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ARTICLE



Openings and closings in human-human versus human-spoken dialogue system conversations

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Abstract

Although conversation openings and closings are ritualized speech acts (House & Kádár, 2023), they do require interactional work (Schegloff, 1986). Thus, they are important elements of interactional competence (Roever, 2022) and have been studied extensively in L2 interactions, including various types of technology-mediated communication contexts (e.g., Abe & Roever, 2019; 2020). However, to our knowledge, no research on openings and closings has been conducted with newer technologies such as spoken dialogue systems (SDS). To address this gap, this study compares conversation openings and closings across two modalities: a role-play with a human interlocutor versus with a fully automated agent. We analyzed interactional data from 47 tertiary-level learners of English. A quantitative (e.g., number of turns) and a qualitative, discursive analysis rendered several key findings: 1) learners were more transactionally oriented in SDS modality, but tended to engage in relational discourse with a human interlocutor; 2) humans adapted to the emergent discourse in both modalities; 3) despite training, the human interlocutor was inconsistent in displaying transactional versus interactional patterns with different participants, while the SDS followed the same dialogue structure in each interaction. Findings will be discussed in terms of specific affordances of the two modalities for interactional competence.

Keywords: *Openings, Closings, Interactional Competence, Artificial Intelligence, Spoken Dialogue Systems*

Language(s) Learned in This Study: *English*

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Introduction

Since Kramsch (1986) proposed the idea of teaching interactional competence (IC) in the context of second/foreign language (L2) instruction, IC has been described in a variety of ways. For example, IC has been defined as learners' competence for social interaction (Youn, 2020) which requires learners to use conventional linguistic tools for expressing certain intentions (Roever, 2022) in social interactions in a way that is recognized by their interlocutor (Hall & Pekarek Doehler, 2011).

In general, interactional problems, as well as human strategies for solving these, are shared across speaking communities (Kendrick et al., 2020; Schegloff, 2006). Interlocutors need to handle various phenomena when structuring and sequencing communicative interaction including speech acts, turn-taking, recipient design, repairs, adjacency pairs, preference organization, topic management, as well as conversation openings and closings (Roever, 2022; Wong & Waring, 2010). Literature on L2 speakers' IC suggests that they manage their participation with the same fundamental interactional methods as L1 speakers do, even if their linguistic resources are limited (Carroll, 2000; Kecskés et al., 2018; Wong, 2000). However, although adult L2 learners usually possess IC in their first language (L1), they may encounter challenges in the L2 due to different linguistic realizations as well as culturally-distinct communication patterns.

To better understand and support learners' acquisition and honing of L2 interactional abilities, IC has

become a focus of pragmatics-related research (Hall & Pekarek Doehler, 2011; Roever & Kasper, 2018). Most recently, House and Kádár (2023) have proposed to investigate ritualized speech acts from an interactional perspective. They argued that “[r]itual’ speech acts tend to occur in specific parts of an interaction and are, therefore, highly predictable, and have a social meaning, such that the literal meaning of the utterance – if any – is almost incidental to the significance of the utterance for the interactants” (p. 4). Thus, House and Kádár (2023) propose a close investigation of highly predictable (ritualized), socially meaningful speech acts or interaction sequences that occur in a specific part of an interaction as these units could inform L2 teaching and assessment.

Among the ritualized speech acts identified by House and Kádár (2023) are conversation openings and closings, two key aspects of IC that have been highlighted as particularly challenging for L2 learners (e.g., Roever, 2022). How learners manage openings and closings in interaction has been examined in diverse contexts including classroom tasks (Hellermann, 2007; Hellermann & Cole, 2008) and institutional settings (Hartford & Bardovi-Harlig, 1992). However, the number of studies focusing on conversation openings and closings in the context of technology-mediated conversations is limited with research conducted on openings or closings in text-based computer-mediated communication (Abe & Roever, 2019; 2020, Negretti, 1999) and virtual gaming environments (Pojanapunya & Jaroenkitboworn, 2011). To our knowledge, no research with respect to openings and closings has been conducted on technologies such as spoken dialogue systems (SDS) – a considerable gap in L2 research given that these technologies are becoming increasingly ubiquitous both in our everyday lives (e.g., Siri, Alexa) as well as in language learning (Bibauw, et al., 2022; Godwin-Jones, 2023; Timpe-Laughlin et al., 2022).

To address this gap in research, this paper focuses on conversation openings and closings as interactional practices that are present in all conversations, yet may require practice in a second or additional language (Roever, 2022; Wong & Waring, 2010). We investigated openings and closings produced by L2 learners in a role-play task that was delivered in two modalities: with an automated agent in the context of an SDS and with a human interlocutor in a face-to-face (F2F) setting. We aim to (a) shed light on how L2 learners realize and navigate these sequences and (b) examine if the SDS could be used as a viable alternative to a human interlocutor for the sake of practicing conversational openings and closings in L2.

Literature Review

Openings and Closings in Interaction

Openings are the contact signals (Goffman, 1981) for social interactions accomplished by interactants using both verbal and nonverbal communicative resources, which not only acknowledge participants’ mutual reciprocity of one another (Schegloff, 1968), but are also part of rapport management and negotiating social relationships (Goffman, 1981; Spencer-Oatey & Jiang, 2003). Openings of conversations do not happen effortlessly despite their seemingly routine nature (Schegloff, 1986). Although there is some degree of cross-cultural as well as modality-related variation (e.g., phone vs. F2F), openings tend to comprise the following moves and adjacency pairs: (1) summons–answer; (2) identification–recognition; (3) greeting; (4) how are you (Pillet-Shore, 2018; Schegloff, 1986; see [Appendix A](#)). Interlocutors work through these moves to open the conversation before raising the first topic (Schegloff, 1968). Learners’ IC is at work in openings in two different but related social actions: (1) greetings and the How Are You (HAY) sequence contribute to the establishment of a harmonious social relationship and (2) topic initiation requires (L2) speakers to produce context-appropriate utterances with an illocutionary force recognizable for the interlocutor.

In terms of closings, research shows that conversations do not simply end, but are closed in conventional ways (Button, 1987; Schegloff & Sacks, 1973). Closings are generally achieved by adjacency pair(s) in the pre-closing sequence (e.g., okay - all right) and the terminal exchange (e.g., bye - see you) (Schegloff & Sacks, 1973), although there can be cross-cultural variation in the formal realizations of these turns (Wong & Waring, 2010). Producing appropriate closings in culture- and context-specific ways requires linguistic as well as social skills (Levinson, 1983) that need to be acquired or learned, especially by L2 speakers (Hartford & Bardovi-Harlig, 1992; Wong & Waring, 2010). In terms of IC, closings are also

related to topic management as both parties need to realize and tacitly agree upon the last topic and when to start closing the conversation.

Given the crucial role of openings and closings in interactions, it is important to practice them in L2 education in preparation for real-life tasks (e.g., in the workplace). An individual who opens a conversation usually leaves a first impression. First impressions influence the interlocutor's perception toward that individual (Prickett et al., 2000), rendering openings key to a conversation that may be considered high-stakes given their potential impact on relationship building. Closing sequences also contribute to the strengthening and re-establishment of positive social relationships through, for example, affirmative moves to keep in touch in the future (Kampen Robinson, 2014).

Despite their potential high-stakes nature, research related to L2 opening and closing sequences appears to be scarce, mostly collected in instructional settings (i.e., parts of different tasks), yet findings shed some light on salient patterns. For instance, in the context of L2 chat-based tasks, Abe and Roever (2019) found that stepwise construction of topicality was especially challenging for L2 learners (see also Hellermann, 2007). L2 learners tended to initiate the topic early in the dyadic conversation, thus prioritizing transactional talk (Brown & Yule, 1983) over the management of social relationships (Abe & Roever, 2019; 2020). A possible reason behind short preliminary sequences may also be cultural differences. Given that HAY sequences, for example, vary in their distribution and prominence across cultures, L2 learners may find it challenging to appropriately position them in target language conversations. For example, in English, the HAY is a formulaic expression that is a typical part of an opening sequence, whereas in Samoan, HAY is a genuine question and most often asked only if participants have not seen each other for a considerable time (Liddicoat & Soo, 2000). A noticeable feature of L2 task openings is the application of limited preliminaries before initiating the first topic (Schegloff, 1986). This, however, has also been found in L1 interactions in certain types of institutional settings such as emergency calls (Whalen & Zimmermann, 1987) or workplace interactions (Holmes & Stubbe, 2015), highlighting that the brevity and compactness of openings may be the result of the instrumentality of the situation, whereas extended preliminaries are geared toward sociability (Heritage & Clayman, 2011).

