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POSITION PAPER

Technology and L2 Pragmatics Learning

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Abstract

The field of technology and language learning, also known as CALL (computer-assisted language learning), is now a robust area of study informed by research and practice in the fields of language education, computer science, psychology, sociology, cognitive science, cultural studies, and, most of all, applied linguistics and second language acquisition (SLA). As with any other large field of study, some subareas have become the focus of study, often influenced by advances and research in applied linguistics, while others remain to be explored further; among these is the area of technology-mediated second/foreign language (L2) pragmatics, also known as interlanguage pragmatics. The lack of research in this area is puzzling if one considers that pragmatic competence is one of the essential components of communicative competence and that most of the technologies today exist in the service of communication. This article reviews the efforts so far to explore the connections between interlanguage pragmatics and a variety of technologies and innovations, as well as existing resources to bring L2 pragmatic teaching into the language classroom. It then suggests unexplored areas where technology could be used to aid the development of pragmatic competence and where pragmatic theory can inform SLA research.

Introduction

Computer-assisted language learning (CALL) research expands a long continuum of tools and topics, from those focused on more discrete items such as studies of vocabulary acquisition, grammatical development, effects of technology-mediated instruction, or feedback, to those focusing on the potential to develop cross-cultural and communicative competencies. Research includes studies of collaborative writing, institutional telecollaborative work, studies on asynchronous (e.g., email, forums, blogs, fandoms) and synchronous (video and audio chat) computer-mediated communication (CMC), as well as the exploration of different tools that may facilitate the acquisition of communicative competence such as social media, synthetic environments, and multiplayer games. In spite of the constant evolution of CALL, most of the research has focused on linguistic benefits related to vocabulary, grammar, and negotiation of meaning through the use of glosses, CMC, gaming, and mobile technologies (Plonsky & Ziegler, 2016). The general scarcity of pragmatic studies in the field of CALL is reflected on the specialized CALL academic journals. Since 2016, only 7% of the articles published in *Language Learning & Technology* focused on pragmatics, and the percentage is even lower for *CALICO Journal* (2.2%) and *ReCALL* (1.8%). This paucity of second

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language (L2) pragmatic research in CALL is puzzling if one considers that pragmatic competence is one of the essential components of communicative competence (Hymes, 1972) and that most of the technologies today are in service of communication.

The field of technology-mediated L2 pragmatics acknowledges the importance that pragmatic appropriateness has in the development of an L2 as well as the role that technology plays in our communications. Belz's (2007) article in ARAL provided the first overview of how technology, and in particular telecollaboration, had contributed to the development of L2 pragmatic competence, how internet facilitated exposure to authentic materials, L2 discourses, and meaningful interaction, and how corpora could be used to teach L2 pragmatics. Taguchi and Sykes's (2013) book, *Technology in Interlanguage Pragmatics Research and Teaching*, was the first volume dedicated to exploring the role that technology plays in researching, teaching, and assessing pragmatics through chapters that included a variety of tools such as blogs, wikis, place-based mobile games, and virtual and social environments. Taguchi and Roever's (2017) recent volume, *Second Language Pragmatics,* acknowledges technology-mediated contexts as important spaces for pragmatic development, and Sykes's (2018) guest article in *CALICO Journal* on interlanguage pragmatics presents the intersections of technological innovation and L2 pragmatics in the creation of materials, classroom interventions, telecollaboration, and research methods. This chapter builds on these previous reviews and offers future lines of research for the field.

