Responses to a 5-point Likert scale were overall favorable for both groups but indicated a better experience for students participating in Teletandem interaction for all categories. Some points worth highlighting include answers to the learners' perceived self-confidence and motivation, where the Teletandem group expressed 25% higher levels in willingness to communicate, 28% higher feelings of connection to the L2 culture, 27 % higher interest in what was taught in the classroom, as well as 10%

higher sense of accomplishment, willingness to participate in class, appreciation for course content, and an inclination to continue their Portuguese instruction. In terms of language awareness, the Teletandem group reported perceiving 27% more pronunciation features, and approximately 14% more grammatical structures and false cognates. Perhaps the most remarkable differences across groups, Teletandem participants' reported perceptions of learning outcomes were higher for pronunciation (by 47%), vocabulary (by 40%), and knowledge of the target culture and grammar (by 30%).

A few limitations in this study deserve our consideration. First, a larger sample size would have helped produce more robust results and more reliable statistics. The number of sessions during treatment was perhaps too small to yield any observable changes in CAF facilitated by the affordances of telecollaboration. The LCT proved not to be adequate for the participants' proficiency level and language background and not being sensitive enough to detect changes in listening skills. Lastly, we feel that the model of conversation adopted in this study did not push learners to make the most of what the authentic communicative interaction with native speakers had to offer them. Overall, our study shows that telecollaboration is at least as good as face-to-face interaction for the linguistic development of L3 Portuguese when integrated to the traditional language curriculum, and that it enjoys an advantage in terms of student perceptions and beliefs compared to traditional methods. In this study, we did not focus on the investigation of intercultural competence, affective factors, and motivation, but future research should consider how these and other psycholinguistic and sociocultural dimensions mediate language learning in telecollaboration, especially since digital multicultural environments have a different effect on learners than traditional classrooms (MÜLLER-HARTMANN; DITFURTH, 2010). An ecological approach to telecollaboration that acknowledges the multicomponential nature of online instructional environments seems particularly attractive going forward (BERGLUND, 2009). In addition, addressing the importance of task design in CMC settings (CHEN; SHIH; LIU, 2015; COLLENTINE, 2010; HAUCK, 2010), instruction involving the Portuguese and Spanish interface should seek to clarify the differential effects of task design and complexity during telecollaboration and how they affect patterns of crosslinguistic influence. Research is also needed to broaden our understanding of how the interaction of language learners with native speakers facilitates acquisition, how it compares to study abroad experiences (e.g. KINGINGER, 2009; LEE; SONG, 2019), and how it is mediated by the learners' L2 proficiency level and by length of instruction (SAITO; SUSUZKI, OYAMA; AKIYAMA, 2019).

Other measures of complexity to be explored include the local target-like use approach to counting errors, which takes into account *oversuppliance* (FOSTER; WIGGLESWORTH, 2016) and complexity, nominal, and narrative clusters (ASENCIÓN-DELANEY; COLLENTINE, 2011; COLLENTINE, 2010; COLLENTINE; COLLENTINE, 2020). We also emphasize the importance of including measures of lexical diversity, depth, and sophistication. With that in mind, we welcome further research on the

effects of telecollaboration in linguistic development involving the Portuguese/Spanish language pair. In that respect, listening materials for this population should be challenging enough and reflect the richness of colloquial and formulaic language, including natural speech rate and phonological reductions. Investigation on the effects of synchronous oral interaction on the development of receptive and production oral skills is still incipient, and researchers have at their disposal today a variety of technologies whose pedagogical applications can be explored, making this an exciting field of research. More importantly, echoing Kern, Ware and Warschauer (2004), researchers and instructors should explore more than instructional models that promote teaching the same thing in a different way, but the multiple affordances of telecollaboration (see THORNE; SMITH, 2011), introducing learners to new forms of communication and learning practices, helping them expand their repertoire of skills and resources, as well as to explore new identities within digital environments and communities.

