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The evolution of identity research in CALL: From scripted chatrooms to engaged construction of the digital self

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Abstract

Drawing on past and current scholarship on digitally mediated communication in language learning, this review article examines the evolution of identity research in computer-assisted language learning (CALL) from the 1990s to the present day. The article offers an in-depth overview of critical issues and topics associated with language learner identification in educational digital settings and non-institutionally situated online cultures. A chronological approach is followed, addressing three main historical periods broadly related to the major conceptual shifts in applied linguistics: early developments and the communicative turn (1995-2000), the social and intercultural turns (2000-2010), and the critical and multilingual turns (2010-2020). Thus, this paper seeks to link the research on digital identity in CALL to second language acquisition (SLA) theories and highlight key studies and their importance for the field and the shifting paradigm. The article concludes with a summary of newly emerging themes in digital identity studies and outlines new directions for research on language learner identity in digital spaces. Singling out identity research within the discipline of CALL as a historically evolving topic that reflects the ever-changing realms of the digital world contributes to strengthening interdisciplinary ties between broadly conceptualized digital humanities, digital humanistic pedagogies, and computer-assisted language learning sciences.

Keywords: History of CALL, Identity, Computer-Mediated Communication (CMC), Language Acquisition

Language(s) Learned in This Study: Multiple

Introduction

The rapid proliferation of digital social platforms and utilities has facilitated daily interactions and qualitatively transformed the ways communication is understood in today's global society. From early email technologies to instant video communication tools, social networks, and mobile applications, the past three decades have witnessed fundamental changes in the way information exchange practices are accomplished. In interpersonal, educational, and professional domains, these changes have propagated a great variety of multimodal and multilingual forms of digitally mediated interpersonal interaction (Darvin, 2016). Time lag and physical location are no longer a constraint, and instant communication has become a norm in the realm of global information exchange, giving voice and public online presence to individuals that represent diverse social backgrounds, social positionings, and language-culture affiliations. Concurrently, one-to-one modes of daily interaction have expanded to include one-to-many and many-to-many technology-mediated communication environments, such as media sharing platforms, online interest groups, blogging spaces, and more recently, multiparty video communication tools (e.g., Skype, Zoom).

Since language is an integral part of human communication, it is not unexpected that this rapid evolution of communication tools, modalities, and forms of digital mediation has had a direct impact on how language learning and use in digital spaces is accomplished. Computer-mediated communication (CMC), understood broadly as "any human communication that takes place between human beings via the instrumentality of computers" (Herring, 1996, p. 1), quickly became a medium through which language learners began to develop their second language (L2) skills and related competences, as well as engage in meaningful interactions with the target language communities (see Otto, 2017 for a historical overview).

Computer-assisted language learning (CALL) research draws data from computer-mediated communication (CMC) as evidence of language learning: from improvements in grammatical accuracy and incidental vocabulary acquisition to increased cultural sensitivity and intercultural awareness. Quite soon after the introduction of CMC in CALL, however, it was realized that digital communication technologies extend their reach far beyond linguistic and cognitive domains of learning to encompass more subtle, yet fundamentally critical dimensions of language learner development: the dimensions of agency, identity, and self-expression (Turkle, 1995). It is not surprising that a wide array of opportunities to interact in online environments and fast-growing participatory cultures on the Internet have created and curated rich venues for *self-positioning* and construction of identity through the idiosyncratic use of hybrid language varieties, communicative genres, multimodal interactions, and extensive plurilingual resources readily available to users in digital communication settings (Kelly-Holmes, 2019).

Along with multiple affordances, computer mediation was found to complexify the intricate dynamics of human social activity and reveal its powerful capacity for identity performance (Thorne, et al., 2015). Interest in digital identity in the field of CALL has been growing exponentially in recent years, including more variables and realities of life, such as power hegemonies (Helm et al., 2012), translanguaging (Wei, 2018), multilingualism (Ortega, 2017), linguistic superdiversity (Blommaert & Rampton, 2015), multimodal CMC (Domingo, 2016), and even social justice and forensics (e.g., Chiang & Grant, 2019; Grant & Macleod, 2016). New theoretical assumptions and global societal demands led researchers to problematize the construct of virtual identity and virtual self (Kramsch, 2009) in the face of globalization and hybridization of transcultural and translingual practices, and intersecting movements of people (Canagarajah, 2013; De Costa & Norton, 2016; Higgins, 2011; Lam & Smirnov, 2017).

This review article examines the historical development of identity research in CALL in the past 25 years, focusing specifically on the social and expressive dimensions of CMC, and offers an overview of the critical issues associated with language learner identification in instructional CMC contexts and non-instructional institutional CMC "in the digital wilds" (Sauro & Zourou, 2019). Drawing from a vast volume of second language (L2) identity research for theoretical framing, the article examines how the conceptualization of language has evolved over the past two decades in relation to stable and/or dynamic subject positions and digital contexts which they occupy as L2 users, delineates the rise of identity research in CALL, outlines major contributions to the study of L2 speakers in CMC, and provides an outlook for future research.