L2 Pragmatics and Communication

The field of L2 pragmatics examines how learners of another language communicate and interact with others given the context of the interaction; the relation between participants; physical setting; their linguistic, social, cultural, and historical background; and their ideologies and identities. L2 pragmatics also investigates how this communication may be affected by instruction or developed "in the wild" (e.g., study abroad, workplace, and immigration contexts). The development of pragmatic competence implies the learning of the norms and principles that affect the behavior of participants in a culture (i.e., sociopragmatics) and the ability to choose the language to realize those norms (i.e., pragmalinguistics). This competence is critical for successful social interaction, and it is essential to establish communication, maintain rapport, and avoid stereotyping of a language community. When language learners make pragmatic mistakes (especially more competent speakers), these are not attributed to a lack of language competency, but rather to ill-mannered and rude behavior (Thomas, 1983). Pragmatic mistakes threaten communication more than phonetic, lexical, or grammatical errors (Bardovi-Harlig & Dörnyei, 1998) and can bring frustration and relationship breakdowns (Taguchi & Sykes, 2013).

It seems then imperative to include the teaching of pragmatics in our language classrooms, especially in light of a plethora of studies suggesting the benefit of pragmatic instruction (Plonsky & Zhuang, 2019; Taguchi, 2015). However, language teaching materials hardly ever include pragmatic information on issues such as politeness, register, illocutionary force, and a multiplicity of speech acts, and when they do, it is anecdotal and a sideline to morphosyntactic information (Limberg, 2016; Ren & Han, 2016). In addition, classrooms are limited on the variety of contexts and interlocutors that they can offer, and because of the restricted and institutionalized roles of teacher and students, many discourse practices and speech acts are often absent from language classes

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(e.g., insults, rejection of teacher requests and offerings). In this chapter, I assert that technology offers the possibility of bringing a variety of contexts, interlocutors, and power dynamics to the L2 class that can reflect authentic practices in various interactional situations.

As stated in González-Lloret (2018), it is important to note that although interaction with native speakers is an essential part of acquiring L2 pragmatic competence, achieving native-like competence is not necessarily the goal of instruction. It is more important to equip students with knowledge of the sociopragmatic norms and behaviors of the language community, as well as the linguistic tools (pragmalinguistic realizations of those norms), so they can interact appropriately in a specific linguistic community. It is also important to keep in mind that students, especially adults, may resist or reject the (full) adoption of the pragmatic rules of a language because of their own beliefs, experiences, social position, and their own identity within the L2 community (Davis, 2007; Ishihara & Tarone, 2009; Takamiya & Ishihara, 2013). Even more, as Kasper (1997) pointed out, the differences in the learner's L2 pragmatics may be positively valued by members of the target community as indicators of the person as an outside member of the community.

In light of The Douglas Fir Group's (2016) proposal, in which language learning is understood as learning how to "negotiate social and linguistic action in the face of minimal common ground and maximal semiotic demands" (p. 23), the role of pragmatics is clearly central to teaching language. Language learning is about not only learning a linguistic system but also knowing how to use it within the social norms and behaviors (the sociopragmatics) of the language. The definition seems to also emphasize the importance of the context, a decisive factor in pragmatic choice, and the ability to interpret our interlocutor's signs, implications, body language, and other semiotic resources. In the next section, I will review existing research that proposes that technology provides a context for this "social and linguistic action" that is L2 learning.

Research on L2 Pragmatics and Technology

The essentialness of technology-mediated communication as a life and workforce skill has generated a growing literature focusing on L2 pragmatics and technology, including a variety of topics informed by research on L2/interlanguage pragmatics and CALL, as well as research on what Yus (2001, 2011) termed "cyberpragmatics." Earlier research mirrored L2 pragmatic studies conducted face to face, mostly descriptive in nature, which later evolved toward experimental studies, and developmental studies looking at a variety of pragmatic norms and language features from a variety of frameworks (e.g., cognitive, sociocultural, grounded theory, and conversation analysis).

