An eco-dialogical study of second language learners’ World of Warcraft (WoW) gameplay

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ABSTRACT

This exploratory research proceeds from the perspective that language is ecological and dialogical. We examined variables derived from eco-dialogical coding of an episode of World of Warcraft play involving three English learners. According to the Eco-dialogical model (Zheng, 2012), second language (L2) learners need to learn to take skilled linguistic action (Cowley, 2013), a process of realizing the values of physical, sociocultural and dialogical affordances in the environment. We employed Multinomial Logistic Regression to determine which of our variables were predictors for three types of values realizing; namely, wayfinding orienting to sociocultural norms and synergized values realizing of both wayfinding and orientation to sociocultural norms. The model we developed suggested that when communicative projects collectively entailed players’ a) verbalizing with synchronized avatar action, b) attending to game rules and c) coordinating in anticipation of good future prospects, players were more likely to realize both values realizing types synergistically. In other words, players’ skilled linguistic action of prospective coordination, combined with multimodal languaging and constrained by WoW game rules, together, were more likely to lead to dual values realizing. This finding suggests that dual values realizing evokes connections between real-time first-order physical movements and multimodal languaging with situation transcending practices (Linell, 2009) which are second-order rules, and other sociocultural and linguistic norms. Coupling this finding with our Eco-dialogical unit of analysis, communicative projects, we suggest that these language learners developed co-agency. We conclude that our model should be tested in future studies that seek to illuminate the contribution of a new Eco-dialogical understanding of L2 learning and the potential for learners to have high quality languaging experiences in multiplayer 3D game environments and other social semiotically rich contexts.

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1. Introduction

Millions of us now inhabit avatar-based 3D virtual worlds, playing, working and spending time with others in awe-inspiring expansive graphical environments that are rich with opportunities for enacting our values and shaping our identities. Like many researchers, we seek to better understand what these alluring, entertaining and diverse virtual worlds afford for learning and how these affordances can be designed for within other learning environments. A game such as World of Warcraft (WoW) gameplay offers rich opportunities to understand what language learners make of available affordances.
Warcraft (WoW), currently the most popular massively multiplayer online role-playing game (MMORPG), provides an environment that is inherently different from a non-virtual environment. Players can instantaneously transport to a multitude of socially and materially laden situations that support impromptu, emergent interactions with non-linear trajectories. Game interface features allow for multimodal communication (voice, text, use of common gestures) and player-customized avatars are imbued with a sociocultural identity and character-specific talents and skills. Games provide affordances for self-regulated learning, for player autonomy and agency to repeat attempts and review and reflect on outcomes as goals are pursued, achieved (or not), and new goals emerge. Furthermore, widely played multiplayer games provide easy access to social interaction with a built-in purpose, which is typically to cooperate with others, known or unknown, to complete quests, conquer foes and reap shared rewards.

However, we have found a tendency for researchers of second language (L2) learning in virtual worlds, following a mainstream second language acquisition tradition, to treat the material and linguistic resources of the environment as input and language learning as brain-bounded processing (Zheng and Newgarden, 2012). Consequently, their findings are in relation to features of individual learner’s output. This reductionist approach has failed to yield results that are generalizable to understanding L2 learning in classrooms and other open-ended social situations (see Robinson, 2011). When the problem of L2 learning is investigated by examination of discrete linguistic outputs (e.g., accuracy, fluency or pragmatics), the relationship between the agentic learner and their learning and living environment is neglected. This has led to the call for “more widespread pedagogically contextualized research” (Bygate et al., 2009, p. 497). Studies that have taken ecological and dialogical perspectives have avoided the dilemma of generalizability in that they were mainly conducted in the wild and measurements were based on organism-environment (i.e., L2 learner-game environment) couplings (e.g., Zheng et al., 2009; Zheng, et al., 2012; Piirainen-Marsh and Tainio, 2009). In van Lier’s (2004) words, ecology “involves the study of context”, as well as “the study of movement, process, and action” (p. 11). The aforementioned studies on virtual worlds did not intend to pinpoint “immediate, short-term, tangible effects of instruction” (p. 11) but looked at learning opportunities, how they arise, and how learning occurs.

We have also found that most L2 research in immersive multiplayer games (and virtual environments, see Zheng and Newgarden, 2012) has mainly relied on players’ gaming discourse to explain semiosis, neglecting the contribution of players’ avatar-embodied actions. However, from an ecological perspective, “movement, process, and action”, things that people do (van Lier, p. 11), are inextricably integrated with language, i.e., they are part of languaging (Zheng and Newgarden, 2012; Zheng et al., 2012). By ignoring the avatar-embodied actions that are an inherent part of “living” and thriving in virtual spaces, researchers will be limited to merely finding further support for the dominant belief and practices that take language as the only linguistic mode instead of part of a multimodal ensemble of modes (e.g., Jewitt, 2009/2013; Kress and Van Leeuwen, 2001). Treating verbal language as the only linguistic mode has led to pedagogies that fail to induce language learners to reflect on their actions in communicative situations which can lead to insights about how “various learning elements are related” (van Lier, 2004, p. 10).

The neglect of the modalities of movement and action in L2 research and pedagogy is paralleled by a lack of attention to the quality of language learning experiences. While quantity in language learning mainly concerns sufficient time and opportunities to cover content that is often specified by educational standards, quality entails the combination of learner intellect and affect (van Lier, 2004). Quality learning experiences are relevant to life. As Montessori and Vygotsky recognized about a century ago, an understanding of learning requires taking an ecocentric rather than egocentric view. Without a coherent attempt to understand how learners make sense with each other by utilizing sociocultural artifacts embedded in the environment, making movements, such as gestures, gaze, postures, or changes in location, even pedagogically contextualized research will fail to confront the challenge of understanding language learning holistically.

In terms of games studies focused on L2 learning, our theoretical grounding in ecological psychology and dialogicality is, from what we have found, unique. It has led us to adopt analytical methods that are fundamentally different from other L2 researchers. These methods allow us to ask questions that the existing literature has not been able to address. For example, where other game researchers have used conversation or discourse analysis of players’ text chat during gameplay (Peterson, 2012; Rama et al., 2012; Rankin et al., 2009), we employed multimodal analysis, which involves transcribing and analyzing players’ speech, text chat and avatar actions as captured in video-recorded gameplay. This lets us treat language as an activity that people do together in real time that is very different from the activity of writing in the form of text chat. Rather than focusing on turns of talk (e.g., Rama et al., 2012), we parsed players’ language and actions into jointly achieved communicative projects (Linell, 2009), illustrating how conversations and actions are dialogically accomplished, how they are nested in other larger projects and how they have connections to other timescales of speakers lives.

This research therefore, is an ecological and dialogical investigation, which allows us to connect a language learning problem, such as accuracy, fluency, or pragmatics back to a whole person and her/his sociocultural environment. Accuracy, fluency and pragmatic competency in terms of linguistic capabilities are assumed if players can demonstrate skilled linguistic action. Skilled linguistic action, based on Stephen Cowley’s theorization, is the general concept we investigated in this study. It means, “Managing activity under material and cultural constraints. As they (L2 learners) do so, they link linguistic patterns (including ones shown in grammars and dictionaries) with affect, artifacts and social skills” (Cowley, 2012, p.13). According to the Eco-dialogical model (Zheng, 2012), second language (L2) learners need to learn to take skilled linguistic action (Cowley, 2013), in order to realize the values of physical, sociocultural and dialogical affordances in the environment. As we embrace skilled linguistic action, we identify with researchers who have considered learning in the wilds of multiplayer games (Gee, 2007; Zheng et al., 2009; Piirainen-Marsh and Tainio, 2009; Squire, 2008; Steinkuehler and Duncan, 2009; Steinkuehler and
Williams, 2009; Thorne, 2008; Thorne et al., 2009; Barab et al., 2010), seeking to understand how players accomplish multimodal assembly of L2 resources by learning and enacting the social practices of a community through participating in it.

However, a person's development is more than just gaining skills and taking actions, people ultimately seek and realize values by taking actions. Adopting ecological and dialogical perspectives and extending on our previous study (Zheng et al., 2012), we examined English learners' languaging (Maturana, 1988), both their verbalizations and avatar-embodied actions, during gameplay of World of Warcraft (WoW). We sought to explain how players (embodied in their avatars) coordinate among themselves while making use of the materially and culturally rich resources of the WoW environment, and how this particular type of coordination contributes to values realizing in the L2.

2. Current literature on L2 learning in game environments

To provide further contrast, we next discuss several recent studies of L2 learning and games comparing their various theoretical and analytical methods. We begin with our previous study, Zheng et al., 2012, which was based on a qualitative analysis of the same gameplay data with findings that directly informed the questions of this research.

In Zheng et al., we introduced several constructs that are central to the Eco-dialogical model of L2 learning which conceptually and theoretically underpins this study. We reported that WoW players’ coactions (coordinated purposeful interactions toward common goals), entailed an impressive range of communicative activities (prototypical types of conversations) situated in common types of game interactions. We illustrated how communicative projects reflected player’s actions toward obtaining certain material, social and psychological “goods” and how this values realizing fluctuated from individualistic to collective, both within and across projects as gameplay unfolded. We suggested that WoW’s affordances for coaction, languaging, and diverse values realizing in a variety of communicative activities make it a fertile environment for development of skilled linguistic action, a re-definition of L2 learning as dynamic appropriation or language resources through situated practices (Dufva, 2013) rather than linear input–output processing.