Defining the Key Constructs: Identity, Agency, and Self-Concept in CMC

That language learners construct identities and re-establish themselves as L2 communicators in the process of interaction had not been of much interest to applied linguists until the mid-1990s. *Identity* was before then understood as a collection of stable social categories, and it was not until the development of poststructuralist theories in applied linguistics that identity became a critical variable in understanding L2 language speaker development. Once informed by poststructuralist conceptions of language and language learners, identity began to be seen as fluid, emergent, conflicted, performed, and negotiated through and in interaction with others in situated contexts constrained by unequal power differentials (Block, 2007; Darvin & Norton, 2015; Norton, 2000). This approach to identity research allowed for a more holistic understanding of the language learner in complex social contexts of language use (Thorne et al., 2015). In CMC contexts, the poststructuralist perspective on language use has led to a drastic shift towards a view

that online identity is multifaceted and interwoven with learners' off-line positioning, and dynamically constructed in relation to other communicators and digital tools (Bolander & Locher, 2015). A poststructuralist identity is deployed through learner *subjectivities* and *subject positions*, understood as the conscious and unconscious thoughts and emotions of individuals about their place and role in a particular social context, and by the constant (re)positioning and (re)definition of who one is (Block, 2007). Identity is thus performed through linguistic resources and discursive actions which signal these positionings and is co-constructed in relation to other actors in a situated encounter (Bucholtz & Hall, 2005).

Identity performances in social contexts engage learner *agency*–the "power to control one's situation, be fully heard, be free from oppression, and have choices" (Oxford, 2003, p. 79). In other words, agency is realized as a capacity to make choices, create new ways of being, act against the social constraints and power hegemonies of native-non-native speaker differentials, and "stand up from the marginalized positions and liberate oneself from imposed identities" (Yashima, 2012, p. 5). These conceptions of identity and agency are closely tied to a learner's *self-concept* (Dörnyei, 2005)–a learner's self-descriptions of competence and evaluative feelings about oneself as a L2 learner and user. Self-concept can be understood as a learner's sense of self and how it mediates experiences of language learning and use, bringing together who they are, what they feel, what they think, and their strategies for action (Mercer, 2011, 2014).

With respect to digital communication contexts, a L2 learner's self-concept can regulate learner behavior and positioning strategies, particularly given the centrality of language in CMC, of "typing oneself into being" (Sundén, 2003, p. 3), despite increased multimodality and a continuous evolution of technological tools (Bolander, 2017). Technology enables L2 learners to employ a variety of means and affordances to mediate self-positioning and self-expression. These affordances are not limited to solely discursive practices, but also encompass the tools for various semiotic modalities, enabling multiple and often overlapping connections between distinct spheres of *virtual sociality*, understood as a social digital landscape in which new communication technologies are promoting human interaction and contact (Klimanova, 2020). In this respect, Kramsch (2009) introduces the notion of the *virtual self* as "a self that, sitting at his or her computer terminal, perceives, emotes, feels, remembers, projects, and fantasizes based on the verbal and non-verbal symbolic forms he or she apprehends on the screen" (p. 160). Thus, users experience themselves in a virtual reality that is conducive to dreams of escape, anonymity, and performative power. In doing so, language learners create experiences that tie real and imagined identities, self-proclaimed ideologies, and perceptible boundaries of language use in the formation of the new reality of the *digital L2 self*.

Early Developments of CMC Research in CALL (1995-2000)

To understand how digital communication has shaped the concepts of language learner and L2 identity, one has to recognize different conceptual lenses in SLA theory through which the effects of CMC have been examined in the past 25 years of CALL research. Twenty-five years ago, personal computers were stationary desktop terminals, and the Internet was only available to 1% of the world population, concentrated mostly in Western countries (Internet World Stats, 2021). Early synchronous CMC platforms were text based Usernet and Internet Relay Chat (IRC). Electronic mail was considered cutting-edge, promising to transform irrevocably the nature of written communication. Short message services (SMS) and social networks were in early stages of development and were not accessible to the public.

At the same time, early Internet studies emphasized greater anonymity and the capability for building and sustaining personal relationships as essential characteristics of CMC environments (e.g., Parks & Floyd, 1996). A great impact on the understanding of computer mediation on users' behavior was the seminal book *Life on the screen: Identity in the age of the Internet* by Sherry Turkle, a social psychologist and visionary who emphasized the dramatic effect virtual communities and digital communication would exert on human identity. Writing about virtual communities, Turkle noted that the Internet becomes a separate world "where people get lost and the real and the virtual becomes permeable, each having the

potential for enriching and expanding the other" (Turkle, 1995, p. 15). This expansion of computer mediation to social spheres of life led to the emergence of new forms of virtual social communication, including Internet forums, instant messaging tools, and social networking sites, heralding a new era of community building through CMC (e.g., Rheingold, 1993).

Electronic exchange of messages and the development of communication technology opened new opportunities for integrating computers in language instruction. Teaching practitioners experimented with two types of networks: national and international. BITNET and the Internet allowed users to share information via electronic mail, bulletin boards, and discussion lists; while local area networks (LANs) linked computers in an office, a department, or a computer laboratory (Chun, 1994). These earlier CMC activities in CALL involved learner interactions with a computer and technology-mediated intelligent tutors and conversation simulators, operated by networked computer technology (Holland et al., 1995), and later progressed to include real-time synchronous discussions and asynchronous email exchanges and electronic bulletin boards (e.g., Van Handle & Corl, 1998). The CMC medium was conceptualized primarily as a platform for practicing writing skills in semi-authentic computer-mediated communications, and online interaction was viewed as fully disembodied, artificial, and separated from offline lives of language learners (see discussion in Androutsopoulos, 2006).

