ARTICLE

An ecological perspective on the use of memes for language learning

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Abstract

Internet memes—usually taking the form of an image, GIF, or video with text—have become an important type of semiotic tool for meaning making. Due to the fact that memes can help learners leverage semiotic modes in social contexts, they hold great potential for language education. Integrating ecological social semiotic frameworks, this comparative case study examined the semiotic affordances of using memes for language learning in the digital wilds, with a focus on self-identified highly-motivated learner-memers in a university-level student-run Chinese-English intercultural chat group. Data sources included meme artifacts, screen shots, and recordings of meme-related communicative practices as well as semi-structed interviews with each participant. Analysis suggests there were four affordances perceived and utilized by the participants, including linking learners to emergent semiotic repertoires, L2 user agency, increased motivation, and personhood development. Key to learners' experiences was their awareness of perceived semiotic affordances and their agency to participate in meaning making for potentially meaningful learning experiences. We conclude with pedagogical implications for integrating the rich semiotic resources of memes into language classrooms.

Introduction

Semiotics—the study of signs, images, and codes—play an essential role in the field of language learning (Kramsch & Whiteside, 2008). In authentic context of language use, interpretation of meaning relies not only on linguistic codes, but also on a variety of other semiotic clues such as gestures, facial expressions, and intonation (Kim, 2018). Therefore, the environment in which linguistic action takes place is characterized by perceptual diversity that encompasses a vast array of semiotic resources for meaning making (van Lier, 2004). As posited by the Douglas Fir Group (2016), "language learning is semiotic learning" (p. 27). Separating linguistic information from the full array of semiotic repertoire may hinder linguistic growth. Likewise, the richer the meaningful semiotic practices situated in social contexts that L2 learners are given access to, the more robust their evolving multilingual semiotic repertoires for meaning making are likely to be (Douglas Fir Group, 2016).

Digital technologies such as web 2.0 and computer-mediated communication (CMC) tools have changed the way people communicate, and most importantly, the ways in which language is used and how information is presented (Williams, 2009). As a result, the level of available semiotic resources and demands has been maximized in the virtual world, escalating the complexity and dynamism of meaning potentials (Jewitt, 2009). Nowadays, the process of orchestrating multiple semiotic modes working in concert to facilitate meaning making can be extended to technology-mediated language experiences, including reading text messages that have visual enhancements of dynamic imagery, consuming online

videos, playing video games, and many other daily digital activities (Smith et al., 2021).

As a result, there has been increased researcher attention to the affordances of digital spaces and dynamic digital imagery for language learning. Much of this work has examined semiotic-rich digital practices, spaces, and tools such as social digital tools (Klimanova & Dembovskaya, 2013; Lomicka & Lord, 2012), multimodal composing tools (Hafner, 2015; Smith et al., 2017), digital games (Chik, 2014; Reinhardt & Han, 2021), and virtual reality (Berti et al., 2020). Research descriptively illuminates unique multimodal affordances when learners remix multilingual semiotic resources in virtual contexts to practice meaning making (Kress, 2003), including increasing motivation and exploring multilingual identities (Lam, 2000). Others documented affordances when learners make use of semiotic-rich tools for language and cultural learning purposes, including connecting cultural practices and products with spatial contexts (Krase & Shortell, 2011). Research using a variety of methodological and interpretive frameworks must continue to explore the affordances of semiotics in computer-assisted language learning (CALL), especially when much of communication today is multimodal and digital.

Although important strides have recently been made, little is known about the affordances of a particular widespread semiotic object—digital memes—in the context of language learning. In 2020, memes were the third-most shared type of content on social media (behind personal news and videos) according to a survey done by GlobalWebIndex (GWI, 2019). The term *meme* used in this study refers to Internet/digital memes that usually take the form of an image or GIF with text. Introduced by Dawkins (1976), the definition of memes has evolved from pieces of cultural information that pass along from person to person to create a shared social phenomenon (Dawkins, 1976) to "a group of digital items sharing common characteristics of content, form and/or stance, which were created with awareness of each other, and were circulated, imitated, and/or transformed via the Internet by many users" (Shifman, 2013, p. 41). Being able to read, reply, reproduce, remix, or even create memes in an L2 requires not only the ability to interpret the words, but also the ability to decipher the information hidden behind the interplay of semiotic resources (e.g., humor, cultural significance, etc.).

In other words, memeing—or meaning making through memes—involves symbolic competence through a variety of semiotic modes (Kramsch & Whiteside, 2008), a competence that is vital to language learners in the technological age. Some researchers have already suggested bringing memes into literacy classrooms for the development of critical literacies (Knobel & Lankshear, 2007), stressing that memes are valuable literacy artifacts, and they create community around relatable human experience and emotions (Purnama, 2017). Still, a deeper understanding is needed of the language learning potential of Internet memes. Memeing, as a contextualized multimodal social practice, may help expose language learners to more semiotic scaffoldings and meaningful social contexts where they could observe, learn, practice, and create. The process of comprehending, analyzing, and remixing memes allows learners to acquire linguistic and symbolic competence while engaging with humorous, popular cultural phenomena in the real world (Smith, 2021). As others have suggested, the humor element of memes may also help enhance motivation (Harshavardhan et al., 2019) and encourage *language play*, a recreational social activity as well as a reflection of high linguistic and pragmatic proficiency (Belz & Reinhardt, 2004).

The present study explores these new and understudied areas by investigating the affordances of using memes for language and cultural learning, with a focus on self-identified highly-motivated learner-memers in a university-level student-run Chinese-English intercultural chat group.

Theoretical Perspectives and Background Literature

We present a synthesis of scholarship drawn from the interrelated aspects of the current study: affordances, ecological perspectives, and semiotics in CALL. In these sections, we show how the concepts and previous findings inform our understanding of semiotics in CALL from an ecological perspective, thus bringing into light research gaps of the studies of memes as a semiotic tool in the context of language learning.