The setting of the studies varies from laboratory and classroom (with different types of instruction and in a variety of conditions) to study abroad settings and naturalistic contexts where the language can be a foreign language, other language, or lingua franca. Within these contexts, studies have looked at comprehension, oral or written individual production, interaction, or the development of pragmatic elements such as implicature (e.g., Taguchi, 2013), routine formulas (e.g., Furniss, 2016), and a variety of speech acts. They have also explored interactional features such as back channeling (e.g., Utashiro & Kawai, 2009), overlapping (e.g., Jenks, 2009), and alignment (e.g., Uzum, 2010), as well as identity construction (e.g., Liaw & English, 2017). Although technology has opened exciting doors for the collection of data and for the analysis of interlanguage pragmatics (e.g., Taguchi, 2013; Bardovi-Harlig, Mossman, & Su, 2017), only studies in which the

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technology plays a mediating role in the production or understanding of L2 pragmatic features have been included in this review.

Exploratory Research

The bulk of studies of technology-mediated L2 pragmatics have been exploratory in nature and mostly descriptive. Within these, studies comparing CMC to face-to-face interactions are the most frequent. This is comprehensible given that CMC, and in particular email, is the most employed technology for communication in the workplace (Pew Research Center, 2014), with the impact that the mode has for communication between students and faculty.

Looking at email, a group of studies have focused on how politeness is (or is not) produced appropriately by L2 learners by focusing on their degree of indirectness, syntactical and lexical modifiers, facework, and the production of several speech acts. These studies suggest that although the technology is well known and used, when writing emails, L2 learners (even advanced learners) underuse pragmatic features such as face-saving strategies (Bloch, 2002) and request mitigation (Félix-Brasdefer, 2012; Hendriks, 2010), and they still lack control of their politeness level, particularly in asymmetric communication with interlocutors of higher power such as professors (Bloch, 2002; Economidou-Kogetsidis, 2016; Stroinska & Cecchetto, 2013; Zhu, 2012). Learners also negatively transfer features from the L1 (first language) to the L2 (Economidou-Kogetsidis, 2016) and do not employ indirect strategies in spite of demonstrating strong pragmalinguistic control of the forms (Pan, 2012). It is interesting that regardless of the learner's L1, there seems to be a preference for direct strategies (e.g., like, want, need) and conventionally indirect query (e.g., is it possible…? can I…?) when requesting (Alcón-Soler, 2013; Félix-Brasdefer, 2012). It is important to note that the use of technology is not neutral or external to the interaction. Technology shapes the conversation process, allowing us to form relationships at a higher speed than before. Salazar and Codina (2018), who studied L2 learners of English email communication with their professors, found that in a sequence of three emails (1, request from student; 2, answer from the professor; and 3, answer from the student), students' second emails seemed to ignore the asymmetry and unequal status and did not include the necessary politeness, even when their first emails had included multiple politeness markers, thanking moves, and polite leave-takings. The authors suggested that for these students, the second email did not require as much politeness as the first one because one email was enough to establish an institutional relationship.

L2 pragmatic studies of synchronous CMC (SCMC) have focused on a much larger variety of pragmatic features and speech acts. Among them are the use of discourse markers, mitigation devices, and the sequential organization of interaction. Results of SCMC studies that focused on L2 pragmatics suggest that this type of communication is effective to elicit pragmatic functions and various speech acts such as advice giving (Tsai & Kinginger, 2014). In addition, SCMC stimulates interaction that promotes collaborative learning (Kitade, 2000) and provides learners with interactional practices that are essential in the L2 such as alignment with our interlocutor (Jenks & Brandt, 2013; Uzum, 2010), the organization of social presence (Vandergriff, 2013), repair sequences (Tudini, 2013), the use of emoticons (Vandergriff, 2014), and the construction of identity (Liaw & English, 2017; Vandergriff, 2013).

Now that a variety of technologies are more accessible to learners and researches, studies are investigating the differences in L2 pragmatic use in different modes of

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SCMC and other tools such as games, synthetic environments, and social networks. These studies, although still too few, suggest that the mode of communication does indeed affect the L2 pragmatic production. Tercedor Cabrero (2013) found that the organization of interactional features in video CMC by beginner learners was quite different from other media. Sykes (2005) found that learners' text-based CMC used a greater variety of strategies, and more complex ones, to refuse an invitation than their oral CMC. These studies are a beginning, but we definitely need more research comparing the impact of different modes of CMC in L2 pragmatic production.