Summarizing the key findings of synchronous CMC research in that period, Ortega (1997), identified three essential claims: "(a) CACD [computer-assisted classroom discussion] has an equalizing effect on participation; (b) it increases learner productivity in terms of the overall amount of language and/or ideas produced; and (c) the language produced in electronic synchronous discussion can be expected to be more complex and formal than in face-to-face discussion, without losing the interactive nature of oral language" (p. 81). The equalization phenomenon of CMC was tied to participants' social identity and their willingness to produce more language of greater stylistic and linguistic complexity due to reduced social-context cues in a computer-mediated interaction (Dubrovsky et al., 1991). In this regard, Ortega (1997), for the first time, singled out CMC language learning contexts and learner variables as new areas of CALL research inquiry. Later linked to learner identity and agency, these variables explained increased participation as a result of reduced fear of interrupting or being interrupted, absence of the need to manage the floor, and absence of the transfer of speakership in CMC interactions (e.g., Hartman et al., 1991). Pronunciation issues were listed as factors of less concern in CMC contexts, hence making CMC more conducive for anxiety-free language production (Ortega, 1997). As consequences of these CMC technologies' affordances, Ortega highlighted the greater degree of freedom and learner choice-making in computer-mediated contexts. Namely, "(a) interactants are less apprehensive about being evaluated by interlocutors, and thus more willing to participate at their leisure; and (b) they are less affected by wait time, turn-taking, and other elements of traditional interaction, enabling them to participate as much as they want, whenever they want, with opportunities for contribution being more equally distributed among participants" (Ortega, 1997, p. 82).

Two exemplary empirical studies of this period that addressed learner agency and identity markers were Chun (1994) and Warschauer (1996). Examining the impact of a LAN-mediated CACD on beginning German learners' writing skills and interactive competence (Kramsch, 1986), Chun (1994) found a greater variety of discourse and communicative functions in computer-mediated discussion data than in "normal classrooms", and more frequent engagement with the course instructor and other learners through questions and topic initiation moves (p. 17). The finding of greater interest for this historical overview concerns students' documented liberation from the psychological pressures of making a mistake, or "looking foolish" in face-to-face classroom settings. These features of the LAN-mediated CACD encouraged learner initiative to construct and expand on discussion topics, and take a more active role in discourse management (Chun, 1994). Chun concluded that CMC discussions, where the instructor's role was decentralized, provided a favorable opportunity for learners to switch roles with the instructor and initiate more learner-learner interactions, making CMC discussion more learner-centered. In this respect, Kelm (1996) noted that "technology allows language instructors to function in new roles: designer, coach, guide, mentor, facilitator. At the same time, the students are able to be more engaged in the learning

process as active learners, team builders, collaborators, and discoverers" (p. 27).

Warschauer (1996) compared ESL learners' participation in face-to-face versus computer-mediated small group discussions and its correlation to social factors, such as nationality, language ability, time in the Unites States, and student attitudes. The researcher found evidence for a tendency toward a more equal participation in electronic modes. However, this tendency was not the same for students of all backgrounds. For example, Chinese, Japanese, and Vietnamese students in his study increased their participation in electronic discussion, while his Filipino students, who tended to dominate face-to-face classroom discussions, participated, as a whole, less in computer-mediated conversations. The researcher explained this unexpected discrepancy by the national status of English language in the Philippines and a greater experience of the Filipino students with English oral conversation, compared to the other nationalities represented in the study. While this curious finding may not appear particularly significant in the context of contemporary research on digital identity (see Ortega, 1997, for a skeptical discussion of similar findings about "so-called poorer performing students"), Warschauer's research was one of the first CMC studies conducted in the 1990s to bring to the fore aspects of learner identity as possible factors that defined linguistic performance in computer-mediated communicative settings.

Guided by developments in SLA theory and the proficiency-oriented movement in foreign language teaching, early CMC researchers conceptualized language learners as passive agents with fixed social identity markers (e.g., nationality, gender, mother tongue, years in the target language environment) whose actions were manipulated by technological affordances of a CMC medium (e.g., Warschauer, 1997; for a general discussion see Androutsopoulos, 2006). Computer-mediated interaction was defined in two principle epistemological traditions: (a) the Input and Language Modification Model (VanPatten, 1996, 2004); and (b) the Social Interaction Model (Chapelle, 1997). The first model was rooted in the input-processing theory of language learning (Krashen, 1985; Swain, 1985; Swain & Lapkin, 1995), where the L2 is acquired through learners' interaction with other speakers of the L2 and through opportunities to comprehend messages. These were seen as necessary pre-conditions for learning forms and to produce and negotiate modified output required for the development of morpho-syntactic paradigms (Warschauer, 1997). CMC research grounded in this tradition could be defined by two questions: (1) In what kind of language does the learner engage during a CALL activity?, (2) How good is the language experience in CALL for L2 learning? (Chapelle, 1997, p. 24).