As noted in Zheng et al., there are few other studies that have taken a situated, ecological and/or dialogical view of L2 learning in and through games and their cultures. We cited several studies that resonated with our theoretical beliefs about L2 learning and provoked our present study. With the exception of Piirainen-Marsh and Tainio (2009); however, other researchers, for example, Thorne (2008); Zheng et al. (2009); Thorne et al. (2009) have analyzed spoken or written discourse only, without attending to the modality of embodied actions involved in semiosis or languaging. In regard to theoretical orientation, Zheng’s (2006) dissertation was the first known research project to explore the affordances of virtual learning environments for L2 learning. Six years later, in the same special issue of the European Journal of Computer Assisted Language Learning (ReCALL) in which Zheng et al.’s study appeared; there were five other studies of L2 learning and multiplayer games, but only one other (Rama et al., 2012) directly explored game affordances.

Rama et al.’s (2012) study investigated data from play of WoW on the Spanish game server by two adult L2 learners of Spanish over seven weeks with different levels of language proficiency and WoW experience. The researchers were interested in affordances for both language development and socialization and “how the design of the game, cultural norms for its use, and participants’ own abilities interact to afford distinct opportunities for language learning for these two students” (Rama et al., 2012, p. 322). Grounded in sociocultural theory, they adopted the concept of affordance from van Lier’s (2004) ecological view as their unit of analysis. The qualitative analysis proceeded from inductive coding of language patterns in chat log utterances (i.e., types, length, role of speaker in) to identification of themes in participant journal entries and interviews. Field notes of gameplay were captured by one of the authors who served as an observer/participant.

The affordances reported were that WoW supports and creates a safe environment for learning, communicative competence is emphasized in play, and collaborative action between experts and novices is promoted. The authors described how features of the game were involved, for example, the use of a guild and private chat channel to facilitate supportive communication, and group play options that not only provide language practice, but contextualized practice connected with cultural norms (Rama et al., 2012). The findings are positive and in line with points made by Zheng et al. about how guild play promoted caring among L2 learners and access to expert players and how game quests facilitate coaction, which involves coordinated, creative accomplishment of joint projects.

Zheng et al. also noted affordances for sociocultural language norms and conventions embedded in game artifacts and texts. Rama et al.’s study exemplifies research that has moved well beyond the information-processing framework. However, we suggest that the mainstream term “communicative competence” does not sufficiently express the dynamic, embodied activity that takes place as a speaker/listener makes effective use of linguistic signs while orienting to the other party or parties and the socioculturally established practices. This is what we refer to as languaging, and to be good at it is not merely to possess a competence, but to be able to take linguistic actions that are other-oriented and forward directed. Furthermore, analysis of skilled linguistic action requires detailed contextualized description of both language and action in the gameplay environment and ideally, connections made to multiple timescales of L2 learners’ lives. Multimodal analysis (Baldry and Thibault, 2006) is therefore the method we have adopted.

Peterson (2012) also took a sociocultural approach, carrying out a study of four adult English as a Foreign Language (EFL) learners who played the MMORPG Wonderland (four 70 min sessions over the period of one month). His research goals were to 1) describe the features of linguistic and social interaction and 2) to explore learner attitudes about MMORPG gameplay and learning English. Both language and the game were considered as mediating tools that facilitate the type of interactions that transform “lower level mental functions such as attention and memory” to “higher level functions such as planning and
problem solving” (Peterson, 2012, p.365). Learners’ co-construction of L2 forms was theoretically facilitated by interactions operating in Zones of Proximal Development (ZPD), i.e. where more capable peers assist less capable peers, and was claimed to lead to learner intersubjectivity and self-regulation. Pre- and post-course questionnaires and participant interviews were used to triangulate Peterson’s discourse analysis of twelve excerpts from gameplay text chat.

Peterson did not find evidence of interactions operating in the ZPD, but attributed this to the short duration of the study. In this study, coaction as an alternative to the ZPD that puts less emphasis on the novice/expert status of learners and more emphasis on alignment of goals and coordination achieved through both language and action. Peterson’s (2012) analysis of gameplay is limited to text chat, which does not permit consideration of how the immersive game environment and avatar mobility afforded perceiving and action toward individual learner’s values, in other words, how learner agency is involved and how it also impacts interactions, particularly in unguided gameplay sessions such as those he studied.

Thorne et al. (2012) looked at the “linguistic ecology” of WoW texts that are encountered by L2 players in game quests and in regularly accessed external game help sites (wowhead.com, wowwiki.com, and elitistsjerk.com) to “assess the readability, lexical sophistication, lexical diversity, and syntactic complexity of the texts using four indices that have been shown in previous research to be useful measures of linguistic complexity” (Thorne et al., 2012, p.287). They reported that counter to negative stereotypes about what is cognitively required to play MMORPGs, WoW texts present a “substantial volume of highly complex linguistic input” (p. 291) that provides intellectual challenge as L2 learners “engage with the semiotic system and signifying practices they wish to learn” (p. 298). They acknowledge that to understand how this happens in real-time will require “a more complex, non-causal and nuanced approach” (p. 298) and to provide a more complete picture, consideration of player-to-player communication. In their conclusion, they invoke a view of WoW texts as affordances for semiosis that are linked in WoW play with situated practices to become “massively influential developmental forces” (p. 297). The contribution of this study is the evidence of WoW’s rich semiotic budget (van Lier, 2004), which should provide new fuel for ecological studies that seek to demonstrate how this “richness” is about more than just potential “input”.

In the remaining two ReCALL special edition articles, the researchers did not analyze player language directly. Cornillie et al. (2012) investigated L2 learners’ perceptions of corrective feedback (explicit and implicit) during play of a multiplayer game designed for L2 learning of pragmatics. They found explicit corrective feedback to be useful and neither type to detract from the enjoyment of gameplay. And finally, Sylvén and Sundqvist (2012) investigated L2 proficiency in relation to extramural gameplay in English by Swedish youth ages 11–12. Corroborating previous findings, they found a correlation between more frequent extramural gaming and higher English proficiency as measured by tests of reading, listening comprehension and vocabulary.

In the current study, the relationships between three recently adopted theoretical concepts languaging (Cowley, 2012; Zheng and Newgarden, 2012), skilled linguistic action (Cowley, 2012; Zheng et al., 2012; Zheng, 2012), and values realizing (Hodges, 2007a, b, 2009) were tested to explore their associations with each other using Multinomial Logistic Regression. We first conducted a qualitative Eco-dialogical analysis of video and voice recordings of three L2 learners engaged in play of WoW. Specifically, we asked which of the WoW gameplay actions players engaged in contributed to changes in the Eco-dialogical system (composed of L2 learners playing WoW) in ways that enabled players’ languaging, skilled linguistic actions and values realizing.

3. Theoretical grounding and key constructs

In this section, we briefly introduce the origin of our theoretical grounding in ecological psychology and dialogical perspectives. Then in Section 3.1 we discuss the concept of languaging in depth; including its origin and its overarching role in shaping the constructs under investigation. In Section 3.2 we explain the Eco-dialogical model and its role in our hypotheses formulation and analysis: giving attention to the operationalization of each construct explored in this study.

Rather than an internal computational process of an individual mind, a dynamic, action-oriented view of cognition and language is an ecological, dialogical and distributed process of a unified organism–environment system (Järvelä, 2009). Briefly, ecological psychology is a theory of cognition in which the agent/environment interaction is what matters. An agent perceives and acts on affordances (Gibson, 1986) that are detected in the environment. An affordance in language is expressed as a relationship between an agent and a speech act or event. Linguistic acts and events exist as action potentials (Hodges (2007a) calls them dialogical arrays) available to agents conversing in a given environment in a given situation. When picked up, affordances serve the agent by enabling further action and interaction. In this study, we specifically draw on the ecological psychology theory of conversing as values realizing (Hodges, 2007a, b; 2009; Hodges and Baron, 1992), to explain how language emerges in acts of coordination as players act and interact to realize the various personal, social, and moral values that changing situations afford in gameplay. These are values that matter not only in WoW play, but in other timescales of L2 players’ lives as well (e.g., learning the rules, playing by the rules, doing one’s part in a team effort). The changing situations are framed by game interface features that vary dynamically depending on locations and objectives of gameplay. These include, for example, graphics of the WoW environment, game rules, material artifacts and avatar roles.

Dialogicality is a view of cognition, mind and world (Linell, 2009) that stresses our biologically determined other-oriented brain and alterity. To say language is dialogical is to say it does not exist unless it is shared. Speaking any language requires us to orient simultaneously to a dialogical partner, to material artifacts we may reference and to unseen sociocultural norms and conventions we may follow. Tethering to the Eco-dialogical model (Zheng, 2012), which captures the dynamics of values realizing with the affordances of both material artifacts and invisible social norms and conventions, we can account for the situated, multimodal, embodied, agentic, values-realizing activity that emerges for L2 learners in the actions and coactions of gameplay.
3.1. Distributed language: languaging

Distributed Language theorists (Cowley, 2011; Hodges, 2009; Kravchenko, 2009; Love, 2004; Steffensen, 2013; Thibault, 2011 and others), have provided us with the most satisfying explanations of what language is, what it is for and how it is dynamically shaped by us as we enact our lives with it. The most direct application of Distributed Language theories to L2 learning appeared in Zheng and Newgarden’s (2012) work, where they critically evaluated the current use of virtual environments by language educators, reconceptualized language learning extended by such environments in distributed terms, and shared this view with other L2 researchers and practitioners. Reconceptualizing output as languaging was potentially the most impactful rethinking provoked (Zheng and Newgarden, 2012). In the second language and bilingual literature, the concept, languaging, can be traced to Swain (2006) and Garcia (2009). In the distributed view, skills with language are traced to experiences of languaging, which is known as first-order, or real-time embodied activity as opposed to second-order language, which is described by symbols and is culturally defined. First order language is what we do as we integrate what we see others do (their gaze, posture, movements) with how they speak (prosody, volume, tone, register) and also what they say. First order language precedes the development of second order language, both at the level of an individual’s linguistic development and at the level of a society’s development of a vocabulary, grammar, written forms, types of texts, etc. Second order constructs, linguistic rules, norms, and conventions, constrain the dynamics of first order languaging, so that we have to manage ongoing embodied verbal interactions with others while simultaneously orienting to socioculturally-established linguistic meanings, syntax, prosody, etc.

