Towards a Speech-Gesture Profile of Pragmatic Markers: the case of “You Know”

Abstract

Our study introduces a novel approach for examining the functional relationship between the pragmatic marker “you know” and its co-occurring gestures. It draws on 401 instances of “you know” identified in the Nottingham Multimodal Corpus. Based on the speech patterns in the data, a framework of six functions of “you know” was established (i.e., ‘editing’, ‘introducing’, ‘inviting inferences’, ‘elaborating’, ‘marking reported speech’, ‘approximating’). 74 gestures that primarily co-occur with “you know” were selected for analysis based on a functional framework mainly adopted from Kendon (2004): pragmatic, referential, beat and deictic gestures. The main results show that three of the functions (i.e., ‘editing’, ‘introducing’ and ‘elaborating’) take up 81% of the whole dataset, and share a similar function of emphasizing the intention of presenting further information. In addition, they tend to co-occur with the pragmatic gestures that embody a similar pragmatic function. The results illustrate the functional coordination between pragmatic markers and gestures, and demonstrate the value of using a multimodal corpus pragmatic approach for exploring the patterns of speech and gesture and for developing a more nuanced profile of pragmatic markers that, in the history of pragmatics, have largely been described on the sole basis of their speech instantiation.

Keywords: corpus pragmatics, pragmatic markers, “you know”, speech functions, gesture functions, speech-gesture profile

1 Introduction

Over the past two decades, corpus-based explorations of the functional variations and distributions of pragmatic markers such as “you know”, “I mean”, “well”, etc. have gathered pace, with resulting advances in theorisation, conceptualisation and application (Aijmer, 2011, 2013, 2015; Buysse, 2017; Cuenca, 2008; Erman, 2001; Fraser, 1990; Fung & Carter, 2007; Tree, 2007;

Tree & Schrock, 2002). Those pragmatic markers do not tend to contribute to the propositional meaning or syntactic construction, but rather they have multiple pragmatic functions in communication at the discourse, interpersonal and sociocultural levels. However, so far, the majority of research into pragmatic markers is based on transcriptions of spoken interaction, discourse completion tasks or intuition [Author(s), 2008; Author(s), 2006]. Yet, communication is inherently multimodal and there is a lack of corpus pragmatic research that investigates the ways in which pragmatic markers are coordinated with other modes of expression (e.g. prosody, gesture, facial expression, etc.), and how other modes contribute to the functions of pragmatic markers as multimodal units (i.e., multimodal pragmatic markers) [Author(s), 2013; Author(s), 2021; Debras, 2021; Romero-Trillo, 2018].

Drawing on the Nottingham Multimodal Corpus (NMMC) [(Author(s), 2007; Knight, 2011], we address the lack of multimodal corpus pragmatic research on the speech-gesture relationship by proposing an approach for exploring gesture patterns that co-occur with pragmatic markers. While the approach proposed here can be applied to the study of any pragmatic marker, we focus on “you know” as one of the most frequently occurring pragmatic markers in English (Tree & Schrock, 2002). The speech functions of “you know” have been discussed extensively in the literature (Buysse, 2017; Erman, 2001). These studies provide a valuable theoretical and methodological foundation for developing a multimodal functional framework for the description and analysis of speech-gesture patterns.

As far as we know, no corpus-based research to date has been conducted to explore the gesture patterns co-occurring with this marker. Gestures are defined in the current research as improvising and meaningful hand-and-arm movements performed by speakers in talking, and a diversity of their functions have been explored in relation to speech at the semantic, pragmatic, discourse and interactive levels (Calbris, 2011; Kendon, 2004; McNeill, 2005; Streeck, 2009). However, until now, we know little about how those gestures function in relation to pragmatic markers. For instance, in her seminal work, Calbris (2011) emphasizes the gesture’s demarcative functions (i.e., segmenting utterances into words, phrases and sentences, etc.) and