Affordances and the Ecological Perspectives of Language Learning

Affordance is an essential concept in this study. The term *affordance* was first coined by the perceptual psychologist James J. Gibson (1979) in his seminal book, *The Ecological Approach to Visual Perception*, which refers to the fit between animals and the environmental supports and opportunities (both good and bad) that make possible a given activity (Gibson & Pick, 2000). Expanding the original concept, van Lier (2006) draws attention to the relational aspect of affordances, and argues they are mediated in context by perception and activity instead of being direct. The ability to perceive affordances and the experience of utilizing affordances are reciprocal. Perceived and utilized affordances lead to activities, and experiences emerge through such people-environment interactions, influencing the individual's perceptions (Kordt, 2018).

Research into affordances in language learning contexts share an ecological perspective (Kramsch, 2003; Larsen-Freeman, 1997; van Lier, 2006) that understands language learning as a non-linear development mediated by micro to macro social environments. Vital to this theory is the affordance and its emergence in one's learning system (van Lier, 2006). The affordance is not a quality of the learning environment but emerges through the interaction of the learner and the learning environment (Kordt, 2018). Therefore, for different individuals in the same environment, or same individual at different times, unique affordances can emerge and be utilized. The current philosophy of ecological perspectives puts the learner in an agentive and centered role in language learning. It considers language learning as an ecosystem where physical, social, and symbolic factors are intertwined with learning across multiple timescales, underscoring the complexity of the learning journey.

Many researchers who work within an ecological framework adopt a holistic lens to understand the affordances of new learning landscapes, such as digital spaces and tools. When adopting an ecological perspective, scholars share the belief that there is no one best tool or way to learn a language (Kramsch & Steffensen, 2008). Understanding individual differences and affordances in the complex system contributes to empowering learners by offering different choices and approaches to language learning.

Of particular interest to the current study are the perceived and utilized affordances of memes, which are multiple and varied in the context of intercultural encounters. Scholars have suggested that memes, being multimodal communication tools and cultural semiotics, might afford rich spaces for identity exploration and community building in theoretical contributions (Knobel & Lankshear, 2007). More empirical studies are needed to explore affordances of memes available and used in authentic language learning environments in order to inform future pedagogical designs. From an ecological perspective, these affordances of memes have the potential to impact the perceptions that language learners hold, thereby influencing how rich digital semiotic objects like memes are understood and used to impact and enrich language learning.

Social Semiotics

This study also draws from a social semiotics view of multimodality (Jewitt, 2009; Kress, 2003), which underscores how various modes, including but not limited to visuals, sound, text, movement, and gestures, are integral to communication. Modes are socially and culturally shaped resources for meaning making. They are not fixed or universal, but fluid and created through social processes within specific communities (Kress & van Leeuwen, 2001).

A useful aspect of social semiotics when examining students' multimodal practices is the understanding how modes are imbued with specific semiotic resources shaped by their social history, cultural uses, and material features. As described by van Leeuwen (2004), "Semiotic resources have a meaning potential, based on their past uses, and a set of affordances…based on their possible uses, and these will be actualized in concrete social contexts where their use is subject to some form of semiotic regime" (p. 285). Multimodality studies have examined how students draw upon the affordances of various modes (e.g., visuals, sound, movement) for specific purposes and audiences (e.g., Kim, 2018). Additionally, these modal affordances are individualistic and vary based on the composers (Smith, 2017; Smith et al., 2017).

Semiotics in CALL

With the rise of digital landscapes, new modes of reading and writing have created new learning needs and contexts involving using languages in combination with other semiotic resources (Kern, 2014). These new literacies encompass a range of digital formats (e.g., videos, podcasts, websites, video games, social media, etc.) that are shared widely with engaged and authentic audiences. Further, as language learners are entering into relationships with new kinds of content and audiences online, the need to understand semiotic affordances brought by digital tools and the new contexts of connecting and learning for L2 learners becomes salient. With the importance of these new needs and contexts of language learning being recognized by many scholars (Jones & Hafner, 2012; Reinhardt & Thorne, 2011), contributions have been made to further our understanding of semiotics in CALL.

Research in CALL has found that digital tools provide learners with a broader semiotic repertoire to accompany their use and learning of languages. This multimodal nature of language learners' digital literacies was documented in many studies (e.g., Black, 2009). One salient advantage was that learners were able to claim authorship in their L2, engage a broader audience by leveraging semiotic affordances (e.g., multiple modes), and create new knowledge remixing languages, cultures, and places (Kim, 2016; Smith et al., 2021). For example, Schreiber (2015) described a Serbian university student who was also a rap artist using images, videos, and music to engage both non-English speakers in Serbian and non-Serbian speakers around the world. With the support of a variety of modes, he was able to communicate and participate in the global hip-pop community, regardless of language proficiencies. As an English learner, his code-meshed English L2 digital literacy practices functioned as a coherent part of his multilingual identity, empowered by a larger repertoire in which semiotic resources are intertwined and circulated in extended spaces mediated by digital technologies.

Other research has also identified meaningful learning opportunities for language learners with the help of digital semiotic tools. Digital spatial and semiotic tools (e.g., digital maps and virtual tours), for example, can provide a stronger connection between geographical locations and cultural products and practices through dynamic images and semiotic symbols (Apgar, 2018; Klimanova & Hellmich, 2020). In the face of the rising of various semiotic tools and practices in CALL, the need to keep exploring the impact of semiotic tools on language learners' perception and interpretation of mediated linguistic and cultural practices becomes more salient. From an ecological perspective, these semiotic tools can provide meaningful affordances that emerge from learner-environment interactions, thereby offering new directions for how to understand and implement current semiotic tools into language teaching and learning. Although important strides have recently been made for semiotics in CALL, little is known about the affordances of a particularly widespread semiotic object—digital memes—in the context of language learning.

The present study is an attempt to build upon the field's understanding of semiotics in CALL by turning much-needed attention to these understudied semiotic objects: Internet memes.

