



Open Research Online

The Open University's repository of research publications and other research outputs

Negotiation for Meaning Routines in Audio SCMC Interactions: An Expanded Framework

Journal Item

How to cite:

Li, Chenxi (Cecilia) and Lewis, Tim (2018). Negotiation for Meaning Routines in Audio SCMC Interactions: An Expanded Framework. *International Journal of Computer-Assisted Language Learning and Teaching*, 8(3) pp. 50–72.

For guidance on citations see [FAQs](#).

© 2018 IGI Global

Version: Version of Record

Link(s) to article on publisher's website:

<http://dx.doi.org/doi:10.4018/ijcallt.2018070103>

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data [policy](#) on reuse of materials please consult the policies page.

oro.open.ac.uk

Negotiation for Meaning Routines in Audio SCMC Interactions: An Expanded Framework

Chenxi (Cecilia) Li, The Open University, Milton Keynes, UK

Tim Lewis, The Open University, Milton Keynes, UK

ABSTRACT

Negotiation for meaning, in response to instances of non-understanding, plays an important role in SLA. Meaning negotiation routines in face-to-face classroom interactions have been identified by Varonis and Gass. Smith expands the model to adapt it to text chat CMC environments. In the past decade, synchronous audio CMC has become commonly used for online language teaching, but its affordances are different from text chat CMC. Therefore, it is necessary to examine what meaning negotiation routines are in language learners' oral interactions in this new online learning environment. In this study, participants were invited to complete two information gap tasks in which target lexical items were embedded to elicit learners' negotiation for meaning and then they participated in a stimulated recall interview. Based on the analysis of students' oral interactions in synchronous audio CMC, the authors propose two new possible stages in negotiation for meaning routines and demonstrate how different modes of communication can affect language learning online.

KEYWORDS

Beijing Foreign Studies University, China EFL, Computer Assisted Language Learning (CALL), Interaction Hypothesis, Negotiation for Meaning, Second Language Acquisition (SLA), Synchronous Audio CMC

1. INTRODUCTION

1.1. Technology and Language Teaching

As Bax (2003, 2011) foresaw, CALL has become normalized as technology has been fully integrated into second language teaching, learning and research. The past two decades have witnessed the growth of the research field in Computer-assisted language learning (CALL) from its infancy to maturity, with a large number of studies exploring the relationships between different types of technology and second language acquisition (SLA) theories in a variety of linguistic, cultural and educational contexts (Plonsky & Ziegler, 2016; Sauro, 2011). As a result, the main research agenda in CALL has progressed from examining the effectiveness of CALL to studying how the 'affordances' of different types of technology can be best used for language learning online (Cunningham & Akiyama, 2018).

Among various approaches to CALL, Computer-Mediated Communication (CMC), has been one of the most commonly used and widely researched approaches. In their recent review of SCMC (synchronous computer-mediated communication) research, Cunningham and Akiyama (2018) conclude that the field is undergoing reconceptualization and expansion with the advance of technology and the diversification of participants. The central argument in CMC research is that since

DOI: 10.4018/IJCALLT.2018070103

Copyright © 2018, IGI Global. Copying or distributing in print or electronic forms without written permission of IGI Global is prohibited.

communication is mediated by technology, the ‘affordances’ of the technology play an important role in how learners communicate and learn languages in the mediated environment (Yanguas, 2010; Hampel & Stickler, 2012). With the technological development of CMC from asynchronous to synchronous communication, from written text chat messages to audio- and video-conferencing environments, the modes of communication, namely, modality, have gained increasing attention in recent years (Guichon & MacLornan, 2008; Stockwell, 2010). Clearly, audio SCMC is different from text chat CMC in that it ‘affords’ spoken as well as written interactions. Video CMC differs from audio CMC because it enables participants to use visual cues. Therefore, how modalities afford language learning online has become an important question (e.g. Smith, 2003; Hampel & Hauck, 2006; Sauro, 2011, 2012). This study provides a partial insight into the topic by studying specifically how learners interact in audio CMC environments.

1.2. The Interaction Approach in CMC Environments

In their review of theory in CALL research and practice, Hubbard and Levy (2016) observe that, among many SLA theories, the *Interaction Approach* has been extensively referenced as a theoretical base in CMC research, especially in studies that involve text chat, audio- or video-conferencing as a basis for learner interaction and exchange. As Ellis (2000, p.209) points out, learning arises not *through* interaction but *in* interaction. Negotiation for meaning¹(NfM), defined by Varonis and Gass (1985) as a response to instances of non-understanding rather than misunderstanding, is a central, but contested feature of interaction. Long (1980) first proposed the Interaction Hypothesis which holds that NfM is fundamental to second language acquisition in his doctoral thesis. This was followed by hypothesis testing in classroom interactions (e.g. Varonis & Gass, 1985; Pica & Doughty, 1985; Pica *et al.*, 1989), based on which Long (1996, pp. 451-452) proposed a modified version of the Interaction Hypothesis:

...negotiation for meaning, especially negotiation work that triggers interactional adjustment by the native speakers or more competent interlocutors, facilitates acquisition as it connects input, internal learner capacities, particularly selective attention, and output in productive ways.

Other scholars in the field – particularly those associated with ‘focus on form’ - are less convinced. While conceding that “...interaction plays a strong facilitative role in the learning of lexical and grammatical target items...,” Mackey and Goo (2007) suggest that the paucity of empirical studies dealing with negotiation “...render[s] any arguments for the efficacy of one kind of feedback over another premature...” (p. 440). Adams (2007) observes that “...while research indicates that negotiation for meaning may be quite frequent in learner-learner interactions, there remains little evidence of its effectiveness in promoting learning...” (p. 33). Adams’s own study nonetheless leads her to the conclusion that “...learner-learner interactions can promote second language learning, suggesting that the benefits of interaction are not limited to the native speaker-learner context...” (p. 51).

Despite uncertainty about the developmental value of negotiation, a great deal of effort has been expended by SLA scholars in studying the relative effectiveness of the individual feedback moves (e.g. clarification requests, prompts) associated with it (Mackey & Goo, 2007). Whatever its precise role in supporting acquisition, negotiation certainly facilitates continued interaction between interlocutors, which may represent an indirect benefit. As Hossein Nassaji (2016) points out, “...the aim of interactional feedback can be either conversational or pedagogical...”:

Conversational feedback is used during conversational discourse to repair communication breakdowns, which could be due to comprehension problems. Pedagogical feedback has a more deliberate instructional purpose. ... it has the aim of correcting an error or drawing the learner’s attention to form (p. 536).

Focusing on negotiation for meaning in classroom learner interactions, Varonis and Gass (1985) first discovered a basic routine for meaning negotiation, which involves four steps: trigger, indicator, response, and reply to response. Following technological developments in text chat CMC in the late 1990s, Chapelle (1997) was one of the earliest researchers who used the interactionist approach to investigate language learners' discourse in CMC environments, demonstrating how SLA research methods can be applied to CALL research contexts. Smith (2001, 2003) dedicated his doctoral thesis to exploring language learners' meaning negotiation routines in text chat CMC and proposed an expanded framework based on Varonis and Gass (1985). Since then, many researchers have employed Smith's framework to examine meaning negotiation routines in text chat, audio- and video-conferencing CMC environments in diverse linguistic, cultural and educational contexts (e.g. Wang, 2006; Lee, 2006; Yanguas, 2010; Jung & Jie, 2012; Wang & Tian, 2013; van der Zwaard & Bannink, 2014, 2016). An account of these works is given below, focusing on the impact on learner-learner (rather than native speaker-learner) interaction of changing technological affordances.

1.3. Negotiation for Meaning

The first publication reviewed (Foster & Ohta, 2005) deals with foreign language learning in classrooms, rather than in online environments. This is studied as an authoritative statement of what is known about negotiation for meaning, based on collaboration across theoretical paradigms. Ohta takes a sociocultural view of second language development, while Foster is a cognitivist. Four key points are made in their study. First, they point out that identifying negotiation for meaning moves is not straightforward. It cannot be achieved by the surface scrutiny of adjacent turns alone. It necessitates qualitative analysis of the wider interactional context and particularly of the interlocutor's interpretation of what may superficially look like a negotiation move. Second, they find that negotiation for meaning and the resultant modification of output are rare in the one-way discussion/interview task used by them (p. 426). Third, Foster and Ohta suggest that communication breakdown is not indispensable for focus on form and hypothesize that interlocutor understanding and support may be just as vital in supporting target language progress. Consequently, they argue that negotiation for meaning is simply one of a number of ways in which foreign language development is advanced through interaction, and suggest that various kinds of peer assistance and repair also play a significant role in supporting foreign language learning. Their measured appraisal of the role of negotiation for meaning provides the basis for our own exploration of its nature and role in online interactions.