The notion of language output connotes information retrieval from a storage medium in a computer (Hutchins, 1995, see Chapter 9; van Lier, 2004, see Chapter 2). Such a metaphor equates language with symbolic representations, which are second-order in distributed language terms. Output is therefore equivalent to the production of second-order language. However, when the intricacy of linguistic interactivity is reduced to symbol processing within the skull, the “culturally constituted material environment” (Hutchins, p. 360) that also counts in cognition is neglected. However,

Language, in the distributed view, is a radically heterogeneous phenomenon that is spread across diverse spatio-temporal scales ranging from the neural to the cultural. It is not localizable on any one of them, but it involves complex interactions between phenomena on many different scales. A crucial distinction is thus presented and explained, viz. first-order languaging and second-order language. The former is grounded in the intrinsic expressivity and interactivity of human bodies-in-interaction. Second-order patterns emanate from the cultural dynamics of an entire population of interacting agents on longer, slower cultural-historical time-scales. (Thibault, 2011, p. 210)

Material and cultural constraints are both local and non-local in conversations; in first-order languaging, we orient to interlocutors and the circumstances of our “here and now” while also attuning to the conventionalized routines and repertoires of the language that we come to know through our histories in it.

We provoke that languaging is a concept that can deepen our understanding of L2 learning, moving away from the idea that L2 learners need to acquire a pre-existing system of rules and forms that is found entirely outside of themselves (Love, 2004). Instead, as van Lier (2004) suggested, people learn a language like an animal learns the jungle, by learning to live in it. In acknowledging the distinct but interrelated domains of first order dynamics and second order symbols, we can move toward the understanding that L2 learning involves more than merely acquiring and applying a code, that contexts are defining in terms of meanings, and that agency is critical for learners who are part of an Eco-dialogical system.

In considering languaging by L2 learners, we attend to both verbal language and associated physical actions that support and are part of sense-making. This is an important distinction from Hodges’ ecological description of conversing (Hodges, 2007a), which mainly focused on the verbal part of languaging. In the context of this study, languaging was considered either as L2 players’ synchronized verbal utterances and coordinated avatar actions or their coordinated avatar actions without verbalization as they completed game quests and other collaborative activities. In other words, what they did together, accounting for both verbal and nonverbal action, was considered languaging.

3.2. Eco-dialogical model

The Eco-dialogical model was created by Zheng (2012), taking the vantage points of ecological psychology and dialogicality, to make sense of Chinese language learners’ increasing use of the target language during problem solving activities in the virtual world of Second Life (see Fig. 1). Through an instructional design that promoted caring and conversing, learners of Chinese appropriated semiotic resources and embodied affordances to develop their identity by engaging in different kinds of problem-solving activities. The appropriation and embodiment signified the learners’ careful conversing with action. The model illustrates how perception and action are ongoing in cycles of meaning making and values realizing. This process is

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1 Merrill Swain, originator of the output hypothesis has since coined the action term of “languaging” to replace the noun “output” (2006). Either in writing or speaking, learners are engaged in “a dynamic, never-ending process of using language to make meaning” (p. 96). To Swain, inspired by Vygostsky, thoughts and language are inseparable, the relationship between them is ongoing; thought to language and language to thought is a process. Garcia (2009) traced “languaging” to Shohamy (2006), Yngve (1996) and Hopper (1998) referring to language as discursive practices of people. In this sense, “languages are not fixed codes by themselves, they are fluid codes framed within social practices” (p. 32).
languaging, incorporating both the linguistic and action modes of semiosis, as well as the sociocultural engagement of values-realizing. Both what people say and do constitutes languaging.

Applying this model to spoken communication, meanings derived from passively listening, for example, would be partial. Meaning making requires that certain actions be taken, either in the mode of speaking or physically doing something that demonstrates values realizing such as being curious enough to ask questions to get clarity, caring enough to be coherent and comprehensive, and so on. For example, a dancing student tries a new movement after corrective feedback by the instructor. There might not be verbalization involved, but the newly changed movement signals understanding, or the dancer manipulates her movements to understand the instructor’s point. This “discovery through doing” is creative and selective, thus values realizing. Magnani (2006) called this process manipulative abduction. Thus, values realizing, the basis of all actions, has to be present to complete a full eco-dialogical cycle as shown in Fig. 1. The flattened text of this model cannot adequately portray the flow of languaging represented by the inner dynamics of semiosis which are codependent with the outer dynamics of ongoing perceiving/acting. The arrows representing meaning making in a lighter shade and values realizing in a darker shade signify that while these are distinctive processes, they are inseparable from each other. During communication, the two processes continually play off of each other to constitute each cycle of languaging that in turn, feeds into the larger Eco-dialogical system that promotes the cyclical actions. From the abductive analysis for this study, a new values realizing construct emerged. We conceptualized dual values realizing as a synergistic process that promotes change in the larger Eco-dialogical system. Section 3.2.1 explains this concept fully. Learners see the results of their languaging at each cycle, which allows for increasingly more finely tuned perceiving and acting (i.e., languaging). By acknowledging that learners can and do make use of the results of their languaging, we can count each cycle as an Eco-dialogical unit of analysis (see Methods section for further explanation). It is also important to note that values realizing is in relation not only to interlocutors’ current actions, but to past and future events that they are also perceiving and acting upon. This non-localness is ascribed to situation transcending practices (Linell, 2009), which are explained briefly next.

The dialogical part the model represented mainly by the four coordinates of the diamond shape (the inner part of the model in Fig. 1) comes from Linell (2009). According to Linell, there is a four-way dynamic of orientation when we language together. Based on Peirce’s (1902) triadic definition of signs, we each orient to “I” and “you” while also to “it”, our object or topic. Linell’s diamond adds “the silent we/one” which is our intersubjective understanding; including the sociocultural norms that give rise to and constrain languaging. While linguistic interactions are always situated in here and now, a distributed view sees that sense-making also relies on non-local resources. Speakers have to orient to interlocutors in their present context and to situation transcending practices (Linell, 2009), which are trans-situational resources also described as, “habituality, routinization, conventionalization and institutionalization of human practices”, that are drawn upon to “produce and reproduce activity types and other routines” (p. 50). This simultaneous attunement is what Linell (2009) calls double-dialogicality, as reflected by the two double-sided arrows in the inner diamond of the Eco-dialogical model.

When we see languaging as coordination of all the constituent elements of the diamond, we acknowledge that communication entails biological, emotional, cognitive and social affordances and constraints. Communication is not transmission of ideas between two talking heads, rather, it is means for people to realize values by coordinating with those
who are present as well as silent or absent third parties. In the following sections, we will elaborate further on other key components of the Eco-dialogical model and describe how it was applied in this study.

3.2.1. Values realizing

Hodges (2007a) proposed that central functions of language are wayfinding, seeking good prospects, and caretaking. These are values-realizing activities, values being defined as “the real goods that actions must realize sufficiently for an ecosystem to exist” (Hodges, 2009, p. 631) and “the global constraints on self-organizing ecosystems” (p. 634). Values realizing is what fuels any growth and change. It is why we language and why languaging is not merely transmission of ideas and actions are not merely “transactions” (Dewey, 1992 in Jarvielehto, 2009). Instead languaging is for aligning with sociocultural norms, building mutually rewarding relationships, and opening up new opportunities for action. The purpose of all actions is to realize values, which take priority over both rules and laws in constraining our ongoing perceiving and acting (Hodges and Baron, 1992).

However, values are not realized according to some hierarchy or ranking order, rather, they function multiply and heterarchically to constrain what we do in different situations at different moments (Hodges, 2009). As Hodges (2009) explained, taking an action, such as driving, is heterarchical values realizing. At a given moment of driving, we respond to cues in the environment as we simultaneously prioritize getting to our destination on time and paying attention to safety issues (while avoiding a speeding ticket). The values of showing up on time, being safe, and avoiding trouble all constrain our actions.

According to Hodges (2009), like driving, conversing is also an ecosystem defined by values. Key values that define conversing are clarity, coherence, comprehensiveness, and complexity (Hodges, 2009; Hodges and Baron, 1992). Languaging (as explained in Section 3.1), as opposed to conversing, includes embodied actions that may not entail verbalizing but are nevertheless part of the flow of communicative activity. In this study, we explored languaging in WoW group gameplay. As we demonstrated in Zheng et al., 2012, players’ values realizing fluctuates in their languaging throughout an episode of WoW gameplay; sometimes the values of mastery and domination may be prominent while at other times exploring or having fun with others is more salient. For this study, we identified three broad types of values realizing that we connect to productive experiences of languaging in the L2: wayfinding, orientation to we, and dual values realizing. Wayfinding borrows from Hodges (2007a), orientation to we comes from Linell’s double dialogicality and Zheng’s Eco-dialogical model and dual values realizing is the synergizing co-occurrence of both of these types that we observed from data. We next provide further explanation of these terms.

Wayfinding, according to Hodges, is “acting and perceiving over space-time scales that require moving beyond the horizon of the immediate surroundings. It involves the active orienting of perceptual systems to environmental information, and then using information that is revealed by that exploratory activity to guide further performatory and exploratory activity” (Hodges, 2013, Values, Language and Social Perception-Action blog post). Wayfinding is a fundamental reason for talking to each other, but Hodges’s critical insight was that caretaking, paying attention to the need to care for ourselves, others, and the world, is also a fundamental reason for conversing. From this perspective, conversing entails responsibility that when taken, allows us to enact not only physical and social, but also moral lives (Hodges, 2007a). For this study, we considered wayfinding to be bound up with caretaking, since as Hodges (2007b) noted, “In the context of that caring, all other functions of language do occur – coordination, cooperation, conformity, truth-telling, and so forth” (p. 174). In this WoW play data, wayfinding was seen as players’ careful, dialogically realized efforts to follow their individual and shared paths through the game, to make sense of the L2 and its culture, and to make progress (on multiple timescales) with the help of others and with the intention of helping others.