Our study is guided by the following research questions:

1. How did learners perceive and utilize the semiotic affordances of memes for language learning?

2. How did these semiotic affordances influence their emergent language learning experiences?

Methods

To address the research questions, comparative case methods (Stake, 2006; Yin, 2018)—which analyze patterns, similarities, and differences across cases—were employed to understand how motivated L2 Chinese learners creatively engaged in meme-related literacy practices. Additionally, we employed a qualitative interpretive approach (Davis, 1995) to generate further insights into the affordances of using memes for language and cultural learning.

Context and Participants

This study was conducted in a university-level student-run Chinese-English intercultural club initiated by students from a university in a northeastern city in the United States. The intercultural club was a voluntary student-run group that brings together international Chinese-speaking students and Chinese L2 learners of the selected university for language exchange and intercultural communication activities. Interested students in the university signed up and joined the group. The group members met face-to-face once a week for voluntary get-together activities (e.g., board games, movies, and picnics). Apart from the offline activities, there was an online chat group named, "Third Space—Culture Corner" created in WeChat (a mobile messaging app) as the virtual community of the intercultural club. Chinese L2 learners and their peer Chinese native speakers actively engaged in digitally mediated meaning-making practices in the chat group, including instant messaging and sharing digital artifacts. There were 321 members in the online chat group (as of December 31, 2019). This online research site was selected due to the richness of naturally-occurring meaning-making practices. Notably, memeing was the most salient multimodal means of communicating and the focus of this study.

The first author of this study joined this group when she was a graduate student in second language acquisition and became friends with the founder of this group. All the participants of this study joined the Third Space group before she joined. Based on observations of memeing behaviors and through purposeful sampling (Patton, 2002), three participants who self-identified as motivated Chinese L2 learner-users and actively engaged in meme-related literacy practices were chosen for an in-depth analysis of how they perceived and acted upon the affordances of memes for language learning purposes.

In the following section, we provide background information on each participant.

Focal Participant #1: Fred

Fred (all names pseudonyms, 27) was the founder of the English-Chinese intercultural club. Having been learning Chinese for 13 years, he wanted to create a space for Chinese L2 learners at the university and their peer Chinese native speakers to communicate and make friends. He was originally from the US, and he was a graduate student majoring in teaching Chinese as a second language. He considered himself not only a Chinese L2 learner, but also a Chinese language educator. In addition, he mentioned his identity as "洋女婿" (foreign son-in-law in a Chinese family), saying "I'm living Chinese instead of just learning Chinese." Fred's primary role in the chat group was that of lead organizer—someone who organized offline activities and helped engage members in the chat group. His meme use (both in and out of the group chat) was very native-like—he often used popular Chinese memes that Chinese young people would use on social media.

Focal Participant #2: Vicky

Vicky (22), was an avid meme lover and user. As an intermediate Chinese L2 learner, she had learned Chinese for two years, mainly in Chinese classrooms, including a two-month study abroad sojourn in Shanghai. Outside of classroom, she enjoyed participating in the group chat and offline club activities because she liked the "authentic way of learning, through doing, as opposed to the structure of classroom learning." She started learning Chinese because her best friend back in her hometown was a Chinese heritage speaker. She believed that learning Chinese could help her with her travels in Chinese-speaking countries. She was active in the online chat group because she felt that "it's a very non-threatening environment to practice Chinese." She particularly shared lots of "Chinglish" memes both inside and outside of the chat group. She also once created her own meme by using her own recordings and shared it in the chat group.

Focal Participant #3: Brent

Brent (29), was an advanced Chinese L2 learner who majored in teaching Chinese as a second language as a graduate student. He had the most overseas living and working experience among all the participants—he had worked in China for more than 5 years before he came back to US to pursue further studies. He

officially started learning Chinese when he was a freshman in university because his father was Chinese American; however, as he described, his father spoke Chinese to him "just sometimes." His wife was originally from China; however, he described her as "not very interested in Internet and slang." Defining himself as a "funny" person, Brent liked to make jokes and share humorous memes. He and Vicky were the only two participants who had ever created an original meme and shared it in the chat group.

Data Collection

Data from multiple sources were collected and triangulated to construct a multifaceted understanding of the perceived semiotic affordances of memes for language and cultural learning.

Meme Artifacts, Chat Group Screen Captures, and Multimodal Memeing Transcripts

First, we collected all the meme artifacts that participants used in the chat group by referring to the group chat history (from 2016 to 2019). It is worth noting that the meme artifacts in this study were not created for pedagogical purposes—they were mainly used as vernacular meaning-making tools in the chat group. Second, to capture the rich contexts of these naturally-occurring, multimodal meaning-making practices, we gathered the related screen captures of those memeing practices. Third, we created 72 *memeing multimodal transcripts* (Han, 2019) based on these screen captures that include the meme, context in which the meme was used, the meme sender, the meme reader(s), and the excerpt of the conversation (see Figures 3, 4, and 5 as examples) to gain a holistic understanding.

Semi-Structured Interviews

To gain the participants' perspectives, the first author conducted semi-structured interviews with each participant that lasted approximately two hours. The purpose of these interviews was to learn about the participants' language learning background, process, and reflection on meme use, memeing experiences within and outside of the chat group, their perceptions and attitudes towards memes, and how memeing affected their language learning experiences. During the interviews, the participants were asked to show memes they used in other contexts to support their insights and to further elaborate on their memeing experiences. The interviews were conducted online, via WeChat, a multimodal messaging platform that allows for video, voice, text, visual chat at the same time. The participants were given freedom to choose the linguistic codes (e.g., English, Chinese, Chinglish) and semiotic modes (e.g., audio, video, text) during the interviews. All the interviews were captured via screen recording to preserve their multimodal quality. Transcripts that include all the dynamic images and semiotic symbols were prepared for each interview. Following data collection, member checks were conducted by sharing the interview transcripts with participants.

Data Analysis

Qualitative data analysis was an iterative process that involved four phases: (a) multimodal content analysis, (b) open and axial coding, and (c) selective coding (Strauss & Corbin, 1998), followed by (d) comparative case analysis (Stake, 2006; Yin, 2018).