The management of the closing sequence has been regarded as an indicator of IC in previous studies on L2 interactions (e.g., Hartford & Bardovi-Harlig, 1992; Hellermann, 2007; Hellermann & Cole, 2008). Learners may find it difficult to detect the closing signals of the interlocutor and/or to respond to them (Bardovi-Harlig et al., 1991; Griswold, 2003), or have trouble initiating the pre-closing sequence by applying lexical items generally understood as such signals because such signals can carry various discourse functions. For instance, analyzing chat interactions, Abe and Roever (2020) identified *okay?* as a frequent interactional token that either served as a generic pre-closing (Hartford & Bardovi-Harlig, 1992; Knapp et al., 1973) or fulfilled two distinct functions of soliciting or providing agreement on the task (transactional) while projecting an end of the talk (interactional). Additionally, the stepwise transition from topics to closing and expanded closing sequences was found challenging for some learners (Abe & Roever, 2020; Gonzales, 2013). For example, Gonzales (2013) observed that L2 learners squeezed several social actions (e.g., appreciation and goodbye) into one turn. As for L2 closings in institutional settings, Hartford and Bardovi-Harlig (1992) investigated F2F academic advising sessions between L1 academic advisors and L2 students and found diverse strategies for closing, including the application of zero to multiple pre-closing turns, or the usage of thank you or okay as part of the terminal exchange which would be labeled infelicitous (or marked) by traditional accounts on closings (Schegloff, 1968), but were labeled normal and felicitous in the specific sociocultural context of academic advising sessions. Infelicitous closings were mostly the result of reopening previously negotiated topics, highlighting a lack of familiarity with how to end a conversation or sequence topics.

The Effect of Task Modality/Technology on Learner Output

Traditional theories on the sociology of interaction (Goffman, 1972) have identified powerful interpersonal forces at work in opening rituals as well as in leave-taking behavior, that is, how participants terminate conversations (Goffman, 1981; Knapp et al., 1973). Such theories focus on F2F

interactions and emphasize participation framework as well as embeddedness (Goffman, 1981). Context-specific opening (Hellermann, 2007) and closing rituals (e.g., Hartford & Bardovi-Harlig, 1992; Hellerman & Cole, 2008) in diverse interactional settings have been investigated to find out how the nature of the task influenced the interactional features produced by participants. With advances in technology, it is crucial to identify how computer-mediated tasks and the lack of immediate presence of a human interlocutor affect learners' interactional behavior, especially if technology-mediated tasks are to be used in lieu of F2F activities to practice IC in a target language (Balaman & Sert, 2017). More specifically, as humans engage with Artificial Intelligence (AI) more frequently, we need to know what exactly students are practicing in such technology-mediated tasks without "real" human interlocutors in order to utilize the technology most effectively for L2 practice (Timpe-Laughlin et al., 2022).

A large body of research has compared computer-mediated communication (CMC) and F2F interactions. With regard to the amount and quality of the interaction mediated by the computer in comparison to F2F interactions, findings are inconclusive. While some studies found CMC task - based interaction to be natural (e.g., Monteiro, 2014; Shekary & Tahririan, 2006), others found negotiation less nuanced than in F2F interaction (e.g., Blake, 2000; Jepson, 2005). With a special focus on openings and closings in technology-mediated environments, Abe and Roever (2019; 2020) found that participants used transactional language in chat-based tasks to a greater extent than more social, phatic exchanges evidenced most prominently in their prioritizing of topic initiations and their rushing through the closing rituals.

Although ample research has examined CMC interactions, examinations of interactional patterns of human-computer interactions, especially those involving SDS, are scarce (Dombi et al., 2022). SDS systems such as Alexa, Siri, and Google Assistant include automated speech recognition (ASR) and natural language processing (NLP) components. These components work together to detect pre-determined keywords in the user input. For example, if a user were to say "I would like to buy a train ticket," ideally a system would detect "buy" and "train ticket" keywords and offer a suitable response, such as asking the user to provide the departure and arrival destinations (see Ramanarayanan et al., 2017 for additional details). A benefit of SDS for eliciting oral discourse lies in its qualities as a computer system, being available for practice anytime (Timpe-Laughlin et al., 2022). The disadvantage is that SDS systems are only programmed to respond to pre-determined keywords; if a user says something outside of the pre-determined dialogue structure, the conversation likely fails. Although most recent large language model-based chatbots, such as ChatGPT, are more "intelligent" in that they do not need a list of pre-determined keywords and can respond to user's creative language more appropriately, such systems have their disadvantages in terms of comparability across participants and unnaturally long responses (Sydorenko et al., under review; Tao et al., under review), whereas an SDS is consistent in both the content and sequencing of turns. Additionally, our work in progress indicates that the ASR underlying extensions that allow users to talk to ChatGPT does not work appropriately (yet) with learners of certain L1 backgrounds. For these reasons, we have focused exclusively on SDS technology.

Some studies have investigated the potential of SDS in language learning and testing (Litman et al., 2016; Ockey & Chukharev-Hudilainen, 2021; Ramanarayanan et al., 2017; Timpe-Laughlin et al., 2017). Findings highlighted that technological constraints led to a less natural discourse than would have been anticipated with a human interlocutor (Litman et al., 2016; Ramanarayanan et al., 2017). Nevertheless, in many aspects learner output was comparable to that of natural discourse (Ockey & Chukharev-Hudilainen, 2021; Timpe-Laughlin & Dombi, 2020). Timpe-Laughlin and Dombi (2020), for instance, concluded that the fully-automated, technology-mediated task environment did elicit requests from L2 learners; however, the elicited requests did not feature external supportive moves (e.g., reasons for the request) that are typically preferred by L2 learners in F2F environments (e.g., Economidou-Kogetsidis, 2008). In the context of oral performance assessment, Ockey and Chukharev-Hudilainen (2021) compared four trained raters' assessment of test takers' oral output in tasks with a human and a computer partner. They found that the computer elicited discourse in a more standardized and reliable way. Still, raters favored the human interlocutor for its perceived authenticity and naturalness. The authors also highlight that an SDS may make it possible to assess aspects of interactional competence that can be challenging to assess when talking to a human partner, such as opportunities to repair, which may not arise in natural conversation if participants, for example, pretend

to understand one another (Ockey, 2001).

As has been shown, learners' interactional behavior is often characterized by transactional, rather than interactional talk. Typical features of L2 openings and closings include squeezing multiple functions into one turn or applying unnatural tokens or sequences. Additionally, previous findings that learners accommodate their closing strategies to the particular social context (academic advising sessions, Hartford & Bardovi-Harlig, 1992; chat-based tasks, Abe & Roever, 2019, 2020) show that the context and interlocutor impact learners' output in interaction. In this study, we present findings of a comparative investigation into learners' opening and closing sequences to see if such rituals are context-specific, and to explore potential affordances of the SDS to practice communicative interactions and develop learners' IC. The specific research question we examined was the following:

What differences (if any) are present in L2 learners' openings and closings relative to the F2F versus SDS modality?