The construct of orientation to we comes from the dialectical perspective (Linell, 2009). According to Linell’s (2009) diamond (the inner part of the Eco-dialogical model in Fig. 1), orientation to we is found in the meaning potentials of the words used in dialog. This may be thought of as participants’ assumptions about the meanings that a generalized, abstract other could associate with particular words, constructions and utterances across contexts (Linell, 2009). This generalized other is the generic ‘you’, the community at large, or perhaps ‘third parties’ who are not physically present: ‘we’ or ‘they’, or a generic ‘one’. In the languaging we analyzed from WoW gameplay, for example, the third parties referred to game rules, conventions or goals that were implicitly inferred in utterances and avatar actions. Orientation to we is a matter of paying attention to and acting adaptively in accordance with sociocultural norms of the language that are context dependent. Simultaneously, it entails paying attention and acting adaptively in accordance with who we are talking with and what we expect the other to make of what we say and do.

We believe that for L2 learners, orientation to we, or attunement to sociocultural norms, requires experiences that clarify situated L2 practices in a contextualized way, i.e., experiences that require learners to attend to languaging conventions, the reasons for them, and their results in a particular situation. For an example from WoW, if a player has chosen the avatar role of healer and is playing with others in a group to complete quests (accepted assignments that involve completing some task for a reward of gold or other goods), the player needs to learn what actions are expected of this role according to game rules and how to carry them out with specific language and the help of material resources in the game.

We identified orientation to we as a kind of values realizing associated with languaging because, like wayfinding, it entails caring for those with whom we speak, and additionally. Care is taken in terms of respecting L2 languaging practices. This idea is evident in Hodges’s definition of caretaking.

Caretaking is to be careful for others and to be careful of others, or to be careful for practices and the goods entailed in and produced by those practices, while being careful of their dangers. (Hodges, 2007b).
From this perspective, the dialogical achievement of orientation to we (Linell, 2009) can be considered as evidence of an L2 learner’s movement away from alienation from the L2 language and its culture toward attunement with it. Language with skill in the L2 requires this attunement. Knowledge of rules, functions or vocabulary is not enough for a learner who wants to fully partake of the goods of L2 ecosystems, including forming rewarding relationships with other L2 speakers.

Our construct of dual values realizing constitutes more than just aggregation of the presence of both orientation to we and wayfinding in language. It transcends the need to orient to cultural, social or group norms and exceeds finding ways and strategies to keep communication going. We considered dual values realizing as players perceiving and acting in order to “seek values that lead to the integrity of the ecosystem as a whole” (Hodges, 2007a, p. 170). Consistent with our distributed language perspective, we conceptualize instances of dual values realizing in players’ communicative activities during WoW gameplay as reflecting not only the most rewarding experiences of play, but of being the type of emotionally engaging experiences that create system-wide changes (Järvelähto, 2009), i.e., changes in the Eco-dialogical system. These kinds of changes are what we consider learning. For an example from the data, see the analysis of the dialog in Fig. 7 in Section 5.2.

3.2.2. Skilled linguistic action

Cowley (2012) offered skilled linguistic action as a complementary term for second language acquisition that can balance the impact that computational and code views have had in applied linguistics, namely, making the learning of forms and functions the ideal of L2 learning. Conceptually, the skilled linguistic action provides a basis for explaining how speakers coordinate form, meaning, pragmatics and emotional expression in a given action. However, we need to further define what skilled linguistic actions are by identifying them in episodes of language in the contexts of different L2 environments.

In this study, applying the Eco-dialogical model, we looked at the social results of language as values realizing at one scalar level (Thibault, 2006); while at another scalar level, we scrutinized the kinds of actions that potentially contributed to values realizing. In other words, we considered whether any or all of the actions in communicative projects constituted linguistic and/or physical moves 1) to align on a common object or subject, 2) to coordinate in order to move forward toward their goals or 3) to coact in order to take advantage of other’s resources that contributed to values realizing.

We conceptualized the actions just described as 1) common ground alignment, 2) prospective coordination, and 3) coaction. We considered these as types of skilled linguistic actions because they not only manifest Cowley’s theoretical conceptualization, but also because they were each prominent in our data. Similar to the method used in Zheng et al. (2012), keywords for data coding emerged from both theoretical grounding and data coding. While we concede that there are many other types of skilled linguistic action, we focused on these three activities because they are all ecologically and dialogically grounded, and therefore relate to the question we presented previously as fundamental to explaining L2 learning in virtual environments, i.e., how do WoW players (embodied in their avatars) coordinate among themselves and with the materially and culturally rich environment?

The construct of common ground alignment, in Clark and Brennan’s (1991) terms, refers to information that speakers have in common. We extend the meaning of common ground alignment to include not only alignment to cognitive information but also to referable and manipulable material artifacts that are represented by “it” in the Eco-dialogical model (Fig. 1). In the Eco-dialogical view, common ground alignment can be a process that, beyond aligning to information, involves coordinating by all eco-dialogical agents in some shared material and/or cognitive space so as to move toward their (emergent) goals. Common ground alignment is one of the preliminary actions for achieving a change in an Eco-dialogical system.

Prospective coordination, adapted from Hodges’s (2007a, b, 2009) concept of “seeking good prospects” was defined as players’ inviting of others with language or action to move forward with a task. An ecological perspective points out that conversational movements open up a field of action that can be perceived as moving in a good direction, for example toward good prospects. WoW, the learning environment that we are interested in, is a game in which conversing is necessary and advantageous for coordinating many collaborative activities. So it is languaging “in the wild” (Hutchins, 1995) that characterizes our use of prospective coordination. It entails mobility (Reed, 1996) and “the process of learning while doing” by which avatars and many other structural elements are brought into coordination (Hutchins, p. 290), not just conversing, although the concept of conversing to seek good prospects (Hodges, 2007a) is the basis of our construct. Thus prospective coordination is another indicator that an Eco-dialogical system is moving towards a change. Similar to common ground alignment, it is “interactivity-based co-adaptivity, co-agency, and co-regulation” (Steffensen, 2012, p. 519).

Coaction refers to emergent organization as two or more parties coordinate functionally with respect to both mutual influence between individual actions and the concurrent influence of relational dynamics (De Jaegher and Di Paolo, 2007). The construct as applied in this study is also taken from Wegner and Sparrow (2007), to describe when “one agent’s action is influenced by or occurs in the context of another agent’s – and together they do something that is not fully attributable to either one alone” (p. 50). In other words, when coaction occurs, authorship, the feeling of having created or accomplished something, is shared (Wegner and Sparrow, 2007). Importantly for L2 learners, experiences of authorship are positively associated with learning (van Lier, 2004; Engle, 2006). In WoW gameplay, coaction can refer either to players’ verbal interactions with seamlessly orchestrated avatar actions that occur either simultaneously or sequentially, or to avatar and avatar interactions that are highly coordinated without simultaneous verbalizing (Zheng and Newgarden, 2012).

We considered these three constructs representing skilled linguistic action to lie on a continuum from an initial or minimal type of coordination (common ground alignment) to highly finessed coordination in which the two or more parties anticipate and seamlessly adapt to each other’s moves to accomplish something creatively together (coaction).
4. Research aims and hypotheses

This research, an analysis of an episode of unplanned gameplay by three adult L2 learners and Newgarden, their instructor, is an exploratory study designed a) to further explore the dynamic interrelationships between languaging modes, conversational focus on game features, skilled linguistic action and values realizing in the context of WoW gameplay, and b) to determine the collective predictive power of languaging modality, focus on game features and skilled linguistic action for values realizing, therefore supporting the Eco-dialogical model. Expressed in terms of Multinomial logistic regression determine the collective predictive power of languaging modality, focus on game features, skilled linguistic action for values realizing in the context of WoW gameplay, and b) to is an exploratory study designed a) to further explore the dynamic interrelationships between languaging modes, conver-

5. Methods

5.1. The data

The gameplay video and audio data used for this study was collected during a semester-long course taught by the first author at the University of Connecticut. The L2 learners were enrolled in an intensive English program (IEP) had chosen to take a course that centered on WoW play. The course was designed by the first author to bring them into interaction with native English speaking (NES) university students and support their participation in the nested L2 communities of practice of the class, the university, and the game. Weekly one-hour gameplay with use of voice through Skype conference calling was required for each group of NES and L2 learner players and facilitated and recorded by the first author using iShowU video recording and Skype Call Recorder software.

The episode of gameplay selected for this study was from the first week of the course, before any scheduled play with assigned groups had begun. The three L2 learner players were college-age students from Saudi Arabia, China and Turkey. They knew each other and the instructor from having studied together in the IEP for a previous semester. Their English proficiency in speaking ranged from low-intermediate to advanced on the American Council of Teachers of Foreign Languages (ACTFL) scale. During the 47-minute episode of play, which took place across several low-level play areas of the game world, decisions about what to do and where to go were made on-the-fly. The instructor joined the three other players in the midst of play as they were working collectively on completing a game quest. The four then played together, initially to complete the quest and then to travel to a nearby city via a route that took them through an area that presented dangers that were beyond the level of individual players to survive alone.

The languaging in this episode reflects what would be fairly typical of a group of relatively new players of WoW. Such prototypical play was reported in Zheng et al. (2012) as a communicative activity type (CAT) (Linell, 2009). Using multimodal analysis, the authors teased out characteristics of the CAT, revealing a diverse tapestry of communicative activities. This was the first study to apply CAT in an effort to reify the affordances of WoW for language learning.