1.4. Negotiation Routines in Text and Speech

Smith (2003) examines "synchronous computer mediated communication (CMC) among intermediate-level learners of English..." using text chat (p. 38). He asks three research questions:

1. How do learners negotiate for meaning during text-based task-based CMC?
2. Does task type affect how learners negotiate for meaning during text-based CMC?
3. How do these negotiation routines compare to those found in the face-to-face negotiation literature? (p. 40)

To answer these questions, Smith studies the negotiation for meaning routines of 14 dyads (n=28) of intermediate learners, following a pre-session intensive English course at a large Midwestern university, which entailed interacting in Internet Relay Chat. He employs the widely used model of face-to-face negotiation established by Varonis and Gass (1985) and concludes by proposing "...an expansion of this model in order to incorporate better the observed features of negotiation episodes during text-based CMC..." (p. 52)². Smith ascribes the presence of two additional (confirmation and reconfirmation) phases in his transcripts to "...the apparent demand for explicit acknowledgements of understanding/nonunderstanding that text-based written CMC interaction elicits..." (p. 52). Smith also finds that task type has a significant impact on the frequency of negotiation episodes, concluding

that "...lexically-seeded discussion tasks generated a significantly higher percentage..." (p. 45) of negotiation turns than did jigsaw tasks.

Smith's study raises the questions of whether negotiation for meaning is inherently more successful *via* text, rather than *via* speech. Studying speech-based classroom negotiations Foster (1998) and Pica *et al.* (1989) had suggested respectively that between 23% and 35% of such routines resulted in modified responses. However, in Smith's computer-mediated data no fewer than 94% of negotiation routines were apparently completed, with 82% of these culminating in a further reaction to the modified response (pp. 46-47). Smith concludes that "...CMC removes, or at least reduces, many of the para- and non-linguistic aspects of face-to-face speech that facilitate verbal communication. Thus, in text-based CMC a certain degree of support is stripped away, concentrating the entire burden of communication on written characters..." (p. 47). However, since Smith wrote these words, online exchanges have increasingly used audio- or video-conferencing tools, which offer quite different affordances to language learners, variously accommodating para-verbal and non-verbal cues, but restoring the burden of communication to speech.

1.5. Negotiation Routines in Video-Conferencing CMC

Two studies published in 2006 explore whether Smith's modified model of negotiation for meaning also applies to video-conferencing exchanges. Wang (2006) recounts a series of one-to-one distance teaching interactions between herself (a native speaker teacher of Chinese) and five of her students. This is insider research, and Wang's findings appear in part to be based on her own online behavior. She concludes that "...beneficial focus on form also occurs in video-supported task completion..." and that "...videoconferencing-supported negotiation has its own distinct features in comparison to face-to-face interaction..." (p. 140). Lee's (2006) research, which scrutinizes peer interaction in NNS-NNS dyads, is of greater relevance to the present study. Eight (8) intermediate-level Korean learners of English took part in a three-week program of video-conferencing exchanges, using their university computer lab. Three sessions were devoted to the completion of jigsaw tasks, preceded by topic-based discussions. Lee's specific findings include the observation that most of her participants' NfM routines were signaled by local (rather than global) indicators (i.e. by individual lexical items) and that more than half of their negotiation routines incorporated a (re)confirmation phase, as identified by Smith (2003). Lee concludes that video CMC provides "...positive conditions for spoken language acquisition..." (p. 149). However, Lee is less confident than Wang that the visual affordances of the medium are fully exploited by learners, observing (a) that lip-reading is not possible in a desktop video-conference and (b) that learners focused on studying their jigsaw tasks, rather than on the screen or watching interlocutors' facial expressions (p. 141). Lee observes at least one strategy that is peculiar to speech-based CMC: interlocutors tended to spell out items which their partners found difficult to understand. This would be neither necessary nor possible in text-based CMC, where the potential for trouble at a phonological level is non-existent.

1.6. A Cross-Media Comparison of Negotiation Routines

Yanguas' (2010) reports on a study of "...task-based, synchronous oral, computer-mediated communication (CMC) among intermediate-level learners of Spanish..." (p. 72). This directly foreshadows the present study, in that Yanguas takes account of differences between negotiation in audio CMC and in video CMC. His research questions are:

1. How do learners in video and audio CMC groups negotiate for meaning during task-based interaction? (b) Are there differences between oral CMC and traditional FTF communication?
2. How do these negotiation routines compare to those found in the text-based CMC negotiation literature?

Participants were randomly assigned to three groups who were interacting via video-conferencing (VidCMC), audio-conferencing (AudCMC) and face-to-face (FTF). Yanguas places sole reliance on a jigsaw task, on the basis of arguments by Pica, Kanagy and Falodun (1993) that such tasks can elicit most occurrences of meaning negotiation.

Yanguas uses the model proposed by Varonis and Gass (1985) to scrutinize the negotiation routines in his transcripts. Two raters independently coded these turns. Yanguas analyses only the first 12 minutes of the 20-minute interactions engaged in by his participants, on the grounds that most negotiation takes place in this period and to ensure comparability of data from all dyads.

Like Smith, Yanguas calculates the ratio of negotiated turns to total turns in his transcripts. Yanguas identifies 48% of turns in video CMC, 57% of turns in audio CMC and 50% of turns in face-to-face interaction as being devoted to negotiation (p.79). These figures are higher than those provided by Smith (2003) - who finds that "...learners engaged in CMC tasks ... engage in negotiated interaction in about one-third of their total turns..." (p. 44). Yanguas' data indicate a much greater presence of elaborations in negotiation routines in audio CMC than in either video CMC or face-to-face interactions, where he indicates that "...learners made use of both gesture and elaborations at roughly 50% respectively..." (p. 82).

As far as audio CMC is concerned, Yanguas's study offers mixed results. On one hand, "... Aud-CMC forces learners to make use of linguistic resources, which could be superseded by visual cues in VidCMC and FTF groups..." (p. 86). On the other hand, in face-to-face mode, Yanguas's learners achieve complete understanding 70% of the time, in video CMC the figure is 64%, and in audio CMC a mere 45%. In other words, while negotiation in audio CMC generates a higher level of second language output, it is less successful in enabling interlocutors to understand one another. This is an apparent paradox, which our study seeks to explore.

1.7. Studies of Negotiation by Chinese EFL Learners

Jung and Jie (2012) report on a study conducted at Daejeon University in South Korea, involving two Korean and two Chinese learners of EFL (p. 254). Participants completed six information-gap tasks, in 12 sessions, over a six-week period, first in culturally homogenous (e.g. Chinese/Chinese) pairs, then in mixed (Korean/Chinese) pairs. Jung and Jie find that negotiation between culturally diverse partners stemmed most frequently from '*content* and *phonological* errors' and indicators of non-understanding were most frequently '*global*' (e.g. "What?" or "I don't understand") (p. 266). By contrast, between culturally homogeneous partners local indicators involving specific '*lexical errors* and *content*' provided the main triggers of meaning negotiation. As for resolution, in homogeneous dyads "...rephrasing and elaboration were the most commonly used strategies to minimize non-understanding..." (p. 266). Jung and Jie's research is informative and intriguing. It requires replication with a larger sample.

Wang and Tian (2013) study "...the characteristics of the negotiation of meaning by eTandem partners in a videoconferencing-supported multimodal environment..." over a period of 9 weeks, to explore the ways in which "...the synchronous multimodal environment contribute[s] to L2 acquisition..." (p. 42). Their participants are 15 dyads of university-level learners of Mandarin and English respectively. In other words, half of their sample consists of Chinese learners of EFL. Focusing on three dyads, at low, intermediate and high levels of L2 proficiency. Wang and Tian conclude that "...there existed a difference in the degrees of the use of the video by the students..." (p.52). While "...some used it deliberately ... others seemed to ignore the video most of the time..." (p. 52) a limitation of their study – which they acknowledge - is the very small sample on which their conclusions are based.

Research on meaning negotiation in China has been mainly carried out in face-to-face classroom contexts. In many studies, a teacher of English intentionally indicates a new lexical item and asks students to guess the meaning of the word (e.g. Luan, 2015; Li & Zhao, 2016; Li, 2017; Xue, 2017). In such cases, the trigger might not be a real non-understanding by the student, instead, it's usually

a 'new' word the teacher wants to teach in the class. These articles focus on what strategies can be used to scaffold students in negotiating the meaning of target vocabulary. As Li and Zhao (2016) note, in these classroom interactions, one teacher interacts with the whole class of students because there are usually so many students in college English classes that it is ineffective for the teacher to interact with individual students. Other research on learner-learner interactions in face-to-face classrooms mainly focuses on the effects of task types and task complexity on students' performance in meaning negotiation (e.g.: Cheng & Liu, 2008; Qiao, 2010; Wang, 2012). Another popular topic in the Chinese literature on classroom learner interactions is the effect of proficiency pairing on meaning negotiation. It has been argued that students tend to engage in more meaning negotiation episodes when there is a big difference in the oral proficiency levels of the two partners in a dyad (Mu, 2009; Zheng, 2011a; Wang & Qi, 2012).

Only a few studies in Chinese have explored meaning negotiation in synchronous computer-mediated communication. Zheng (2011b) dedicates her doctoral thesis to exploring the feasibility and effectiveness of text-based SCMC as a supplement to a spoken English course. Despite the participation of almost 200 participants in peer to peer online interactions using text-chat, only 6 episodes of meaning negotiation were found. She concludes that students rarely engaged in negotiation for meaning because they try to use simple language during text chat CMC to avoid any non-understanding, and students are not competent enough to correct their peer's mistakes. Chen (2014) studies lexical acquisition in teacher-learner interactions in text-based SCMC. She reports more cases of meaning negotiation than cases of non-occurrence and stresses the teacher's role in offering sufficient language input as an interlocutor during online interactions with individual students. Feng, Chen and Shen (2015) focus on meaning negotiation strategies used in text-based CMC interactions between Chinese and Japanese learners. They find that students prefer confirmation checks and clarification requests to recasts in negotiated interactions. The interview data reveals that students did not focus on language use unless it contributed directly to a successful task outcome.