The second model drew from a social-interactionist view of learning, where interactivity was understood as a range of ways in which communication can be orchestrated (Van Lier, 1996), and emphasized the teacher and learner roles along a continuum from "authoritarian" to "authoritative" to "exploratory" (pp. 180–181). Communicative symmetry, understood through equal and distributed participation in CMC interactions in terms of turns and roles, and a combination of familiarity with subject matter and unpredictability, were coined as "contingent interaction" (pp. 175–178) for most effective language learning. Much of this early research on CMC viewed the Internet as a monolithic space that was more egalitarian, democratic, and liberating than face-to-face interactional spaces (e.g., Dubrovsky et al., 1991). The capacity of CMC platforms to liberate language learners and build virtual communities was also widely acknowledged as a potential breakthrough in educational practice (Rheingold, 1993). The agentive roles of learners in electronic learner-centered interactions were compared to teacher-dominated classroom practices, where teachers initiated and fully controlled turn-taking. This consideration brought about new developments in identity research in CALL where the social affordances of CMC for relationship building were studied to explain learners' identity work and self-positioning.

The Social and Intercultural Turns in CMC-Mediated Identity Research (2000-2010)

The next period in CALL-based identity research was characterized by an exponential growth in the number of CMC studies, particularly between 2004 and 2010 (see Lin's 2014 article for a meta-analysis of the CALL studies published during this period). The social interactionist model, along with the concurrent social turn in SLA research (Firth & Wagner, 1997) and a post-structuralist theorization of L2

identity (Norton, 2000) brought into focus individual learners and their unique sets of social and idiosyncratic variables as precursors of language development through CMC.

A seminal essay by Firth and Wagner (1997) identified a tendency with SLA studies to over-rely on the learning aspect "at the expense of other potentially relevant social identities" (p. 28), urging applied linguists to recognize that language learners' needs are social as well as cognitive. This new conceptualization of language learners, along with Van Lier's social interactional view on language development (Van Lier, 2004) and the growing popularity of socio-cultural theory in SLA studies (Lantolf, 2000; Lantolf & Thorne, 2006) outlined new trajectories for understanding computer-mediated interaction in CALL research. CMC studies began to explore the ways in which various CMC platforms lent themselves to the exploration of identity work by L2 learners (e.g., Nguyen & Kellogg, 2005; Warschauer et al., 2002).

As the popularity of social networking sites and virtual communities grew exponentially, CMC language learning environments gradually expanded to include learner-initiated informal online activities, such as those found in public forums (Hanna & de Nooy, 2003, 2009), social networks (Lam, 2004), fan fiction (Black, 2006), and massively multiplayer games (Thorne, 2008). These non-institutionalized and unstructured language learning CMC contexts, deemed by Thorne (2010) as "intercultural communication in the wild" (p. 144), offered new avenues for investigating learners' 'non-scripted' L2 use outside formal instructional settings, where learners' roles were mostly restricted to those of learners and students.

Two early notable studies of this period (Lam, 2000, 2004) examined language socialization and literacy practices of ESL learners engaged in informal writing in non-institutional digital spaces. Drawing from new developments in socio-cultural theory and the growing attention to community variables in language learning, Lam (2000) considered online literacy practices and CMC writing as a nexus of identity performances and a "reflective and generative process for constructing alternative social networks and subject positions through the textual media" (p. 476). Lam understood language socialization in CMC contexts as the process of gaining communicative competence, membership, and legitimacy in online communities. In her study, language played the mediating function in acquiring digital literacy skills and in shaping the social practices of these communities. A language user's identity, hence, became a central construct in practicing any form of literacy in CMC contexts and enacting a particular role and membership in a particular group.

At the theoretical level, Lam (2000) proposed to examine CMC writing as a unique type of literacy practice in the L2. She offers the term *textual identity,* or "the notion for understanding how texts are composed and used to represent and reposition identity in the networked computer media" (p. 258). This term explains the transformational nature of literacy experiences and its engineering power in articulation and self-positioning through written texts and other semiotic media on the Internet. Her research supports the claim that online CMC environments empower L2 learners by providing opportunities for socially balanced and egalitarian communication where they can potentially build a more positive L2 identity than the one they enact or that is imposed on them in off-line contexts (see also Freiermuth & Jarrell, 2006). By engaging with online CMC environments, L2 learners may even improve oral proficiency and gain greater confidence in using additional languages (e.g., Lin's 2014 meta-analysis).

Another important breakthrough in the research on CMC and identity in the early 2000s was associated with the exploration of social roles that L2 learners adopt in CMC environments. This shift of attention from the SLA theory-bound negotiation of form and meaning to negotiation of language learner and language speaker identities was particularly notable in the studies of public Internet forums. Hanna and de Nooy's (2003) research on four anglophone learners of French and their engagement with a forum on the web site of the French newspaper Le Monde brought into focus learner positioning strategies in non-educational computer-mediated social spaces. Two of their participants positioned themselves as L2 learners in the forum populated predominantly by French speakers and, being in this learner role, were discouraged from posting to the forum. The other two participants downplayed their language learner identities and foregrounded the role of active forum contributors and thus, quickly adjusted to the genre of

online discussion and were welcomed to the forum by its seasoned members.