Branching to other technologies, Pojanapunya and Jaroenkitboworn (2011) used *Second Life* (a virtual environment) to investigate how Thai students of English produced closing sequences in this environment. The results showed that although learners were interacting through avatars and did not have to worry about face-saving, they frequently performed preclosings (e.g., informing of the need to leave, agreeing on future encounters) before closing the sequence by saying good-bye. That is, learners borrowed pragmatic conventions from the real world and brought them into the virtual world. This suggests that virtual environments allow for a close reproduction of face-to-face interactions and can be spaces for practice. As for games, two investigations into place-based games give us a glimpse of their possible uses for L2 pragmatic instruction. Holden and Sykes (2012) created and researched a mobile game for learners of Spanish, *Mentira* (http://www.mentira.org/), through which students collaboratively interacted with the Albuquerque neighborhood of *Los Griegos* and the mobile game to solve a mystery. Their interaction with the game required of the learners to be pragmatically appropriate to get information from the game characters. Their research on the use of the mobile application shows that the tool was effective to engage learners with sociopragmatic features of the language. Also investigating mobile devices, Hellermann, Thorne, Lester, and Jones (2013) researched how learners collaborate and coordinate movement and talk around a mobile device. They found that the device is essential to the communication and to how the participants organize the interaction. This is another area that is wide open for research.

Experimental Research

A few studies of technology-mediated L2 pragmatics with an experimental-control group design have investigated whether an intervention such as explicit teaching, awareness-raising activities, computerized practice, feedback, and the like has an effect on learners' comprehension and/or production, either oral or written. As with exploratory studies, experimental studies have focused on email as the tool to mediate the interaction and almost exclusively on the perception and production of requests (Chen, 2015; Eslami, Mirzaei, & Dini, 2015; Nguyen, 2018). Employing traditional data-gathering methods from the field of pragmatics and second language acquisition (SLA) such as discourse completion tests (DCTs; Eslami et al., 2015), pre-post tests (Chen, 2015; Nguyen, 2018), and judgment tests (Pan, 2012), these studies analyze whether instruction has an impact on learners' L2 pragmatic knowledge (or production) and, if so, what type of intervention is the most effective: explicit (metapragmatic explanations, corrective feedback, form-focused activities) or implicit (enhanced input, input flood, implicit feedback). Results from these experimental studies suggest that intervention helps improve students' production in email communication (Chen, 2015; Nguyen, 2018), which parallels the results of nontechnology pragmatic research (Plonsky & Zhuang, 2019). It seems that the combination of instruction with the use of the

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technology is an effective way to incorporate technology-mediated L2 pragmatics into the language classroom (Alcón-Soler, 2013). This is also supported by Li, Taguchi, and Tang's (2018) study investigating the effectiveness of text-based CMC alone and with data-driven instruction to acquire four Chinese sentence final particles. The results indicate that the combination of CMC and data-driven instruction was more effective for the acquisition of token frequency, type frequency, and acceptability.

Although some of the exploratory studies suggest that learners are not pragmatically appropriate and have problems with levels of politeness and power distribution (e.g., Bloch, 2002; Economidou-Kogetsidis, 2016), other studies demonstrate that students are competent interactants, capable of recognizing pragmatic norms and produce appropriate interactional acts, employing multiple resources, including their multilingual resources (Abrams, 2013). Learners use strategies similar to those of native speakers in the medium to organize, develop, and maintain interaction (González-Lloret, 2009; Tudini, 2010), and learners also tend to ignore linguistic problems in favor of maintaining social interaction through complex, highly organized, and collaborative interactional work (Jenks & Brandt, 2013; Tudini, 2013).