Multimodal Content Analysis

We first analyzed the content and context of memes, focusing on the linguistic and the visual modes of the meme artifacts to familiarize ourselves with meme artifacts and memeing practices. We traversed across meme artifacts and memeing transcripts to better understand their semiotic information through several rounds of reading, identifying, and coding. Initial codes were generated to gain a better understanding of what semiotic information was shared and in what ways.

Open and Axial Coding

The second phase of analysis included open coding (Strauss & Corbin, 1998) across data sources to develop emergent categories for the affordances of memes perceived and used by the focal participants. This phase involved identifying, naming, and categorizing the different ways learners perceived the semiotic

affordances of memes for learning-related purposes. We started with open coding the interviews, then shifted analysis to meme artifacts and memeing transcipts, and continued to traverse across data sources to develop overall categories. Axial coding (Strauss & Corbin, 1998) was then used to relate codes and to investigate how memes influence their emergent language learning experiences. During this process, we aimed to connect learners' perspectives to their memeing practices by linking what they said and did. For example, some codes developed from the interviews centered on learners' sense of belongings and authorship. These codes were grouped into an overall category of "identity" when traversing across artifacts and perspectives.

Selective Coding

For the final phase of analysis, we circled back across all the data sources to conduct selective coding (Strauss & Corbin, 1998). The goal for this analysis was to validate if our overall categories were abstracted enough to encapsulate the semiotic affordances of memes perceived and seized by the focal participants. Ultimately, four themes were developed (Appendix A) for the affordances of memes perceived by the participants during their learning journey, illustrating their influences on emergent language learning experiences.

Comparative Case Analysis

In an attempt to create "fully fleshed-out portraits of identifiable individual learners" (Benson, 2019, p. 66), comparative case studies were adopted at this phase. Patterns and themes were revisited, one case at a time, to gain an in-depth understanding of each case. We then adopted a comparative method that involved comparing individual themes and patterns among the participants, examining whether there were replicative relationships across cases, and identifying important differences among the cases.

Findings

Findings revealed how each learner-memer made sense of their meme-related practices for language learning opportunities in unique yet similar ways. Across cases, there were four semiotic affordances perceived and utilized by the participants that centered on (a) emergent semiotic repertoires, (b) emergent unique and agentive L2 user identities, (c) emergent motivation for life-long learning, and (d) emergent personhood development. In the following, each theme is explained with illustrative examples to demonstrate how semiotic affordances shaped emergent learning experiences.

Emergent Semiotic Repertoire

All the participants reported serendipitously learning aspects of language, culture, and pragmatic skills through participating in semiotically-rich and socially-situated memeing practices. The multimodal and social nature of memes made possible serendipitous learning of linguacultural knowledge with the help of semiotic clues and social scaffoldings. Such collaborative use of shared semiotic repertoires and resources in turn enabled richer semiotic repertoires for learners to draw on in intercultural communicative contexts.

Analysis revealed that semiotic modes beyond the verbal helped scaffold the acquisition of linguistic knowledge and context awareness. Additionally, memeing, as a contextualized social practice, helped expose learners to meaningful social contexts where they could observe, research, and practice in authentic contexts. For example, both Brent and Fred reported that they managed to learn some Chinese Internet slang through reading memes in the chat group (Figure 1 & Figure 2, provided by the participants during the interview). The two memes identified by the pair had visuals that accompany and match the emotions of the text. The "extra little touch of emotion" (Brent, interview) of the memes when used in context helped him better understand the slang. Both of them did not participate in the conversation around those memes— they were only consumers while still finding opportunities to learn some slang terms through observation and conducting research on memes. Brent pointed out the serendipitous learning opportunities with memes in his interview by saying "it just helped me to learn some things, learn some languages otherwise I would not have learned." Fred emphasized in his interview the importance of social contexts, pointing out that the

slang (Figure 2) he learned could not be translated and its meaning varied in different contexts. For him, extra research on his own was needed to understand the untranslatable nuance of the meme.

Figure 1

"[T]oo Poor Until Fade Away" (Literally Translated) Meme, Provided by Brent
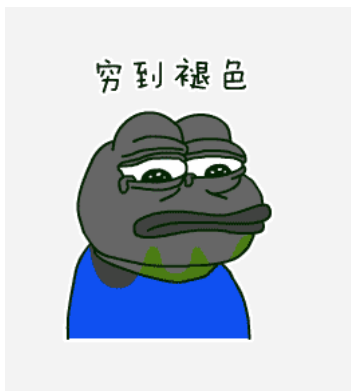
Figure 2

The 社会 Meme, Provided by Fred

Note. 社会 originally refers to "society." In Internet slang, it can refer to someone like a boss or even a gangster. The meaning of this meme depends heavily on the context. It was shared in the chat group as a joking way to say someone is doing a very good job in their class project.

Apart from observing first-hand how the meme was used in context, one participant, Vicky, also described the importance of negotiating meaning through talking about memes. To illustrate, Figure 3 demonstrates how Vicky learned the Chinese expression of 666 (六六六) through memeing in the chat group. It was through the negotiation of meaning that she reached a clear understanding and practiced the slang in authentic contexts. In her interview, Vicky shared, "I sometimes don't understand, but oftentimes other Americans also don't understand and will ask questions for the Chinese in the chat to answer. It's a very non-threatening environment." In Vicky's case, observing first-hand how the meme was used in contexts, initiating negotiation of meaning, and practicing using the semiotic knowledge in new contexts played an important part in making possible the affordance of enriching semiotic repertoire for language and cultural learning through memes. As Vicky mentioned, "in general I'm more of a fan of letting conversation lead learning."

Participants also identified some constraints in utilizing this affordance. One of these challenges was at the

proficiency level. According to Brent, learners need to have some if not a lot of linguacultural knowledge learned before using memes as a learning resource. In addition, learners need to be highly motivated and ready to act upon the affordance. Brent mentioned that "it's about effort." He believed that learners would have to be willing to devote time to doing their own research or asking for help when they encounter a meme that they do not understand; otherwise, as he stated, "I don't think they will go on any kind of search engine to find out what that figure was." Fred also pointed out the importance of agency by saying "people might be lazy and just ignore them if they don't understand the jokes."