1.8. Aim of the Study

Despite advances in the understanding of meaning negotiation routines made by the scholars cited above, no one has yet proposed a model of NfM specific to either audio or video CMC. Where a framework has been used, it remains that devised by Smith (2003) for text-based CMC. Even Yanguas, who notes some differences (in turn adjacency, the amount of elaboration, and the nature of indicators) between written and oral CMC, concedes that there are "...certain commonalities between task-based interaction across different modes..." and endorses Smith's model as producing similar results to his own (p. 86). Yet there is agreement, that the affordances of different media impact the second language acquisition process (Stockwell, 2010; Hampel & Stickler, 2012). And indisputably, the affordances of audio- and video-conferencing tools differ significantly from those of text chat, in enabling the use of the spoken channel. The present study aims precisely to fill the knowledge gap around negotiation routines in synchronous audio CMC environments, by examining the form these take in a Chinese EFL context.

Our research questions are:

1. What meaning negotiation routines are evident in oral CMC interactions between Chinese learners of English in audio conferencing environments?
2. And why do such meaning negotiation routines occur in speech-based CMC interactions?

2. METHODOLOGY

2.1. Context

This project was designed by the first author as part of her doctoral research study and was carried out in 'BeiwaiOnline', the Institute of Online Education at Beijing Foreign Studies University, which is a prestigious Chinese university specialized in foreign languages and cultural studies. BeiwaiOnline provides degree courses at undergraduate and postgraduate levels and non-degree online language courses. Many students at BeiwaiOnline are adult learners in full-time or part-time employment, who study online in their spare time to gain a better degree, expand their knowledge, and improve their language skills and proficiency. The aim of this course is to develop students' speaking skills through audio and video CMC, and to collect data for the first author's doctoral research project. The main content of the course is to ask students to engage in peer oral interactions based on information gap tasks (see Appendix). The experience on which this study is based was made available free of charge by BeiwaiOnline to their students as a freestanding, extracurricular online oral English course. Students' performance in the course did not contribute to their assessment in their degree courses.

The advertisement recruiting project participants was published on the BeiwaiOnline learners' forum. The requirements for participants included: 1) having at least half a year's experience of studying at BeiwaiOnline; 2) having the necessary equipment (laptop, headset, wifi) and the competence to use them for all online sessions; 3) being available for the proposed time-span of the project; 4) being willing to participate in audio/video peer interactions in English. Among those who applied for the course and met all the requirements, 8 participants were eventually selected because they scored highest in the 'spoken English' exam from their previous academic terms. All 8 participants were female students studying English or an English Education undergraduate degree at BeiwaiOnline. Most of them usually work in the daytime and study at BeiwaiOnline in the evenings and at weekends. Eight participants were allocated to four dyads to perform the tasks.

To maintain research rigour and avoid subjectivity, the first author was not involved in the teaching of this course, as she needed to collect audio recording data during the online sessions and conduct stimulated recall interviews after the online sessions. Two experienced online English teachers at BeiwaiOnline were responsible for the delivery of these online sessions. Their role included giving task instructions, facilitating task interactions when needed, and offering post-task feedback to participants after peer interactions.

Figure 1 presents the interface of the BeiwaiOnline synchronous audio/video-conferencing system, which consists of (a) the online teacher's audio/video channel, (b) all participants' attendance information, (c) presentation slides, (d) students' audio/video channels, (e) text chat messages, (f) a typing area, and (g) some control buttons. The online teacher has overall control of the system and can give access to audio/video channels to certain students for oral communication with the online teacher and peers.

2.2. Research Design and Data Collection Procedures

Although this article will only report a part of the findings from the first author's doctoral research study, it is important for readers to have a full picture of the research design and data collection procedures. The data were collected in three stages (Table 1). This article only reports the findings from data collected in Stage 2 g & i, and Stage 3 j & k.

Stage 1 aims to prepare participants to get to know each other and become more familiar with the research project and the use of audio/video-conferencing for peer interaction. A mock IELTS test was conducted to measure participants' oral proficiency. The results show participants' oral proficiency levels ranged from B2 to C1 according to the Common European Framework (CEFR).

In Stage 2, each dyad performed two types of information gap tasks: spot-the-difference and problem-solving tasks (see Appendix). Information gap tasks have been proven to be effective in eliciting learner interactions because the gap offers learners a real purpose for their communication

Figure 1. Screenshot of audio interactions in BeiwaiOnline SMC system

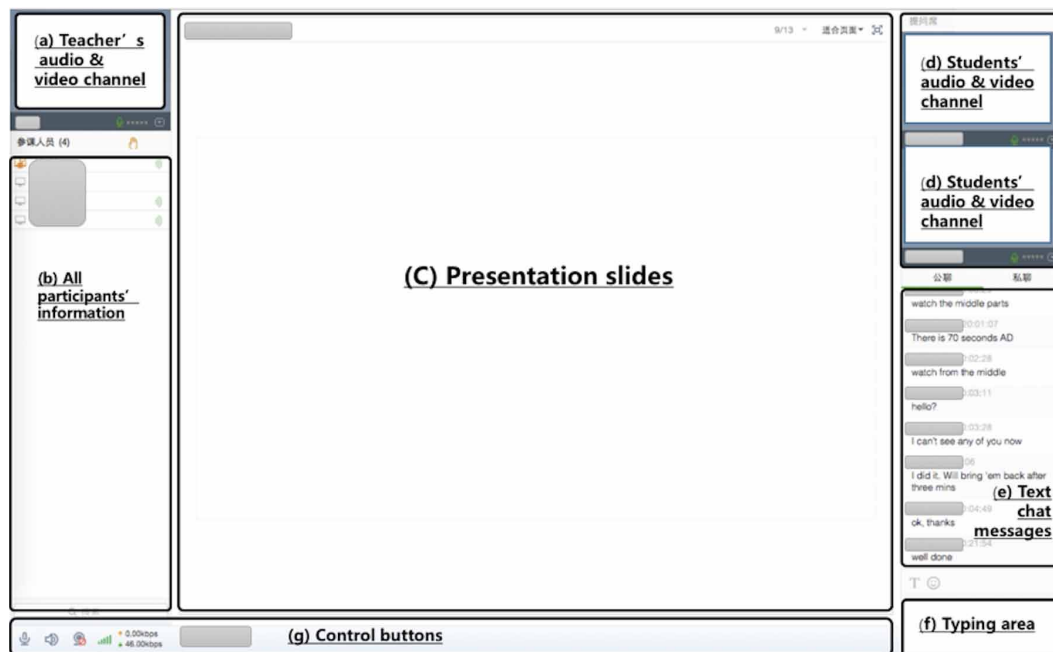


Table 1. Data collection procedures

Stages	Session	Content	Data
Stage 1: Preparation	SCMC Session 1	(a) Induction, pairing, ice-breaking (video) (b) Pre-task vocabulary test	Not used for analysis.
	SCMC Session 2	(c) Mock IELTS speaking test (video) (d) Task 1: Opinion gap (video) (e) Task 2: Opinion gap (audio)	
Stage 2: Main tasks	SCMC Session 3	(f) Task 3: Spot-the-difference (video) (g) Task 4: Spot-the-difference (audio)	8 hours of screen video recordings
	SCMC Session 4	(h) Task 5: Problem-solving tasks (video) (i) Task 6: Problem-solving tasks (audio)	
Stage 3: Interviews	Face-to-face one-to-one interview	(j) Video stimulated recall interview about negotiated interactions (k) Interview questions on students' general information and opinions	12 hours of audio recordings

(Pica, Kang & Sauro, 2006). They have been widely used for research by interactionists in both face-to-face classrooms and CMC contexts (Smith, 2003; Wang, 2006; Jung & Jie 2012; van der Zwaard & Bannink, 2014, 2016). In this study, each dyad had different task sheets. They were asked to describe the pictures (spot-the-difference tasks) or identify items (problem-solving tasks) in their own task sheet to each other and together work out the differences between the two pictures or to make choices among the given items.

The target lexical items were 'embedded' in the tasks so that students had to negotiate the meaning of these words to complete the tasks. The words were especially selected because they are not very

commonly used, so that most participants were unlikely to know them before attempting the tasks. But these words should also not be too hard to explain so that students can still negotiate their meanings in English instead of going directly to the dictionary. Actual examples were: ladybug, magnifying glass, phone accessories, stationery, portable clothes rack. All SCMC sessions were recorded for transcription and analysis and to serve as the basis for stimulated recall interviews.

Stage 3 was devoted to post-task stimulated recall interviews. According to Gass and Mackey (2016), stimulated recall is an introspective method in which participants are asked to recall thoughts they had had while performing a prior task or while participating in a prior event. The theoretical assumption behind the stimulated recall methodology is that some tangible (visual or aural) reminder of the event will stimulate recall of the mental processes in operation during the event itself and will, in essence, aid the participant in mentally re-engaging with the original event. An important benefit of stimulated recall methodology, as with normal interviews, is that it allows researchers to obtain valuable ‘insider’ information about participants’ mental or cognitive processes. Such information is hard to access by other means. In interaction research, stimulated recall has been used to explore aspects of cognition that lie behind the participants’ decisions and actions in face-to-face classrooms (e.g. Yoshida, 2008), and in CMC environments (e.g. Jung & Jie, 2012).

