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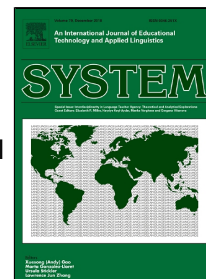
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Gesture in speaking tasks beyond the classroom: An exploration of the multimodal negotiation of meaning via Skype videoconferencing on mobile devices

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Gesture in speaking tasks beyond the classroom: An exploration of the multimodal negotiation of meaning via Skype videoconferencing on mobile devices

ABSTRACT

This qualitative study attempts to explicate the role of gestures formed with learners' hands and technology during second language speaking tasks via Skype videoconferencing tools, accessed on mobile devices. The theory of negotiation of meaning according to the Varonis and Gass model of non-understandings (1985) underpins the study. Data was collected from ten intermediate English language learners via recordings of their task-based interactions and stimulated recall interviews. The study found that gestures support forms of negotiation through affording participants a range of visual and embodied clues which operate in close conjunction with their language use. Findings suggest that gestures play a role in the establishment of joint attention and negotiation of vocabulary; and they are exploited to appeal for assistance and scaffold interlocutors. In some instances, gestures also potentially confuse learners. The deployment of mobile technologies was found to transform and mediate gestures in complex ways. Learners also experience challenges in their co-ordination of multimodal talk from beyond the classroom.

1. Introduction

There has been increasing interest in theories surrounding the role of the body within communication and learning. This is largely due to advances in ubiquitous digital technologies and the notion that we learn through our embodied experiences in the world (Farr et al., 2012). Moreover, due to cited aspects of portability and connectivity within mobile-assisted language learning (MALL), communicative settings now extend to a multiplicity of spaces, enabling language learners to engage with a range of collaborative tasks: "[L]anguage learning increasingly straddles classroom-based learning and learning outside the classroom, in virtual spaces and out in the world" (Kukulska-Hulme, 2013, p. 2). Emerging principles in MALL suggest that educators begin to link the affordances and constraints of devices, and their contexts of use, to second language (SL) research and theory (Stockwell & Hubbard, 2013) with the teacher orchestrating activities and acting as guide (Pegrum, 2014).

As Benson (2011) notes, locations beyond the classroom represent 'social spaces' or 'settings' which offer language learners a range of affordances and constraints; access to peer and pedagogic relationships; and the use of material or virtual resources (p. 13).

Central to the theory of *negotiation of meaning* (Long, 1996; Pica, 1994; Varonis and Gass, 1985) is the argument that the modification of an interaction when interlocutors "perceive, or experience difficulty in message comprehension" (Pica, 1994, p. 494) is beneficial to acquisition. As Levy and Stockwell (2008) note, these 'adjustments' serve to highlight specific linguistic, but also non-linguistic, features in the discourse in ways which 'render the input comprehensible' (p.113). Faraco and Kida (2008) argue that the types of learning sequences which are highlighted by Varonis and Gass (1985) can be extended in multimodal ways in order to elucidate how learners attempt to deal with their communicative issues with gesture influenced by the conditions of the particular interactive situation. Reasons for studying a diversity of modes within negotiation include the ability to explicate elements of the learning sequence which would not appear if examining the verbal channel in isolation, and to highlight the negative and positive effects of non-verbal clues on learners' linguistic acquisition (Faraco & Kida, 2008, p. 281).

The approach to task design involved one of the authors visiting locations which included historical buildings, art galleries, and cafés. In these 'settings' the author took a series of photographs of curious objects which were situated within them. The images were then built into the design of a set of information gap tasks (Pica et al., 1993) as a way to ideally stimulate negotiation of meaning via learners' collaborative deployment of mobile technologies. In keeping with a qualitative approach, participants were given opportunities to verbalize their experiences and thoughts as they were encouraged to discuss their negotiation from multimodal perspectives. To our knowledge, a focus on negotiation of meaning via mobile devices and the contexts which they enable remains as yet unexplored.

2. Literature Review

2.1. *Gesture and speech*

It has been argued that language use is multimodal (Seyfeddinipur & Gullberg, 2014) and that the hands act as "a locus of shared knowledge and emergent understanding" (Streeck et al., 2011, p. 8). McNeill (1992,

2000) investigated speech-associated gestures, noting how these form a unit of meaning which requires analysis in its entirety. Kendon (2004) also discusses speech and gesture operating in multimodal concert and posits that the movements of the hands must be recognised by interlocutors as 'communicative' in order to qualify as gesture.

Previous studies in the field of multimodality and embodied communication illustrate how hand gestures assume a role in talk-in-interaction and contribute to frameworks of co-operative action (Goodwin, 2000, 2007, 2014; Mondada, 2007, 2014; Schegloff, 1984; Streeck et al., 2011). As a result, gestures cannot be separated from the contexts in which they are constructed and are thus seen to operate in relationship to the participants' own perspectives on 'the material, real-world settings in which they interact' (Goodwin, 2014, p. 201). Gestures have been shown to enable speakers to establish joint attention in relationship to their sharing of co-present objects within face-to-face contexts (Mondada, 2014). Whilst many studies have adopted a conversational analysis approach, the current study positions gesture within the second language acquisition (SLA) framework of the negotiation of meaning whilst drawing on tenets of MALL such as the creation of opportunities for learners to interact beyond the classroom.