References

ABRAMS, Z. 2003. The effect of synchronous and asynchronous CMC on oral performance in German. *Modern Language Journal*, 87.2: 157-167.
AKIYAMA, Y.; SAITO, K. 2016. Development of comprehensibility and its linguistic correlates: A longitudinal study of video-mediated telecollaboration. *The Modern Language Journal*, 100.3: 585-609.
ASENCIÓN-DELANEY, Y.; COLLENTINE, J. 2011. A multidimensional analysis of a written corpus of L2 Spanish. *Applied Linguistics*, 32.3: 299-322.
BARALT, M. 2013. The impact of cognitive complexity on feedback efficacy during online versus face-to-face interactive tasks. *Studies in Second Language Acquisition*, 35: 689-725.
BELZ, J. A. 2003. Linguistic perspectives on the development of intercultural competence in telecollaboration. *Language Learning & Technology*, 7.2: 68-99.
BOWDEN, H. W. 2016. Assessing second-language oral proficiency for research: The Spanish elicited imitation task. *Studies in Second Language Acquisition*, 38.4, 647-675.
BUENO-ALASTUEY, M. 2011. Perceived benefits and drawbacks of synchronous voice-based computer-mediated communication in the foreign language classroom. *Computer Assisted Language Learning*, 24: 419-432.
BULTÉ, B.; ROOTHOOFT, H. 2020. Investigating the interrelationship between rated L2 proficiency and linguistic complexity in L2 speech. *System*, 91.
BUZATTO, G. T.; NUNES, G. O.; MARTINS, C. B. M. J. 2021. A telecolaboração no ensino e aprendizagem de línguas estrangeiras: desafios e possibilidades. *Revista Estudo de Letras*, 2.1: 133-154.
CARVALHO, A. M.; FREIRE, J. L.; DA SILVA, A. J. B. 2010. Teaching Portuguese to Spanish speakers: A case for trilingualism. *Hispania*, 93.1: 70-75.
CARVALHO, K. C. H. P. DE; RAMOS, K. A. H. P. 2020. Aspectos comparativos em contextos de telecolaboração: teletandem português e espanhol. *Caracol*, 19: 536 – 563.
CHEN, W-C; SHIH, Y-C D.; LIU, G-Z. 2015. Task design and its induced learning effects in a cross-institutional blog-mediated telecollaboration. *Computer Assisted Language Learning*, 28.4: 285-305.
COLLENTINE, J.; COLLENTINE, K. 2020. Organic models for measuring Spanish learners' linguistic complexity. In: PASCUAL Y CABO, D.; ELOLA, I. *Current theoretical and applied perspectives on Hispanic and Lusophone linguistics*: 39-62. John Benjamins.
COLLENTINE, K. 2010. Measuring complexity in task-based synchronous computer-mediated communication. In: THOMAS, M.; REINDERS, H. (Eds.). *Task-based language learning and teaching with technology*: 105-130. Continuum.