In this study, stimulated recall interviews were used to capture students’ thoughts during negotiated interactions because it is as important to establish why students performed the way they did in negotiated interactions in this environment as how they performed. As Foster and Ohta (2005) point out, identifying meaning negotiation routines is not straightforward. Stimulated recall interviews can help researchers to gain a more precise understanding of students’ moves in negotiated interactions. To achieve this, the first author studied the recordings after each task session to identify meaning negotiation stances and prepare related questions for the stimulated recall interview. The interviews were conducted within two days of the participants’ last SCMC session, while their task interactions were still fresh in their minds. The interview was mainly in English, and Chinese was only used in exceptional cases where participants could not express themselves clearly in English. At the end of the interview, the first author also sought information about students’ educational background, their attitudes towards task-based language teaching, and their opinions on learning English through synchronous audio/video-conferencing environments. Participants’ answers to these questions will be helpful in enabling researchers to develop a more comprehensive understanding of the thought processes underlying their meaning negotiation stances.

3. DATA ANALYSIS AND FINDINGS

3.1. Data Analysis Methods

The data from audio interactions by all four dyads (Stages g & i in Table 1) were transcribed and analyzed following an interactional approach (Ellis & Barkhuizen, 2005, pp. 165-196). Specifically, Smith’s (2003) model of meaning negotiation routines in a text-based CMC environment was used as an initial framework for coding speech turns in the transcriptions. Figure 2 presents this data analysis framework. Varonis and Gass (1985) introduce a model for analysing the patterns of meaning negotiation between non-native speakers. According to this model, negotiation episodes are responses to instances of non-understanding, as opposed to misunderstanding. This model consists of two main parts: a trigger, and a resolution which involves three phases. The *trigger* (T) is an utterance that causes non-understanding in the hearer. Then, the hearer signals non-understanding through an *indicator* (I). A *response* (R) phase occurs when the speaker fixes the non-understanding. The last phase occurs when the hearer produces a *reaction to the response* (RR). Smith (2003) proposes an expanded framework, adding the confirmation (C) and reconfirmation (RC) stages after RR. Smith (2003) identifies three types of confirmation, including simple confirmation, reaffirmation (with new information/input) and comprehension check (e.g. “Got it?”). The final phase in the expanded model is reconfirmation, which usually takes the form of a minimal reconfirmation (e.g. “OK” or

“Yes”), or a simple appreciation (e.g. “Thanks”). Smith (2003) justifies the expanded stages in terms of participants’ greater need for explicitness in text-based written CMC interactions than in face-to-face interactions.

Being aware of the differences between oral and written interactions in CMC environments, the authors kept an open mind to any potential differences or new stages which might emerge from the data. Data from stimulated recall interviews were transcribed (Stages j & k in Table 1) and are mainly used to verify the findings from the analysis of participants’ oral interactions in meaning negotiation instances.

3.2. Finding: New Emerging Stages: Confirming Trigger (CT) and Confirming Indicator (CI)

The analysis draws on data from four dyads, each performing two tasks in audio CMC. Out of the eight task interactions, ten episodes of negotiation for meaning were identified as successful since the dyads reached understanding at the end of the negotiation. All ten meaning negotiation episodes involved the basic steps of meaning negotiation (including trigger, indicator, response, reaction to response) in the Varonis and Gass (1985) model. Moreover, the confirmation and reconfirmation stage proposed by Smith (2003) also appeared in six meaning negotiation episodes.

In addition, the authors identified possible new stages in the successful meaning negotiation episodes in audio CMC interactions. It was found that the trigger and the indicator stages are not always directly followed by the problem-solving stage including response (R) and reaction to response (RR). Instead, participants in audio interactions tend to confirm the trigger (CT) and the indicator (CI) before moving to resolving non-understanding. For example, during the confirmation of trigger (CT) stage, the initiator (the interlocutor who knows the meaning of the word) will usually repeat the trigger with rising intonation, to ask the other if this is the problem. With this confirmation request, the respondent (who does not know the meaning of the word) will usually confirm the indicator (CI) by clarifying what exactly the problem is. It seems that only after both speakers understand the problem clearly can they move on to the stage of resolving the nonunderstanding.

The examples below will demonstrate this finding in detail. Table 2 is from Dyad 2’s audio interaction in Task 5, the problem-solving task where two students were asked to select four gifts out of eight to give to members of their homestay family.

At first, D2A intended to list all her four items to D2B, but after saying the first item, ‘razor’, D2A performed a comprehension check to see whether D2B understood this word. In the stimulated recall interview, when asked why she had done that, D2A explained “...because through communicating with her, during several classes, I know she did not master a lot of vocabulary so, I think she probably doesn’t know what is a razor...” Hearing the confirmation check, D2B indicated the trigger by saying ‘sorry’ as a negative response to D2A’s comprehension check. However, in D2A’s reply (turn 3), she only repeated the trigger, and did not offer any further explanation. So, this turn was used more as a confirmation of the trigger, rather than a response because it does not involve resolving the problem or by explaining the meaning. Then (in turn 4) D2B explicitly asked D2A to explain the word ‘razor’, which confirmed that she did not understand the lexical trigger. In this turn, D2B confirmed her

Figure 2. Theoretical frameworks for analyzing meaning negotiation routines

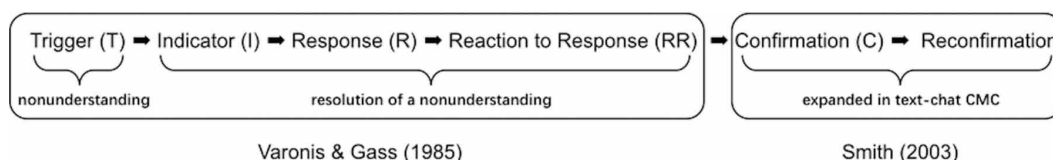


Table 2. Razor

1	D2A:	ok, I will tell you what I've got, four items, they are a razor, do you know razor?	T
2	D2B:	razor, sorry	I
3	D2A:	yeah, razor	CT
4	D2B:	sorry can you explain? razor	CI
5	D2A:	it is for, it is used by a man to shave his face, shaving, you know?	R
6	D2B:	oh, I (...) no (.) I know that, I know that	RR
7	D2A:	you know that? it is, it is used to get rid of the moustache or ...	C
8	D2B:	yeah, I I know that, I know that	RC
9	D2A:	Ok	C
10	D2B:	em, men, men often use it	RC
11	D2A:	haha, ok, next one ...	N/A

indicator and clarified the issue. Only then did both interlocutors arrive at a consensus that they needed to work out the meaning of 'razor' for D2B's benefit.

Having understood that D2B's issue is not about the pronunciation but the meaning of the word 'razor', in turn 5, D2A started resolving the non-understanding by explaining the use of a razor, followed by a comprehension check 'you know?'. In her reaction to D2A's response (turn 6), D2B first hesitated and initially said no. In the interview, she admitted that this was because she "didn't remember" the word 'shaving' in D2A's explanation, which was why she said 'no'. But then she quickly changed her mind and said 'I know that' twice to confirm to D2A her understanding as she can "...guess the sentence because D2A first said 'cleaning the face...'"

Although D2B said she understood the word, D2A thought "I'm not quite sure if she really understands what it is, I tried to give her some further references to make her know clearly what it is...". In turn 7, D2A did not use the word 'shave', instead, she paraphrased the word 'shave' by saying 'get rid of the mustache', she even said 'or' but then paused, as she was "...trying to find an easier alternative for mustache...". But D2B interrupted D2A's further explanation at this point (turn 8) and offered her a clear and strong confirmation 'yeah, I know that' with another repetition to stress that she understood the meaning of the word 'razor'.

However, it seemed that D2A was still not fully convinced that D2B really understood 'razor' as her response to D2B's reconfirmation was 'ok'. Then D2B (in turn 10) added her own explanation by saying 'men often use it', suggesting that she managed to guess the meaning of 'razor' correctly based on D2A's explanation. D2A's laugh in turn 11 showed that she was finally convinced that D2B understood 'razor' correctly and became more relaxed. She then closed this meaning negotiation episode with an 'ok' and carried on their task-related interaction by signaling 'next one'.

Sometimes, participants might have already moved to resolving the non-understanding but without clearly understanding what exactly was the problem. Once students realized this confusion about the issue, they tended to come back to confirm the trigger (CT) and the indicator (CI) to clarify the issue before moving on again to resolving the problem. The following two examples illustrate the meaning negotiation routines that happen in such cases.

Table 3 comes from the audio interaction by Dyad 4 for Task 4, the spot-the-difference task, where two students have different pictures and have to describe their pictures to each other and work together to identify the differences.