2.2 *Studies on gesture within SLA*

Within the paradigm of interactionist accounts within SLA, Gullberg (2010) highlights the relevance of the analysis of gesture within L2 speech. She suggests that there are unexplored research domains which include gestures and 'input' (Gass & Mackey, 2006) and their contribution to 'noticing' (Schmidt, 2001) of language items. The specific area of hand gestures has been shown to play a role in the following areas: communicative strategies for L2 learners (Gullberg, 1998; Kellerman, 1991); L2 intrapersonal problem-solving (McCafferty, 2004; Negueruela et al., 2004); repair work (Mortensen, 2016; Oshler, 2008); L2 comprehension (Belhiah, 2013; Dahl & Ludvigsen, 2014; Kida, 2008); lexical searches (Gullberg, 1998; Negueruela & Lantolf, 2008); acquisition of vocabulary (Allen, 1995; Eskildsen & Wagner, 2015; Kelly et al., 2009); establishment of intersubjectivity (Mori & Hayashi, 2006). It was considered that the mode of gesture may represent a particularly important multimodal resource for language learners when they are interconnected via *Skype* VC from geographically-separated contexts, although gestures may be mediated and constrained by mobiles in complex ways.

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Negueruela and Lantolf (2008) deployed McNeill's (1992) gesture-speech unit of analysis in order to investigate how meaning is constructed when comparing the execution of L1 and L2 speaking tasks. Their study found that L2 advanced level speakers exploited iconics (gestures which depict people, places and objects) and deictics (pointing gestures). Both L1 and L2 speakers synchronised their gestures to co-occur with speech; however, the meaning contained within L2 gestures frequently duplicated or emphasised the linguistic portion of the message, rather than adding new information. It has been suggested that, unlike native speakers, language learners deploy gestures to "concretize the verbal channel" in ways which can support their intrapersonal cognition and help to "elucidate meaning" for interlocutors (McCaffery, 2004, p. 155). L2 gestures also occur in an asynchronous manner to speech in that the gesture can emerge before its linguistic counterpart. These examples of gesture-speech relationships are categorised as 'lexical searches' (Negueruela & Lantolf, 2008) in that the gesture is potentially supporting the speaker to remember a word. This corresponds to theories of cognition which suggest that "gestural representation serves to 'hold' the conceptual properties of a sought-after lexical entry in memory during lexical search" (Krauss et al., 1996, p. 421). Gullberg (1998) found that French and Swedish participants exploited more gestures in their L2 than in their L1. 'Speech-related gestures' were performed as a strategy to solve lexical problems, to elicit help from an interlocutor, to ensure co-reference and coherence; and to support internal cognitive processes. Sime (2008) investigated L2 learners' perceptions of the role which gestures played in their understanding of explanations of language. It was found that in providing the group with opportunities to reflect via stimulated recall, they became more aware of those gestures which they perceived to be relevant to their self-identified learning needs as they took account of the interplay between gesture and language items.

2.3. *Learning beyond the classroom and with mobiles*

Interest in second language learning which takes place in locations beyond the classroom (Lee, 2016; Kukulska-Hulme, 2017; Benson & Reinders, 2011; Eskildsen & Theodorsdottir, 2017; Hellermann et al., 2017; Kurhila and Kotilainen, 2017) has come of age. Work within the specific area of MALL has shown that there has been a lack of research in relationship to the exploitation of the communicative affordances of mobile devices (Burston, 2015). However, this is changing as mobile teaching and learning frameworks increasingly emphasise the importance of aspects such as context and collaboration.

We are beginning to see MALL applications that relate language learning to a person's physical context when mobile, primarily to provide access to location-specific language material (e.g., useful vocabulary

and phrases) or to enable learners to capture aspects of language use *in situ* and instantly share and discuss them with others (Kukulska-Hulme 2012, p. 2).

Mobile learning (Kukulska-Hulme, 2012, 2017; Chinnery, 2006; Hellerman et al., 2017; Lonsdale et al., 2004; Pachler et al., 2010; Pegrum, 2014; Ros i Solé et al., 2010; Stockwell, 2016; Stockwell & Hubbard, 2013; Wong et al., 2012) has heralded prospects which include the acquisition of vocabulary, real-world tasks, self-reflection, as well as embodied and situated forms of learning. Pegrum (2014) depicts embodied approaches to learning with mobiles which link the body, the mind, and the environment. Stockwell (2016) emphasises how exploiting theories of SLA in MALL can highlight what can be achieved through learning with devices. Lonsdale et al., (2004) also discuss how learning with mobiles can be defined as 'context-aware' when locations such as botanical gardens, museums, game parks, or heritage sights are exploited. Studies have shown that teachers can enable learners to 'create contexts' from beyond the classroom via their interaction with everyday objects and people in ways which support language learning (Wong et al., 2012). In terms as to how the use of mobiles might influence and transform learners' gestures, it has been found that the act of pointing can be achieved through a person's use of an artificial device (Clark, 2003). Cameras and video are thus deployed as forms of 'prosthetic embodiments' or extensions of the human body (Jaworski & Thurlow, 2011) in ways which enable people to draw attention to and record aspects of their physical surroundings (Jaworski & Thurlow, 2011).