Developmental Research

A third line of research, longitudinal in nature, focuses on whether L2 pragmatic development (learning/acquisition) is possible and how it happens when mediated through technologies, either as part of an institutional setting or in a natural context. The difference with experimental studies, as defined above, is that they do not include a control group, but rather investigate the development of one or more pragmatic features by a group of learners. These studies look closely at the technology as the space created for an authentic and significant communication with its own interactional norms and practices.

As with the previous studies, CMC has been the preferred technology to explore L2 pragmatic development, probably because it is the most commonly employed and the longest in existence. Within these studies, a few have investigated the development of addressivity (e.g., González-Lloret, 2008; Kim & Brown, 2014) and several speech acts such as openings (Abrams, 2013); requests (Cunningham, 2016); leave-takings (Gonzales, 2013); responses to troubles talk (González-Lloret, 2011); invitation refusals (e.g., Takamiya & Ishihara, 2013), and requests for help and suggestions (Soares Palmer, 2010). It is not easy to summarize the results of these studies given the large variety of topics and tools, but we can extract a few results relevant to the learning of L2 pragmatics. Developmental studies demonstrate that technology-mediated environments are effective for the learning of L2 pragmatics, providing that learners maintain interaction and engagement, receive quality feedback from the L1 speakers, and are prepared to adopt L2 sociopragmatic norms. The studies show that learners can display an understanding of sociopragmatic rules and improve their pragmalinguistic use. Their speech acts became more complex and sophisticated with time, reducing their formulaic language and including more elaborated sequences with more mitigators and strategies, becoming more similar to L1 production. Most important, these results seem to be consistent through different media such as chats (Kim & Brown, 2014), email (Kakegawa, 2009), blogs (Takamiya & Ishihara, 2013), and, as we will see in the next paragraphs, also in virtual environments (Sykes, 2009) and multiplayer online games such as *World of Warcraft* (Soares Palmer, 2010).

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Games and virtual spaces have been postulated as ideal environments for pragmatic acquisition, however, developmental research is still limited. In a set of studies, Sykes (2009, 2013) reports on *Croquelandia*, a synthetic immersive environment built for the learning of Spanish L2 requests and apologies. Although Sykes's pre and posttest showed small gains in the production of pragmalinguistic forms and modest gains in the learning of apologies, the results indicated a large improvement of learners' interpretation, analytical skills, and awareness of both requests and apologies. Exploring the English interactions of two Finish teenagers engaged in a multiplayer game (*FinalFantasy*), Piirainen-Marsh and Tainio (2014) traced for two years their development of epistemic stance and knowledge asymmetry as well as their use of bilingual resources to construct their action inside and outside of the game. In a recent study, Taguchi, Li, and Tang (2017) investigated the learning of Chinese formulaic expressions through a video-based interactive game-like activity in which students had to complete several scenarios (e.g., take a bus, talk to a vendor, have a dinner party). The students' learning of comprehension and production was assessed through pre- and posttests (after two sessions and after two weeks). The results showed fast progress in their comprehension of formulas, especially their sociopragmatic ability, while their production improved for some formulaic expressions but not others. These studies add to the research suggesting that engaging game-based activities that include useful feedback are worth exploring for the teaching of L2 pragmatics.

Also, social and learning networks for conversation or academic tasks seem to be the ideal place to develop L2 pragmatic competence (Blattner & Fiori, 2011). This line of research (reviewed in depth by González-Lloret, 2015) demonstrates that technology allows students to engage with other speakers in pragmatic sequences, using resources that are essential for the development of interactional competence in regular face-to-face communication and that are often neglected in L2 classrooms. Here, the main potential of the technology is to provide sustained engagement to lead to interactional development in the L2, which in technology-mediated environments, as in face-to-face, is a question of recalibration of resources for social action (Pekarek Doehler & Pochon-Berger, 2015). Within social and learning spaces, it is important to highlight studies of intercultural competence that focus on the tools and methodological implementations to effectively engage in telecollaborative projects between two or more institutions learning one another's languages and cultures. Intercultural competence is essential to be able to communicate within the sociopragmatics of the L2, and it pushes learners to reflect on their own sociopragmatic and pragmalinguistic norms. See Chun (2011), O'Dowd (2016), and Çiftçi (2016) for more on telecollaboration and intercultural development.