Methodology

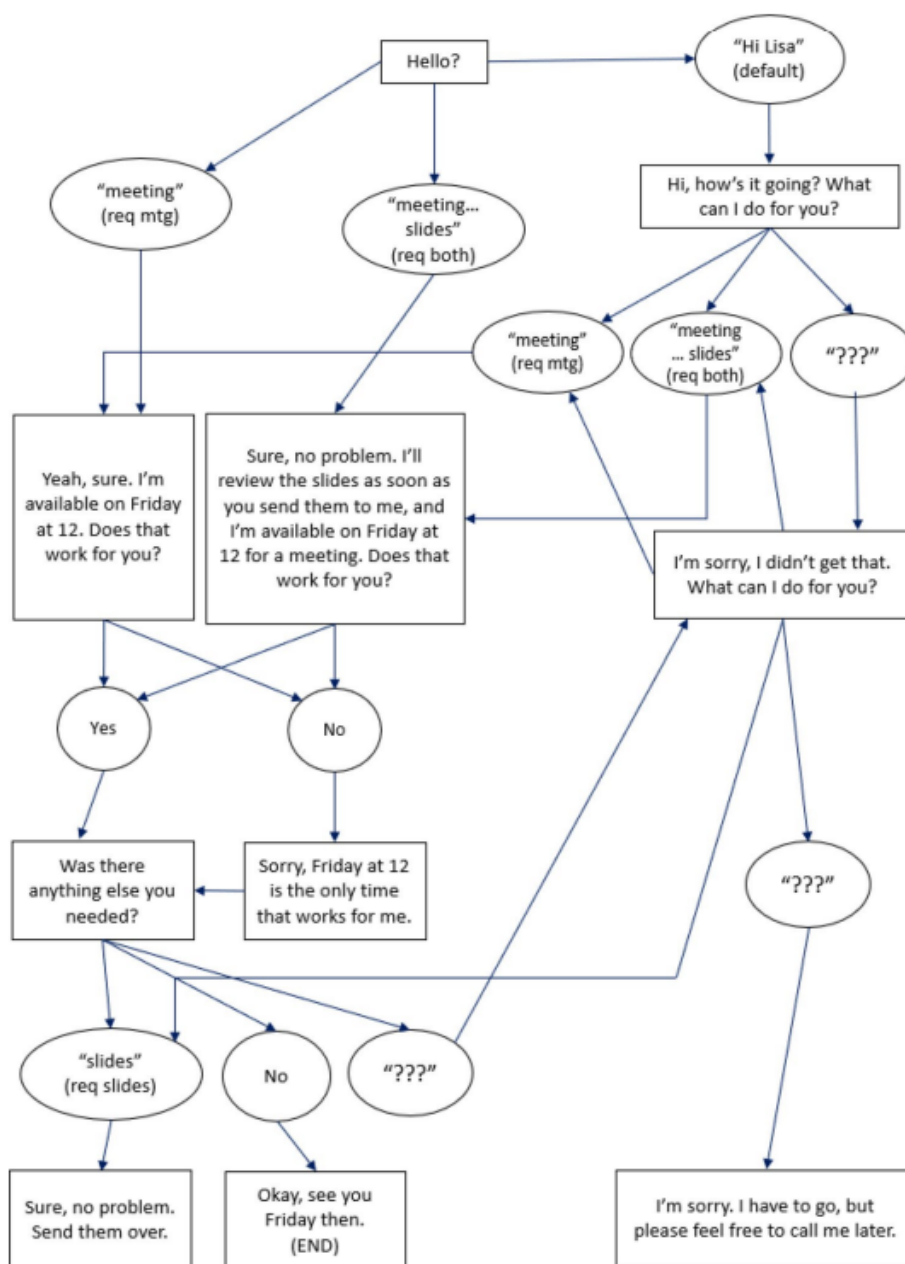
The Task

A multi-turn conversation task called "The Request Boss" task was developed to elicit approximately two minutes of oral interaction. In the SDS modality, participants were asked to make a call to their supervisor and ask for a meeting, as well as to review their slides before the meeting. The instructions for the F2F modality were identical, except the participants needed to "talk with" rather than to "call" their supervisor. The task required considerable interactional work: learners had to make two requests of different degrees of imposition in an asymmetric power relationship as well as manage opening and closing a conversation. Prior research indicates that requests realizations (e.g., Economidou-Kogetsidis, 2018) and management of openings and closings (e.g., Roever, 2022) can be challenging even for advanced L2 learners.

In the SDS modality, the dialogue structure (shown in [Figure 1](#)) was implemented in HALEF, an open-source, web-based spoken dialog system technology (Ramanarayanan et al., 2017). A branching structure was utilized so the system responds appropriately regardless of where in the dialogue the requests are made. However, the opening and the closing turns (Hello?; Hi, how's it going? What can I do for you? and Okay, see you Friday then) always appeared in the same dialogue state (i.e., at the beginning and at the end of the exchange). At times, when the system did not understand participants, it offered a clarification request ("I am sorry I didn't get that. What can I do for you?"), allowing participants to reword or restate their initial utterance.

Figure 1

Dialogue Structure of the Role-play Task (adopted from Timpe-Laughlin et al., 2022)



In the F2F role-play version, a human interlocutor (HUMAN) was playing the supervisor role. Prior to data collection, the HUMAN participated in a three-hour training session to follow the same script and interactional patterns as the automated agent in the SDS version of the task. However, as shown in the results and discussion sections, despite the extensive training, the HUMAN at times deviated from the script to accommodate the evolving discourse at hand.

Participants

The participants were tertiary-level ESL learners at an Intensive English Language Program in the United States. After some data loss due to microphone malfunction ($n=4$), the final data set included 47 participants (27 male, 19 female, and one who identified as ‘other’) who were on average 23 years old ($SD= 2.8$), ranging from 19 to 30 years of age. Various L1 backgrounds were represented: Mandarin

Chinese ($n=23$), Japanese ($n=12$), Thai ($n=4$), French ($n=3$), and Other ($n=5$). The participants had varying degrees of English proficiency, ranging from A2 to C1 levels on the Common European Framework of Reference (CEFR). As each participant completed the same task in both modalities and as our research question pertained to modality differences, we did not include proficiency as another variable.

Procedures

All participants ($N=47$) engaged with the Request Boss task in two different formats. We implemented a counterbalanced design: approximately half of the participants ($n=23$) completed the SDS task first, while the other half ($n=24$) engaged in the F2F task first. The SDS task was completed in a university's computer lab, while all F2F role-plays were conducted in a designated office on campus. The time period between the students' engagement with each task was about one week. The interactional data from each task performance were audio-recorded.

Analysis

Interactional data, and specifically the opening and closing sequences, were analyzed turn-by-turn for patterns across modalities. For openings, we used Schegloff's (1986) framework, but we coded only the greetings and the HAY statements (excluding summons-answer and identification-recognition) (see [Appendix B](#) for examples) as these elements are more commonly investigated in learner discourse (e.g., Abe & Roever, 2019; Huth & Taleghani-Nikazm, 2006). These parts of openings were analyzed as adjacency pairs (i.e., first and second parts of each pair) (Schegloff & Sacks, 1973). Thus, for greetings, we examined greeting initiated by Speaker A (the first part of greeting adjacency pair) and greeting returned by Speaker B (the second part of greeting adjacency pair; e.g., Hi. – Hi.). HAY sequences are more complex in terms of adjacency pairs in that in American English, Speaker A may initiate an HAY statement, Speaker B may return it and at the same time initiate a second HAY statement, and Speaker A may return the second HAY statement (See [Appendix C](#), example 4). Although such four-part HAY sequences are traditional, not all interactions include all four parts (e.g., Goffman, 1971; Yates, 2017). Additionally, we coded for topic initiations which served to indicate the end of the opening sequence; response to topic initiation was not coded. (See [Appendix C](#) for examples.)

With regard to closings, we coded for the adjacency pair(s) of the pre-closing sequence (e.g., Well, Okay) and the terminal exchange (e.g., Bye, See you) (Schegloff & Sacks, 1973). (See [Appendix B](#) and [C](#) for examples).

Two of the authors discussed the coding principles, as presented above, and then coded all of the data independently. Interrater agreement was calculated for various functions in opening and closing sequences. The interrater agreement for different coding categories varied between 86.5% and 100%, indicating fairly high reliability of ratings (for details see [Appendix D](#)). All discrepancies were resolved in a final consensus coding.

Results

First, we provide a broad overview of the length of opening and closing sequences in each modality because we observed a clear difference across modalities in this regard. Then, we discuss openings and closings separately.

Length of Opening and Closing Sequences

As [Table 1](#) shows, opening sequences varied in length across modalities. Opening sequences were never more than two turns in SDS, while in the F2F modality, there were 14 dialogues with three or more (up to 10) turns in the opening sequence. The dialogue with the most opening turns in the F2F modality is presented in [Excerpt 1](#). In the F2F modality, human interlocutors distributed various functions (e.g., greetings, HAY) over multiple turns, thus making the opening sequences longer than in the SDS modality.

Table 1*Length of the Opening Sequence Across Modalities*

N turns	F2F	SDS
0	6	2
1	20	30
2	7	15
3+ (up to 10)	14	0

Excerpt 1

HUMAN: Hi.
 ID53: Hello, [name]
 HUMAN: Hi.
 ID53: ...uh [name]
 HUMAN: Yes.
 ID53: How are you?
 HUMAN: I'm good. How are you?
 ID53: [laughs] Uh, I'm good.
 HUMAN: Great.
 ID53: Mm-hmm.
 HUMAN: Uh, was there anything I can do for you?

In contrast, in the SDS participants often “packed” several functions related to openings (such as a greeting, an HAY sequence, and a topic initiation, see [Excerpt 2](#)) all into one turn, which explains why the opening sequences in SDS comprised fewer turns.