2.4. *Negotiation of meaning in CMC and the Varonis and Gass model*

Interactionist studies within SLA have continued in the field of technology-mediated communication with the Varonis and Gass (1985) model exploited in the analysis of L2 digital learning environments (Smith, 2003; Van der Zwaard & Bannink, 2014; Wang, 2006; Yanguas, 2010). However, whilst the premise behind negotiation suggests that interactive opportunities can engineer an attention to form (Wang, 2006), Smith (2005) concluded that computer-mediated-communication (CMC) is similar to face-to-face interaction in that "lexical items have been found to trigger the vast majority of computer-mediated negotiation, with morphosyntax triggering very little" (p. 36). There has also been an increasing interest in language learners' multimodal and embodied forms of communication in the field of desktop videoconferencing (VC) (Hampel & Stickler, 2012; Kern, 2014; Lamy & Flewitt, 2012; Satar, 2015).

There have been contradictory findings regarding the benefits of audioconferencing and chat over video-based communication. The benefits include fewer distractions, reduced communicative pressure, and non-threatening

aspects of 'face-saving' (Guichon & Cohen, 2014; Tudini, 2012; Van der Zwaard & Bannink, 2014). These findings can be compared to arguments that the multimodal aspects of video such as the availability of gestures, visuals, and social presence can support aspects of learning and communication (Kern, 2014; Lamy & Flewitt, 2011; Satar, 2015; Wang, 2006; Yamada & Akahori, 2007; Yamada, 2009).

Hampel & Stickler (2012) investigated *negotiation of meaning*, according to Long (1996), on the desktop platform *FlashMeeting* in exchanges between teachers and learners which enabled visuals, text, audio and video. Nevertheless, they note how technical issues, for example, a lack of clarity of visuals, significantly impacted the use of body language and gesture from being exploited as an effective communication tool.

> We have seen how the environment shapes interaction, how users adapt the available tools to their purposes and how different modes can be used in a complementary, compensating and competing manner (Hampel & Stickler, 2012, p. 135).

The Varonis and Gass (1985) model adopts a broad definition of the notion of communicative *non-understanding* within *negotiation of meaning*. From the authors' perspective, *non-understanding routines* (also termed negotiation routines) do not signify the necessity for a complete breakdown in communication between interlocutors to occur for the creation of opportunities for them to modify messages and clarify sources of information. From this perspective, communicative issues are seen to operate along a continuum: 'misunderstanding, no understanding, or incomplete understanding.' As a result, negotiation affords opportunities for speakers to work together to establish 'understanding' (p. 81). As Varonis and Gass (1985) state, "the *sine qua non* of a *non-understanding* routine is that within the exchange there are embeddings of one or more clarifications" (p. 73).

The model claims that routines can be categorised into two principal parts: a trigger and a resolution phase.

Figure one here

The trigger (T) forms the section of the discourse which prompts the initial non-understanding for the listener. During the resolution phase, the portion of the discourse which triggers the non-understanding is signified by this same listener via an indicator (I). This acts as an opportunity to indicate that there is a problem in understanding in terms of the previous utterance. This then leads to a response (R) from the speaker to the previous indication of non-understanding, with the reaction to response (RR) signifying the end of the routine.

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In her study on task-based-language-learning (TBLL) via VC, Wang (2006) exploited the Varonis and Gass (1985) model and found that communicative issues could arise from queries based around items of vocabulary. For example, speakers would attempt to negotiate the meaning of new words in ways which resulted in the creation of opportunities for interactional modification.

The following example (see Table 1) is derived from data taken from the present study. It shows an example of a coded example of negotiation before the transcription and analysis of gesture.

Table 1 here

The Varonis and Gass model also enables the possibility to code more complex and lengthy examples of negotiation than previously shown in Table 1. The authors classify extended examples of negotiation as "embedded non-understanding routines." These types of negotiation involve 'embeddings' in that there are multiple triggers, indicators and responses which can occur anywhere within the negotiation before a communicative issue is resolved (see Varonis and Gass, pp. 78-79, and Excerpts 1 and 2 from the present study).

The present qualitative study aims to investigate the role of gesture in negotiation of meaning with a focus on speech-associated gestures and the role of mobile technologies when used by learners from a range of contexts located beyond the classroom. A second aim is to explore how learners can be supported to reflect on their multimodal communication.

The two research questions guiding this study are:

1) What is the role of gesture in negotiation of meaning when learners are communicating via *Skype* VC accessed on mobiles from contexts beyond the language classroom?

   a) How are speech-associated gestures exploited and responded to between learners during their negotiation of meaning routines?

   b) What are the affordances and constraints of mobile technologies, and the contexts they enable, in relationship to learners' deployment of gesture during their negotiation of meaning routines?