Figure 3

The Negotiation of Meaning of the "6666" Meme (3 Interlocuters and 8 Turns)

Meme	Context	Meme sender	Audience participated	Excerpt
6666	Members of the group were chatting about their course projects. One student (native Chinese speaker) said he had already finished the course project. Another student sent this meme to react to the message. Then the focal participant V asked about the meaning of the meme.	A native Chinese-speaking international student in the group chat.	The focal participant **V** (Vicky) Chinese native speakers (**N**): 2	**N1**-我已经做完啦~ (*I've already finished it~*) **N2**-[the meme] **V**- 666不是魔鬼的意思吗?(*666 means the devil, right?*) **V**-好像中国和美国对这个有不同的含义 (*looks like 666 has different meanings in China and the US*) **N2**-真的吗？！(*Really?!*) **N2**-原来supreme那个666是魔鬼(*So the 666 on supreme means the devil?*) **N2**-我们的666是好厉害的意思(*666 means "awesome", "good job" to us*) **V**- 哦，我刚才做完很六六六的项目。你们看吧，给我赞扬吧😊😋(*oh I see, I just completed a very 666 project. You can take a look and praise me😊😋*)

Emergent Unique and Agentive L2 User Identity

Through remixing, producing, and using the emerging semiotic resources, these learner-memers were able to explore and articulate their unique and agentive L2 user identities, fueling their volitional agency to act personally as an agentive L2 user.

Echoing previous research (e.g., Smith, 2021), we found that some memeing practices uniquely connected to the theme of identity, including bicultural identity, self-expression, and sense of belonging. To illustrate, Brent created and shared a meme at Chinese Mid-autumn Festival ("Mooncake day") in the chat group. The meme was adapted from the movie *The Great Gatsby* (2013). The original line in the movie scene was "Congratulations, old sport." This meme was popular and had a strong reference to American pop culture. Brent creatively changed the line into "Happy Mooncake Day, old sport" to remix bicultural semiotic elements. In addition, he changed the original glass of wine into a mooncake to make cultural reference to Chinese Mid-autumn Festival. Illustrated in Figure 4, his meme was read and appreciated by chat group members, followed by more festive greetings and conversations. For Brent, the meme creator, as he explained how his message was conveyed in an amusing way in which he creatively mixed cultures to share festive greetings to both Chinese native speakers and L2 learners in the chat group, he mentioned that he enjoyed "mixing cultures" and it made him feel "more of part of the community." This bicultural identity that differs from monolingual Chinese- or English-speaking communities was echoed by Vicky, who was also interested in "fun combinations of cultures." According to Vicky:

It's not just a Chinese space, it's not just an English space, only people who kind of have an understanding of both languages will be able to get the meme and think it's funny. So, it's something that the people on the third space will be able to laugh about together, which I think it's nice. (interview)

At one point, Vicky created a meme through remixing herself doing the Chinese number gesture of 6, text of Chinese character of 6, and other "666" memes (Figure 5). She shared this meme in the chat group to encourage group members to join the offline meeting. Vicky believed that remixing semiotic elements, especially the Chinese ones, helped her "share moments of friendship in non-academic moments." Such memeing practices gave her more freedom for *reprodusing*—a portmanteau of remix, produce, and use (Reinhardt & Thorne, 2019)—multiplex semiotic codes for self-expression.

Figure 4

Mooncake Meme Created by Brent and Its Related Conversations (9 Interlocutors and 9 Turns)

Meme	Context	Meme sender	Audience participated	Excerpt
HAPPY MOONCAKE DAY, OLD SPORT	The Mid-Autumn Festival is a harvest festival celebrated by Chinese People. A mooncake is the pastry traditionally eaten during the festival. This meme was created and sent out in the group chat on the day of Mid-Autumn Festival by an advanced Chinese L2 learner.	An advanced Chinese L2 learner/user (**B**) who is now living and working in China. He joined the group chat when he was a graduate student at the university. The meme was created by him.	The focal participant **B** (Brent) Chinese L2 learners/users (**L**): 3 Chinese native speakers (**N**): 5	**B**-[the meme] **L1**-Happy Mid Autumn Day to you all! **N1**-Midterm festival haha **N2**-中秋节快乐! 😊😊(*Happy Mid-Autumn Festival!*😊😊) **L2**-祝大家中秋节快乐!🌕🥮🎆🏮 (*I wish you all a happy Mid-Autumn Festival*🌕🥮🎆🏮) **N3**-大家中秋快乐！！快去赏月！(*Happy Mid-Autumn Festival to you all! !Let's go enjoy the moon!*) **N4**-and happy mid-term festival haha **N5**-中秋快乐😊(*Happy Mid-Autumn Festival* 😊) **L3**- [photo of mooncake] 祝大家中秋节快乐！！😊 (*Happy Mid-Autumn Festival to you all!!* 😊)

Additionally, Fred liked to use Chinese specific memes (Chinese text and visual with reference to Chinese culture) in the chat group. For example, he shared a meme when the group was chatting about finals (Figure 6). The meme pokes fun of and makes reference to illustration styles during the Mao period in China, with the text reading "Studying makes me so happy." Fred explained that his use of "mao-style" memes was not political but his way of being "endearing to native speakers." He liked to collect memes with Chinese cultural elements. He further connected his meme use with his identity needs by saying "it sort of indicates you are part of Chinese culture, and that you are someone that can be engaged with like a Chinese person, which affords all sorts of possibilities for language learning and friendship development." The rich semiotic and cultural codes of memes helped Fred to achieve the goal of being a legitimate L2 user to the Chinese-speaking community.