Although opportunities for interaction are essential for the development of L2 pragmatics, the technology does not bring authentic, rich, and effective communication automatically (Ortega, 2009; Vandergriff, 2013). What is crucial for the acquisition of pragmatic features is the quality and amount of engagement (González-Lloret, 2008), the experiences of the learners during the interaction, and the moments in the interaction that bring awareness and reflection into their practice (Belz & Kinginger, 2003). Therefore, when bringing a technology into the L2 environment, we need to think about not just the possibilities of the medium, but its "social affordances," the properties of the environment that "act as social-contextual facilitators relevant for the learner's social interactions" (Kreijns, Kirschner, & Jochems, 2002, p. 31).

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Bringing Technology-Mediated Pragmatics to the L2 Classroom

Given the number of technologies and the array of contexts in which sociocultural norms, behaviors, speech acts, formulas, and the like may be used by our learners, it is infeasible to teach them all. As Sykes (2017) stated, L2 pragmatic instruction should focus on strategies of interaction through "an intentioned pragmatic lens" (p. 121) so that learners become aware of the pragmatics involved in different spaces, virtual or not, and are able to choose an adopt pragmatic behaviors and the language associated with them. Moreover, it is critical to consider that interactional pragmatic work is not fixed and static; rather, it "results from participants' ongoing, contingent interpretive work during jointly pursued practical activities" (Kasper, 2009, pp. 278–279), and therefore exposing students to a list of language formulas and rules is not as useful as teaching them to engage in pragmatic observation, negotiation, and interaction.

In order to develop L2 pragmatic competence, pragmatics need to be incorporated in all aspects of the instruction and the curriculum. Language curriculums with strong cultural, social, or authentic elements will allow for better integration of pragmatic materials. For example, as suggested above, telecollaborative projects, which have a strong sociocultural component, are an excellent way of incorporating the teaching and practice of L2 pragmatics.

From the point of view of the technology, rather than focusing on the effectiveness of one tool, it is more sensible, given the fast pace of innovation, to identify particular features of technology that can assist pragmatics learning and teaching. Informed by the existing research, we want technologies that (a) offer interactional spaces that can expose learners to different texts and interactions with a multiplicity of speakers; (b) provide rich, authentic input from a variety of interlocutors and contexts; (c) facilitate useful feedback; and (d) allow learners to deploy their multilingual resources.

It is crucial to note that the value is not in the technology per se, but in how it is integrated within the language curriculum. Combining technology with authentic tasks that represent a variety of contexts (different physical contexts, interactants, relationships, backgrounds, etc.) can help integrate language and pragmatics in an organic way. These tasks should be learner-centered, highly contextualized, flexible, and diverse. They should allow for learner agency, use of own digital skills, and linguistic and nonlinguistic resources. They should be real-world tasks "with a main focus on meaning, and with interactional pragmatics learning built into the task design so as to be experienced by learners as mostly incidental" (González-Lloret & Ortega, 2018, p. 194). As an example, Ikeda (2009) developed an email task followed by a phone task for learners of Japanese, in which they had to contact a company searching for an internship and a professor at a university inquiring about an MA program. The study focused on honorifics, and the results showed that although advanced learners still did not employ as many honorifics as native speakers, they used a variety of linguistic and nonlinguistic resources to show the deference required in these tasks.