2) To what extent can a supported focus on gesture and language use help learners to understand aspects of their multimodal communication during the negotiation of meaning?

3. Method

3.1. *The participants*

The participants in this study were ten adult language learners from countries which included Kazakhstan, Switzerland, Turkey, Thailand and Brazil. They were studying on formal English language programmes at a language school in the UK at the time of the research. The participants ranged in ages from 22-27 years and had been initially evaluated at B1 and B2 levels by the institution according to the Common European Framework for Languages. Learners originally attended a research meeting at their institution to hear about the research. Participants were not told about the specific focus on gesture. All participants' names have been changed, with permission to use images of them obtained within consent forms.

3.2. *Research procedures*

The examples of negotiation presented in this article were isolated from approximately 5 hours of transcripts from video recordings of the learners' speaking tasks, enabled by their use of mobile devices. The stimulated recall sessions generated a further 8 hours of data resulting in 13 hours in total. Data collection from the tasks took place in and around a coastal city in the UK over a period of several months from February to July. The participants communicated with each other from different locations. One half of each dyad exploited their own device (either a tablet, smartphone or 'two-in-one' detachable tablet device), however, for reasons around analysis and data protection, the second half of each dyad borrowed the researcher's tablet which had a video-capturing app pre-installed.

The approach to TBLL in the present study centred around conceptualization of the information gap task (see Ellis, 2003; Pica et al., 1993; Skehan, 1998) in terms of an identification of the affordances of mobile technologies and the contexts which they enable. The communicative tasks were designed as a way to encourage learners to collaborate remotely in order to share missing sources of information in a manner which would ideally prompt them to walk around a space, locate and share an array of real-world objects across *Skype* VC. Pica et al.'s (1993) analysis framework for task evaluation was selected due to its basis in interactionist theory and its potential to stimulate forms of negotiation between learners. It suggests guidelines for communicative tasks which include the notion that interactants hold different portions of information; they must supply the

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information; and they have a convergent goal (p. 16). Participants were handed a task sheet without preparation time or instruction. Each task lasted approximately one hour.

4. Analysing gesture with speech

In the present study, the Varonis and Gass model (1985) was deployed to initially identify and analyse examples of negotiation (these included routines and more extended forms of negotiation). Examples based around the negotiation of vocabulary items were included in the coding scheme (Wang, 2006). The gestures of concern in the present study were iconic, metaphoric and deictic gestures (McNeill, 1992). Iconic gestures are pictorial in nature; mirror the speech channel; and represent people, places and objects. Metaphoric gestures entail the hands forming a representation of an abstract concept under discussion. Deictic gestures (pointing actions) can indicate real or imagined people, objects and locations.

The video data from the tasks was imported into the software tool ELAN, a Computer Assisted Qualitative Data Analysis Software (CAQDAS) https://tla.mpi.nl/tools/tla-tools/elan/ which supports the fine-grained analysis of gesture and speech (for an overview of multimodal analysis, see Flewitt et al., 2014). The tool allows the researcher to transcribe visual data containing split second movements through slowing down a video clip of individual gestures to examine fleeting movements frame by frame. This enables the possibility to break the gesture down into a series of components in order to understand the gesture type and its co-timed, or asynchronous, occurrence with speech. The software supports the analyst to first discern individual gesture types and to examine how learners' individual movements build sequentially across entire routines. In the current study, the speech turns within examples were linked back to the unit of the gesture phrase according to McNeill (1992). The data were subjected to inter-coder reliability checks with the coder asked to determine the gestural phrase and categorise the gesture type within the wider coding scheme of the negotiation of meaning.

As shown in Table 2, the overall gesture phrase is broken down into a series of smaller phases with the stroke viewed as the obligatory meaning-based phase. The phases of a gesture are shown in the table below which is taken from McNeill (1992, p. 83).

Table 2 here

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An example of data from Negueruela and Lantolf (2008) illustrates how McNeill's (1992) coding scheme is operationalized in order to analyse the meaning-based relationships which occur between gesture and speech within an L2 spoken language task:

the frog eh came [to the **face** of the man] ICONIC

(p. 94)

The square brackets are used to determine the timed onset and offset of the gesture with the boldface exploited to establish where the stroke occurred in relationship to the word or words which the speaker simultaneously deployed. Table 3, which follows, demonstrates how McNeill's (1992) transcription scheme was adapted to encompass learners' deictic gestures via their use of mobile devices and cameras.