The need to negotiate multiple identities as learners venturing outside their class boundaries to engage in vernacular, non-educationally designed CMC media platforms focalized the notions of *situated* and *transportable* identities (Thorne et al., 2015; Zimmerman, 1998; also *situational identity* in Okamura, 1981) to help explain the dynamic tension between the subject positions of language learner and language user in CMC contexts. Where transportable identities indexed stable and 'culturally claimable' categories of the language learner, such as nationality, gender, and age, situated identities were described as context-bound subject positions and expected behaviors. Within situated identities, the 'oriented-to-identities' or 'identities-as-contexts' provided proximal and distal contexts for social activities. 'Oriented-to-identities' offered a turn-by-turn orientation towards developing sequences of action, while the identities-as-contexts were oriented towards extra-situational agendas and concerns accomplished through deployment of transportable categories "claimable on the basis of physical and culturally based insignia which furnish the intersubjective basis for categorization" (Zimmerman, 1998, p. 91). Situated identities explained the positioning of language learners in relation to the genre and context of a concrete CMC setting. From this perspective, practicing the target language was not enough to frame online discussion tasks for L2 learners. Instead, language learners were expected to perform, for example, 'Frenchness' through participation and alignment with other participants in online cultural practices (Hanna & de Nooy, 2003). This new direction in CMC research reflected a theoretical movement toward conceptualizing language learners as multicompetent language users.

A fast-growing body of research on non-institutional settings during this period drew more attention to considerations of *genre* and the positioning of L2 learners in response to the CMC cultures in which they engaged (Thorne, 2003). Learning to practice the genre meant becoming familiar with it and using it for optimal language learning gains. In the forementioned Hanna and de Nooy study (2003), conforming to genre rules earned two French learners a legitimate status in the public forum: their CMC performance was moderated by others and their positioning as legitimate L2 users was independent from their language proficiency or learning goals–"with very little effort, students can be brought to a point at which they are forced to consider what they might have seen to be abstract notions of cultural and generic appropriateness" (p. 81). Hanna and de Nooy (2009) further argued that the genre of online public discussion offers students in language classes a medium where they can recreate themselves as speakers of another language where the role of a language learner, in which one is traditionally typecast by interlocutors as a deficient and hence, limited communicator, can transform into opportunities to stretch one's linguistic competences and adopt speaking positions "where being the pet foreigner would not work" (p. 119). Successful teaching of CMC interactions then entails, above all, an understanding of what successful participation means for a particular CMC space, a community of shared cultural practice (Hanna & de Nooy, 2003; Wenger, 1998). More importantly, cultural sensitivity to a CMC genre involved moving away from performing the restrictive identity of language learners, which anchored L2 identity to the notion of communicative deficiency and the rehearsed mode of self-presentation inculcated in language classes, and instead asserting oneself as a multifaceted, interesting communicator.

CMC genre considerations made language educators aware of the routinely accumulated practices of use associated with various types of CMC platforms, also known as *cultures-of-use* (Thorne, 2003, 2016). Coined by Thorne (2003) for CMC intercultural language learning, the term was applied to specific uses that accrue over time to a CMC platform from its everyday use in non-institutional contexts. These uses shape learners' expectations for a CMC activity and allow for "an interplay between students' non-academic identities and the discursively constructed institutional roles of the classroom" (p. 40).

The culture-of-use metaphor has expanded our understanding of the complex nature of CMC in language learning. Reporting on three case studies where French learners engaged in CMC interactions with French speaking peers, Thorne (2003) noted the significant role of CMC tools in building and mediating impersonal, interpersonal, and hyperpersonal relations, particularly the hyperpersonal ones which attain personal depth and intimacy between interactants in CMC mediated encounters. Cultures-of-use of CMC

platforms were found to influence self-positioning and facilitate or impede hyperpersonal relationship building. When the instructor's choice of Internet communication tools invoked divergent communicative expectations on the part of CMC interactants, reaching the depth of interpersonal interactions for developing self-image as L2 communicator was not possible. This was the case of Grace, a female French student in Thorne's (2003) study, who refused to participate in an email exchange with her male French project partner due to her conviction that email was not an appropriate communication tool for establishing an interpersonal relationship with an age peer. Perceived commonality and a shared communicative goal, as well as a high sense of self-awareness among non-proximal communicators, were determined to boost the development of hyperpersonal communication and result in desirable self-presentation in instructional CMC contexts.

While discussion of CMC virtual communities as online alternatives to face-to-face language immersion environments continued in CMC research into the late 2000s, new critical variables challenged earlier assumptions of the Internet as a monolithic borderless space that is egalitarian, democratic, liberating, and capable of removing cultural difference (Dubrovsky et al., 1991). A new wave of research began to show the restrictive nature of CMC communication (e.g., Miller & Slater, 2000). Reduction in anxiety associated with CMC platforms in comparison to face-to-face communication contexts and greater opportunities for language production were still cited as important affordances for language learning. At the same time, constraining factors, such as the dominance of English and English speaker privileges, were shown to foster feelings of foreignness, a place where one can be surrounded by the language and, at the same time, a place where one is always an L2 student (Pasfield-Neofitou, 2011). A sense of being in or trespassing someone else's digital space was found to impact a language learner's desire to attempt communication in the L2. By deploying identities of Japanese language learners, participants in Pasfield-Neofitou's (2011) study, for example, were able to mitigate a potential loss of face (Goffman, 1959) due to limited linguistic competence in the social-networking spaces where construing oneself as a native English speaker made them more attractive CMC communicators. These considerations led to new developments in CMC-mediated digital identity research in CALL, where online power hegemonies, linguistic multicompetence, code-switching, and the agent-tool relations were moving to the forefront.