At first, D4A wanted to indicate the presence of a drawer, but she pronounced the word as 'driver', which triggered a non-understanding for D4B. In turn 2, D4B indicated her non-understanding with 'hmm', using rising intonation. D4A replied in turn 3 by expanding her previous sentence and trying

Table 3. Drawer

1	D4A:	there is a driver in the desk	T
2	D4B:	hmm?	I
3	D4A:	it's the driver with a lock in the desk.	R
4	D4B:	IN the desk?	TAR
5	D4A:	under the desk or something...do you have a, is there a driver in your picture?	CT
6	D4B:	driver? what kind of driver? drive what?	CI
7	D4A:	hmm...	R
8	D4B:	car driver?	CI
9	D4A:	抽屉 [drawer]	R
10	D4B:	drawer.	RR
11	D4A:	drawer.	C
12	D4B:	yeah, yeah, there is a drawer.	RC, TAR

to locate the drawer in the picture, but she still pronounced 'drawer' as 'driver.' This attempt to explain the drawer shows that D4A was already moving to the explanation stage because she was still not aware that her mispronunciation had resulted in non-understanding for her peer. In turn 4, D4B reacted to D4A's response with a question 'in the desk?' with a clear stress on the preposition 'IN'. This suggests that D4A's explanation had confused her, rather than leading to understanding. It can be seen that in turns 3 and 4, both interlocutors moved to resolve the non-understanding, although they had not yet reached a shared understanding of the nature of the communication breakdown.

In turn 5, D4A first changed the preposition 'in' into 'under', but she was "not sure." Then, in the second part of the turn, she appeared to realize that the main problem for D4B was not the preposition, but the word 'drawer', so she tried to confirm the trigger (CT) with D4B by asking if there is a 'drawer' (pronounced as 'driver') in her picture. In this turn, D4A finally realized that the problem might be 'driver/drawer', so she returned to confirming the trigger with D4B. However, her mispronunciation made D4B more confused. Consequently, in turn 6, D4B uttered three consecutive questions 'driver?', 'what kind of driver?', 'drive what?' to directly point out her non-understanding, by insistently demanding a clear answer. This stage is devoted to a confirmation of the indicator, by means of repeated clarification requests. Only when the nature of the source of non-understanding was established can D4A and D4B move on to the resolution phase. During the stimulated recall interview, D4B admitted that she was "...feeling impatient at this point because of the confusion caused by D4A..."

In turn 7, D4A wanted to explain the word but did not manage to say anything. As she recalled in the interview, she "...didn't know also how to describe the driver/drawer, because my pronunciation is not good..." D4B might have realized that D4A was not able to explain the word, so in turn 8, D4B offered a guess, 'car driver?'. In an attempt to confirm the indicator and to clarify the problem caused by D4A, D4B resorts to a strategy referred to by Smith (2003) as "testing a deduction" (p. 44).

In turn 9, D4A chose to use Chinese to reply to D4B's question. This is her second attempt to resolve the non-understanding. D4B quickly understood the Chinese term and pronounced the word correctly. D4A repeated D4B's pronunciation, which is a form of modified output. D4B confirmed the existence of a drawer to her and moved on to their task-related response.

This example demonstrates how pronunciation can trigger non-understanding in audio CMC interactions in a way that is simply not possible in text-based CMC interactions, and represents a fundamental difference between the two modes. Equally, difficulty in the perception of an utterance

can be yet another source of non-understanding. In this case, D4B was listening carefully and heard D4A clearly but she could not make sense of it as she thought D4A was saying ‘driver’. The following example (Table 4) is also related to pronunciation.

At the interview, D2B said, of the term ‘stationery’, “I can’t guess what it means...,” so in turn 2 she asked “...her [D2A] to spell it for me...” However, D2A did not answer her question but explained the meaning of the word in turns 3 and 5. D2B could “imagine (guess) general idea of its meaning but “...was still not very sure what it is really...” D2B seemed to attribute the problem to pronunciation, because, after D2A’s explanations in turn 3 and 5, she came back to confirm the indicator (CI) in turn 6 and stressed twice that she wanted to know the pronunciation of the word. After D2A pronounced the word clearly (turn 7), D2B was finally satisfied and confirmed that she could guess the meaning in turn 8.

A possible reason why she insisted on asking for the pronunciation of the word could be that she wanted to infer the meaning of the word from its pronunciation. But the word ‘stationery’ is tricky in this respect. It sounds like ‘station’ as in ‘bus station’, but its meaning has nothing to do with ‘bus station’. Therefore, D2B might have found it hard to connect the meaning of the word to its pronunciation. This example confirms that the respondent’s perception of even an accurately pronounced item may play an important role in negotiation for meaning.

The above analysis presents three meaning negotiation routines in detail. Table 5 offers a summary of all ten successful meaning negotiation episodes in relation to the CT and CI stages, and their reasons for nonunderstanding. Seven out of ten MNEs have CT and CI stages in their meaning negotiation routines across all three dyads (Dyad 1 did not succeed in any of their MNEs). As for the reasons that cause the nonunderstanding, 5 episodes only were caused by meaning, 2 by pronunciation and another 3 by both meaning and pronunciation.

4. DISCUSSION

4.1. An Expanded Framework of Negotiation for Meaning Routines in Audio SCMC Interactions and Its Rationale

Based on the analysis of meaning negotiation routines, the authors propose an expanded model of negotiation for meaning routines in oral SCMC interactions (Figure 3). In this new model, which should be read from the top downwards, two new stages, CT and CI (confirmation of trigger and

Table 4. Stationery

1	D2A:	em, the third one is, stationery, stationery, you know, like pencil, paper, notebook, erasers and scissors, are used, used for, studying ... do you know that?	T
2	D2B:	en, could you please spell, spell this word?	I
3	D2A:	ok, I will ex, explain it to you, station, stationery includes pencils, and notebook, scissors, erasers, the tools you use during your study, when you need to write something, you need a pencil, and then write on a notebook, right?	R
4	D2B:	yes	RR
5	D2A:	things you use during your study, have you got it?	C
6	D2B:	en, how to pronounce it please? could you please pronounce it again? stationery, right?	CI
7	D2A:	stationery, stationery	R
8	D2B:	stationery, stationery, yes, I know, I I can guess, what it is	RR
9	D2A:	ok, it’s pencils, pens, and notebooks, scissors, erasers, got it?	C
10	D2B:	oh, I ok, I can gu, I can guess it	RC

Table 5. A summary of successful MNEs

Dyad	Lexical item	CT & CI Stages	Reasons for Nonunderstanding
D2	couch	N/A	meaning
D2	cube	CT, CI	meaning
D2	carrot	CT	pronunciation
D2	Rubic's cube	CT, CI	meaning and pronunciation
D2	razor	CT, CI	meaning
D2	perfume	N/A	meaning
D2	stationery	CI	meaning and pronunciation
D2	skateboard	CT, CI	meaning
D3	toaster	CT, CI	meaning and pronunciation
D4	drawer	CT, CI	pronunciation

confirmation of indicator) are added to the routine. These stages appear in meaning negotiation routines at three possible points: 1) immediately after the indicator and before any resolution or explanation, 2) during the resolution stage (R or RR), and 3) after completing the resolution stage and following the confirmation request (Figure 4). These three possible routines were drawn from the meaning negotiation episodes identified in the data and are exemplified in the three extracts. But it is important to discuss why these three examples generate different pathways of meaning negotiation.

In Example 1 (the 'razor' example), the source of non-understanding is the meaning of the word 'razor'. In the CT stage, the initiator confirmed the pronunciation of the word to the respondent. In this case, pronunciation was not the cause of the non-understanding. During the CI stage, the respondent clearly requested the initiator to explain the meaning of the word. Here, the meaning negotiation routine follows pathway 1.