It is also important to remember that when tasks are brought to the classroom, students orient to them as institutional in nature, regardless of how authentic they may be (Gonzales, 2013; González-Lloret, 2008; Tsai & Kinginger, 2014; Tudini, 2013). This is important for L2 pragmatics because when participants orient to an activity as institutional, some principles of regular conversation may not hold true. For example, although disagreement in regular conversation is a face-threatening act (Brown & Levinson, 1987) that is seen as a socially dispreferred disruptive practice (Pomerantz, 1984), it may not be perceived as dispreferred when expected as part of classroom

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tasks. The same is true for corrections or repairs. In regular conversation, correcting is usually perceived as a dispreferred act that implies a lack of competence by one of the participants. However, in a learning context, it is seen as part of the activity, an intervention for the benefit of the person corrected, and therefore appropriate and even desirable. Even then, participants orient to repairs and corrections as somehow dispreferred, as suggested by the frequent request for permission or confirmation of acceptance to engage in correction and a variety of politeness mitigators that commonly accompany dispreferred acts such as explanations, encouragement, compliments, and use of emoticons (González-Lloret, 2015; Tudini, 2010). I would argue that although a communicative act may be transformed when it becomes institutionalized, there is still value in bringing it to the L2 classroom since digital tools provide possibilities of engaging in conversation in a safe space where language and pragmatic errors are accepted and even encouraged.

Finally, we cannot overlook the role that learner agency plays in L2 pragmatic development and the ways to foster it, accommodated it, and make it part of the developmental process. It is important to know the sociopragmatic rules of the L2 as well as their pragmalinguistic realizations, but we need to consider that learners, in many cases adults, are individuals with their own points of view, histories, and convictions, and allowing for learner's agency in the development of their L2 pragmatics is essential. As Takamiya and Ishihara (2013) showed, for a student of Japanese to develop "white lies" as a social convention to rejecting invitations (even when she was linguistically able to do it) took time and effort as well as a change on her perception of the behavior and her own values. The development of learners' identity is an essential component to create and maintain social presence, especially in online settings (Liaw & English, 2017) and certainly to be encouraged in the teaching of L2 pragmatics. Unlike most classroom spaces, digital spaces and online environments can empower L2 authors and can "grant agency to second/foreign language learners by allowing them to take charge of their own language learning" (Vandergriff, 2016, p. 87), which, in turn, promotes language learning (Duff, 2012).

How Technology-Mediated L2 Pragmatics Can Inform SLA Research

Our technology-mediated daily interactions have fundamentally changed who our interlocutors can be and have exponentially increased our array of contexts. Therefore, individuals' sociopragmatic and pragmalinguistic knowledge needs to grow to accommodate this variety of encounters, including those carried out in our second and other languages. As Sykes (2017) stated: "digital technologies have expanded the possibilities for human interactions in ways that were never before imaginable, further complexifying the teaching and learning of interlanguage pragmatics" (p. 118). As L2 teaching practitioners, it is imperative to train our students to face these new complexities and challenges, and the study of SLA should expand to include research that is more multimodal in nature to mirror most of our daily communications.

Technology allows us to observe the building of relationships in ways that were almost impossible before, and it gives us access to communication that used to be difficult to study. We can consider, for example, the difficulties of studying advice or commiseration in support groups (for reasons of privacy and access) and how access to data has drastically changed with the existence of open internet support groups in which people produce the same type of language or even more open language, given the anonymity that internet grants. This type of access and research seems of great importance

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for certain populations, such as multilingual L2-learning adult immigrants searching for advice from institutions and other more experienced immigrants. How can the L2 be used to capitalize and maximize success in these online support groups? What linguistic and sociopragmatic resources are needed to succeed in their efforts? This type of research fits perfectly with The Douglas Fir Group's (2016) definition of L2 learning as "learning how to negotiate social and linguistic action in the face of minimal common ground and maximal semiotic demands" (p. 23).