Figure 5

Meme Created by Vicky and Its Related Conversations (4 Interlocutors and 6 Turns, Face Censored for Privacy Considerations)

Meme	Context	Meme sender	Audience participated	Excerpt
	V (Vicky) sent a message to invite chat group members to join the face-to-face meet up of the group chat.	An intermediate Chinese L2 learner/user (V). She joined the group chat when she was an undergraduate graduate student at the university. The meme was created by her.	The focal participant V (Vicky) Chinese native speakers (N): 2 Chinese L2 learners/users (L): 1	V- 大家好！！欢迎大家来Culture Corner,文化角，今天七点半。有麻将还有我会把我在家乡最喜欢超市的 chocolate chip cookies带去，希望看见大家！！！(*Hi everyone!! Welcome to Culture Corner, 7:30 pm tonight. We have mahjong, and I will bring chocolate chip cookies from my favorite grocery store in my hometown, hope to see you all!!!*) V-[the meme] V-哇you can make your own stickers in 微信 now this is疯狂，very卓越 (*Wow you can make your own stickers in WeChat now this is crazy，very awesome*) N1-👏👏👏 N2-yasss👌 L1-Yooo 晚上见 (*Yooo see you tonight*)

Figure 6

"Mao-style" Meme Shared by Fred to Be Endearing to Native Speakers

By taking initiatives in sharing memes and creating memes, these participants demonstrated agency in expressing their valued identities through memeing in the intercultural chat group and beyond. One semiotic affordance is that memeing offered a broader semiotic repertoire for L2 learners to explore and construct identities. In this process, new identities might become available and empowered in authentic contexts. Therefore, a commitment in L2 linguacultural learning was powerfully enhanced when learners became more agentive language learner-users who valued and invested in their new identities.

## Emergent Motivation for Life-long Learning

Among participants, the rich cultural semiotic resources of memes and their playful, creative, and relatable content were perceived as a rich space for inquiry in the sense of allowing learners to indulge in personal interests and cross-cultural explorations—to practice thinking, learning, meaning making, and creating—

and to exercise curiosity with peers. Such curiosity was found to be a major driving force for potential life-long language learning motivation.

Apart from memeing in the chat group, the participants also shared their memeing experiences outside the chat group. While Fred liked to collect memes shared by his Chinese-speaking friends, Vicky and Brent reported that they would actively search for memes online. For example, Vicky found a meme online and shared it in the chat group (Figure 7). This meme uses two different languages and pop culture symbol to create meaning. "我的" sounds like "water" and means "my" in Chinese. "Squirtle is Water type" and the hashtag #pokemonpickupline originate from the *Pokémon* popular culture fandom. Vicky mentioned that she was particularly interested in these "Chinglish" memes because they "reflect the bridge in language and culture." She also enjoyed sharing memes with friends ("like my friends who are learning Chinese or my Chinese friend who know English"). Brent, emphasizing his love for humor, explained that he actively searched for memes that were "kind of like my sense of humor" in both English and Chinese. He explained that he consumed and used memes on a daily basis and he could easily align his personal interest with memeing. Fred reported introducing memes into his Chinese classrooms (Fred was a Chinese language learner-teacher), stressing that "they are something that they already do in English."

Figure 7

Chinglish Squirtle Meme Collected and Shared by Vicky
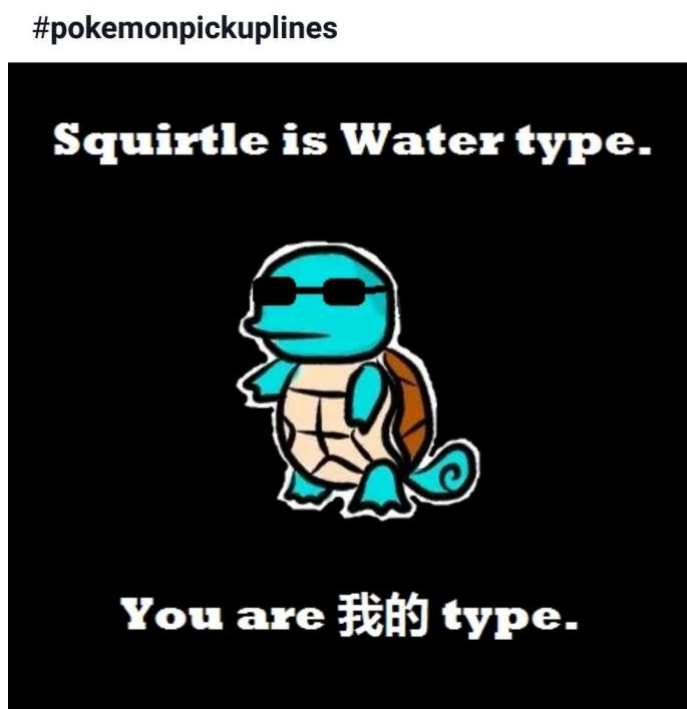
In sum, we see that our participants' perceptions of memes echo the idea that memes are valuable cultural units and symbols (Iloh, 2021), a current trend, and a part of everyday meaning making practices among today's young people. Such perceptions made possible actions to use memes as an entry point for unlocking curiosity in different cultural and linguistic practices in a familiar way that is closely related to their personal lives. As Vicky pointed out, "memes are, kind of, a door that can open ways forward."

Emergent Personhood Development

The affordance of intercultural inquiry and discourse that meme-related practices facilitate was perceived and leveraged by the participants of the study. Their rich semiotic information, situated and relatable social

topics, and humor were used by L2 learners to engage native speaker peers. Such conversations opened up more opportunities for negotiation of meanings, through which learners not only exercised language but also seemed to reinforce an already existing open mindset that recognizes and appreciates multiple cultures and languages.