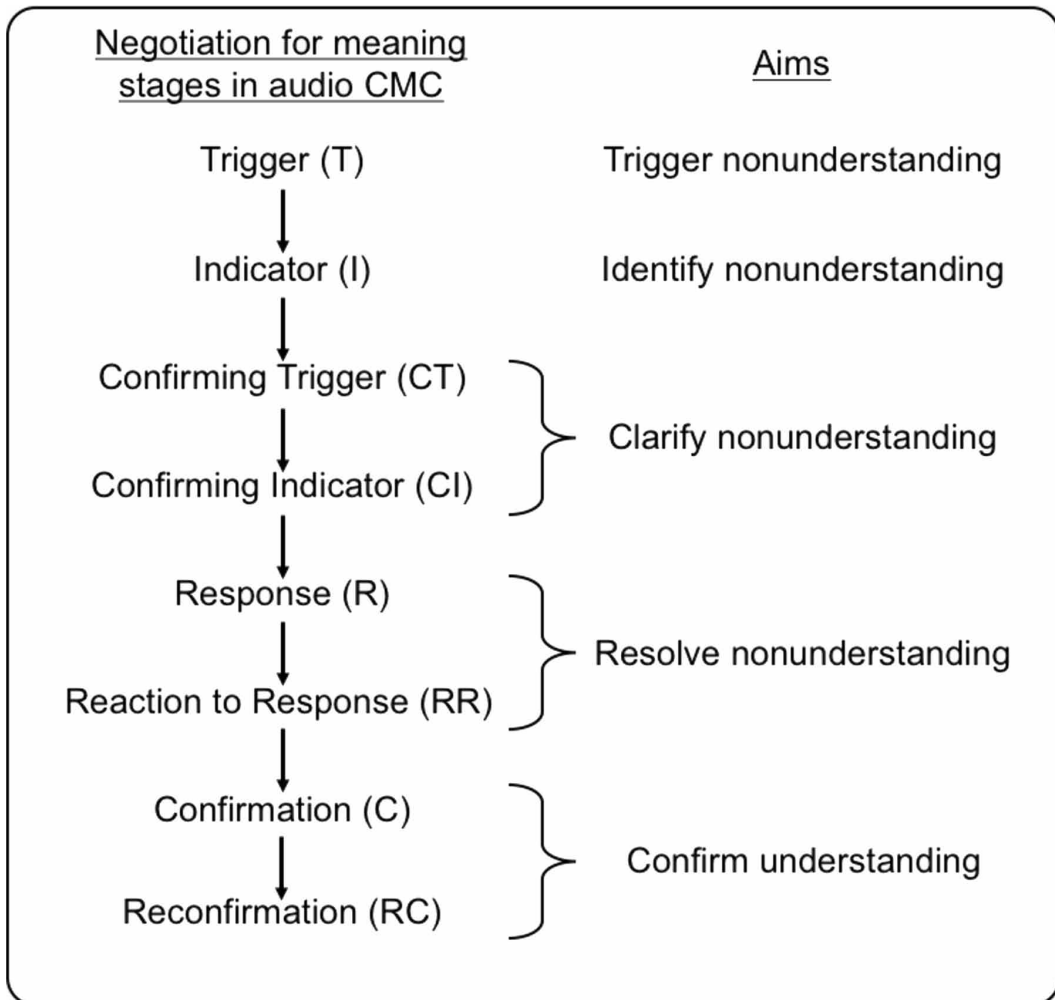
However, in Example 2 (the 'drawer' example), the source of the trigger of non-understanding is not the meaning of the word 'drawer' but its pronunciation as 'driver'. The initiator, D4A, struggles with her explanation. Her interlocutor, D4B, engages in three successive attempts at resolution by: (i) exploring global meaning; (ii) seeking clarification of a local indicator; and (iii) testing a deduction. Finally, the focus is transferred to D4A's mispronunciation of the word 'drawer' as 'driver'. This is finally revealed as the actual trigger of non-understanding, but it takes several turns devoted to repeating and seeking to confirm the trigger to figure this out. Only when the initiator has recourse to the L1 equivalent of 'drawer' does the respondent realize that her non-understanding was caused by the initiator's mispronunciation.

In the model proposed for Pathway 2, the RR stage and CI stage are connected by an equals sign, to indicate that the clarification and confirmation of a non-understanding may be embedded either in the RR (respondent's reply to the initiator's explanation) or (as in Path 3) in the RC (reconfirmation) stages of a meaning negotiation routine

In Example 3 (the 'stationery' example) the source of the respondent's difficulty is both meaning and pronunciation. Therefore, when the initiator is explaining the meaning of the word, the respondent does not interrupt but listens to it. After the explanation when the initiator performs a confirmation request (turn 5), the respondent confirms her understanding of the meaning of the word (turn 8), but not before raising another question (CI) about its pronunciation (turn 6).

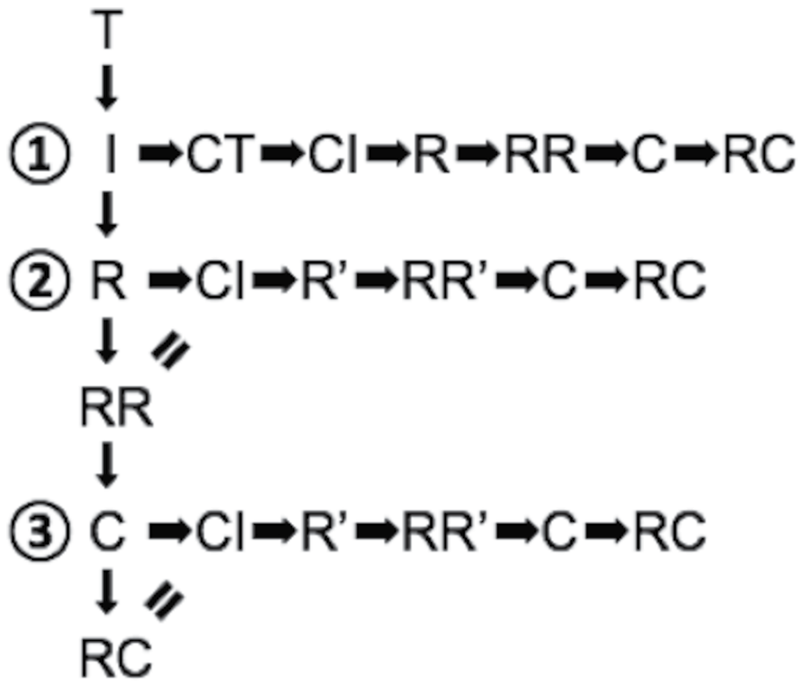
These three routines are different essentially because the nature of the spoken medium permits different kinds of non-understanding. Potential non-understanding can be caused by the meaning of the word, or its pronunciation, or both. This is different from written interactions in text-based CMC environments where the only possible cause of non-understanding is meaning.

Figure 3. A negotiation for meaning routine for audio SMC interactions: An expanded model



Our analysis of the oral interaction data suggests that there are different layers of potential non-understanding due to the specific technological affordances of the audio SMC environment. First, as in Example 2 (the ‘drawer/driver’ example), a speaker’s failure to pronounce the word correctly or clearly can trigger non-understanding to the hearer. Second, oral communication differs from its written counterpart, in that it requires a higher level of attention and memory from the hearer. Once a word has been spoken, the information is gone, it is not preserved in any way, unlike in text-based CMC where one can normally read past messages. So, if the listener has poor listening skills, or experiences a lapse in concentration, she/he can easily miss a word, or an entire utterance. Moreover, oral communication is mediated by synchronous audio-conferencing technology, so non-understanding can be caused by technical issues, which may also impede perception. Finally, how the respondent perceives the spoken sound of the trigger and how she/he comprehends this information can both make a difference in meaning negotiation routines. For these reasons, when a respondent indicates non-understanding, the initiator may find it difficult to identify the level at which the cause of non-understanding is located. Therefore, it is often necessary for a further confirmation of the trigger and the indicator to take place, before resolving the non-understanding. In other words, in speech-based

Figure 4. Negotiation for meaning as exemplified in three audio SCMC interactions



SCMC it is not possible to move to resolving non-understanding unless both interlocutors have clearly identified what exactly has triggered it. The respondent tends to find an appropriate point at which to clarify the issue and asks the initiator to resolve the non-understanding.

In summary, the authors identified four layers of possible communication breakdown in audio SCMC interactions: (1) the initiator's expression or pronunciation, (2) the respondent's reception of and attendance to the spoken sound, (3) the respondent's perception of the spoken sound, and (4) respondent's comprehension of its meaning. All these factors, which are related to the audio mode of communication, can influence meaning negotiation routines differently from text-based written CMC interactions. The proposed stages in meaning negotiation (CT and CI) can help interlocutors to understand the nature of the problem in this specific context. In this sense, synchronous audio communication may require an even higher level of explicitness than text chat SCMC, as claimed by Smith (2003). The essential difference is the phonological dimension, which does not exist in text-based CMC, but can trigger many non-understandings in speech-based interactions in either audio- or video-conferencing. Pronunciation as a trigger has also been highlighted by Jung and Jie (2012) who studied oral interactions between NNS English learners from different ethnicities.

5. CONCLUSION: IMPLICATIONS AND LIMITATIONS

Research into negotiation for meaning began with the study of oral interaction in face-to-face classrooms (Long, 1980; Varonis & Gass, 1985; Long, 1996), it was subsequently applied to written interaction in text-based SCMC (Smith, 2001, 2003). Focus then returned to oral/aural interactions in speech-based environments, as they supplanted text chat (Wang, 2006; Yanguas, 2010; Jung & Jie, 2012; Wang & Tian, 2013). Building on and adapting the work of Varonis and Gass (1985) and Smith (2003), it is proposed, on the basis of our findings, that two further stages should be added to their proposed model of negotiation for meaning, to accommodate it to speech-based SCMC. These

are ‘confirming trigger’ (CT), and ‘confirming indicator’ (CI). Both reflect the role of phonology (i.e. pronunciation and perception) in meaning negotiation routines in video and audio environments. This answers both our research questions. The proposed adaptation also sheds light on the question raised by Hampel and Stickler (2012) about how different modes of online communication can affect learner interactions.

To answer the broader question posed by Stockwell (2010) about how different technological affordances can influence the ways in which languages are learned online, we need to consider how well audio SCMC can support second language development, in relation to its text-based or video counterparts. We have observed that negotiating for meaning in audio SCMC entails coping with an additional (phonological) source of possible non-understanding, not present in text-based exchanges. And while audio carries paraverbal information, it does not afford the non-verbal communication (via gesture, posture or gaze), that may be present in video. It is, in all probability, these challenges that result in the lower success rates in reaching understanding in audio CMC, as noted by Yanguas (2010). The pedagogic affordances of audio conferencing should not be overlooked. However, for successful negotiation, audio CMC requires extended interaction and places exclusive reliance on the spoken language. Arguably, this equates to ‘comprehensible pushed output’ (Swain and Lapkin, 1995). Motivated learners, seeking to develop their spoken communication skills may well find that audio conferencing has particular benefits for them. For specific professional language users (e.g. radio announcers and presenters, air traffic controllers, airline pilots and seafarers), it has obvious niche applications.