The final form of the data used for statistical analysis was derived from the following procedures: first, in keeping with multimodal analysis (Baldry and Thibault, 2006), avatar actions were transcribed alongside players’ recorded gameplay verbalizations (including their text chat) using Transana software. Next, the transcript was parsed in terms of communicative and general “projects” of language and/or action. (Note: For the purpose of consistency, we refer to both communicative and general projects as communicative projects (CPs) from this point on.) Authors 1 and 2 conducted parsing independently and resolved any discrepancies before proceeding. In each project, conversing and/or action centers on a task that requires coordinated efforts by two or more individuals (Linell, 2009, p. 178).

Communicative projects are other-oriented and jointly accomplished communicative actions, typically but not necessarily carried out in external interpersonal interaction and over several contributions to discourse (utterances, turns at talk). The theory of communicative projects is conceived as a counter-theory to that of autonomous speech acts by individuals (Searle, 1969). (Linell, 2009, p. 178)

Next, using an abductive approach (Zheng et al., 2012), keywords were co-derived by applying the Eco-dialogical framework and successive rounds of coding. We examined the function and characteristics of each CP and assigned keywords of interest from the Eco-dialogical model. We then identified relationships between keywords and established the keyword categories. CPs were then coded by the first and second authors independently. Interrater agreement of 80% was established through repeated checks of random collections representing ten percent of all coded projects.

In our analysis of gameplay data, we identified four types of languaging modalities that comprised the keyword category we termed “Mode of Languaging”. The four modes of language coded were 1) Acting without verbalizing (as when players acted in coordination to fight off an attacker), 2) Verbalizing only, 3) Verbalizing with coordinated (avatar) movement, and 4) Multitasking, or verbalizing on one topic while acting (with avatars) on something else.

For the keyword category of Skilled Linguistic Action, we initially coded three types: common ground alignment, prospective coordination and coaction. For the keyword category of Game Interface Features, we selected three aspects of the WoW environment that are unique to the game: game rules, avatar role and material artifacts in the virtual space. These were coded according to their saliency in communicative projects, i.e., when players’ languaging or action made reference to a particular game rule, game-specified avatar role (e.g., dealing damage, healing others, or tanking, which is taking damage to protect others), or to a specific material object in the game.
For our keyword category of Values Realizing, the two types coded were: orientation to we, and wayfinding. The third type, dual values realizing, was not a keyword used in coding, it emerged as a result of coding and in the analysis.

Keyword categories were reviewed and collapsed as needed for the purpose of conducting Multinomial logistic regression to see whether these variables were collectively predictors of values realizing. Out of 150 CPs identified, 17 were eliminated because they were incomplete, leaving 133 total projects for the statistical analysis.

5.2. Operationalization and illustration of keywords

Keywords of interest were operationalized by the first two co-authors. Examples of keywords from the data are provided below, including verbal and action transcripts for each CP. This section is meant to provide the reader with a context for keywords as well for WoW gameplay and the nature and dynamics of players’ languaging. The timeframes for these transcripts are very short, ranging from 16 to 36 seconds.

Four players are named in the transcript examples with their WoW pseudonyms, Sev, a female from Turkey, played as a human avatar who was a warrior (a damage-dealing role), Gwolyan, a male from Saudi Arabia, played as a dwarf who was also a warrior, Lovol, a male from China, played as a dwarf priest (a healer role), and Jil, a female (author/researcher) played as a dwarf rogue (a damage-dealer known for stealthiness).

As described in 3.2.2, skilled linguistic action was broadly defined in Cowley’s (2013) terms as ecologically, pragmatically, and dialogically well-executed actions (with or without language). We considered three types of skilled linguistic action, common ground alignment, prospective coordination and coaction, all or none of which could occur within a CP.

Common ground alignment was defined as players’ directing others’ actions and/or inviting others to the same space and/or drawing others’ attention to certain object(s) and references in the virtual world. In this example of common ground alignment (Fig. 2), the player Sev directs the other three players’ attention to an abandoned farm building by voicing her intention and moving her avatar in a way that helps others know where she wants to go. She knows there are dangers in the building and that she needs the other players’ help to deal with these. This unspoken shared knowledge of the hidden danger in the farm building is also an example of orientation to we.

Prospective coordination was defined as players’ verbal language or actions that invited others to move forward with a task. In this CP (Fig. 3), the players are working on a quest that involves killing threatening robotic scarecrows called Harvest Reapers. They have been working together, but in the chaos of fighting, the player Sev has not noticed that another player in the group, Gwolyan, has been killed. She wants to continue to complete the quest and has spotted a living Harvest Reaper that looks like a good target for the group to tackle next. Her verbal directive is intended to lead the others to what looks like a “good prospect” while her follow-up inquiry about the others’ health is caring and forward-looking. She knows that the other players need to be in good health in order to take on the next round of Harvest Reapers.

Coaction was defined as players’ actual coordination of their actions (and/or avatar actions) with other players, either using verbal language or not, to accomplish a mutual goal that could not be accomplished by players independently. In the project below (Fig. 4), the players Sev and Gwolyan fall into coaction both verbally and physically. Sev’s first utterance indicates her intention, her request for other players’ help, and her simultaneous movement toward the enemy she wants to attack. Gwolyan’s verbal response indicates that he has come into common ground alignment while his action indicates he has committed to interact with Sev to accomplish their joint goal. Jil, their instructor, also joins in the coaction without verbalizing her intention to do so.

Orientation to we, that is orienting to sociocultural norms (or a silent third party) in this WoW play episode, was evident in CPs that concerned players’ efforts to follow game rules (e.g. not venturing into areas beyond one’s level), to follow routines (e.g. following the sequence of picking up, completing, and turning in a quest), or to adopt values of WoW culture (e.g. taking care of one’s health or gear). In the example below (Fig. 5), Gwolyan and Sev are working on the quest of killing Harvest Reapers in order to collect the “loot” of hops, the grain used to make beer, after a kill. They need a certain amount of hops to claim a reward when they turn in their completed quest. Gwolyan’s response to Sev refers to an earlier time the two had

Transcript example - Clip 17z (clip length: 18.4 seconds)

Language:

Sev: Hey guys, I want to get into the building.
Jil: It’s not a good idea...

Action:

Sev loots then runs toward the farm building
Sev stops in field facing toward farm building

Fig. 2. Sev wants to get into the building.
played WoW together when Sev had been able to point out which wild boars when killed would drop the needed loot (goretusk liver). Now he wants to apply the same strategy to their current task. Gwolyan’s utterance demonstrates that he is orienting to the game rules and the fact that others know strategies that can be helpful to completing joint projects more quickly. With his languaging in this project, he orients to we on several levels, to his shared experience of play with Sev and to the norms and values of the game culture in both his question about strategy and his actions (looting a Harvest Reaper).

Wayfinding was defined as players’ efforts to realize the potential information contained in certain affordances available in the virtual world, which included change of strategies and languaging modes, changes in the way affordances were perceived, etc. There was also an apparent element of caring for self or other within the CP. In the two sequential CPs (Fig. 6), for example, the players Sev, Gwolyan and Jil take a quick break from the work of questing to explore a nearby area that is very green and lush compared to the desolate plains where they still have more work to do. Wayfinding happens on many levels in these CPs. Sev’s perceiving of an affordance for exploring becomes an invitation to others to join her in finding out more about the game environment. The players’ movement to the beautiful natural area of Elwynn Forest afforded Sev’s utterance that was intended to share something she had learned and could relate to in sociocultural terms (a place like heaven). Gwolyan’s question “Have you ever been to heaven before?” is also wayfinding in the sense of his effort to make others laugh. Both Gwolyan and Sev demonstrate wayfinding in caring to share their different cultural perspectives as a way of getting to know more about each other.

In CPs that exemplify dual values realizing, both wayfinding and orientation to we are apparent and additionally, there is also evidence of some change taking place in players’ attunement to an aspect of language, to a sociocultural feature of the game, or to the groups’ collective knowledge of each other and relatedly, their capacity to play well together. In this CP (Fig. 7), Sev and Lovol focus on understanding the meaning and pronunciation of the word “hops”, an object they know is required for completion of the groups’ quest. This is an example of a CP that was coded for players’ focus on both a game rule and a material artifact. In terms of values realizing, Sev and Lovol orient to we as they pay attention to a game goal (completing a quest where they need to collect a quantity of hops) that has become her groups’ goal as well. Jil orients to we (in terms of an L2 norm), by attending to Sev’s initially incorrect pronunciation of hops as “hopes”. Sev’s imitative pronunciation of the word in response indicates her intention to get it right (later in the episode, she pronounced hops correctly on several occasions), which is also a sign that she is attuning to a socioculturally defined norm of L2 phonology. Lovol’s question about the meaning of hops is wayfinding. He knows hops is central to the group’s current activity because they are collecting it and therefore, he perceives that understanding more about hops may help him as they proceed with the hops quest. Dual values realizing is synergistic. It
encompasses more than the addition of wayfinding and orientation to we. It becomes a catalytic process that leads to system-wide change. In this example, due to the care taken by Lovol to find out the meaning of hops, by Sev to know the pronunciation of hops, and by the instructor to provide on-time support, everyone involved in the CP has come to a better understanding of the word. The environment has changed for players who now share the knowledge that hops are associated with wheat and beer and they are of value in the WoW culture, where they come up recurrently in the game narrative. Everyone is empowered as intersubjective understanding is increased for the system and completion of the hop quest is made more meaningful.