When sharing their memeing experiences beyond the chat group, Vicky and Fred identified some changes in their way of thinking—their increasing cross-cultural understanding. Vicky explained, "it can make me realize which things about culture are not universal, and are specific to my culture." Believing that memes can be "a way for people to have a reason to talk to and laugh at each other," Vicky described having conversations around memes on topics like romantic relationships and lifestyles. Figure 8 was a meme that she used to engage her Chinese friend in conversation (outside of the chat group). This meme pokes fun at the pressure of being in a relationship in Chinese communities. For Vicky, such conversations helped her see things from her Chinese peers' perspective:

> I think in general learning about what the onion was talking about, about being in relationships, is just interesting. How girls feel pressure when they're approaching 25 if they don't have a boyfriend, how many of my Chinese girl friends have said that they try to find their future husband on their first try dating, they don't really date around for fun like how Americans seem to. And how that relates to if they find their partner, their parents can't yell at them for being single ever again [laughter], so hopefully while they love them it's also a way to complete a cultural goal of being in a relationship. And seeing that represented in a silly meme by the onion is a lighthearted reminder of how serious this pressure can be, that it finds its way into even silly media like this. (Vicky, interview)

Fred, sharing his experiences talking about Chinese memes with his friends and family outside of the chat group, mentioned that discussing about the popular Chinese memes was a way to "learn about how other people view the world." He believed that such interactions were often fruitful and engaging.

Overall, memes had the ability to tap into valuable concepts in multiple aspects and cultures through its rich semiotic information. This can be perceived and utilized as an affordance to engage meaningful intercultural conversations and dialogues around memes. Such an affordance might potentially support and reinforce personhood development towards being a more open-minded person with higher intercultural competence, empathy, and less judgmental thinking, thus affording meaningful life experiences and intercultural friendship:

> I think I'm open to see things in a new way, sometimes it's not that I necessarily can "embrace them" for myself, none of my relatives will yell at me during Chinese New Year because I'm single haha, but it can allow me to better understand the experiences of others. I want to know what Chinese people and friends think and feel, what makes them who they are, and then reflect on how what I think and feel and do makes me who I am as an American. Of course, I think our similarities as people unite us in ways beyond what our differences can make us, but I think learning about cultural differences can be a fun way to be distinct from each other and even contrastingly to come together and share and appreciate these differences. (Vicky, interview)

Figure 8

The Onion Meme Shared by Vicky That Shows the Pressure of Being in a Relationship in Chinese Communities


Discussion

Reaffirming the findings of a growing number of studies focused on semiotics on CALL, we found that among our participants, semiotic affordances of memes were perceived and used in meaningful ways to impact their Chinese language learning journey. This study also contributes new insights into the potentials of memes and related literacy practices in language learning. Examining these findings through an integrated ecological theory (Kramsch, 2003; van Lier, 2006) and social semiotics (Jewitt, 2009; Kress, 2010) framework is helpful when considering how semiotic affordances, which are meditated in social contexts and emergent depending on learner's perception and agency, can be perceived and utilized.

We noted that the learner-memers were at the center of their organic meme-mediated learning journey. In particular, personal experience, perception, awareness, and agency played key roles in shaped learning experience, which was emergent through the interaction with the environment and realized through the practice of literacies. It is worth noting that the participants of the study were all memers in their everyday lives beyond the chat group. Their pervious experiences with memes had the power to impact their perceptions of viewing memes as valuable semiotic objects. Affected by experience, learners' perception of memes was key to enabling the agency to act upon affordances, but was not solely adequate. Awareness of language learning opportunities of memes raised by their perceptions was needed as well to enable agency to make learning activities possible. Through using and making sense of these semiotic affordances, unique learning experiences emerged, which in turn would keep shaping learners' experience, perception, awareness, and agency for more affordances to emerge. We envision the language learning experiences influenced by memes as both mediated and emergent, more dynamic and interactive than linear (see Figure 9).

Figure 9

The Relationship Between the L2 Learner-memer and the Affordances of Memes
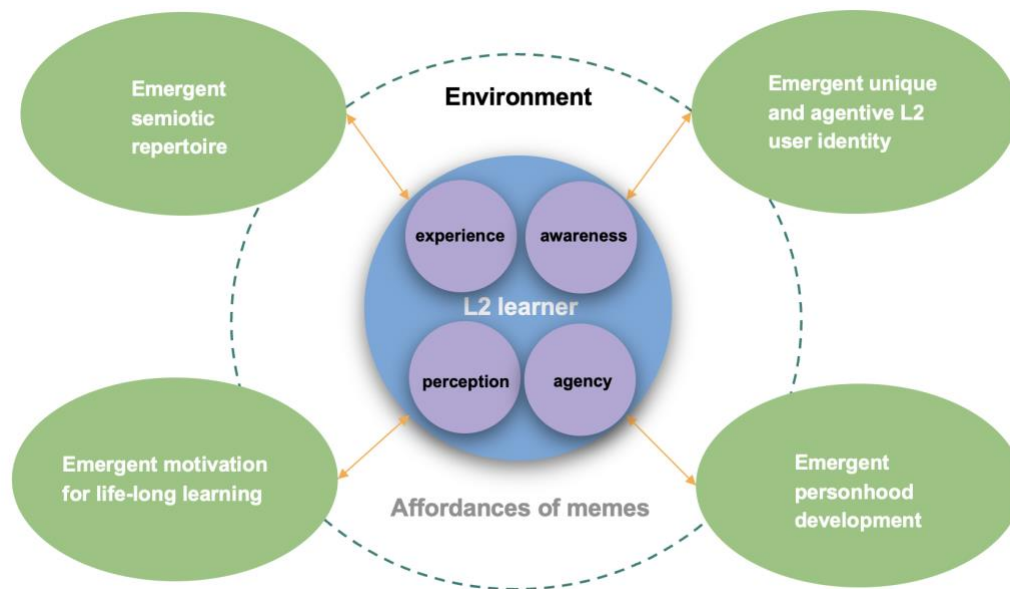
The findings contributed evidence to the ecological understanding of language learning (Kordt, 2018; van Lier, 2006). Memes, as an element in a nested system, work with other factors (e.g., personal history, personal interest) within context to impact emergent learning experience. We emphasized that the affordances of memes did not simply come from the quality of memes themselves. These affordances emerged from the participants' interaction with the learning environment through an interplay of experience, perception, awareness, and agency.