CONIAM, D.; WONG, R. 2004. Internet relay chat as a tool in the autonomous development of ESL learners' English language ability: An exploratory study. *System*, 32: 321 – 335.
CUNNINGHAM, J.; VYATKINA, N. 2012. Telecollaboration for professional purposes: Toward developing a formal register in the foreign language classroom. *The Canadian Modern Language Review*, 68.4: 422-450.
DE CLERCQ, B.; HOUSEN, A. 2017. A cross-linguistic perspective on syntactic complexity in L2 development: Syntactic elaboration and diversity. *The Modern Language Journal*, 101.2: 315-334.
DE LA FUENTE, M. J. 2003. Is SLA interactionalist theory relevant to CALL? A study on the effects of computer-mediated interaction on L2 vocabulary acquisition. *Computer Assisted Language Learning*, 16: 47 – 81.
DE NOOY, J.; HANNA, B. E. 2009. *Learning language and culture via public internet discussion forums*. Palgrave Macmillan.
DOOLY, M. 2017. Telecollaboration. In: CHAPELLE, C. A.; SAURO, S. (Ed.). *The handbook of technology and second language teaching and learning*: 169-183. Wiley-Blackwell.
DUSSIAS, P. E. 2006. Morphological development in Spanish-American telecollaboration. In: BELZ, J. A.; THORNE, S. L. (Eds.). *Internet mediated intercultural language education*: 121-146. Heinle Cengage Learning.
FÆRCH, C.; KASPER, G. 1987. Perspectives on Language Transfer. *Applied Linguistics*, 8.2: 111-136.
FOSTER, P.; WIGGLESWORTH, G. 2016. Capturing accuracy in second language performance: The case for a weighted clause ration. *Annual Review of Applied Linguistics*, 36: 98-116.
FOSTER, P.; TONKYN, A.; WIGGLESWORTH, G. 2000. Measuring spoken language: A unit for all reasons. *Applied Linguistics*, 21.3: 354-375.
GOMEZ, R. T.; DINIZ, M. B. N. P. 2017. Proposta de uso de jogo lúdico para o ensino-aprendizagem de português e de espanhol em teletandem. *Atas do V SIMELP -Simpósio Mundial de Estudos de Língua Portuguesa*: 2995-3014. Università del Salento.
GOOSKENS, C.; VAN HEUVEN, V. J.; GOLUBOVIĆ, J.; SCHÜPPERT, A.; SWARTE, F.; VOIGT, S. 2018. Mutual intelligibility between closely related languages in Europe. *International Journal of Multilingualism*, 15.2: 169-193.
GUTH. S.; HELM, F. 2010. *Telecollaboration 2.0*: Language, literacies and intercultural learning in the 21st century. Peter Lang.
HAUCK, M. 2010. The enactment of task design in telecollaboration. In: THOMAS, M.; REINDERS, H. (Eds.). *Task-based language learning and teaching with technology*: 197-217. Continuum.
HELM, F. 2021. The practices and challenges of telecollaboration in higher education in Europe. *Language Learning and Technology*, 9.2: 197-217.
HIROTANI, M. 2005. T*he effects of synchronous and asynchronous computer-mediated communication (CMC) on the development of oral proficiency among novice learners of Japanese* [Unpublished doctoral dissertation]. Purdue University.
HOUSEN, A.; KUIKEN, F. 2009. Complexity, accuracy, and fluency in second language acquisition. *Applied Linguistics*, 30.4: 461-473.
HOUSEN, A.; DE CLERCQ, B.; KUIKEN, F.; VEDDER, I. 2019. Multiple approaches to complexity in second language research. *Linguistic Complexity* (Special Issue), 35.1: 3-21.
IWASHITA, N.; BROWN, A.; MCNAMARA, T.; O'HAGAN, S. 2008. Assessed levels of second language speaking proficiency: How distinct? *Applied Linguistics,* 29: 24–49.
JENSEN, J. B. 1989. On the mutual intelligibility of Spanish and Portuguese. *Hispania*, 72.4: 848-852.
JIN, L. 2003. Language development and scaffolding in a Sino-American telecollaborative project. *Language Learning & Technology*, 17.2: 193-219.
JOUËT-PASTRÉ, C.; KOBLUKA, A.; SOBRAL, P.; MOREIRA, M. L.; HUTCHINSON, A. P. 2007. *Ponto de Encontro*: Portuguese as a world language. Prentice Hall.
KELLERMAN, E. 1977. Towards a characterisation of the strategy of transfer in second language learning. *Interlanguage Studies Bulletin*, 2: 58-145.