Excerpt 2

ID61: Hello. I'm (name). How are you? (pause)
 Uh I like to meet you about our presentation slides, and I will send you the pre- presentation slides before having our meeting. So I'm wondering about whether uh when you're available.
 SDS: Sure, no problem. I'll review the slides as soon as you send them to me, and I'm available on Friday at 12 for a meeting. Does that work for you?

Similarly, closings were typically longer in F2F than in SDS. [Table 2](#) shows that the closing sequences included never more than five turns in SDS, and were most commonly two or three turns long, while in F2F closing sequences were overwhelmingly between four and ten turns.

Table 2*Length of the Closing Sequence Across Modalities*

N turns	F2F	SDS
1	1	4
2	1	16
3	6	24
4	9	0
5	9	3
6 to 10	21	0

Participants often packed several functions into their closing turn in SDS modality, albeit to a lesser degree than in their openings (see [Appendix E](#) for number of functions per turn comparison). As [Excerpt 3](#) shows, ID 22 produced three functions in their closing turn: leave-taking, gratitude, and good wishes.

Excerpt 3

ID22: See you. Thank you. Have a good rest of the day.

In F2F, these functions generally occurred over several turns. [Excerpt 4](#) illustrates that ID19 first issued gratitude, then a leave-taking token in a subsequent turn, and finally another leave-taking token in their final turn.

Excerpt 4

ID19: Uh, no that's all. Thank you very much for your time.
 HUMAN: All right. See you Friday at twelve then.
 ID19: See you there.
 HUMAN: Bye.
 ID19: Bye.

Openings**Greetings**

In F2F, greetings were more often initiated by the HUMAN, while in SDS participants initiated greetings most of the time, with SDS initiating them only 4 times (see [Table 3](#)) (see [Appendix F](#) for task set-up across modalities, which might have accounted for this difference).

Table 3*Greeting Initiations and Completions Across Modalities*

	Initiated by*		Completed** by		% completed by	
	HUMAN /SDS	Participant	HUMAN/ SDS	Participant	HUMAN/ SDS	Participant
F2F	32	11	8	28	73% 8/11	88% 28/32
	43		36		84% 36/43	
SDS	4	43	24	4	56% 24/43	100% 4/4
	46		28		60% 28/46	

Note. * Although there were a total of 47 interactions, in four of them no greeting was initiated in the F2F modality.

** Relationship between initiation and adjacency pair completion: for example, in F2F the HUMAN initiated 32 greetings; 28 of those were completed by participants, and 4 were not.

In SDS, most of the time participants initiated the greeting due to task setup differences (see [Appendix F](#)), thus, we focused on comparing the two modalities with regard to adjacency pair completion, in this case the return of the greeting.

In F2F, greetings were often returned (84% of the time). In seven cases either the HUMAN or participants did not return the greeting. In some of these cases it appears that the participants rushed to complete the task (e.g., [Excerpt 5](#)).

Excerpt 5

HUMAN: Hi.
ID08: Can I come in?

However, in other cases, such as [Excerpt 6](#), it might have been odd to return the greeting since the topic of the conversation was already initiated (i.e., a request was made). [Excerpt 7](#) similarly illustrates that when two functions are combined in a turn (greeting and HAY), the participant adapts to the ongoing nature of discourse and decides to respond only to HAY.

Excerpt 6

ID27: Hi. Uh, hi, [name]. I want to get you to agree to meet with you.
HUMAN: Sure, I can meet with you, um, Friday at twelve o'clock.

Excerpt 7

HUMAN: Hi. How's it going?
ID63: Yeah, fine. Thanks. And you?

In other words, both humans adapted to the discourse at hand and did not return the greeting if an additional function (e.g., request) was produced in the same turn as the greeting. The pattern is, not surprisingly, quite different in the SDS modality where 40% of the greetings were not returned (in each case, by the SDS) due to the dialogue structure programmed into the SDS.

Additionally, of the 24 greetings returned by the SDS, 10 occurred after participants initiated the topic, which resulted in unnatural (or marked) discourse sequencing. [Excerpt 8](#) demonstrates that SDS could not adapt to the discourse flow at hand, contrary to human interlocutors ([Excerpt 6](#)).

Excerpt 8

ID20: Hi, [supervisor name]. Uh can I meet with you in a few weeks.
SDS: Hi, how's it going? What can I do for you?

How Are You (HAY) Sequence

First and second HAY sequence initiations and responses are summarized in [Table 4](#), available via [Open Science Framework](#). Additionally, as may be expected, the SDS sometimes initiated the HAY sequence after the participant initiated the topic. Therefore, for SDS, we additionally coded which sequences were initiated before versus after topic initiation ([Table 5](#)).

Table 5

Breakdown of HAY Initiations Before vs. After Topic Initiation in SDS

	First HAY		Second HAY	
	Before TI	After TI	Before TI	After TI
SDS	13	8	4	2
P	8			2

HAY sequences occurring before topic initiation sounded unmarked as such discourse sequencing would be commonly found in natural conversations. [Excerpt 9](#) is an example of a second HAY initiation occurring after topic initiation; such marked sequences often caused misunderstanding by SDS.

Excerpt 9

ID39: Hello [supervisor name], this is [name]. (pause) Uh how are you doing? And I'm wanting to ask you to um review my...
SDS: Hi, how's it going? What can I do for you?
ID39: Oh, I am doing good. How about you?
SDS: I am sorry I didn't get that. What can I do for you?

When participants did not initiate the topic in the same turn as the HAY sequence (e.g., [Excerpt 10](#)), the interactions sounded unmarked in SDS modality with regard to HAY sequence.

Excerpt 10

ID63: Hello, boss. How are you doing? How is it going?
SDS: Hi, how's it going? What can I do for you?
ID63: Yeah. I'm fine. Thanks. Um I'd like to meet with you uh during this week. Is it possible for you?

In F2F modality, HAY sequences were smooth in terms of discourse sequencing because they were always produced before topic initiation, as illustrated in [Excerpt 11](#).

Excerpt 11

HUMAN: Hi.
ID12: Hi [name]. How's it going?
HUMAN: Uh, not bad. Uh, what can I do, help you with?

With regard to response to first HAY, the human interlocutors responded (e.g., with “not bad” in [Excerpt 11](#) above) in all but one case (see [Table 5](#)). Specifically, it was the HUMAN who did not produce a response to HAY in one case, indicating that humans were not only able, but also likely felt the need to use culturally appropriate social cues. In SDS modality, only the participants responded to HAY sequences, and they did it only some of the time (the SDS produced 21 HAY sequences, and the participants responded to 12 of them). One possible explanation is that participants realized that responding to the HAY sequence might cause NLP processing issues (as in [Excerpt 9](#) above) and thus did not respond to HAY on many occasions. A second HAY statement was less common than the first one. This echoes prior research which indicates that while HAY sequences can be reciprocated with a follow-up “And how are you?” or similar, but many times they are not (e.g., Goffman, 1971; Yates, 2017). As [Table 4](#) indicates, in F2F modality, there were 12 total initiations of the first HAY statement, but only five initiations of a second such statement. In SDS, there were 29 total initiations of the first HAY statement and only 8 initiations of a second one. Additionally, there was a similar pattern with regard to the response to HAY in that all of the second HAY statements received a response (e.g., “I’m good”) in F2F modality, but only half of the second HAY statements received a response (all from the participants) in SDS modality. That is, the given SDS was not programmed to adapt to social cues in the discourse, and the participants used social cues to respond to SDS only a few times, possibly because they realized that the SDS would not be able to handle them well.

Overall, these findings indicate that F2F interactions are ideal for allowing learners to practice turn-taking and social language using natural discourse patterns, while in SDS modality natural sequencing may not always be possible.

Closings

Turning to the specific sub-elements of closings and how they compare across the two modalities, we separated the results by pre-closings and terminal exchanges as we observed differences in those sequences (see [Table 6](#)).

Table 6*Pre-closings and Terminal Exchanges Across Modalities*

	Pre-closings						% completed
	Initiated by		Completed by		Total initiations*	Total completions	
	HUMAN/S DS	Participant	HUMAN/S DS	Participant			
F2F	50	33	24	45	83	69	83.13
SDS	2	34	2	2	36	4	11.11

	Terminal exchanges						% completed
	Initiated by		Completed by		Total initiations	Total completions	
	HUMAN/S DS	Participant	HUMAN/S DS	Participant			
F2F	56	11	9	45	67	54	80.60
SDS	30	16	7	29	46	36	78.26

*The larger number of total pre-closing initiations in F2F as compared to SDS indicates that in some cases there were several pre-closing adjacency pairs in a given dialogue in F2F as both humans took time when closing the conversation.