5.3. Statistical procedures

To explore the association among the three predictor categories of interest (mode of languaging, skilled linguistic action, and game interface features) with values realizing, a series of Chi-square tests was conducted using SPSS. The expected number of cases in each combined condition (i.e., cell frequency) was determined to be greater than five in order to achieve a valid result for the Chi-square test. The significant variables were then used in Multinomial Logistic Regression analysis to
investigate each predictor’s net effect on values realizing while controlling for other predictors. Multinomial Logistic Regression provides a technique to examine the strength of the contribution of the significant predictor variables (from the Chi-square test) to values realizing in communicative projects. The procedure allowed us to have statistical evidence to support our claims regarding the relationships between predictors and values realizing.

Logistic regression is used to determine the likelihood of a dichotomous outcome, which consists of only two categories (e.g., success and failure; players demonstrate wayfinding while playing WoW or do not), rather than a continuous dependent measure typically used in regression (Hair et al., 2010). Logistic regression models predict the log odds of one category of outcome relative to the other outcome category. As an extension of logistic regression, Multinomial Logistic Regression predicts an outcome variable with multiple categories (Azen and Walker, 2011), such as three types of values realizing in our case, wayfinding, orientation to we, and dual values realizing. In the current study, dual values realizing is the reference category, and wayfinding and orientation to we are compared with it individually. Thus, readers can interpret this model as a combination of two logistic regression functions defining two logits, \( \ln(p(\text{wayfinding})/p(\text{Dual Values Realizing})) \) and \( \ln(p(\text{Orientation to We})/p(\text{Dual Values Realizing})) \) as criterion variables. Since all the predictors were categorical variables, dummy coding was applied.

The assumption of Multinomial Logistic Regression is the independence of observation. It generally means that an observation on one experimental unit of analysis does not influence or affect the observation on another experimental unit. In our case, the keyword coding of for example, common ground alignment on one communicative project (our experimental unit of analysis) was unrelated to the keyword coding of common ground alignment on another communicative project. Each communicative project (\( N = 133 \)) we considered was treated as a unique data point and coded for keywords of interest without reference to adjacent communicative projects.

6. Results

The significant results of the Chi-square test indicated that game rules, common ground alignment, prospective coordination and mode of languaging had a statistically significant relationship to values realizing while the Chi-square results for coaction, avatar roles and, material artifacts suggested they have a nonsignificant relationship with values realizing. Table 1 illustrates keyword categories and brief definitions of all keywords initially coded.
The finding provided sound statistical evidence to explicitly model values realizing using multinomial logistic regression in which all the significant variables serve as predictors. When we initially included all four modes of languaging as predictors in the regression model, there was no significant difference among their predictive effects on values realizing. This was probably due to insufficient sample size. However, when we dichotomized the modes into two categories, collapsing Modes 1 and 2 into single-mode languaging and Modes 3 and 4 into multimodal languaging, we obtained statistically significant results for our given sample size. Table 2 summarizes the coding for the categories of significant predictors. Tables 3–6 report the statistically significant criterion variables from Chi-square tests that were ultimately used in the regression model.

Multinomial Logistic Regression analysis (Azen and Walker, 2011) was conducted in SPSS and results were confirmed using SAS. The goodness of fit Chi-square based statistics that include both the Pearson and Deviance are 11.62 with a p-value of .17 and 11.17 with a p-value of .19, indicating a good fit of the model to our data. The likelihood ratio Chi-square of 22.47 with p-value < .001 shows that the overall model (i.e., the model with all the predictors) fits significantly better than an empty model (i.e., the model with intercept only but no predictors).

Likelihood ratio tests (P < .05) suggest that the effects of game rules, prospective coordination and mode of languaging are all statistically significant. However, common ground alignment was not found to be a significant predictor for values realizing and was removed from the model. The estimated final Multinomial Logistic Regression model is expressed with the following two equations.

\[
\ln\left( \frac{p(\text{Orientation to We})}{p(\text{Dual Values Realizing})} \right) = 1.59 - 1.08\text{gamerules} - 26\text{coordination} - 1.33\text{Mode} \\
\ln\left( \frac{p(\text{Way Finding})}{p(\text{Dual Values Realizing})} \right) = 1.09 - 0.96\text{gamerules} - 1.43\text{coordination} - 0.35\text{Mode}
\]

Taking the first equation as an example, the estimated intercept 1.59 is the multinomial logit estimate for a player’s values realizing being orientation to us versus dual values realizing when the predictors that are included in the model are all equal to 0. In other words, if the CP was characterized as single mode languaging (either verbal or action modes) in the absence of game rules and prospective coordination, the players were 5 \(e^{1.59}\) times more likely to realize only orientation to we rather than dual values realizing. Holding other components in Equation (1) constant, the logit estimate for the multimodal languaging (coordinated verbalizing and acting) condition relative to the single mode languaging condition is .26 \(e^{-1.33}\) units

### Table 1

<table>
<thead>
<tr>
<th>Keyword Category</th>
<th>Keywords and Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Values realizing (2 types)*</td>
<td>Communicative Projects (CPs) were coded for the following characteristics and functions.</td>
</tr>
<tr>
<td>Possible</td>
<td>Either, both or none</td>
</tr>
<tr>
<td>Mode of Languaging (4 types): One mode only required per CP</td>
<td>1. Orientation to We: Attending to sociocultural norms</td>
</tr>
<tr>
<td>2. Wayfinding: Attending to information needed to move on toward goals</td>
<td></td>
</tr>
<tr>
<td>3. Verbalizing with coordinated avatar movement: Language and actions are toward the same goals</td>
<td></td>
</tr>
<tr>
<td>4. Multitasking: Verbalizing and acting are not coordinated, are toward different goals</td>
<td></td>
</tr>
<tr>
<td>Skilled linguistic Action (3 types): All or none possible</td>
<td>1. Common Ground alignment: Joint attending to objects or referents in the virtual world</td>
</tr>
<tr>
<td>2. Prospective Coordination: Verbalizing/acting to invite others to move forward</td>
<td></td>
</tr>
<tr>
<td>3. Coaction: Verbalizing/acting in coordination to accomplish a mutual goal that requires the other’s resources</td>
<td></td>
</tr>
<tr>
<td>Game interface features (3 types): All or none possible</td>
<td>1. Game Rules: Focus on understanding and/or complying with WoW rules</td>
</tr>
<tr>
<td>2. Avatar Role: Focus on a player’s avatar role (i.e.,) healer, damage dealer, damage taker</td>
<td></td>
</tr>
<tr>
<td>3. Material Artifacts: Focus on a game world object</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Dual Values Realizing was not a keyword used for coding. It emerged in the analysis and was the third type of Values Realizing in the criterion variable for the Multinomial Logistic Regression model.

### Table 2

Index of significant variables in Chi-square tests and the multinomial logistical regression model.

<table>
<thead>
<tr>
<th>Variable/Predictor or criterion</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of Languaging – predictor</td>
<td>Single Mode Languaging: Either acting only or verbalizing only</td>
<td>Multimodal Languaging: Both acting and verbalizing and these may be coordinated or not (i.e.,) multitasking</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Common ground alignment – Predictor</td>
<td>Common ground alignment not evident in CP</td>
<td>Common ground alignment evident in CP</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Prospective coordination – Predictor</td>
<td>Prospective coordination not evident in CP</td>
<td>Prospective coordination evident in CP</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Game rules – predictor</td>
<td>Game rules were a focus of the CP</td>
<td>Game rules not a focus of the CP</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Values realizing – Criterion</td>
<td>Orientation to we evident in CP</td>
<td>Wayfinding evident in CP</td>
<td>Dual Values–Realizing: Orientation to we and wayfinding both evident in CP</td>
</tr>
</tbody>
</table>
lower for values realizing of the single orientation to we type versus the dual values realizing type. In other words, the occurrence of multimodal languaging increased the likelihood of a CP reflecting dual values realizing. By the same token, game rules and prospective coordination also decreased the multinomial logit of orientation to we versus dual values realizing by 1.08 and .26 units respectively. Consequently, game rules and prospective coordination increased the likelihood of values realizing being dual values realizing rather than of the single orientation to we type. In other words, game rules and prospective coordination increased the odds that players’ communicative projects would reflect dual values realizing, i.e., the synergizing combination of orientation to we and wayfinding.

The coefficients in Equation (2) could be interpreted in a similar way. For example, the estimated intercept of 1.09 means players who engaged in a CP using only a single mode of languaging who did not focus on game rules or demonstrate prospective coordination, were 3 times ($e^{1.09}$) more likely to enact the single value of wayfinding rather than dual values realizing. As $\ln(p(\text{Orientation to We})/p(\text{Way Finding})) = \ln(p(\text{Orientation to We})/p(\text{Dual Values Realizing})) - \ln(p(\text{Way Finding})/p(\text{Dual Values Realizing}))$, we could also determine the logit function for $\ln(p(\text{Orientation to We})/p(\text{Way Finding}))$ and interpret it in a similar way. Its function can be computed as $(1.59 - 1.08 \text{gamerules} - 1.33 \text{coordination} - 1.33 \text{mode} - (1.09 - .96 \text{gamerules} - 1.43 \text{coordination} - .35 \text{mode}) = - .50 - .12 \text{gamerules} - 1.17 \text{coordination} - .98 \text{mode}$

Comparing the regression coefficients of the same set of significant predictors in Equations (1) and (2) in conjunction with the hypothesis testing results (i.e., $p$ values associated with the regression coefficients), we noticed that Equation (1) implies that mode of languaging had a stronger positive effect than prospective coordination on the likelihood of dual values realizing versus only orientation to we; while Equation (2) shows an opposite pattern, i.e., prospective coordination was a stronger predictor than mode of languaging in predicting dual values realizing rather than only wayfinding. The effect of game rules was similar across both Equations.