The Critical and Multilingual Turn in CMC-Mediated Identity Research (2010-2020)

The past decade has seen an upsurge of identity research in applied linguistics, with an unprecedented number of publications, special journal issues, and volumes documenting cutting-edge research and scholarship (e.g., Darvin, 2016; Darvin & Norton, 2019; Helm, 2018; *CALL Journal Special Issue*, 2017; *The Modern Language Journal Special Issue*, 2017). In CALL research, the increased focus on learner identity has been fueled by the rapid repurposing of social media and mobile devices for an instant, multimodal, and increasingly mobile access to private, public, and professional digital networks. As digital spaces and practices have become more diversified and embedded in everyday life, the focus of identity research has expanded to include a wider array of communicative data sources. Empirical strands in CMC-mediated identity research have begun to examine more informal, non-educational contexts and propose new epistemological and analytical frameworks.

Studies of CMC-mediated identity research have become more clearly delineated by digital context–institutional/educational, instructor-orchestrated CMC environments, and non-institutionally orientated CMC contexts (Thorne et al., 2015)–positioning language learners more frequently across the interstitial spaces that connect classroom activities and lived experiences in 'public networks' (boyd, 2014) and in the 'digital wilds' (Sauro & Zourou, 2019; Thorne, 2003). This rapid expansion and diversification of digital social contexts has contributed to the development of informal learning paradigms in CALL-based CMC research (see a meta-analysis by Reinhardt, 2019).

On an epistemological level, the monolithic notion of L2 identity has been gradually supplemented by a more nuanced repertoire of concepts and constructs that allowed researchers to capture performative and fleeting acts of L2 identity. Many of these constructs have been drawn from applied linguistics,

communication studies, and language socialization theories and appropriated for digital educational and non-educational contexts, reflecting the increasingly critical and multilingual nature of identity performances. Subject positions of L2 learners in CMC contexts have been linked to their internal sense of self and its discursive, psychological, social, and cultural representations accomplished via the use of symbolic systems. That is, "... a view of the subject as decentered, historically and socially contingent–a subject that defines itself as is defined in interaction with to other contingent subjects" (Kramsch, 2009, p. 20).

In the era of ubiquitous *social virtualities*, understood as the merging of real-world social relations and networks into virtual worlds, identity research in CALL has started to examine the emergence of fundamentally new types of subject positions–*virtual subjectivities*–reflecting a post-structural understanding of the self "expressed as fluid abstraction, reified through the individual association with a reality that may be equally flexible" (Papacharissi, 2012, p. 210). Identity performances in CMC are no longer viewed as a linear progression from language learners to language users where, as the interaction unfolds, the new identity replaces the old, but rather understood as complex systems where interactants' positions are dialogically related to platform-appropriate discursive repertoires.

Challenging the previous "dichotomous labeling and the linear framing that reify static roles and essentializing identities" (p. 85), Wu (2018) argued that language learners' positioning systems as representations of their fluid online identities are multiple, emergent, and contested. Drawing from Dynamic Systems Theory, Wu observed the discursive practices of English learners in an asynchronous intercultural CMC task and found that her participants' discursive positions were performed, not pre-determined. They engaged in negotiating, circumventing, re-affirming, and contesting new positions assigned to them, and (re)positioned themselves and their interactants "to evolve the positioning systems" (p. 86), gradually consolidating their positions into *interactional personae*–the coherent and enduring online identities which are formed over multiple interactions as a result of locally situated stance-taking (Kirkham, 2011). Discursive practices of language learners constitute both the causes and constituents of positioning systems, "because discursive practices have the causal power to effect the change of a positioning system state but are simultaneously susceptible to the system state" (Wu, 2018, p. 87).

Similar to L2 positioning, the notions of agency and self-concept have undergone a new cycle of reconceptualization and appropriation for digital contexts and fast-evolving virtual socialities. Studies by Kohn and Hoffstaedter (2017) and Vandergriff (2015) expanded on the notion of learner agency and the emancipatory qualities of non-native speaker identity in telecollaborative chats and CMC forum interactions respectively, acknowledging learners' constructivist involvement in the learning process as agents with the ability to act, accept and reject solutions, and make choices. In her book, *Second-Language Discourse in The Digital World*, Vandergriff (2016) continues to examine computer-mediated discourse in a variety of digital social spaces with the focus on agency deployment as a driving force in language learning processes, strategic self-presentation, and negotiation of discursive spaces.

In a similar vein, Zarrinabadi and Khodarahmi's (2020) study investigated the evolution of a learner's digital self-concept as a determining factor for increasing motivation and achievement by examining how interactions via social networks impact English (L2) learners' perception of themselves as English speakers. Operationalizing self-concept as an individual's psychological makeup grounded in a system of beliefs about oneself and self-perception of competence, the researchers identified how facets of EFL learners' self-concept underwent evolution after participating in interactions in instructive CMC contexts, contributing to their positive beliefs about language learning.