In F2F the HUMAN initiated more pre-closings ($N=50$), though participants also initiated a fair share of them ($N=33$). A typical pre-closing by the HUMAN (often in a form of backreferencing) is illustrated in [Excerpt 12](#).

Excerpt 12

HUMAN: Okay. Great. Um then, I'll see you on Friday at twelve o'clock. (*pre-closing*)
 ID04: Friday, twelve o'clock, yeah.
 HUMAN: Yep, see you then.
 ID04: See you.
 HUMAN: Bye.
 ID04: Bye.

In the SDS modality, the participants initiated the majority of pre-closings (34, compared to 2 initiations by the SDS). In both cases when SDS initiated the pre-closing, it was in the form of "I'm sorry, I'm having trouble understanding you. I have to go, but please feel free to call back later." Participants, on the other hand, typically initiated a pre-closing via gratitude, as shown in [Excerpt 13](#).

Excerpt 13

SDS: Was there anything else you needed?
 ID47: Uh no, that's all. Thank you.
 SDS: Okay, see you Friday, then.
 ID47: See you.

By contrast, terminal exchanges were predominantly initiated by the HUMAN or the SDS in each modality, although the participants also initiated some of them in each modality. As with pre-closings,

some dialogues in F2F (but not in SDS) had several initiations of terminal exchange, as illustrated in [Excerpt 14](#).

Excerpt 14

HUMAN: All right. See you later.
 ID28: See you.
 HUMAN: Bye.
 ID28: Bye.

In terms of pair completions, pre-closings were completed 83% of the time in F2F and only 11% of the time in SDS. As can be seen in [Table 6](#), the two cases of pre-closing initiations by the SDS received their second pair part from the participants; however, of the 34 pre-closings initiated by participants, only 2 were returned by the SDS (e.g., [Excerpt 15](#)). That is, it was only by accident that the SDS was able to return these particular pre-closing turns.

Excerpt 15

ID33: Okay. Thank you. And see you, uh, next Friday, I think.
 SDS: Okay, see you Friday, then.

However, with regard to terminal exchanges, the initiations were responded to with similar frequency in both modalities (78% to 81% of the time). That is, it seems it was easier to program the dialogue flow for terminal exchanges adequately for the SDS as compared to that for pre-closings.

Although F2F modality afforded learners opportunities to practice turn-taking in closings (more so than in SDS), there was a lot of variation. For example, while some closings in F2F were relatively short and similar to those in SDS in some way, as shown in [Excerpt 16](#), others were either extremely short and occasionally did not even include a terminal exchange ([Excerpt 17](#)) or on the contrary were rather long ([Excerpt 18](#)). By contrast, the highly structured dialogue flow reduced this variability in SDS. As shown in [Table 2](#) above, there were at most five closing turns in SDS, but up to ten in F2F.

Excerpt 16

HUMAN: Okay, great. Then I'll see you Friday at twelve o'clock
 ID27: Thank you.
 HUMAN: Okay. Thank you. Bye.

Excerpt 17

HUMAN: Yes. Um, was there something else you needed?
 ID24: For the moment, no.
 HUMAN: Okay. All right, then.

Excerpt 18

HUMAN: Was there anything else I can help you with?
 ID12: Mm, yeah, pretty much okay. Yeah, I will talk to you maybe next time our, our appointment.
 HUMAN: Sure. Yeah.
 ID12: Yeah.
 HUMAN: All right. Great. See you then.
 ID12: Yeah, see you.
 HUMAN: Bye.
 ID12: Bye.

Some of the closings in SDS were extremely short compared to those in F2F. Although in some instances the participants tried to close the conversation in just one turn (e.g., in [Excerpt 19](#) the participant says “Bye” as the first turn of the closing sequence), in other cases the SDS is the one that could have continued the closing (such as in [Excerpt 20](#) where SDS could have added “you are welcome. See you”).

The SDS we used was not programmed to handle extended closings in the given task, but it would certainly be possible because there wasn’t much variation in the keywords in closings in SDS modality (see examples in [Appendix B](#)). This aligns with research indicating that there is not much variation in pre-closing tokens in American English (Knapp et al., 1973).

Excerpt 19

SDS: Sure, no problem. Send them over.
 ID33: Bye.
 SDS: Okay, see you Friday, then.
 ID33: See you. Oh. Yeah

Excerpt 20

SDS: Sure, no problem. Send them over.
 ID21: Gotcha...thank you so much.

However, one might argue that other SDS interactions, like [Excerpt 21](#) with three to four closing turns, were quite appropriate in terms of the length of closing given the mono-topical and goal-specific nature of this task. As such, the SDS modality might be suitable for allowing learners to practice transactional discourse which can be appropriate in certain situations, while the F2F modality is ideal for practicing relational discourse—a consideration further discussed below.

Excerpt 21

SDS: Sure, no problem. Send them over.
 ID20: Okay. Thank you.
 SDS: Okay, see you Friday, then.
 ID20: Okay, see you.

Discussion

This section discusses findings on the differences between learners’ opening and closing sequences relative to modality. As our study conceptualized openings and closings as manifestations of interactional competence (Roever, 2022), we focused on adjacency pair initiation and completion. Initiations of opening and closing sequences tell us about the speakers’ ability to sequence talk in interaction, whereas adjacency pair completion signals intention-recognition and cooperation (Schegloff & Sacks, 1973).

Similar to other studies that compared the F2F and the SDS modalities (e.g., Timpe-Laughlin et al., 2022), we found that learners focused on efficiently completing the task in the SDS modality (i.e., they were transactionally motivated), while engaging to a larger degree in relational talk in the F2F version. For example, in SDS modality learners often placed several functions (e.g., greeting, HAY, and topic initiation) into one turn (also found by Abe & Roever, 2019; 2020), whereas in the F2F modality they typically included one function per turn. This could mean that F2F role-play scenarios are more helpful for learners to practice their IC in general, and conversational openings in particular, especially as regards the sequencing of interaction and the inclusion of turns designated to maintain harmonious social relationships. By contrast, SDS with its structured dialogue flow can be useful to practice transactional talk that is also useful in certain types of workplace interactions (Holmes & Stubbe, 2015). Another finding was that there were more initiations of pre-closings in F2F modality altogether than in SDS.

Pre-closings are in general difficult for at least two reasons (1) learners may find it challenging to initiate and sequence pre-closing turns once the transactional part of the dialogue is resolved, or (2) may face difficulty in detecting the other party's closing signals which can result in an inconvenient talk. In F2F modality, it was mostly the HUMAN who initiated these sequences, whereas in SDS mostly participants did—an observation that could be due to the fact that the SDS unlike the HUMAN did not “rush” to help participants if they seemed uncertain about how to progress to the next dialogue stage. Thus, the SDS modality may be better for learners to practice producing particular interactional features, in this case, how to initiate pre-closings. By contrast, while in the SDS modality participants can practice how to initiate pre-closings, they receive little if no input on how this should be done. Thus, a human interlocutor may be a better conversational model for providing input on initiating and sequencing pre-closings.

Another prominent finding was that humans, unlike SDS, are capable of adapting to the discourse at hand (e.g., they do not return a greeting if a topic has been initiated). It appears that participants (humans) can also adapt to SDS once they realize its capabilities. For example, participants did not respond to a greeting a lot of the time because the topic had also been initiated in the same turn by the SDS. Also, oftentimes participants did not respond to an HAY sequence produced by SDS, likely because they understood the limitations of the system. Such adaptability is part of emerging common ground (i.e. “mapping the rules” of the conversation as they evolve) and was also observed in Dombi et al. (2022) where some, but not all, participants adapted their requests in interactions with an SDS and in Wu et al. (2020) who found that L2 English speakers adjusted their pronunciation to be intelligible to the ASR. However, speakers have also been found more egocentric in their interactional behavior, relying on their own perspective and private, non-shared knowledge, especially under demanding conditions such as multi-tasking or increased cognitive load (e.g., Deppermann, 2015, Keysar, 2008). Thus, learners could draw further benefits from SDS by practicing adapting to an ongoing, potentially less natural discourse. That is, humans accommodate, but SDS does not, and this in itself might be good practice in “extra-difficult” conversational conditions (e.g., the conversational partner is hard of hearing, is of lower proficiency, does not understand indirect meanings, etc.). As such, learners could practice being agile in L2 conversations and adapt their turns relative to the needs of their interlocutor. This idea is supported by a range of studies on the broader construct of learners' interactional competence highlighting that the development of L2 IC involves an increased ability to deploy context-sensitive conduct (Pekarek Doehler & Pochon-Berger, 2015) and to design talk, both linguistically and sequentially, to be easily attended to and understood by others, also by detecting and preempting potential problems (Pekarek Doehler & Berger, 2018).