These findings also connect to the social semiotics understanding of semiotic resources (van Leeuwen, 2004). Along with participants viewing memes as having affordances for identity expression (Han, 2019; Kim, 2018), these findings point to the promise of memes and related literacy practices for language learning. This comparative case analysis revealed four semiotic affordances that can be beneficial for language and cultural knowledge learning, identity exploration and construction, integrating language learning with personal interest and life, and fostering intercultural competence, open-mindedness, and empathy, which are important current goals for language education (Dewaele & Li, 2012). Supporting current understanding of semiotics in CALL, our findings connect to themes in the literature, including empowering language learners' identity articulation (Schreiber, 2015; Smith et al., 2017), facilitating the exchange of linguacultural knowledge in the local and global contexts (Kim, 2018), and allowing for negotiation for meaning and *reprodusing* (Reinhardt & Thorne, 2019). Additionally, this study contributes to a growing body of semiotics in CALL literature that examines their potentials and impacts on language learners' learning experience, suggesting that semiotic affordances of CALL tools and objects can go beyond linguistic improvement to include identity, motivation, and personhood development. We emphasize an ecological view of language learning and the concept of affordance to understand the impact of memes on language learners' perception and interpretation of linguistic and cultural products and practices.

It is important to acknowledge that this study is limited to one specific intercultural chat group as the main empirical site of research. The cases presented represent a specific context and participants who were selected because they represented highly motivated L2 learner-memers. The memeing practices presented in this study were in the wilds and not purposefully designed for pedagogical purposes like those in language classrooms. The affordances perceived and utilized by the participants were serendipitous in

nature. Results are ecologically valid rather than generalizable in the positivistic sense. As such, more research is needed that examines the multimodal meaning-making processes connected to memes with differing contexts, language learners, and online spaces. While this study relied on learners' perception and interpretation of memeing practices and did not explore specific language learning gains, it offers initial insights that memes may extend the possibilities for how L2 learners perceive the affordances of semiotic artifacts, articulate identities, and develop intercultural understanding, especially in a time when global political tensions are seemingly on the rise. Future research might look into learners with different L2s and broaden the investigative scope to consider tracking L2 learners' memeing practices across multiple platforms and over a longer period of time to gain a holistic and deeper understanding of how space, time, and life stages may be intertwined with memeing and language learning. Future studies can also systematically focus on specific pragmatic, linguistic, or cultural skills with a more targeted pedagogical design in language classrooms.

Pedagogical Implications

The current study has pedagogical implications and contributions. It sheds light on the potentials of integrating memes into classroom activities. Considering the affordance of emergent semiotic repertoire, teachers can select memes or have students collect memes regarding a certain topic. Teachers can guide students to understand the linguistic information of memes and to analyze other semiotic information such as humor, cultural reference, and emotion, and how these elements work together to create meanings. Teachers can also have students recreate the text for certain memes and imagine specific contexts in which a meme can be used. Through the analysis of not only *what* the meme means, but also *how* it conveys meaning, *when* it can be used by *whom* in *what ways*, teachers can help learners build language and cultural knowledge, metalinguistic skills, context awareness, and symbolic competence.

Educators can also design activities in which learners can remix and recreate memes for a certain topic to facilitate emergent L2 user identity and motivation for learning. It is important for educators to foster a multilingual community where learners can create bi/multicultural memes to explore their identities and generate rich cultural hybridity. The ecological perspective of language learning emphasizes authentic texts, contexts, and audiences. Through *bridging activities* (Thorne & Reinhardt, 2008), which consist of 3 steps, "observation and collection, guided exploration and analysis, and creation and participation" (p. 566), students can be encouraged to collect memes they encounter in real life, bring them to the classroom for collaborative analysis, and use memes in real life meaning making. While encouraging students to use memes to engage real life audiences, teachers should remind students to pay attention to how their use of memes is responded to, what impact it has on the conversation, and how actions are situated where they use certain memes through natural engagements. Such a learning activity in authentic contexts can shape learners' perception of memes, raise awareness of the potentials for learning, encourage agency to participate in meaning making, and enable emergent and serendipitous learning experiences.

A dialogic approach can be used when integrating memes for the teaching of intercultural awareness and empathy. As perceived and used by the participants of the study, memes can serve as valuable intercultural topics on social issues that are personally significant to enable emergent personhood development, such as marriage, gender equality, and education. Teachers can select and ask students to collect memes from different cultural contexts regarding a specific social issue, then engage learners in intercultural dialogues by exposing them to a multiplicity of cultural perspectives and practices through memes. By creating a safe space for learners to compare, reflect, and reexamine previous assumptions and beliefs, such a dialogic approach has the potential to prepare language learners to become individuals with open-mindedness and intercultural empathy.

Finally, this study raises new questions regarding how we select and design meme-related pedagogical activities for students with different levels of linguacultural knowledge, especially for beginning learners, whom we did not examine in the current study. Future attention should be devoted to how the rich semiotic affordances of memes can be integrated into classrooms of all developmental levels in effective and meaningful ways.

Acknowledgements

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Appendix A. Phases of Data Analysis: The Evolution of Codes

	Phase 1: Multimodal Content Analysis	Phase 2: Open and Axial Coding	Phase 3 & 4: Selective Coding and Comparative Case Analysis
Data Sources	Memeing transcripts Meme artifacts	Semi-structured interviews Memeing transcripts Meme artifacts	Semi-structured interviews Memeing transcripts Meme artifacts
Codes	• language • slang • Chinglish • images • humor • feelings • Chinese culture • pop culture • creativity • remix • fun • community • identity • social issues • dialogues	• serendipitous learning • learning language and culture • communicating in the target language and semiotics • context awareness in the target language • pragmatic knowledge through semiotics, emotions, and contexts	Emergent semiotic repertoire
		• meaningful communication • part of the community • semiotic repertoire for bicultural identity purposes • remix semiotics: *reprodusing* for unique identity	Emergent unique and agentive L2 user identity
		• interested to learn how peers think and why • open discussions to explore languages, culture, and people • relatable to personal life • curiosity and fun	Emergent motivation for life-long learning
		• open discussion for social issues • develop a different way of thinking and critical thinking • develop awareness of different cultural perspectives • become open-minded • enable intercultural friendships	Emergent personhood development

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