Along with the changes in the epistemological scope, the research on L2 learner identity have become more diversified in terms of conceptual and analytical frameworks, homing in on critical, multimodal, and multilingual facets of digital experience. A new wave of CALL research has turned its focus to interactional dynamics and conversation turns, observing learners' discursive moves in various types of CMC interactions and platforms. This direction has given rise to new methodological and empirical methods of analysis, including CMC conversation analysis (González-Lloret, 2013), critical discourse

analysis (Klimanova & Dembovskaya, 2013), multimodal analysis (Helm & Dooly, 2017), identity as performance (Mendelson, 2020), computer-mediated discourse analysis (CMDA) (Herring, 2004), participatory cultures (Androutsopoulos, 2013), and digital ethnography (Vazquez-Calvo et al., 2020).

Klimanova (2020), for example, has proposed to examine virtual identity building strategies holistically through a critical post-structuralist lens, focusing on language learners' positioning in connection to their past and present experiences with technology and language use. Drawing from personal construct theory (Kelly, 1955; Salmon, 2003) and interpretative phenomenology (Smith et al., 2009), Klimanova theorizes *critical virtual experience* to explain the ways three Russian L2 learners constructed and performed identities in online contexts as a result of earlier acquired ideologies of native-speakership and technology use. Their positioning in CMC interactions was found to be conditioned by how each learner "lived" through the virtual experience of self-identification in digital spaces, and how experience is constructed and perceived by the "experiencer".

A great impact on identity research in CALL in the recent decade has also been drawn from ethnographic studies of multimodal and multilingual/translingual practices in transnational digital contexts (Blackledge & Creese, 2016; Blommaert, 2010). As content in online communication has begun to include increasingly non-linguistic forms of representation to make meaning, it has become more problematic to disentangle textual identity discourse from 'the multimodal ensembles" in which it is embedded (Domingo, 2016). The multimodal medium itself has been found to empower L2 users and, at the same time, limit online communication and composing to fit a variety of newly emerging digital formats and network-mediated multiliteracies, thus promoting online identity deployment through *hybrid textual practices* (Chen, 2013). Such designs of multimodal texts have been described as "templates of identity" and "cultures of bricolage," digital spaces for performances of identity by means of intricate combinations of texts, images, videos, and animation referencing popular culture and global digital cultures (Williams, 2009). Learners' multilingual repertoires play a major role in the creative process of digital identity bricolage, often reflecting the face-to-face local reality in which they are situated (e.g., Chen, 2013; Vazquez-Calvo et al., 2020).

Schreiber (2015), for example, describes semiotic self-expression and multilingual practices of Alexandar, a Serbian student of English and a hip-hop artist. Alexandar mixed multiple varieties of English and Serbian and embedded links to music videos in his idiosyncratic code-mixed text to project his unique online identity and establish himself as a 'distinctly Serbian member of the global hip-hop community" (p. 69) on Facebook. Examining Alexandar's blending multiple linguistic and non-linguistic codes through the prism of translingual perspectives allowed Schreiber to see his multilingual and multimodal practices as a single, highly integrated semiotic system (Canagarajah, 2013; Creese & Blackledge, 2010). Displaying high levels of linguistic creativity and drawing from an assortment of semiotic resources and digital texts, Alexandar engaged in multilingual literacy practices shaped by an orientation to networked audiences, "digital writtenness", and access to global mediascapes (Androutsopoulos, 2013).

In institutional settings, Jacob et al. (2020) examined how marginalized elementary school students in a computer science education program leveraged their multilingual identities while engaging in computational thinking practices. They found that the use of media-rich environments, where students had access to multimodal and multilingual home- and school-based resources, facilitated positive self-image and allowed the children unrestricted possibilities for self-expression, transforming their identities into academically and technologically competent creators. In this way, educational technologies broadened the way in which marginalized students were able to identify with the science curriculum and "leverage knowledge and linguistic practices learned outside school to facilitate formal learning" (Jacob et al., 2020, p. 312).

Finally, current research on L2 identity in digital settings has begun to scrutinize the evolving relationship between communicators and communication tools, exploring how language learners endorse various cultures-of-use (Thorne, 2003, 2016) and how emerging social virtualities and digital tools (re)shape

identity performances in digitality-mediated social contexts. In this regard, Thorne et al. (2015) noted that digital mediation ramifies the language learner capacity for creative identity performances within and outside educational contexts. With a wider array of possibilities for engaged multimodal and multilingual self-representation in digital contexts, technology may destabilize situated identities, urging language learners to participate in dynamic semiotic practices where the ability to be adept and resourceful across various modalities of online communication can determine learners self-positioning as competent and capable communicators.

Recent studies, therefore, have conceptualized language learners more holistically, giving prominence to individual, social, and participatory roles they perform in and outside of language learning contexts. Drawing on the developments in SLA research, the CALL field has significantly expanded the scope of identity studies to examine digital contexts and interstitial spaces where bi/multilingual users create, sustain, and adapt their linguistic identities while engaging with diverse digital communities in increasingly multilingual and hyperlingual activities. In these spaces, an increased presence and visibility of "big" and "small" languages provide greater levels of multilingual provision and linguistic differentiation (Kelly-Holmes, 2019). More importantly, CALL studies are beginning to emphasize linguistic multicompetence and the diverse linguistic repertoires of multilingual individuals as a *symbolic capital* (Bourdieu, 1987) and a critical resource for communication and identity performance in various contexts of *heteroglossia*, where L2 language use is socially, politically, and historically entangled with the voices of others, indexing coexisting and competing ideological points of view (Bakhtin, 1981; Blackledge & Creese, 2014).