Table 3 here

Table 4 demonstrates the gesture-speech multimodal coding scheme for the negotiation of meaning and illustrates it using data from the study under discussion.
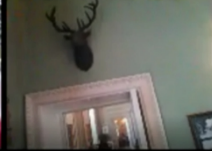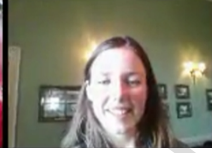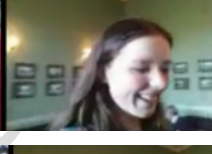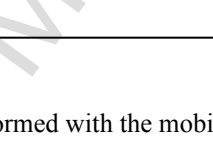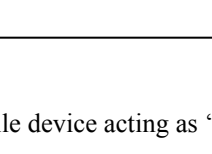
Table 4 here

5. Results

We next present the findings from two dyads (Excerpts 1, 2, 3, 4, and 5) which illustrate how language learners negotiate for meaning over a distance using the multimodal affordances of *Skype* VC on mobile devices. For each dyad, we will first focus on the role of gesture in negotiation of meaning when learners are communicating via *Skype* VC accessed on mobiles from contexts beyond the language classroom, thus answering the first research question. We will then show to what extent a supported focus on gesture and language use helps learners to understand aspects of their multimodal communication during the negotiation of meaning, thus answering the second research question.

Excerpt 1, shown below, demonstrates the mobilization of a pointing (deictic) gesture, which is achieved using *Skype* VC via a mobile tablet, by a learner situated in an historical building whilst communicating with her interlocutor who is situated within a botanical garden. The gesture indicates one particular object (a hunting trophy) which the learners were required to locate and share across their devices.

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Excerpt 1: Dyad 1.VC on mobile devices from an historical building and botanical gardens (00:06:37 - 00:07:11)

				FAY	ANDREA	
1. A:	There is a beautiful **head**.	T				DEICTIC (Andrea with mobile device) Stroke = (00:06:40)
2. F	I don't know if you see. I can see it. It's a….	I				ICONIC Fay: (00:06:50)
3. A	You see it?	R				
4. F	[**Um**] [How do you **call** it?]	I				
5. A	I don't know the name… I don't know how what's the name.	R				
6. F	[**Horn**] [**hor**n]	I				ICONIC Fay: (00:6:57) Andrea: (00:07:01)
7. A	[Like the **wood**]	R				
8. F	[**Horn**]	I				
9. A	[**Yeah**]	R				
10. F	[**Like eh**] I don't know. And how do you say in Eng [ah **deer**] deer? deer.	T				ICONIC Fay: (00:07:03)
11. A	Deer?	I				
12. F	[**Head**][**Head of**] [**deer**]	R				ICONIC Fay: (00:07:09)
13. A	Ah yeah.	RR				

The deictic gesture which Andrea (A) first mobilizes is formed with the mobile device acting as 'embodied prosthesis,' and serving the purpose of enabling Andrea to point to a specific object which is situated within the historical building. She uses the gesture to establish joint attention in order to co-reference this object with her interlocutor Fay (turn 1). As she points at it, she simultaneously clarifies that she has tried to focus the technology accurately: 'I don't know if you see.' It was observed that this example of negotiation was not driven by Fay's need to clarify Andrea's previous spoken utterance but instead reflected an interest in negotiating based on an object which had been shared across the learners' mobile screens. The initial trigger leads to a subsequent indicator, based around an unknown vocabulary item (turn 2), as Fay (F) begins to search for the appropriate lexis to describe the object. Fay initially focusses on the anatomy of the animal's antlers, illustrating the shape and trajectory of these with two iconic gestures: [**Um]** [How do you **call** it?]. Repetition of the same iconic gesture may be helping the learner to remember the word for 'horn' which later emerges in turn 6, as a representation of the antlers is repeated three more times with each reiteration of Fay's use of the word (turns 6 and 8). Andrea's response gesture (turn 7) was interpreted to function as a communicative strategy in order to

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signal that Fay's gestures had been both noticed and understood. However, Andrea chooses to represent the shape and position of the animal's antlers in a different manner to Fay as she forms an iconic gesture by moving one hand from her head outwards whilst continuing to hold her tablet device in the other. She uses the linguistic portion of the negotiation to clarify that horns are [like the **wood**] in her response (turn 7). Fay's next individual gesture has been modified in order to now reflect her search for the key word 'deer.' The learner uses her hands and body to represent the animal in its entirety (turn 10), however, her embodied communication is constrained by the size of her screen. Fay's iconic gesture precedes her use of the key word 'deer' as she utters the words [**Like eh**]. A second trigger (turn 10) is responded to with an indicator in the form of an echo to suggest a query around the word 'Deer?' This next prompts Fay to clarify that it is the actual head of the deer which may best depict the object which she had glimpsed on her screen. The meaning of the designated object is finally related to the act of hunting as Fay (turn 12) forms her gestural strokes in order to represent the action of a knife being used on the deer. This draws the negotiation to a close with a reaction to response from Andrea: "Ah yeah."

Excerpt 2 below has been taken from the stimulated recall session with Fay based on the routine previously shown in excerpt 1. The interview data is presented verbatim with no corrections.