referential functions (i.e., contributing to the semantic meaning). Kendon (2004: 158-159) proposes a functional framework, including referential, pragmatic and interactive gestures. Kendon's referential functions are similar to those described by Calbris (2011), and those in studies that refer to 'representational gestures' that describe concrete entities and actions (e.g., Debreslioska & Gullberg, 2020). Pragmatic functions are defined as non-referential, pragmatic roles in gestures, including model functions (i.e., indicating the speaker's attitudes to the utterance), performative functions (i.e., performing speech acts), and parsing functions (i.e., marking up the structure of discourse). Interactive/interpersonal functions refer to the gesture's role in managing turn-taking (e.g., holding the floor by holding the hand). McNeill (2005) shows that gestures can be co-expressive of the co-occurring speech in meaning (i.e., referential functions), and some gestures, especially beat gestures (i.e., biphasic movements of the hand), can help highlight noteworthy information of utterances (e.g., pragmatic functions). Drawing on the aforementioned functions, we develop a functional framework of gestures to explore their role in relation to the pragmatic marker "you know".

While our study makes both theoretical and methodological contributions to the broad areas of pragmatics and gesture studies, the implications are particularly relevant to multimodal corpus-based investigations of the speech-gesture profiles of recurrent speech (e.g., Debras, 2021; Zima, 2017). As such, the research presented here builds on, extends and refines the methods proposed in a previous case study of the pragmatic marker of "[do] you know/see what I mean" drawing on the same multimodal corpus [Author(s), 2021]. The current study of "you know" thus allows us to further our understanding of the speech-gesture relationship of pragmatic markers, extending the research on the functional variations of this shorter pragmatic marker and developing a more comprehensive and more nuanced picture of the functional coordination between pragmatic markers and gestures.

2 Methods

Our data analysis can be divided into two main parts: speech functions and

co-occurring gestures. The analysis and annotations of both speech and gesture were conducted in each of the video recorded and transcribed supervision meetings in our corpus, assisted by the ELAN software (Wittenburg et al., 2006). All of the instances and annotations from the different ELAN files generated through our analysis were also exported to the Excel spreadsheets to assist in further analysis of the speech and gesture patterns. We provide details of these procedures in the following sub-sections.

2.1 The sub-corpus of the Nottingham Multimodal Corpus (NMMC)

Our research draws on a sub-corpus of the NMMC, which comprises 13 naturally occurring supervision meetings taking place at a UK university. We decided to focus on the supervision meetings as the data source due to their interactive nature as the remaining videos of the corpus are composed of non-interactive academic lectures. Two videos were excluded because of poor speech-image alinement in the original data, which led to the selection of 11 videos as the dataset for the current study.

There are eight supervisors and eight students in the 11 videos with three supervisors and three students participating in more than one meeting. The total length of the corpus amounts to more than 640 minutes with each meeting lasting for at least 30 minutes. All of the video recordings are fully transcribed, totalling 113,866 running words.

2.2 Selection of speech: “you know” and functional analysis

The search, selection and annotation of all of the instances of “you know” were conducted using the ELAN software with the assistance of the speech transcripts. To qualify as a pragmatic marker, we selected only those instances that were syntactically independent (i.e., they did not contribute to the propositional meaning of the utterance) (Erman, 2001). Thus, those instances of “you know” that form part of a larger sequence (e.g., *do you know what I mean*) or are a compulsory syntactic and semantic constituent in an utterance (e.g., *cos you know how I did it last year*) were excluded from the analysis. In addition, we identified and excluded 10 instances of “you know” which are followed by an interruption of the speaker. In those instances, no

words or only a few words follow the use of “you know” due to the interruption and the utterances are unfinished, which makes it impossible to analyze their speech function (e.g., *<$2> they're so loaded// erm/ that you know/ I <$1> and the the terminology's loaded as well*). Based on the aforementioned criteria of data selection, 401 instances of “you know” were identified for further analysis.

The analysis of the speech functions was carried out for all of the 401 instances according to a framework specifically developed for this study based on the speech patterns that emerged from the NMMC. According to Sinclair (1996), one of the pioneers in corpus linguistics, to describe the meaning of a word, we need to examine the words surrounding it (e.g., five words to the left and right of the word). As we take a corpus pragmatic approach to analyzing pragmatic functions [Author(s), 2021], we examine the speech patterns that occur immediately before and after the instances of “you know”, and we also consider the wider discourse context (i.e. mainly the immediate utterances before and after “you know”). For instance, we have identified a large number of instances of “you know” followed by dysfluent features and/or repairs, and we coded these as carrying the ‘editing’ function.