When multimodal languaging, game rules and prospective coordination were all present together, i.e., the three predictors in both equations were equal to one, the chance of players enacting dual values realizing was 2.94 times ($e^{1.09}$, logit = 1.59 – 1.08 – .26 – 1.33 = –1.08) higher than enacting orientation to we and 3 times ($e^{1.43}$, logit = 1.09 – .96 – 1.43 – .35 = −1.65) higher than enacting wayfinding.

### 7. Discussion

For this study, we started out exploring two types of values realizing, wayfinding (perceiving and acting to inform future actions while caring for self and others) and orientation to we (achieving intersubjectivity by attuning to shared sociocultural norms). We consider these to be among the values realizing activities that sustain human life since they fulfill the greater good of the community and perpetuate the Eco-dialogical system. We found these to be defining for many of the CPs in the gameplay episode and observed how they combined to create a more intense kind of values realizing which we called dual values realizing (integrating both values in a way that opens new affordances for perceiving and acting). In the following themes, we discuss how certain Eco-dialogical factors contributed to values realizing and explain how we believe L2 learners can benefit from realizing these values, especially synergistically. We connect values realizing to the quality of languaging in the L2.

#### 7.1. Significant relationships

The results for our main aim of discovering contributing variables to values realizing will be discussed in Section 7.3. In order to fully discuss the dynamic relationships in the final Multinomial Regression Analysis model, it is necessary to discuss the Chi-square test results and the reasons for significant and nonsignificant relationships.

### Table 4
Crossstabulations of values realizing and common ground alignment.

<table>
<thead>
<tr>
<th>Values realizing</th>
<th>Skilled linguistic Action: Common ground alignment (frequency/percentage)</th>
<th>Marginal total</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absent</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Orientation to we</td>
<td>19</td>
<td>28</td>
<td>47 (35%)</td>
</tr>
<tr>
<td>Wayfinding</td>
<td>7</td>
<td>35</td>
<td>42 (32%)</td>
</tr>
<tr>
<td>Dual Values realizing</td>
<td>10</td>
<td>34</td>
<td>44 (33%)</td>
</tr>
<tr>
<td>Marginal total</td>
<td>36 (14%)</td>
<td>97 (86%)</td>
<td>133 (100%)</td>
</tr>
</tbody>
</table>

Note. ** = $p < .05$. 

Table 3
Crossstabulations of values realizing and game rules.

<table>
<thead>
<tr>
<th>Values realizing</th>
<th>Game interface features: Game rules (frequency/percentage)</th>
<th>Marginal total</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absent</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Orientation to we</td>
<td>37</td>
<td>10</td>
<td>47 (35%)</td>
</tr>
<tr>
<td>Wayfinding</td>
<td>32</td>
<td>10</td>
<td>42 (32%)</td>
</tr>
<tr>
<td>Dual Values realizing</td>
<td>25</td>
<td>19</td>
<td>44 (33%)</td>
</tr>
<tr>
<td>Marginal total</td>
<td>94 (71%)</td>
<td>39 (29%)</td>
<td>133 (100%)</td>
</tr>
</tbody>
</table>

Note. ** = $p < .05$. 

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![Image](image.png)
frequency patterns in the Chi-square results demonstrate a significant positive relationship between game rules, common ground alignment, prospective coordination, mode of languaging and values realizing. Among the game interface feature types, only game rules appeared to be a significant predictor for values realizing (Table 2). Game rules, such as the WoW rule of being able to come back to life after dying, are considered second-order constructs in distributed language terms. Interestingly, in terms of the Eco-dialogical model (Fig. 1), game rules may be reflected by both the “it”, as a common topic referenced in players’ CPs, and by the “silent we/one”, as the norms of WoW game culture players are attending to in CPs. Game rules dynamically serve as both affordances and system constraints for values realizing. WoW’s game rules are embedded within the game’s design and players are obliged to follow them in their cycles of perceiving and acting. Compared to avatar roles and material artifacts, which were not found to be predictors, game rules directly constrain the actions that WoW players need to take to play the game well. We suspect that in addition to this, game rules provided an affordance for purposeful communication, lending ease to the conversational flow. Having an authentic reason to communicate with others is sometimes a challenge for L2 learners in classroom situations or in virtual worlds such as Second Life where rules are absent.

The Chi-square tests suggest a positive development between two types of skilled linguistic action, i.e., common ground alignment and prospective coordination with values realizing. This provides support for Hodges’ theory that in human conversing, values realizing completes the cycle of perception and action. We extended Hodges’ theory beyond conversing to languaging in order to account for the coordination of interbody interactive movements of avatars. L2 learners playing WoW are not just conversing or engaging in actions such as fighting and defeating enemies, they are engaging in the Eco-dialogical environment. They move, not just with discursive action, but locomotive actions that include walking, running, flying, riding mounts, brandishing swords and other weapons, picking up loot, repairing armor, eating, drinking, dancing, and so on. Thus, common ground alignment and prospective coordination, constructs that emerged in our analysis of WoW play based on our theoretical underpinning (Zheng et al., 2012), are what the L2 learners were striving to do in languaging. As dialogical agents, they grounded their common understanding in shared material artifacts and dialogue arrays; they coordinated movement toward their emergent goals and they realized values.

Coaction was not significant in the Chi-square test, nor as a predictor in our final statistical model. This result is not completely surprising. In heterarchical values realizing, multiple constraints on action are often in tension, creating conditions for the Eco-dialogical system to strive to complete goals or access whatever real goods are sought via actions. Often, when players engaged in coaction in a project, they did so without need for verbalization, for example, joining together to efficiently take out a beast or enemy bandit. In these CPs, the constraints on action were no longer in tension and players seemingly understood each other’s intentions, thus they reached a state of equilibrium and exhibited no need for wayfinding or orientation to we.

The relationship between mode of languaging and values realizing is revealing in that multimodal languaging was the strongest predictor that a CP would reflect dual values realizing. This strong predictability deserves discussion in its own right and is therefore taken up next in Section 7.2.

7.2. Multimodality makes a difference in values realizing

In this episode of gameplay, multimodal languaging, (L2 learners either coordinated movement with verbalizing or engaged in talking with each other while acting (with avatars) on something else, i.e., multitasking), was the strongest

<table>
<thead>
<tr>
<th>Values realizing</th>
<th>Skilled linguistic Action: Prospective coordination (frequency/percentage)</th>
<th>Marginal total</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Absent</td>
<td>Present</td>
<td>Marginal total</td>
</tr>
<tr>
<td>Orientation to we</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wayfinding</td>
<td>33</td>
<td>9</td>
<td>42 (32%)</td>
</tr>
<tr>
<td>Dual Values realizing</td>
<td>21</td>
<td>23</td>
<td>44 (33%)</td>
</tr>
<tr>
<td>Marginal total</td>
<td>80 (71%)</td>
<td>53 (29%)</td>
<td>133 (100%)</td>
</tr>
</tbody>
</table>

Note: *** = $p < .01$.

Frequency patterns in Table 5 above indicate that multimodal languaging is the strongest predictor that a CP would reflect dual values realizing. This strong predictability deserves discussion in its own right and is therefore taken up next in Section 7.2.

<table>
<thead>
<tr>
<th>Values realizing</th>
<th>Mode of languaging (frequency/percentage)</th>
<th>Marginal total</th>
<th>$\chi^2$</th>
<th>Fisher’s exact test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Action only</td>
<td>Verbalizing</td>
<td>Verbalizing with coordinated action</td>
<td>Multitasking</td>
</tr>
<tr>
<td>Orientation to we</td>
<td>8</td>
<td>7</td>
<td>26</td>
<td>6</td>
</tr>
<tr>
<td>Wayfinding</td>
<td>2</td>
<td>5</td>
<td>24</td>
<td>11</td>
</tr>
<tr>
<td>Dual Values realizing</td>
<td>0</td>
<td>5</td>
<td>32</td>
<td>7</td>
</tr>
<tr>
<td>Marginal total</td>
<td>10 (7%)</td>
<td>17 (13%)</td>
<td>82 (62%)</td>
<td>24 (18%)</td>
</tr>
</tbody>
</table>

Note. ** = $p < .05$. Fisher’s exact test is more appropriate since the expected frequency is less than 5 in 3 cells.
predictor of dual values realizing versus just wayfinding or orientation to we. This result reveals the contribution of complexity when players engaged in ecological pragmatics. When players were dealing with both verbalizing and acting with their avatars, they intensely directed their intention and attention toward realizing the potential information contained in certain affordances available around them. They changed strategies or communication modes, acted upon certain affordances differently and so on in order to move on in a positive direction.

From this finding, we propose that WoW’s affordances for connecting verbal utterances and avatar-embodied actions, i.e., for multimodal languaging, may be highly rewarding in terms of helping L2 learners to take appropriate actions while caring for themselves and others in a target language (virtual) environment. We suggest that a more complex languaging modality enriched the experience of interacting for these L2 learners by requiring them to constantly manage the various affordances of WoW gameplay. Complexity makes a difference to language learners in terms of the quality of experience they have in an L2 community. Ecologically, quality “combines intellect and affect, and yields a higher level of consciousness” (van Lier, 2004, p.18).

7.3. Co-agency and the dynamics of constraints and affordances

Multinomial Logistic Regression analysis provided further evidence that players’ skilled linguistic actions of prospective coordination, combined with multimodal languaging and constrained by WoW game rules, were more likely to lead to dual values realizing (versus one type only). Hodges (2009) pointed out that in ecological conversations, or languaging in our coordination, combined with multimodal languaging and constrained by WoW game rules, were more likely to lead to dual terms, agency drives activity. From this perspective, the physical and pragmatic aspects of conversing are the key to understanding how the coordination of activities is made possible by linguistic activities (Hodges, 2007a). This is in contrast to a cognitivist focus on understanding the processes of rule-following, encoding, and decoding that are usually assumed to be central to language use. As Hodges (2009) stressed, agency is what connects agent and environment as a dynamic system for which language is constrained and guided not by rules or laws, but by values-realizing actions with physical, social and moral consequences.