It needs to be emphasized that our findings are based on oral interactions in audio SCMC between Chinese adult learners of English and that the number of meaning negotiation stances in our data is limited. Our data analysis suggests the following possible reasons for this. First, some students feel strong resistance to negotiating meaning in oral interactions with their peers. Instead, they prefer to look up unfamiliar words in the dictionary. This seems to be a natural enemy of meaning negotiation, but is considered a very important tool for Chinese students. Moreover, some students showed strongly goal-oriented learning attitudes. They tended to focus on achieving what they perceived as the final goal of the task (e.g. finding differences between two pictures), and did not appear to value spending time discussing the language and negotiating meaning during the task process (similar attitudes on the part of Chinese language learners are described by Littlewood, 2007 and Wen, 2016). Above all, this project was a new experience in a number of ways, for participants. They did not know each other and were not familiar with negotiating meaning at the outset, nor had they engaged in online pedagogical interactions with peers before taking part in this study. But some students still managed to negotiate meaning in such conditions and produced modified output. Our stimulated recall data suggests that in the course of the exchange, despite the absence of visual cues, they became adept at interpreting each other’s behaviour.

The authors are aware of the limitations of their study and welcome further examination of their proposed framework in linguistically and culturally diverse contexts. Another important question is whether this model might also have relevance for a re-examination of face-to-face oral interactions in non-mediated environments. Finally, as video-conferencing technology becomes more accessible, it is important to move forward to study how meaning is negotiated in multi-modal SCMC interactions and what is the role of the webcam in such an audio-visual environment.

ACKNOWLEDGMENT

The authors are thankful for the support from BeiwaiOnline, including the gatekeeper, Prof. Jinlan Tang, the two online teachers, Prof. Ligao Wu, and Dr. Chen Li, and all the staff and research participants involved in this research project. Chenxi (Cecilia) Li is grateful for the funding offered by the Open University, UK, and the guidance and support from her supervisors: Dr. Timothy Lewis, Dr. Uwe Baumann, and Dr. Lijing Shi.

REFERENCES

- Adams, R. (2007). Do second language learners benefit from interacting with each other? In R. Mackey (Ed.), *Conversational interaction in second language acquisition* (pp. 29–51). Oxford: Oxford University Press.
- Bax, S. (2003). CALL—past, present and future. *System*, 31(1), 13–28. doi:10.1016/S0346-251X(02)00071-4
- Bax, S. (2011). Normalization revisited: The effective use of technology in language education. *International Journal of Computer-Assisted Language Learning and Teaching*, 1(2), 1–15. doi:10.4018/ijcallt.2011040101
- Chapelle, C. (1997). CALL in the year 2000: Still in search of research paradigms? *Language Learning & Technology*, 1(1), 19–43.
- Chen, H. (2014). Foreign lexical acquisition in SCMC. *Foreign Language Education*, 35(3), 65–68.
- Cheng, Z., & Liu, W. (2008). The effects of task types on the quality and quantity of meaning negotiation. *Journal of Shaoyang University [Social Science Edition]*, 7(4), 148–151.
- Cook, J. (2015). Negotiation for meaning and feedback among language learners. *Journal of Language Teaching and Research*, 6(2), 250–257. doi:10.17507/jltr.0602.02
- Cunningham, J. D., & Akiyama, Y. (2018). Synthesizing the practice of SCMC-based telecollaboration: A scoping review. *CALICO Journal*, 35(1), 49–76.
- Ellis, R. (2000). Task-based research and language pedagogy. *Language Teaching Research*, 4(3), 193–220. doi:10.1177/136216880000400302
- Ellis, R., & Barkhuizen, G. P. (2005). *Analysing learner language*. Oxford: Oxford University Press.
- Feng, J., Chen, Y., & Shen, R. (2015). Cross-cultural SCMC negotiation of meaning and its role in lexical acquisition among tertiary Chinese students. *Technology Enhanced Foreign Language Education*, (2), 10-16.
- Foster, P. (1998). A classroom perspective on the negotiation of meaning. *Applied Linguistics*, 19(1), 1–23. doi:10.1093/applin/19.1.1
- Foster, P., & Ohta, A. S. (2005). Negotiation for meaning and peer assistance in second language classrooms. *Applied Linguistics*, 26(3), 402–430. doi:10.1093/applin/ami014
- Foster, P., Tonkyn, A., & Wigglesworth, G. (2000). Measuring spoken language: A unit for all reasons. *Applied Linguistics*, 21(3), 354–375. doi:10.1093/applin/21.3.354
- Gass, S. M., & Mackey, A. (2016). *Stimulated recall methodology in applied linguistics and L2 research*. Oxford: Routledge. doi:10.4324/9781315813349
- Guichon, N., & McLornan, S. (2008). The effects of multimodality on L2 learners: Implications for CALL resource design. *System*, 36(1), 85–93. doi:10.1016/j.system.2007.11.005
- Hampel, R., & Hauck, M. (2006). Computer-mediated language learning: Making meaning in multimodal virtual learning spaces. *The JALT CALL Journal*, 2(2), 3–18.
- Hampel, R., & Stickler, U. (2012). The use of videoconferencing to support multimodal interaction in an online language classroom. *ReCALL*, 24(2), 116–137. doi:10.1017/S095834401200002X
- Hubbard, P., & Levy, M. (2016). Theory in computer-assisted language learning research and practice. In F. Farr & L. Murray (Eds.), *The Routledge handbook of language learning and technology* (pp. 24–38). London, New York: Routledge.
- Jung, S. K., & Jie, J. (2012). Analysis of meaning negotiation patterns between non-native speakers in video conferencing. *English Teaching*, 67(2), 247–269. doi:10.15858/engtea.67.2.201207.247
- Lee, H. G. (2006). Meaning negotiation in task-based video conferencing. *The Journal of the Korea Association of Multimedia-Assisted Language Learning*, 9(2), 128–153.
- Li, C. C. (2016). A survey on Chinese students' online English language learning experience through synchronous web conferencing classrooms. In S. Papadima-Sophocleous, L. Bradley, and S. Thoušny (Eds.), *CALL communities and culture—short papers from EUROCALL 2016* (pp. 265-270). Research-publishing.net.

- Li, D. (2017). Autonomy in scaffolding as learning in teacher-student negotiation of meaning in a university EFL classroom. *Canadian Journal of Applied Linguistics*, 40(4), 410–430.
- Li, Y. & Zhao, D. (2016). Negotiation of meaning and output optimization of college English classes. *Journal of Northeast Normal University (Philosophy and Social Sciences)*, (3), 131-135.
- Littlewood, W. (2007). Communicative and task-based language teaching in East Asian classrooms. *Language Teaching*, 40(3), 243–249. doi:10.1017/S0261444807004363
- Long, M. (1996). The role of the linguistic environment in second language acquisition. In W. C. Ritchie & T. K. Bhatia (Eds.), *Handbook of second language acquisition* (pp. 413–468). London: Academic Press Limited. doi:10.1016/B978-012589042-7/50015-3
- Long, M. H. (1980). *Input, interaction, and second language acquisition*. Unpublished doctoral dissertation, University of California, Los Angeles, CA.
- Luan, L. (2015). Research on negotiation of meaning in college oral English classrooms. *Journal of Jilin Radio and TV University*, (7), 32-33.
- Mackey, A. (Ed.). (2007). *Conversational interaction in second language acquisition*. Oxford: Oxford University Press.
- Mackey, A., & Goo, J. (2007). Interaction research in SLA: A meta-analysis and research synthesis. In A. Mackey (Ed.), *Conversational interaction in second language acquisition: a series of empirical studies* (pp. 407-453). Oxford, MA: Oxford University Press.
- Mu, Y. (2009). The impact of language proficiency difference on learner-learner's negotiation of meaning. *Teaching English in China CELEA Journal Bimonthly*, 32(5), 25–37.
- Nassaji, H. (2016). Interactional feedback in second language teaching and learning: A synthesis and analysis of current research. *Language Teaching Research*, 20(4), 535–562. doi:10.1177/1362168816644940
- Ohta, A. S. (1995). Applying sociocultural theory to an analysis of learner discourse: Learner-learner collaborative interaction in the zone of proximal development. *Issues in Applied Linguistics*, 6(2), 93–121.
- Ohta, A. S. (2001). *Second language acquisition processes in the classroom: Learning Japanese*. Routledge. doi:10.4324/9781410604712
- Ohta, A. S. (2005). Confirmation checks: A discourse analytic reanalysis. *Japanese Language and Literature*, 39(2), 383–412. doi:10.2307/30038905
- Pica, T., & Doughty, C. (1985). Input and interaction in the communicative language classroom: A comparison of teacher-fronted and group activities. In S. M. Gass & C. G. Madden (Eds.), *Input in second language acquisition* (pp. 115–132). Rowley, MA: Newbury House.
- Pica, T., Holliday, L., Lewis, N., & Morgenthaler, L. (1989). Comprehensible output as an outcome of linguistic demands on the learner. *Studies in Second Language Acquisition*, 11(1), 63–90. doi:10.1017/S027226310000783X
- Pica, T., Kanagy, R., & Falodun, J. (1993). Choosing and using communication tasks for second language research and instruction. In G. Crookes & S. Gass (Eds.), *Tasks and second language learning* (pp. 9–34). Clevedon, UK: Multilingual Matters.
- Plonsky, L., & Ziegler, N. (2016). The CALL-SLA interface: Insights from a second-order synthesis. *Language Learning & Technology*, 20(2), 17–37.
- Qiao, L. (2010). An empirical study of meaning negotiation from the perspective of task characteristics: Task difficulty and task complexity. *Chinese Journal of Applied Linguistics*, 33(4), 45-63.
- Sauro, S. (2011). SCMC for SLA: A research synthesis. *CALICO Journal*, 28(2), 369–391. doi:10.11139/cj.28.2.369-391
- Sauro, S. (2012). L2 performance in text-chat and spoken discourse. *System*, 40(3), 335–348. doi:10.1016/j.system.2012.08.001
- Smith, B. (2001). *Taking students to tasks: Task-based computer-mediated communication and negotiated interaction in the ESL classroom*. Unpublished doctoral dissertation, University of Arizona, Tucson, AZ.