Excerpt 2: Dyad 1. Stimulated recall interview

Can I ask what you were gesturing here?
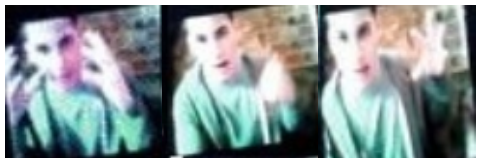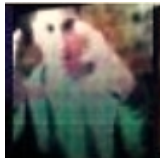
When I saw the object I couldn't find the name of the words so my first gesture was to find the name of the animal … It was for me to think but at the same time as she saw my screen that I was thinking I tried to make a connection with her … it would be easier for both of us to work out the words. You know sometimes you know the words but you have to search in the head you know to find it … I was pointing to the antlers with my head to the outside kind of with my hands. We didn't succeed in that she didn't stay for long … now I see that she did copy it so it was good that I got her attention to this word. That means she understood me in a way … later when I saw it it is hunting prize. When I pointed to my neck I was explaining that it was the head of the deer as a hunting prize.

(Learner from Kazakhstan, March, 2016)

The interview which followed the task revealed a learner-centred insight into the section of data illustrated previously in excerpt 1, thus contributing to answering the second research question. It becomes clear from the interview that Fay's multiple gestures assumed a dual role for her. She explains that the first gesture is helping her to search for the name of the animal but whilst gestures are representative of her thought processes, they also simultaneously act as a communicative strategy for her interlocutor to notice that she requires help in order to achieve her linguistic goals. Fay interprets her interlocutor's response gesture with the hands as a sign of the est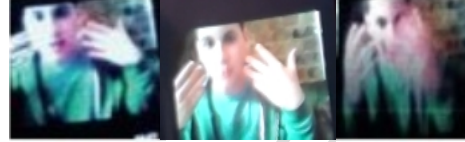ablishment of mutual comprehension; however, she also views her physically walking away, and ceasing to continue to point with the device at the relevant object, as problematic. This can be interpreted in her conclusion that "*we didn't succeed* " and the further information revealed that of her own volition this particular learner followed up the problem.

In excerpt 3, two learners are communicating via Skype VC on tablet devices from two separate café locations in the city. The excerpt shows stills from the video capture of one of the learners and represents the most lengthy and complex example of negotiation within our data, lasting over three minutes.

Excerpt 3: Dyad 3. VC on mobile devices from two café locations (00:09:34) – (00:12:44).

1.P	It's a place. There is a [like a **head** of a man] [In the **wall**] attached in the wall. Like eh [he's like **getting** through the wall you know]	T	ICONIC (00:09:37) DEICTIC (00:09:39) ICONIC (00:09:44)
	[like a **door** and there's a door is] [**broken**] [and his face is like eh **getting** through the door]		ICONIC: (00:9:47) ICONIC: (00:09:49) ICONIC: (00:09:50)
2.L	[The face?]	I	
3.P	Yeah [like **it's a**]	R	
4.L	It's a man?	I	
5.P	Yeah. It's a place around you I think. Maybe downstairs?	R	ICONIC (00:09:54)

6.L	Could be downstairs. So ok. Just ask. It's a face of a man. He goes outside of the wall. It's near to the door?	I	
7. P	Yeah. It's a scene of a movie actually. I don't know if you know this movie of Stanley Kubrick. I don't I don't think so but it's really easy to find I think. [It's a **man**] [that is like eh **getting** through the door you know] [The **face**]	R	ICONIC: (00:10:24) ICONIC (00:10:25) ICONIC (00:10:26)
8.L […]	Ok. So I have to walk and find the place?	I	
13.P	Yes. Try to **show** me. Yeah.	R	DEICTIC (with device). (00:10:56) (00:10:57)
14. L	Ah **wait**.	R	
15.P […]	Yeah. I **can** see it I **can** see it. Do you know who the actor is?	RR/T	DEICTIC (with device). (00:10:59) (00:11:01)
25. P	Just a second. I'm finding it. The movie is The Shining.	T	
26. L	Shining… is the title?	I	
27. P	The title of the movie.	R	
28. L	OK.	RR	
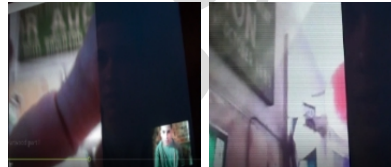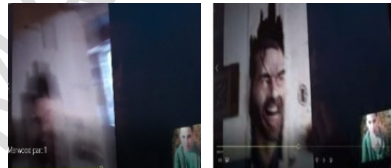
In excerpt 3, Paul (P) is observed to use a series of iconic gestures in close conjunction with his language use to create a multimodal trigger. Whilst Paul is a proficient second language speaker, his use of gesture coheres with the suggestion that learners exploit gesture, not to add further information, but to instead 'concretize' or duplicate information in L2 language. For example, Paul's use of iconic gesture is precisely timed with his deployment of key words: "head;" "wall;" "getting;" "door;" "broken." These gestures may simultaneously act as a strategy to elucidate meaning for his interlocutor, Lily (L). There have been arguments that in order to support acquisition, gestures must align with language in order to create a coherent semantic message and enable dual channel input (Kellerman, 1992).