KELM, O. R. June3, 2021. *Introduction: Portuguese communication exercises*. BrazilPod. University of Texas.
KERN, R.; WARE, P.; WARSCHAUER, M. 2004. Crossing frontiers: New directions in online pedagogy and research. *Annual Review of Applied Linguistics*, 24: 243-260.
KESSLER, G. 2009. Student-initiated attention to form in wiki-based collaborative writing. *Language Learning & Technology*, 13.1: 79–95.
KFOURI-KANEOYA, M. L. C. 2013. O ensino de línguas próximas (português e espanhol) em diferentes contextos (sala de aula e teletandem): Contribuições para a formação inicial do professor de língua. *Gláuks Online*, 13.1: 15-29.
KINGINGER, C. 2009. *Language learning and study abroad*: A critical reading of research. Palgrave Macmillan.
KOST, C. R. 2004. *An investigation of the effects of synchronous computer-mediated communication (CMC) on interlanguage development in beginning learners of German*: Accuracy, proficiency, and communication strategies [Unpublished doctoral dissertation]. University of Arizona.
LARSEN-FREEMAN, D. 2009. Adjusting expectations: The study of complexity, accuracy, and fluency in second language acquisition. *Applied Linguistics,* 30.4: 579-589.
LEE, J.; SONG, J. 2019. Developing intercultural competence through study abroad, telecollaboration, and on-campus language study. *Language Learning & Technology*, 23.3: 178-198.
MAIMONE, L.; ZACH, A. *Developing a Portuguese Elicited Imitation Task for research purposes* [Manuscript in preparation].
MESSIAS, R. A. L.; TELLES, J. A. 2020. Teletandem como "terceiro espaço" no desenvolvimento de professores de línguas estrangeiras. *ETD - Educação Temática Digital*, 22.3: 731–750.
MR. BEAN [Username]. 2009, November 13. *Cooking turkey*: Mr. Bean official cartoon [Video File]. https://www.youtube.com/watch?v=bdks9im0wUo
MR. BEAN [Username]. 2012, November 9. *Beach day with goldfish*: Mr. Bean official cartoon [Video File]. https://www.youtube.com/watch?v=MbQcECz9K1w
MÜLLER-HARTMANN, A.; DITFURTH, M. S-V. 2010. Research on the use of technology in task-based language teaching. In: THOMAS, M.; REINDERS, H. (Eds.). *Task-based language learning and teaching with technology*: 17-40. Continuum.
NORRIS, J. M.; ORTEGA, L. 2000. Effectiveness of L2 instruction: A research synthesis and quantitative meta-analysis. *Language Learning*, 50.3: 417-528.
NORRIS, J. M.; ORTEGA, L. 2009. Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. *Applied Linguistics,* 30: 555 – 578.
O'DOWD, R. 2005. Negotiating sociocultural and institutional context: The case of Spanish American telecollaboration. *Language and Intercultural Communication*, 5.1: 40–57.
O'DOWD. R. 2013. Telecollaborative networks in university higher education: overcoming barriers to integration. The Internet and Higher Education, 18: 47-53.
ORTEGA, L. 1997. Process and outcomes in networked classroom interaction: defining the research agenda for L2 computer assisted classroom discussion. *Language Learning & Technology*, 1.1: 82-93.
ORTEGA, L. 2003. Syntactic complexity measures and their relationship to L2 proficiency: A research synthesis of college-level L2 writing. *Applied Linguistics*, 24.4: 492-518.
ORTEGA, L.; IWASHITA, N.; NORRIS, J.; RABIE, S. 2002, October. *An investigation of elicited imitation tasks in crosslinguistic SLA research*. Paper presented at the Second Language Research Forum Conference, Toronto.
PAYNE, J. S. C.; WHITNEY, P. J. 2002. Developing L2 oral proficiency through synchronous CMC: Output, working memory, and interlanguage development. *CALICO Journal*, 20.1: 7-32.
PELLETTIERI, J. 2000. Negotiation in cyberspace: the role of chatting in the development of grammatical competence. In: WARSCHAUER, M.; KERN, R. (Eds.). *Network-based language teaching*: Concepts and practice: 59–86. Cambridge University Press.