Conversing with others is not a matter of deciphering an abstract structure or of producing some outcome; rather, it is a matter of ongoing agency. Agency is the initiation of unforced actions that activate environmental potentials that constitute a real physical-social-moral field that constrains and guides the ongoing activity. That agency is directed toward the goods of the ecosystem. (Hodges, 2009, p. 634)

Thus, we can infer from our model that our L2 learners embodied agency, the engine of dynamic ecosystems (Hodges, 2009). Our model also provides a partial answer to the fundamental question of how L2 learners coordinate their actions together in WoW. It is the unforced actions, constrained by the Eco-dialogical system (in our model, game rules were the most prominent constraints) that open up new affordances that can lead players to the loot, to borrow a WoW term, which is whatever goods of the ecosystem they seek. Our analysis shows that the goods the L2 learners sought included finding their way while caring for others and acting as part of an Eco-dialogical system. They evaluated what was the best way to proceed and executed actions with care. Whether they helped each other to practice pronouncing the word “hops”, or described a WoW scene as “heaven” to make others laugh and attune to something common but not present; the L2 learners strategically oriented to their shared experience of play and to the game culture. We interpreted instances of synergized sophisticated languaging as L2 player’s demonstrations of agency. These unfolded as they successfully dealt with constraints, managed complex tasks, and coordinated actions while dealing with the tensions of immediate and future goals. Agency was distributed across time and space as players coordinated their forward actions while, at the same time, agency was constrained by game rules.

Therefore, agency should be reformulated as co-agency. Our unit of analysis based on communicative projects fundamentally differentiates this study from studies based on individuals and or utterance turns as the unit of analysis, as we cited in the literature section. As discussed, above, our concern is how L2 learners coordinate in the game space of WoW and how their coordination with each other and game affordances contribute to values realizing activities. This approach challenges readers to move away from the notion of individual competence to other-oriented, distributed languaging. The languaging concept based on the Eco-dialogical framework and analysis is not suited for answering research questions based on the individual as the unit of analysis.

Material artifacts and avatar roles were more dynamic as compared to game rules, in terms of players’ perception and action cycles in this data. In general questing in WoW, one of the primary activities in this episode, players could attend to artifacts and roles more flexibly without compromising their progress in the game. We expect this is why they did not constrain players’ actions as saliently as game rules. However, in other common types of WoW group gameplay, such as doing instances or raids, we could expect avatar roles to be a more apparent focus in CPs since the end goal of overcoming the “boss” (evil foe) depends on coordination of avatars with very different but interdependent skills. This idea can extend to understanding how affordances and constraints on languaging are dynamic in other open-ended social situations in which actions and the values at play are dependent on communicative activity types (Linell, 2009) that reflect the sociocultural and Eco-dialogical dynamics (Zheng, 2012).

8. Limitations

As alluded to above, the episode of WoW play can be seen as one type of typical play. The use of voice (and English) during WoW play is optional and we could expect to find different communicative activity types (CATs) in other gaming situations or
when players engage in languaging (or even translanguaging) in some other language(s). We do not claim that our results from one episode of play are generalizable to other CATs of WoW play.

The video data for this study was captured from the perspective of one WoW player (Zheng) and therefore descriptions of actions (but not language) are limited to what occurred from this frame of reference.

Another limitation of the data was that due to the sample size, we could not test whether a primary mode of languaging of interest, verbalizing with coordinated avatar movement, was by itself a significant predictor of dual values realizing, we had to consider it together with the multitasking mode.

Additionally, a minor shortcoming is that the results of Multinomial Logistic Regression are expressed in terms of a likelihood ratio (i.e., the probability of wayfinding versus dual values realizing) rather than in terms of a single type of values realizing. These limitations and unanswered questions should guide future research.

The theory of communicative projects (2009) is derived from dialogical perspectives. Unlike a unit of analysis from a monological tradition, for example, an individual speaker’s turns in talk, communicative projects are not units to look at in order to answer questions about individual L2 learner’s accuracy, competency, or autonomy. Instead, situated meaning-making is our main concern and therefore, L2 learners’ actions have to be included as data and coded and analyzed using procedures such as those we have employed here. We used an abductive analytical process, considering our data in light of the Eco-dialogical framework. This is a highly dynamic process and situation dependent. As a result, our language learning as values realizing model from the Multinomial Regression Analysis may not be generalizable to other situations, such as classroom-like environments. However, it should illuminate what classroom-based language teaching and learning could gain from approaches that promote learners’ action-based coordination in the L2. Our unit of analysis and the statistical model we developed for this study are not really limitations in terms of our research agenda, but may be perceived as limitations for researchers who are interested in individual learning.

9. Conclusion

Adopting Hodges (2009) understanding of conversing as a dynamic system for perceiving, acting and caring for others, led us to investigate 1) how L2 learners manage these multiple activities across situations and timescales of interaction during play of WoW and 2) how and when L2 learners’ languaging contributes to sense-making and skillful linguistic performances that realize the life-supporting values of wayfinding and orientation to we.

Analysis of this WoW gameplay episode led to a statistical model that helped us understand the relationships between several constructs we have adopted to describe the complex processes of L2 languaging. One of three constructs we identified as a type of skilled linguistic action, prospective coordination, was found to increase the odds of players’ dual values realizing. As we mentioned, we considered prospective coordination to lie between common ground alignment and coaction in terms of players’ engagement from an initial state of joint attention to more full-blown coordination. Prospective coordination can be considered as occurring during more unstable states of the Eco-dialogical system. The languaging moves made by players during this phase of interaction are highly adaptive and may be more critical in determining whether a positive outcome occurs; thus, prospective coordination was a strong predictor of values realizing while common ground alignment and coaction were not.

We also found that multimodal languaging in gameplay increased the odds of players’ dual values realizing, suggesting that avatar embodiment afforded an enriching experience for these L2 learners. If values realizing for L2 learners is to be facilitated, as we believe it should be, designers and educators can look to the affordances of 3D games multiplayer games such as WoW, in which agency is distributed and learning to take skilled linguistic action is accomplished in emotionally engaging play. The fact that multimodal languaging was a significant predictor suggests that interactions that combine verbal and physical activities in tandem may provide more affordances for L2 learners’ skill development, since the values to be realized, both wayfinding and orientation to we, are primary activities of dialogical beings. Design and pedagogy should support L2 learners of all levels of skill, in coordinating and coacting with others in the L2, to enact both values.

Quest-based learning is a direct recommendation based on the findings of our study since questing was the main activity of the players and drove their need for coordination in traveling, fighting, locating and picking up artifacts, and so on. Other familiar hands-on and action-oriented approaches, for example, project-based and problem-based learning, share the same objective of enriching the quality of L2 learning experiences. They promote learning opportunities that stimulate both intellectual curiosity and affect investment and they allow for practice with different language modalities. The currently popular and well-studied pedagogy known as task-based learning and teaching (TBLT) has the potential to cultivate quality in learning experiences when assessment of learning and evaluation of learners is approached from an ecological rather than reductionist perspective. It is not within the scope of this paper to engage in an intellectual debate on epistemological and ontological orientations, but TBLT is deeply rooted in SLA tradition, and thus far, studies taking this action-oriented approach have fallen prey to reductionist conclusions that fail to expose the full potential of contextualized learning.

10. Implications

This paper investigated L2 learners’ WoW gaming processes. The Eco-dialogical model provided a basis to study learners’ coordinations in the L2, their broader values realizing and the relationship between these activities in the spontaneously self-organized 47 min of group play. We explored the full process of languaging, from players’ skilled linguistic actions to their
values realizing. Regardless of the fact that the study data consisted of less than an hour of gameplay, in our view, describing the ecological and dialogical process of languaging in such play using communicative activity type theory is significant in and of itself. We will summarize the implications of our endeavor in terms of identifying problems for L2 learning theory and methodology.

An input-processing-output model is a reductive paradigm that views L2 learning as a number of discrete problems that are localized in individual brains. In the Eco-dialogical model, we locate language learning problems and outcomes in integrated skills and social capital that emerge as a learner takes part in various types of coordination (e.g., common ground alignment, prospective coordination and coaction), constrained by attunement to environmental and social resources (e.g., avatar roles, game rules, material artifacts, skilled others) and assembled from multimodal experiences. We provided evidence of the interplay of these factors by employing a unit of analysis that couples the eco-dialogical interactivity rather than looking only to individual brain-based processing.

Transcending Hodges’s original values-realizing theory of conversing, we explored the idea of values realizing as an outcome of embodied first-order languaging. The larger implications of modeling language learning as values realizing in this way lie in the ethical need to treat language learners as social beings whose (linguistic) actions are held accountable for their role in developing co-agency, for caring for others in co-laboring activities, and for participating fully in communities that benefit from their contributions. The L2 learners’ coordinations in orchestrating the dual complexity of orientation to we and wayfinding were profound because they opened potentials for change in the individuals, in group dynamics and in the community. By pursuing our agenda for this study, we were able to further illustrate Zheng and Newgarden’s (2012) conceptualization of “the new three Cs for L2 learning”, namely coaction, caring and community of becoming, and provide a model for future studies that make the effort to understand language learners as holistic, social beings. They are not patients who need be treated for their vocabulary, grammar and pronunciation problems in an isolated fashion. They are whole persons whose being and becoming are intertwined with present and invisible others, whose agency is constrained and afforded by values realizing that is ongoing as they learn to language in the jungles, cities and wilds of the virtual and non-virtual worlds in which they live.

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Appendix A. Supplementary data

Supplementary data related to this article can be found at http://dx.doi.org/10.1016/j.langsci.2014.10.004

References