Lily's subsequent use of indicators is formed through her linguistic echo strategies (turns 2 – 4), as she attempts to clarify elements from the original message as a way to establish sufficient levels of understanding in order to complete the task. In querying the information in the trigger, she draws attention to aspects of her interlocutor's communication in ways considered valuable to acquisition according to the Varonis and Gass (1985) model. However, whilst Paul attempts to modify his input in multimodal ways, he also struggles to find adequate words to respond to Lily's indicator and instead relies on a rather vague gesture which fails to convey the meaning of the object and may have instead further confused Lily (turn 3). Items of language, but also gestures, are later modified and recycled at subsequent points in the discourse (see turn 7) as the depiction of the object is once again clarified multimodally in order to enable mutual understanding. Lily eventually locates the correct object, however, she experiences difficulties in accurately pointing at the model of Jack Nicolson with her tablet and camera (turns 13-15). It is only through close peer collaboration that Lily is able to establish the point at which she has visually conveyed the object across *Skype* VC as Paul remarks: 'I can **see** it.' Paul is curious about the film itself and next picks up a second device (a mobile phone) in order to search for further information on *Google*. From turn 25 onwards, the negotiation culminates in the more recognisable pattern of a trigger, indicator, response and reaction to response, achieved through language alone.

Excerpt 4 below has been taken from the stimulated recall session with Paul based on routines shown in excerpt 3.

Excerpt 4: Dyad 3. Stimulated recall interview
`

Can I ask what you were gesturing here?

I'm talking about the head and making a gesture around my head… I want her to understand that it is getting through the door [repeats gesture from video]. It's an action… I'm trying to make the image in her head so she got the image. To inject the image into her head.

(Learner from Brazil, May 2016)

 Paul evidently interprets his own physical movements as a visual mode which is literally transferable to his interlocutor's mind; noting that the images he created at the time were deliberately aimed to be co-expressive with his speech. His depiction of gesture as a visual mode may have been part of his earlier memories of the

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moving image as he was familiar with the original film. His interlocutor was also asked to reflect on her experiences of the same section of data (see Excerpt 5 which has been taken from the stimulated recall session with Lily from the negotiation example shown in Excerpt 3).

Excerpt 5: Dyad 3. Stimulated recall interview

Could you tell me what you were doing with your device?

Downstairs it was very difficult to understand because the music was very loud. I had to think about the light and position of my hands. If it is high or low… maybe it's not in front of it [the object] but I was on the stairs. At this moment I was in the middle. It was the same the music again because all the time I tried to control the screen with his mouth moving and speaking and so I had to move.

(Learner from Switzerland, May 2016)

This participant is struggling with unpredictable levels of background music present in her location. She conveys information from her context via her device and camera whilst simultaneously attempting to watch and listen to her interlocutor throughout the negotiation. This is challenging and retrospection reveals the need to harness her own multimodal resources whilst simultaneously addressing and responding to signals from her interlocutor.

6. Discussion

While this exploratory study has limitations, given the small number of participants, it illuminates the multimodal nature of language learners' communication. It explicates the role of gesture when operating in conjunction with speech using examples of negotiation across *Skype* VC accessed on mobile devices from contexts which are situated beyond the classroom. The multimodal analytical framework allowed for the examination of gesture in direct relationship to speech from a perspective rarely considered within research into negotiation. Patterns of extended forms of negotiation which contained iconic and deictic gestures were prevalent across the data. The stimulated recall sessions aimed to encompass a learner-centred viewpoint on negotiation to understand the role of gesture and to gain further information in order to more fully address the

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affordances and constraints of both technology and context. They may have also supported learners in ways which appeared to encourage their multimodal competence as they were given opportunities to understand the modal interplay of gesture and speech. It has been suggested that teachers need to support language learners to develop multimodal competence based on raising their awareness as to how combinations of modes operate (Royce, 2002); for example, language learners can be supported by stimulated recall methods as an awareness-raising activity which allows them to attribute functions of gestures in relationship to the meaning of language items (Sime, 2008).

It was found that the multimodal communication observed during negotiation was significantly impacted by the public settings; for example, physical space and artefacts were mediated in complex ways via the mobility of the learner and the shifting nature of the device and camera within *Skype* VC. This was largely a result of the context-sensitive nature of the task design which exploited a range of real-world settings across which the participants negotiated as it aimed to support processes considered relevant to SLA within MALL.

It was also found that learners did not deploy metaphoric gestures. Their use of iconic and deictic gestures assumed roles which included: attempts to establish mutual understanding; negotiation of vocabulary; and the affordance of a resource with which to scaffold peers and indicate appeals for assistance in order to complete tasks. Conversely, gestures which were designed to perhaps support an interlocutor may have inadvertently contributed further incidents of non-understanding. For example, if the meaning of the gesture did not accurately reflect the meaning conveyed in language then learners may have been confused, especially where specific language items were recycled but their co-occurring gestures altered. As Gullberg (2006) notes, gesture analysis can contribute to theoretical SLA in relationship to the development of our understanding as to how speakers deal with communicative issues in usage. However, within our study learners paid little attention to form, with lexical items and task goals acting as triggers to negotiation.