Finally, we observed that the HUMAN was oftentimes inconsistent despite extensive training, corroborating findings on interlocutor variability (e.g., Brown, 2003; Ockey, 2001) that may create challenges if such tasks were to be used for oral assessment purposes. For instance, one study specifically in the assessment context found that raters believed SDS was a more consistent interlocutor, as compared to humans, but less natural (Ockey & Chukharev-Hudilainen, 2021). Also, interviewer accommodations shape participants' opportunities for displaying their IC (Roever & Kasper, 2018), such as showcasing their ability to transition from the topic to the closing sequence. One reason might be humans' limited processing capacity, as illustrated earlier. By contrast, an SDS is consistent and always follows the same predetermined paths. Given this consistency, it is reasonable to further explore how SDSs could be used for low-stakes, formative assessments of greetings and leave-takings. For example, HAY sequences, which are difficult for learners from some cultures given intercultural variability (Liddicoat & Soo, 2000), could be introduced by the SDS in separate turns to indicate to the learners how to place them appropriately in the openings. At the same time, performances from these SDS tasks could be used to provide feedback and identify aspects of greetings and leave-taking in need of further practice.

Conclusion

The present study provides an initial account of affordances that each modality offers for practicing conversation openings and closings as two specific aspects of IC. Substantiating previous findings, we observed that in the SDS conversations with an automated agent L2 learners were transactionally

motivated, focusing primarily on completing the task at hand. By contrast, in F2F interactions with a human interlocutor, opening and closing sequences were considerably longer and more elaborate, which suggests a larger degree of relational talk and potential facework. Additionally, the data showed that participants in both modalities were capable of adapting to the discourse at hand, a crucial aspect of interactional competence. Given that previous research has shown that conversation openings and closings in naturally occurring talk-in-interaction can also be transactional in some contexts (Holmes & Stubbe, 2015), the different modalities could be used to practice distinct styles of conversation opening and closings, thus raising awareness of the various ways in which opening and closing sequences can be handled in interaction. To conclude, this study is not without limitations. First, given the range of proficiency levels, this study was not designed to examine any possible interaction affects between modality and proficiency. Additionally, although the task included openings and closings, more attention was given to the design of requests in the dialogue structure. The SDS was designed to look for specific keywords, such as “meet(ing)”, “presentation”, and “slides” for the purpose of detecting requests. It was not specifically programmed to detect and respond in detail to the various aspects of opening and closing sequences. Nevertheless, this aspect can be further advanced in future iterations of this task insofar as the keyword method could be used for detecting specific interactive sequences within openings and closings. The focus on opening and closing sequences in the task could be strengthened to encourage separate turns from participants related to greeting/HAY and topic initiation, thus drawing learners’ attention to these, potentially culture-specific, aspects of conversational interactions. We offered some possibilities as to why participants behaved in different ways across modalities; however, to confirm these guesses, future research can utilize think-aloud or retrospective interview protocols to obtain specific reasons for participants’ behavior. Finally, future research is needed to explore how cutting-edge technologies, most importantly large language model-based chatbots, like ChatGPT can be used by L2 learners to practice various interactional patterns.

References

- Abe, M., & Roever, C. (2019). Interactional competence in L2 text-chat interactions: First-idea proffering in task openings. *Journal of Pragmatics*, 144(1), 1–14. <https://doi.org/10.1016/j.pragma.2019.03.001>
- Abe, M., & Roever, C. (2020). Task closings in L2 text-chat interactions: A study of L2 interactional competence. *CALICO Journal*, 37(1), 23–45. <https://doi.org/10.1558/cj.38562>
- Balaman, U., & Sert, O. (2017). The coordination of online L2 interaction and orientations to task interface for epistemic progression. *Journal of Pragmatics*, 115(1), 115–129. <https://doi.org/10.1016/j.pragma.2017.01.015>
- Bardovi-Harling, K., Hartford, B. A., Mahan-Taylor, R., Morgan, M. J., & Reynolds, D. W. (1991). Developing pragmatic awareness: Closing the conversation. *ELT Journal*, 45(1), 4–15. <https://doi.org/10.1093/elt/45.1.4>
- Bibauw, S., Van den Noortgate, W., François, T., & Desmet, P. (2022). Dialogue systems for language learning: A meta-analysis. *Language Learning & Technology*, 26(1), 1–24. <https://hdl.handle.net/10125/73488>
- Blake, R. J. (2000). Computer-mediated communication: A window on L2 Spanish interlanguage. *Language Learning & Technology*, 4(1), 111–125. <http://dx.doi.org/10125/25089>
- Brown, A. (2003). Interviewer variation and the co-construction of speaking proficiency. *Language Testing*, 20(1), 1–25. <https://doi.org/10.1191/0265532203lt242oa>
- Brown, G., & Yule, G. (1983). *Discourse analysis*. Cambridge University Press. <https://doi.org/10.1017/CBO9780511805226>
- Button, G. (1987). Moving out of closings. In G. Button & J. R. E. Lee (Eds.), *Talk and social organization* (pp. 101–151). Multilingual Matters.
- Carroll, D. (2000). Precision timing in novice-to-novice L2 conversations. *Issues in Applied Linguistics*, 11(1), 67–110. <https://doi.org/10.5070/L4111005025>

- Deppermann, A. (2015). When recipient design fails: Egocentric turn-design of instructions in driving school lessons leading to breakdowns of intersubjectivity. *Gesprächsforschung: Online-Zeitschrift zur verbalen Interaktion* 16(1), 63–101.
- Dombi, J., Sydorenko, T., & Timpe-Laughlin, V. (2022). Common ground, cooperation, and recipient design in human-computer interactions. *Journal of Pragmatics*, 193(1), 4–20.
<https://doi.org/10.1016/j.pragma.2022.03.001>
- Economidou-Kogetsidis, M. (2008). Internal and external mitigation in interlanguage request production: The case of Greek learners of English. *Journal of Politeness Research*, 4(1), 111–138. <https://doi.org/10.1515/PR.2008.005>
- Economidou-Kogetsidis, M. (2018). “Mr Paul, please inform me accordingly”: Address forms, directness and degree of imposition in L2 emails. *Pragmatics* 28(4), 489–516.
<https://doi.org/10.1075/prag.17025.eco>
- Godwin-Jones, R. (2023). Emerging spaces for language learning: AI bots, ambient intelligence, and the metaverse. *Language Learning & Technology*, 27(2), 6–27.
<https://hdl.handle.net/10125/73501>
- Goffman, E. (1971). *Relations in public*. Harper.
- Goffman, E. (1972). The presentation of self to others. In J. G. Manis & B. N. Meltzer (Eds.), *Symbolic interaction: A reader in social psychology* (pp. 234–244). Allyn & Bacon.
- Goffman, E. (1981). *Forms of talk*. University of Pennsylvania Press.
- Gonzales, A. (2013). Development of politeness strategies in participatory online environments. In N. Taguchi & J. M. Sykes (Eds.), *Technology in interlanguage pragmatics research and teaching* (pp. 101–120). John Benjamins. <https://doi.org/10.1075/llt.36.06gon>
- Griswold, O. (2003). How do you say good-bye?. In K. Bardovi-Harlig & R. Mahan-Taylor (Eds.), *Teaching pragmatics*. Office of English Language Programs, U.S. Department of State.
- Hall, J. K., & Pekarek Doehler, S. (2011). L2 interactional competence and development. In J. K. Hall, J. Hellermann, & S. Pekarek Doehler (Eds.), *L2 interactional competence and development* (pp. 1–18). Multilingual Matters. <https://doi.org/10.21832/9781847694072>
- Hartford, B. S., & Bardovi-Harlig, K. (1992). Closing the conversation: Evidence from the academic advising session. *Discourse Processes*, 15(1), 93–116.
<https://doi.org/10.1080/01638539209544803>
- Hellermann, J. (2007). The development of practices for action in classroom dyadic interaction: Focus on task openings. *The Modern Language Journal*, 91(1), 83–96.
<https://doi.org/10.1111/j.1540-4781.2007.00503.x>
- Hellermann, J., & Cole, E. (2008). Practices for social interaction in the language-learning classroom: Disengagements from dyadic task interaction. *Applied Linguistics*, 30(1), 186–215.
<https://doi.org/10.1093/applin/amm032>
- Heritage, J., & Clayman, S. (2011). *Talk in action: Interactions, identities, and institutions*. John Wiley & Sons.
- Holmes, J., & Stubbe, M. (2015). *Power and politeness in the workplace: A sociolinguistic analysis of talk at work*. Routledge.
- House, J., & Kádár, D. Z. (2023). Speech acts and interaction in second language pragmatics: A position paper. *Language Teaching*, 1–12. [Advanced online publication.]
<https://doi.org/10.1017/S0261444822000477>
- Huth, T., & Taleghani-Nikazm, C. (2006). How can insights from conversation analysis be directly applied to teaching L2 pragmatics?. *Language Teaching Research*, 10(1), 53–79.
<https://doi.org/10.1191/1362168806lr184oa>