- Smith, B. (2003). Computer-mediated negotiated interaction: An expanded model. *Modern Language Journal*, 87(1), 38–57. doi:10.1111/1540-4781.00177
- Stockwell, G. (2010). Effects of multimodality in computer-mediated communication tasks. In M. Thomas & H. Reinders (Eds.), *Task-based language learning and teaching with technology* (pp. 83–104). London: Continuum International Publishers Group.
- Swain, M., & Lapkin, S. (1995). Problems in output and the cognitive processes they generate: A step towards second language learning. *Applied Linguistics*, 16(3), 371–391. doi:10.1093/applin/16.3.371
- Van der Zwaard, R., & Bannink, A. (2014). Video call or chat? Negotiation of meaning and issues of face in telecollaboration. *System*, 44, 137–148. doi:10.1016/j.system.2014.03.007
- Van der Zwaard, R., & Bannink, A. (2016). Non-occurrence of negotiation of meaning in task-based synchronous computer-mediated communication. *Modern Language Journal*, 100(3), 625–640. doi:10.1111/modl.12341
- Varonis, E., & Gass, S. (1985). Non-native/Non-native conversations: A model for negotiation of meaning. *Applied Linguistics*, 6(1), 71–90. doi:10.1093/applin/6.1.71
- Wang, P. (2012). An empirical study on the meaning negotiation under three kinds of task characteristics. *Journal of Zhengzhou Normal Education*, 1(2), 24–28.
- Wang, P., & Qi, S. (2012). The effects of proficiency pairing on meaning negotiation in task-based learning. *Journal of Chuzhou University*, 14(4), 101–103.
- Wang, Y. (2006). Negotiation of meaning in desktop videoconferencing-supported distance language learning. *ReCALL*, 18(1), 122–146. doi:10.1017/S0958344006000814
- Wang, Y., & Tian, J. (2013). Negotiation of meaning in multimodal tandem learning via desktop videoconferencing. *International Journal of Computer-Assisted Language Learning and Teaching*, 3(2), 41–55. doi:10.4018/ijcallt.2013040103
- Wen, Q. (2016). The production-oriented approach to teaching university students English in China. *Language Teaching*, 1–15. doi:10.1017/S026144481600001X
- Xue, L. (2017). The interaction and optimizing countermeasures of teacher-student negotiation of meaning in college English classroom. *Journal of Heilongjiang College Education*, 36(8), 127–129.
- Yanguas, I. (2010). Oral computer-mediated interaction between L2 learners: It's about time! *Language Learning & Technology*, 14(3), 72–93.
- Yoshida, R. (2008). Teachers' choice and learners' preference of corrective feedback types. *Language Awareness*, 17(1), 78–93. doi:10.2167/la429.0
- Zheng, P. (2011a). The features of language output and interaction patterns of dyads with different English language proficiency in text-based synchronous computer-mediated communication. *Foreign Language World*, (3), 60-67.
- Zheng, P. (2011b). *A study on text-based synchronous computer-mediated communication as an alternative to face-to-face oral practice in college English teaching and learning* [Doctoral dissertation]. Shanghai International Studies University, Shanghai, China.

ENDNOTES

- ¹ In discussing conversational repair by peers, usage has varied between 'negotiation **of** meaning' and 'negotiation **for** meaning'. The latter expression has imposed itself in recent years (see Mackey, 2007; Cook 2016) as the more logical. Negotiation in this context does not involve a choice between competing meanings. It is an attempt to move from non-understanding to a single shared understanding.
- ² For a visual representation of Bryan Smith's revised model, see Figure 2, in Section 3.1 of this article.

APPENDIX: TASKS

Task 3 and 4: Spot the Difference Tasks

You and your partner each have a picture. There are 7 differences in the two pictures. Please describe your picture to each other and find as many differences as possible.

Task 5 and 6: Problem Solving Tasks

Task 5:

You and your friend are trying to decide on some gifts for your home stay family in the UK. You host family has four members: Mr. Jones (father), Mrs. Jones (mother), Billy Jones (son, 15 years old), and Mary Jones (daughter, 14 years old). Below are some items you and your friend have noticed while shopping at the Mall, which may make good presents. Your friend has been shopping at the Mall and has also seen some (different) things that he/she thinks might make good presents. Since the presents will be from both of you, you need to decide together on one present for each family member (four in total). After you and your friend have decided on the four presents, discuss with your friend, estimate a reasonable price for each gift and calculate the total cost of these gifts.

Task 5 Student A Task 5 Student B

Task 6:

Students at BFSU are having a giant flea market sale to raise money for a trip to the Great Wall. In addition to working as 'sales assistants' next Saturday, students have all been asked to donate (give) some items that they no longer need for the sale. These items will be sold at the BFSU flea market sale next Saturday. Pretend you and your chat partner are students in a BFSU dormitory on campus.

Figure 5. Task 3 and 4

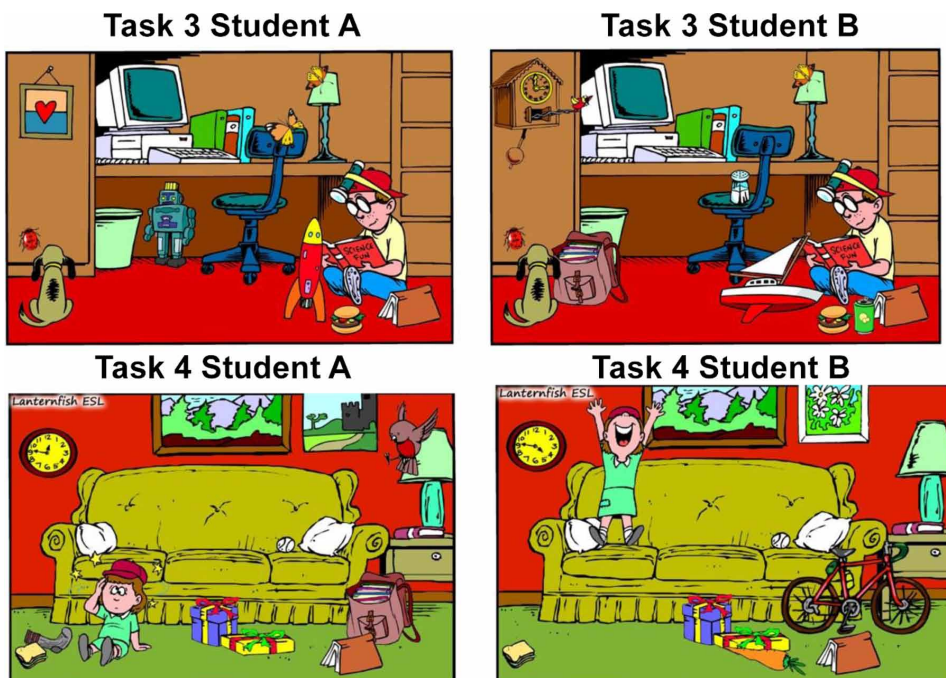


Figure 6. Task 5

Task 5 Student A



Task 5 Student B



Below is a list of used (old) items you have found in your room. Your chat partner also found some different items. Together, decide on four items in total that you want to donate to the flea market sale. Sometimes, it is not easy to sell things at a flea market because the items may be old, broken, out of fashion, etc. After you and your partner have decided on the four items you will donate, discuss how you will convince (persuade) people to buy these items, and discuss at what price you plan to sell these items. You may wish, for example, to talk about the usefulness of the items, their value, their condition, etc.

Task 6 Student A Task 6 Student B

Figure 7. Task 6

Task 6 Student A



Task 6 Student B



Chenxi (Cecilia) Li is a Ph.D. student in the School of Languages and Applied Linguistics at the Open University UK. Her research interests include computer-assisted language learning (CALL), computer-mediated communication (CMC), multimodality in CMC, task-based language teaching (TBLT), negotiation for meaning, oral interactions in CMC, and EFL in China. Chenxi's doctoral research project aims to compare the differences of meaning negotiation routines in synchronous audio and video CMC environments and to identify the roles of a webcam in synchronous video CMC interactions. This article reports on the partial findings from participants' audio CMC interactions in her doctoral research project.

Dr. Timothy Lewis is a Senior Lecturer in School of Languages and Applied Linguistics at the Open University. His research areas include e-tandem learning, telecollaboration, CMC, CALL.