There are indications from our interview data that iconic gestures can assume multifunctional roles in that these serve both intrapersonal and communicative purposes simultaneously: '*It was for me to think but at the same time … I tried to make a connection with her*.' There are also limited examples of iconic gestures exploited for the purpose of lexical searches (see Negueruela & Lantolf, 2008). In these instances, the gesture emerged before the learner had found the appropriate words to convey their meaning, however, during these examples participants often continued to speak using fillers such as 'eh like' and 'um.'

Deictic gestures, formed with the device itself, relied on peer feedback to clarify whether the learner had located and accurately conveyed the correct object across *Skype* VC. To accomplish tasks within this L2 learning environment, gestures constitute a set of visual and embodied resources which operate in direct relationship to the unfolding nature of negotiated language use. Conversely, the restricted size of mobile screens required learners to reconfigure their iconic and deictic gestures with regard to their deployment of technology. Mobile devices both enabled and constrained gesture, with participants in the study demonstrating a range of abilities in terms of their understanding as to how to construct gestures via use of technology and the contexts in which they were situated. Learners mainly exploited deictic gestures with the device itself. This technology-mediated action involved high levels of co-ordination, for example, it was difficult for learners to establish whether or not they had accurately pointed at a correct object without listening to peer feedback. Learners deployed deictic gestures with mobile devices in order to co-reference objects in virtual ways and to create joint frames of attention in order to negotiate for meaning.

7. Conclusion

This study suggests that while contextual factors around settings such as cafés and sites of historical interest include affordances which can both stimulate and support negotiation in potentially new ways through forms of task design, they can also generate unpredictable issues for learners which would need to be carefully managed in terms of teacher guidance and support. Studies involving greater numbers of participants and conducted over an extended period of time are required in order to more fully understand the multimodal use of mobile technologies beyond the classroom when underpinned by theories of acquisition. This would further our understanding as to how learners and teachers engage with aspects of gesture-speech interrelationships through combinations of task type and design, reflective learning experiences; and strategic pedagogic intervention within the wider context of teachers' dedicated classroom practice.

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Tables

Table 1:

Varonis and Gass model illustrating data and coding scheme from present study under discussion	
1. F: Where are you sitting? It looks like a library you know. Is it?	T
2. A: Sorry?	I
3. F: Ha ha ha library. It looks like a library where you're sitting. Eh behind you the books.	R
4. A: Yeah.	RR
5. F: The books behind you.	R
6. A: Do you want I show you?	I

Table 2:

Phases of gesture for analytic transcription purposes in the present study

Preparation: the limb moves away from the resting position to a position where the stroke begins.

Stroke: is the peak effort of the gesture at which point the meaning of the gesture is expressed. The stroke is synchronized with the linguistic segments which are co-expressive with it.

Retraction: is the return of the hand to its resting position.

Table 3:

Gesture and speech transcription scheme for study via *Skype* VC on mobiles beyond the classroom

Indicates the peak effort or stroke of the pointing (deictic) gesture when constructed with mobile technology: the device and embedded camera are deployed by the learner to focus on a specific object in order to share this with an interlocutor via *Skype* VC.

Bold letters in the speech mode indicate the point at which the stroke of the gesture synchronizes with the speech mode.

Table 4:

Varonis and Gass model illustrating data and coding scheme from present study under discussion	
1. F: [**Where** are you] [**sitting**?] [It **looks** like] a library you know. Is it?	T
2. A: Sorry?	I
3. F: Ha ha ha [**library**]. It [**looks** like a **library**] where you're sitting. Eh [**behind** you the **books**].	R
4. A: Yeah.	RR
5. F: [The **books behind** you].	R
6. A: Do you want I show you?	I

Listing of titles of figures, tables, and excerpts

Gesture in speaking tasks beyond the classroom: An exploration of the multimodal negotiation of meaning via *Skype* videoconferencing on mobile devices.

Figure 1: The Varonis and Gass (1985) model for negotiation of meaning

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Table 2: Phases of gesture for analytic transcription purposes in the present study

Table 3: Gesture and speech transcription scheme for study on *Skype* VC on mobiles beyond the language classroom

Table 4: Varonis and Gass model (1985) integrated with gesture-speech unit of analysis (McNeill, 1992)

Excerpt 1: Dyad 1. VC on mobile devices from an historical building and botanical gardens (colour on website)

Excerpt 2: Dyad 1. Stimulated recall interview

Excerpt 3: Dyad 3. VC on mobile devices from two café locations (colour on website)

Excerpt 4: Dyad 3. Stimulated recall interview

Excerpt 5: Dyad 3. Stimulated recall interview

TABLES

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Table 4:

Varonis and Gass model illustrating data and coding scheme from present study under discussion

7.	F: [**Where** are you] [**sitting**?] [It **looks** like] a library you know. Is it?	T
8.	A: Sorry?	I
9.	F: Ha ha ha [**library**]. It [**looks** like a **library**] where you're sitting. Eh [**behind** you the **books**].	R
10.	A: Yeah.	RR
11.	F: [The **books behind** you].	R
12.	A: Do you want I show you?	I

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Trigger	Resolution

$$T \longrightarrow I \longrightarrow R \longrightarrow RR$$