Summary and New Directions

Over the past 25 years, much valuable CALL research has been produced on the nature of positioning and identity construction through language and through multimodal resources in instructional and social CMC. Since the late 1990s, the concepts of language learner and L2 learner identity in CMC environments have rapidly evolved to include attitudinal, social, and critical variables, resulting in new theoretical approaches to understanding linguistic identity performances in digital settings. This relationship between digital communicative activity, language learners, and identity enactment has been a fruitful area of empirical investigation, which will remain "continuously fresh as the assemblage of human generated tools, cultures, and semiotic practices continue to evolve" (Thorne et al., 2015, p. 229).

As one possible new avenue for future empirical inquiry, the progressive rise of digital media and telephony via mobile smartphones and tablets warrants more research on positioning and identity performances through the use of mobile applications and gadgets. As the most individualized digital mediation device in today's techno-landscape (Yao & Ling, 2020), the smartphone offers its users a wide variety of linguistic and semiotic affordances for self-expression, and its social impact on language learning extends far beyond digital mediation. The evolution of mobile communication from portable telephones into a complex cultural system of dynamic mobile media has reshaped and repurposed sociality (connecting and disconnecting from personal relations), and spatiality (connecting and disconnecting from spaces) (Campbelle, 2020). In the context of language learning, smartphones have become indispensable technological extensions of learners' linguistic repertoires (Godwin-Jones, 2017). Exploring their effect on language learners as L2 communicators "on the move" offers an animated area of research in CMC-based identity research.

Another pertinent direction for future research is to continue to examine how language learners leverage their multilingual identities and position themselves through language and semiotic resources in non-institutional digital spaces, including already established and newly emerging digital gaming environments, social networks, fan-fiction platforms, and many others (e.g., Klimanova, in press). Even more importantly for CALL, we need more scholarship that examines how language learners bridge their in-class activities with non-educational uses of the target language and other vernaculars in digital spaces. In this regard, translanguaging practices in CMC contexts and the effects of increased multimodality on

digital communication constitute intriguing avenues for investigating the complexity of multilingual identity performances online.

At the same time, as plurilingual approaches become more prominent in language education, challenging the established notion of language competence as a discrete entity (Preece & Marshall, 2020), CALL research in instructional contexts remains predominantly in the monolingual paradigm. Shifting the emphasis from language to *languaging* and monolingual to *plurilingual competences* may open new possibilities for researching identity negotiation in educational online settings, where the status of translingual markers can be dynamically negotiated by interactants and where students' agentive use of their linguistic repertoire supports an inclusive learning environment and creates a space for a holistic identity performance (e.g., Wu, 2018).

Future studies should also explore digital social contexts where English is not the dominant language of communication, involving more multilingual age groups from diverse cultural and linguistic backgrounds, for example, elementary school students, adolescents, and seniors. The Jacob et al. (2020) study described above addresses an important issue of access to privileged academic disciplines for young ESL pupils from marginalized communities, showing how multilingual and multimodal communicative activities in a computer science class may help promote culturally responsible computing education.

Finally, what has not yet been studied extensively is the impact of various multilingual configurations of non-educational social CMC platforms (e.g., TikTok, Instagram) on language learner positioning and identity construction. The provision of multiple supercentral (e.g., English) and some peripheral languages, and the evolution of linguistic gateways in social public websites has increased the visibility of multilingual communicative practices online. Many digital platforms and digital tools offer a huge number of language interfaces to choose from for immediate communication purposes, creating highly 'hyperlingual' digital environments, "where more and more languages are achieving their own bounded spaces and places of use" (Kelly-Holmes, 2019, p. 31). Increased multi-orthographism (i.e., the simultaneous display of multiple alphabets) entices users to be more creative with linguistic choices they make in digital spaces, enabling more user-generated multilingual content and bringing together linguistic communities that are dispersed over time and space (e.g., Vazquez-Calvo et al., 2020).

On the one hand, this diversification of linguistic content leads to tailoring and personalizing online language provision ("idiolingualism"), but also may leave behind some peripheral languages and local vernaculars, for which user options are not available, restricting users to select only from the options provided. These online platform features increasingly draw linguistic boundaries across borderless digital social spaces. Along the same line, previous reliance on dictionaries has been partially replaced by automated real-time oral translators (e.g., Microsoft speech-to-speech and speech-to-text multilingual translators). Predictive text and autocorrect tools in text messaging applications produce 'forced' modifications in users' digital discourse. These technological utilities may liberate as well as restrict language learners in their selection of subject positions and identity building strategies. In these symbiotic online environments, users "cycle through personae, cutting across "real life" distinctions of gender, race, class, and culture", writing into existence online personae that "function as evocative objects: the virtual can be used to reflect constructively on the real" (Turkle, 2005, p. 288). In this regard, the CALL and SLA fields need to develop new conceptual and epistemological frameworks to explain this growing symbiosis of humans, languages, and digital devices.

Acknowledgements

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