- Jepson, K. (2005). Conversations—and negotiated interaction—in text and voice chat rooms. *Language Learning & Technology*, 9(3), 79–98. <http://dx.doi.org/10125/44033>
- Kampen Robinson, C. (2014). “i've got to go now. bis dann”: Teaching closing sequences. *Die Unterrichtspraxis/Teaching German*, 47(2), 180–192. <https://doi.org/10.1111/tger.10169>
- Kecskés, I., Sanders, R. E., & Pomerantz, A. (2018). The basic interactional competence of language learners. *Journal of Pragmatics*, 124(1), 88–105. <https://doi.org/10.1016/j.pragma.2017.10.019>
- Kendrick, K. H., Brown, P., Dingemans, M., Floyd, S., Gipper, S., Hayano, K., Hoey, E., Hoymann, G., Manrique, E., Rossi, G., & Levinson, S. C. (2020). Sequence organization: A universal infrastructure for social action. *Journal of Pragmatics*, 168(1), 119–138. <https://doi.org/10.1016/j.pragma.2020.06.009>
- Keysar, B. (2008). Egocentric processes in communication and miscommunication. In I. Kecskés & J. Mey (Eds.), *Intention, common ground and the egocentric speaker-hearer* (pp. 277–296). Mouton de Gruyter.
- Knapp, M. L., Hart, R. P., Friedrich, G. W., & Shulman, G. M. (1973). The rhetoric of goodbye: Verbal and nonverbal correlates of human leave-taking. *Speech Monographs*, 40(3), 182–198. <https://doi.org/10.1080/03637757309375796>
- Kramsch, C. (1986). From language proficiency to interactional competence. *The Modern Language Journal*, 70(4), 366–372. <https://doi.org/10.1111/j.1540-4781.1986.tb05291.x>
- Levinson, S. (1983). *Pragmatics*. Cambridge University Press.
- Liddicoat, A. J., & Soo, A. (2000). Telephone openings in Samoan. *Australian Review of Applied Linguistics*, 23(1), 95–107. <https://doi.org/10.1075/ara1.23.1.06soo>
- Litman, D., Young, S., Gales, M., Knill, K., Ottewell, K., Van Dalen, R., & Vandyke, D. (2016). Towards using conversations with spoken dialogue systems in the automated assessment of non-native speakers of English. In R. Fernandez, W. Minker, G. Carenini, R. Higashinaka, R. Artstein, & A. Gainer (Eds.), *Proceedings of the 17th Annual Meeting of the Special Interest Group on Discourse and Dialogue* (pp. 270–275). Association for Computational Linguistics. <https://doi.org/10.18653/v1/w16-3635>
- Monteiro, K. (2014). An experimental study of corrective feedback during video-conferencing. *Language Learning & Technology*, 18(3), 56–79. <http://dx.doi.org/10125/44384>
- Negretti, R. (1999). Web-based activities and SLA: A conversation analysis approach. *Language Learning & Technology*, 3(1), 75–87. <http://dx.doi.org/10125/25057>
- Ockey, G. J. (2001). Is the oral interview superior to the group oral? *Working Papers on Language Acquisition and Education*, 11(1), 22–41.
- Ockey, G. J., & Chukharev-Hudilainen, E. (2021). Human versus computer partner in the paired oral discussion test. *Applied Linguistics*, 42(5), 924–944. <https://doi.org/10.1093/applin/amaa067>
- Pekarek Doehler, S., & Berger, E. (2018). L2 interactional competence as increased ability for context-sensitive conduct: A longitudinal study of story-openings. *Applied Linguistics*, 39, 555–578. <https://doi.org/10.1093/applin/amw021>
- Pekarek Doehler, S., & Pochon-Berger, E. (2015). The development of L2 interactional competence: Evidence from turn-taking organization, sequence organization, repair organization and preference organization. In T. Cadierno & S. W. Eskildsen (Eds.), *Usage-based perspectives on second language learning* (pp. 233–268). Mouton De Gruyter.
- Pillet-Shore, D. (2018). How to begin. *Research on Language and Social Interaction*, 51(3), 213–231. <https://doi.org/10.1080/08351813.2018.1485224>

- Prickett, T., Gada-Jain, N., & Bernieri, F. J. (2000). *The importance of first impressions in a job interview* [Paper presentation]. Annual Meeting of the Midwestern Psychological Association, Chicago, Illinois, United States.
- Pojanapunya, P. & Jaroenkitboworn, K. (2011). How to say “Good-bye” in Second Life. *Journal of Pragmatics* 43(14), 3591–3602. <https://doi.org/10.1016/j.pragma.2011.08.010>
- Ramanarayanan, V., Suendermann-Oeft, D., Lange, P., Mundkowsky, R., Ivanov, A. V., Yu, Z., Qian, Y., & Evanini, K. (2017). Assembling the jigsaw: How multiple open standards are synergistically combined in the HALEF multimodal dialog system. In D. A. Dahl (Ed.), *Multimodal interaction with W3C standards: Towards natural user interfaces to everything* (pp. 295–310). Springer. https://doi.org/10.1007/978-3-319-42816-1_13
- Roever, C. (2022). *Teaching and testing second language pragmatics and interaction: A practical guide*. Routledge.
- Roever, C., & Kasper, G. (2018). Speaking in turns and sequences: Interactional competence as a target construct in testing speaking. *Language Testing*, 35(3), 331–355. <https://doi.org/10.1177/0265532218758128>
- Schegloff, E. A. (1968). Sequencing in conversational openings. *American Anthropologist*, 70(6), 1075–1095. <https://doi.org/10.1525/aa.1968.70.6.02a00030>
- Schegloff, E. A. (1986). The routine as achievement. *Human Studies*, 9, 111–151. <https://doi.org/10.1007/BF00148124>
- Schegloff, E. A. (2006). Interaction: The infrastructure for social institutions, the natural ecological niche for language, and the arena in which culture is enacted. In N. J. Enfield & S. Levinson (Eds.), *Roots of human sociality: Culture, cognition and interaction* (pp. 70–96). Berg.
- Schegloff, E.A., & Sacks, H. (1973). Opening up closings. *Semiotica*, 8(4), 289–327. <https://doi.org/10.1515/semi.1973.8.4.289>
- Shekary, M., & Tahririan, M. H. (2006). Negotiation of meaning and noticing in text-based online chat. *The Modern Language Journal*, 90(4), 557–573. <https://doi.org/10.1111/j.1540-4781.2006.00504.x>
- Spencer-Oatey, H., & Jiang, W. (2003). Explaining cross-cultural pragmatic findings: moving from politeness maxims to sociopragmatic interactional principles (SIPs). *Journal of Pragmatics*, 35(10–11), 1633–1650. [https://doi.org/10.1016/S0378-2166\(03\)00025-0](https://doi.org/10.1016/S0378-2166(03)00025-0)
- Timpe-Laughlin, V., & Dombi, J. (2020). Exploring L2 learners’ request behavior in a multi-turn conversation with a fully automated agent. *Intercultural Pragmatics*, 17(2), 221–257. <https://doi.org/10.1515/ip-2020-0010>
- Timpe-Laughlin, V., Evanini, K., Green, A., Blood, I., Dombi, J., & Ramanarayanan, V. (2017). Designing interactive, automated dialogues for L2 pragmatics learning. In V. Petukhova & Y. Tian (Eds.), *Proceedings of the 21st workshop on the semantics and pragmatics of dialogue* (pp. 143–152). SemDial. http://semidial.org/anthology/Z17-Timpe-Laughlin_semdial_0018.pdf
- Timpe-Laughlin, V., Sydorenko, T., & Dombi, J. (2022). Human versus machine: Investigating L2 learner output in face-to-face versus fully automated role-plays. *Computer Assisted Language Learning*, 1–30. <https://doi.org/10.1080/09588221.2022.2032184>
- Whalen, M. R., & Zimmerman, D. H. (1987). Sequential and institutional contexts in calls for help. *Social Psychology Quarterly*, 50(2), 172–185. <https://doi.org/10.2307/2786750>
- Wong, J. (2000). Delayed next turn repair initiation in native/non-native speaker English conversation. *Applied Linguistics*, 21(1), 244–267. <https://doi.org/10.1093/applin/21.2.244>
- Wong, J., & Waring, H. Z. (2010). *Conversation analysis and second language pedagogy: A guide for ESL/EFL teachers*. Routledge.