In addition, the field of L2 pragmatics should be considered more integral to general SLA since the essentialness of pragmatics for communication has by now hopefully been demonstrated. However, many studies of SLA still focus exclusively on language complexity, accuracy, and fluency (CAF). In line with Pallotti's (2009) recommendation to include *adequacy* (i.e., success in achieving the task's goals efficiently) in CAF research, *appropriateness* could also be considered. An email in the L2 to a future employer can have impeccable language, but if it is perceived as arrogant, unfriendly, or in violation of any other sociopragmatic conventions, it will not be successful.

In this line, studies of task complexity could benefit from considering the importance of the role that pragmatics play in interactional tasks. Robinson (2011) already proposed *participant variables* (i.e., gender, familiarity, shared knowledge, and power status) as part of his complexity model. This dimension clearly involves sociopragmatic interactional principles and the pragmalinguistic choices specific to each language; nevertheless, it has not attracted much attention from research until recently (e.g., Gilabert & Barón, 2018; Kim & Taguchi, 2016). See González-Lloret and Ortega (2018) for an in-depth discussion of this topic.

Future Investigation

CALL research advances in parallel to that of applied linguistics and SLA. An example is the (slow) evolution of the field toward the recognition of the world as a multilingual space and the acknowledgment that many language learners in our research and our practice are multilingual. Another important notion gaining acknowledgment among SLA scholars is that of social and economic inequality. This concept has long existed in CALL as the "digital divide" (Warschauer, 2003), and it is still a persistent and important topic, focusing not only on access to technology but also on use (Warschauer & Newhart, 2016). As Ortega (2017) argues, "once we acknowledge that the majority of the world is multilingual, but inequitably multilingual, and that much of the world is also technologized, but inequitably so, it becomes not only our business, but also our professional responsibility to generate research about language learning and digital literacies for language learning that addresses these problems." (p. 288). For technology-mediated pragmatic research this means acknowledging that L2 learners often deploy multilingual resources for communicating that need to be considered assets rather than obstacles. For example, traditional issues of negative pragmatic transfer between the L1 and the other languages need to be reconceptualized within a paradigm of translanguaging practices. Kulavuz-Onal and Vásquez (2018), Piirainen-Marsh (2010), and Schreiber (2015) are excellent examples of research accounting for the bilingual resources of participants who orient to different languages and other semiotic resources to organize their communication and establish their identities. The acknowledgment of this *multilingual turn* (Ortega, 2013) also implies researching technology-mediated L2 pragmatics with underrepresented populations,

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often affected by the digital divide, and investigating how to include innovation to best serve their development of L2 pragmatic competence.

As the importance of pragmatic competence is recognized and incorporated more regularly in language teaching, the assessment of pragmatic knowledge and pragmatic competence will become common practice in the field. The volume by Ross and Kasper (2013) *Assessing Second Language Pragmatics,* as well as studies by Roever, Fraser, and Elder (2014), Youn (2015), and Timpe-Laughlin (2018), indicate the growing importance of this area of research. However, we still need more studies to find the most effective ways to assess technology-mediated L2 pragmatic learning, to understand the role that technology plays (and should play) in assessment, and to determine whether pragmalinguistics and sociopragmatics can be assessed independently from the technologies that mediate them.

I would like to end by mentioning that on May 8, 2018, Google announced in its blog the launching of Google Duplex, "an AI [artificial intelligence] system for accomplishing real-world tasks over the phone" (Leviathan & Matias, 2018). In Google's AI blog entry, Leviathan and Matias stated that Google Duplex, an AI system that makes reservations at restaurants and hair salons, had dramatically improved and was ready to be launched for testing. Google thought it was ready because it sounded more natural, more like a person than a robot, and because it included speech disfluencies, silences, and latches to match people's expectations. These are all key elements in a conversation between humans, which as Scott Huffman, Google vice president of engineering, stated "come from a well-known branch of linguistics called 'pragmatics'" (Bohn, 2018). It seems that not only is technology changing our understanding of pragmatics, but pragmatics is also changing the way technology moves forward.

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