RAMOS, K. A. H. P.; CARVALHO, K. C. H. P. DE. 2019. Estabelecendo objetivos de aprendizagem em contexto de teletandem. *Revista do GEL*, 15.3: 73 – 87.
RAMOS, K. A. H. P.; CARVALHO, K. C. H. P.; MESSIAS, R. A. L. 2013. O ensino de português para hispanofalantes no contexto virtual do Teletandem. *Portuguese Language Journal*, 7: 1 – 23.
RINGBOM, H. 2002. Perceived redundancy or crosslinguistic influence? What L3 learners' material can tell us about the causes of errors. In: ANGELIS, G. DE; DEWAELE, J-M. (Eds.). *New trends in crosslinguistic influence and multilingualism research*: 19-24. Multilingual Matters.
ROTHMAN, J. 2015. Linguistic and cognitive motivations for the Typological Primacy Model (TPM) of third language (L3) transfer: Timing acquisition and proficiency considered. *Bilingualism: Language and Cognition*, 179-190.
SAITO, K.; SUSUZKI, S.; OYAMA, T.; AKIYAMA, Y. 2019. *How does longitudinal interaction promote second language speech learning? Roles of learner experience and proficiency levels*. Second Language Research.
SAURO, S. 2009. Computer-mediated corrective feedback and the development of L2 grammar. *Language Learning & Technology*, 13.1: 96-120.
SEQUEIRA, C. A. 2010. *Synchronous computer-mediated communication and second language proficiency* [Unpublished doctoral dissertation]. University of Oregon, Eugene.
SILVA-OYAMA, A. C. 2010. Estratégias de comunicação na aprendizagem de português / espanhol por teletandem. *Revista Brasileira de Linguística Aplicada*, 10.1: 89-112.
SKEHAN, P.; FOSTER, P. 2008. Complexity, accuracy, fluency and lexis in task-based performance: A meta-analysis of the Ealing research. In: VAN DAELE, S.; HOUSEN, A.; KUIKEN, F.; PIERRARD, M.; VEDDER, I.; CONTACTFORUM, K. (Eds). *Complexity, accuracy and fluency in second language use, learning and teaching*: 207-226. Contactforum.
SMITH, B. 2004. Computer-mediated negotiated interaction and lexical acquisition. *SSLA*, 26: 365-398.
SOTILLO, S. M. 2000. Discourse functions and syntactic complexity in synchronous and asynchronous communication. *Language Learning & Technology*, 4.1: 82-119.
THORNE, S. L.; SMITH, B. 2011. Second language development theories and technology-mediated language learning. *CALICO Journal,* 28.2: 268-277.
TONKYN, A. 2007. Short-term changes in complexity, accuracy and fluency: Developing progress-sensitive proficiency tests. In: VAN DAELE, S.; HOUSEN, A.; KUIKEN, F.; PIERRARD, M.; VEDDER, I.; CONTACTFORUM, K. (Eds). *Complexity, accuracy and fluency in second language use, learning and teaching*. Contactforum.
WARE, P.; RIVAS, B. 2012. Researching Classroom Integration of Online Language learning Projects: Mixed Methods Approaches. In: DOOLY, M. A.; O'DOWD, R. *Researching Foreign Language Interaction and Exchange*: Theories, Methods, and Challenges: 107-131. Peter Lang.
VASSALLO, M. L.; TELLES, J. A. 2006. Foreign language in-tandem: Teletandem as an alternative proposal to CALLT. *The Especialist*, 27.2: 189-212.
WARSCHAUER, M. 1996. Comparing face-to-face and electronic communication in the second language classroom. *CALICO Journal*, 13: 7-26.
YANGUAS, I. 2012. Task-based oral computer-mediated communication and L2 vocabulary acquisition. *CALICO Journal*, 29.3: 507-531.
ZAPATA, N. A.; CABRERA, A. F. 2015. Mejoramiento de la comprensión auditiva en portugués como LE en contextos comunicativos mediados por la tecnología. *Estudios Pedagógicos*, 41.1: 27-44.
ZIEGLER, N. 2016. Synchronous computer-mediated communication and interaction: A meta-analysis. *Studies in Second Language Acquisition*, 38: 553-586.