- Wu, Y., Rough, D. J., Bleakley, A., Edwards, J., Cooney, O., Doyle, P. R., Clark, L., & Cowan, B. R. (2020). See what I'm saying? Comparing intelligent personal assistant use for native and non-native language speakers. *Proceedings of the 22nd international conference on human-computer interaction with mobile devices and services* (pp. 1–9). Association for Computing Machinery. <https://doi.org/10.1145/3379503.3403563>
- Yates, L. (2017). Learning how to speak: Pronunciation, pragmatics and practicalities in the classroom and beyond. *Language Teaching*, 50(2), 227–246. <https://doi.org/10.1017/S0261444814000238>
- Youn, S. J. (2020). Managing proposal sequences in role-play assessment: Validity evidence of interactional competence across levels. *Language Testing*, 37(1), 76–106. <https://doi.org/10.1177/0265532219860077>

Appendix A. Opening and Closing Adjacency Pairs

Table A1

Examples of Opening Adjacency Pairs

Function	Example adjacency pairs
Summons-answer	[telephone ring] – Hello?
Identification-recognition	This is Tom. – Hi Tom.
Greeting	Hello. – Hi. Good morning. – Good morning.
How are you	How are you? – Good. What about you? – Not bad. What's up? – Not much.

Table A2

Examples of Closing Adjacency Pairs

Function	Example adjacency pairs
Pre-closing	Well. – Yeah. Okay. – Great.
Closing	Bye. – Bye. See you. – See you later.

Appendix B. Coding Openings and Closings

Table B1

Coding Openings

Function	Examples from Data
Greeting	Hi. Hi [name]. Hi boss. Hi [name], nice to meet you. Hello. Hello. Hi [name]
How are you (HAY)	How are you (today)? How is it going?

Table B2

Coding Closings

Function	Examples from Data
Pre-closing	(Yeah) Okay. Thank you very much. Then I will see you on Friday. Great. So I will send you the slides then.
Terminal exchange	(Okay) Bye. (Yeah) See you. (Yep) See you then. Have a nice day. Okay, thank you.*

**Gratitude (e.g., Thank you) can act as either a pre-closing or a closing depending on where it is sequentially in the interaction (Hartford & Bardovi-Harlig, 1992)*

Appendix C. Examples of Adjacency Pair Coding

Adjacency pair coding was done in a turn-by-turn fashion as illustrated below.

Coding Openings

Example 1: SDS

01 SDS: Hi,	how's it going?	What can I do for you?
<i>Greeting initiation</i>	<i>1st HAY initiation</i>	<i>Topic initiation</i>
02 ID01: Hi. Uh this is Taro.		So I ask you one question.
<i>Response to greeting</i>		<i>(No response to 1st HAY, no 2nd HAY)</i>

Example 2: SDS

01 ID22: Hi, Lisa,	how are you?	
<i>Greeting initiation</i>	<i>1st HAY initiation</i>	
02 SDS: Hi,	how's it going?	What can I do for you?
<i>Response to greeting</i>	<i>2nd HAY initiation</i>	<i>Topic initiation</i>

Example 3: F2F

01 HUMAN: Hi

Greeting initiation

02 ID01: Hi, nice to meet you.

Response to greeting

03 HUMAN: Uh, yes.

04 ID01: Uh how are you today?

1st HAY initiation

05 HUMAN: I'm good. Thanks for asking.

Response to 1st HAY (no 2nd HAY)

What can I help you with?

Topic initiation

Example 4: F2F

01 HUMAN: Hi,

Greeting initiation

how's it going?

1st HAY initiation

02 ID63: Yeah, fine. Thanks. And you?
 No response to greeting *Response to 1st HAY* *2nd HAY initiation*

03 HUMAN: Uh, great. Um, what can I help you with?
 Response to 2nd HAY *Topic initiation*

Coding Closings

Example 5: SDS

01 ID05: Okay. Thank you.

Pre-closing initiation

02 SDS: Okay, see you Friday, then.

(No pre-closing response) Terminal exchange initiation

03 ID05: See you Friday.

Terminal exchange response

Example 6: SDS

01 SDS: I'm sorry, I'm having trouble understanding you. I have to go, but please feel free to call back later.

Pre-closing initiation

02 ID29: Okay.

Response to pre-closing (no terminal exchange)

Example 7: F2F

01 HUMAN: Okay. All right, then.

Pre-closing initiation

02 ID24: [no response]

(no pre-closing response or terminal exchange)

Example 8: F2F

01 HUMAN: No? Okay. Great. Um, then uh just send me your slides whenever you have the chance.

Pre-closing initiation

02 ID03: Yeah.

Response to pre-closing

03 HUMAN: All right. Talk to you later.

Terminal exchange initiation

04 ID03: Okay. Thank you.

Response to terminal exchange

Although originally thanking was not considered a realization of a terminal exchange by Schegloff and Sacks (1973), studies in service encounter contexts (Rubin, 1983), institutional settings (Hartford & Bardovi-Harlig, 1992) and in scenarios depicting the speech act of request (Economidou-Kogetsidis, 2008) revealed that thanking is frequently used as a terminal exchange in such context, so we decided to code it as such in this study (e.g., Example 8 above).

Appendix D. Interrater Agreement

Table D1

Interrater Agreement for Openings

	Greeting		First HAY		Second HAY		Topic initiation
	Initiation	Response	Initiation	Response	Initiation	Response	
F2F	97.87	98	100	100	100	100	93.6
SDS	86.5	100	83	96.67	100	100	86.79

Table D2

Interrater Agreement for Closings

	Pre-closing		Terminal Exchange	
	Initiation	Response	Initiation	Response
F2F	89	90	100	100
SDS	97.35	97.4	100	100

Appendix E. Function per Turn Comparison

Table E

Function per turn comparison for participants

		F2F	SDS
Openings	N of turns with more than 1 function (2-3)	25 (37.9)	50 (82)
	N turns with 1 function	41 (62.1)	11 (18)
	Total turns	66 (100)	61 (100)
Closings	N turns with more than 1 function (2-3)	6 (4.8)	21 (27.3)
	N turns with 1 function	118 (95.2)	56 (72.7)
	Total turns	124 (100)	77 (100)

Table E shows that while participants fused several functions into their opening turns in SDS modality, this behavior was less apparent in their closing sequences. Still, the number of turns with more than 1 interactional functions in the closing sequence was much higher in the SDS modality and scarce in F2F.

Appendix F. Variation in Openings

Dialogue structure of the role-play task: Variation in openings

In SDS modality most of the time the system started with “*Hello?*” after which the participants initiated the greeting. On a few occasions, however, the participants responded back with “*Hello?*” after which the system initiated the greeting: “*Hi, how is it going? What can I do for you?*”. This difference resulted in the different proportion of greeting initiation by participants in SDS modality as opposed to F2F, which was relatively stable (i.e, the HUMAN initiated majority of the greetings in F2F). These minor differences in the task set up across the two modalities are contrasted in [Table F](#).

Table F

Variation in Openings Resulting from Task Set Up Differences Across Modalities

F2F		SDS	
HUMAN	Hi.	SDS	Hello?
:	Hi [name]. How’s	ID28:	Hello?
ID12:	it going?		
HUMAN	Uh, not bad. Uh,		
:	what can I do,	SDS	Hi, how’s it going? What
	help you with?	ID28:	can I do for you?
			Hello. Yeah. Yes, good. I
			saw, uh, our produ-,
			production have some
			problems. So, I thought
			maybe we need to meet in
			next month.
		SDS:	Hello?
		ID30:	Good afternoon, [supervisor
			name]. This is (name) and uh I
			have some questions
		SDS:	discussio-, I want to discuss
			some questions with you. And
			uh--
			Hi, how’s it going? What can I
			do for you?

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