The framework for speech analysis that we have developed draws on existing research, especially by Buysse (2017) and Erman (2001), which consists of six functions, including ‘editing’, ‘introducing’, ‘inviting inferences’, ‘elaborating’, ‘marking reported speech’ and ‘approximating’. We describe the definitions of these functions here, and further details of the coding criteria in the data analysis.

Following Erman (2001) and Buysse (2017), the occurrences of “you know” as ‘editing’ markers are those that indicate the processes of lexical searching, language planning and self-repair on the part of the speaker (e.g., *it's gotta be/ you know unless you've recorded every single bit of piece of text*). The function of ‘introducing’ in our framework is mostly akin to a combination of two categories in the frameworks of Buysse (2017) and Macaulay (2002), which are introducing and emphasizing a forthcoming proposition or (un)shared background information (e.g., *You know the library might even have it*).

The function of ‘inviting inferences’ has been previously identified by

Buysse (2017) and Östman (1981), in which instances of “you know” occur at the end of a sentence and suggest the intention of inviting the listener to actively make inferences relating to the preceding proposition (e.g., *almost like//verbal kind of graffiti you know*). Regarding ‘elaborating’, this function includes those instances of “you know” that mark forthcoming elaborations of certain components of the preceding (sub-)clause (Buysse, 2017). The speech after “you know” helps clarify, paraphrase and exemplify the previous concept (e.g., *um sports reports from that kind of area// you know the Guardian for example the sports reports are bigger than the Daily Mail*).

The function of ‘marking reported speech’ refers to the role of “you know” in marking the occurrences of direct and reported speech, which is similar to the role of quotation marks in written language (e.g., *They will usually say that// you know/ "Don't worry/ I'm not going to do anything*) (Buysse, 2017; Erman, 2001). The function of ‘approximating’ is defined as instances of ‘you know’ that are used to mark approximative speech accompanied by other general references such as “you know whatever”, “you know the sort of thing”, “you know and all that stuff” and “you know or something” (e.g., *you attack somebody else's ideas or you know that sort of idea*) (Buysse, 2017; Erman, 2001).

2.3 Segmentation of gestures

The segmentation of gestures co-occurring with the discourse marker “you know” is a time-consuming and complex process. Out of the 401 instances, we were able to identify 257 instances of “you know” that co-occur with certain hand-and-arm gestures. The next step is to analyze all instances and identify those where a given gesture is ‘completely’ or ‘primarily’ synchronized with “you know” for further analysis so as to analyze the gesture patterns that co-occur with “you know” rather than other words. We provide details of the procedures here.

Mostly following McNeill (2005), we segmented each of the 257 gestures into five phases by mainly observing their hand-and-arm movements: the preparation, pre-stroke hold, stroke, post-stroke hold and retraction phases. The stroke phase is the only phase that is necessary for the gesture to be

identified as a gesture and it is also the only phase associated with the meaning of its co-occurring speech. Kinesically, it is usually more effortful than other phases in terms of speed, tension, hand shape, etc.. As suggested by its name, in the preparation phase, the speaker moves the hand from a rest or holding position to the start point of the following stroke phase, preparing for the hand-and-arm movement of the stroke phase. The pre-stroke and post-stroke hold phases (Kita et al., 1998) are where the hand stops for a period at the beginning and end of the stroke phase, respectively. The retraction phase is where the hand relaxes and/or moves to a rest position. Unlike the stroke phase, the preparation, pre-stroke hold, post-stroke hold and retraction phases are all optional, which means they may or may not occur.

Of the 257 instances of “you know”, 50 are synchronised with the preparation phase, 115 with the stroke phase, 50 with the post-stroke hold and 42 with the retraction phase. No instances were identified that co-occur with a pre-stroke hold phase. To assist the pattern analysis of speech-gesture alignment, all gesture phases were annotated in the speech transcripts with systematic markers in both ELAN and Excel. We used angle brackets “[]” to mark the start and end of the preparation phase, “{}” to mark the stroke phase, “^^” to mark the post-stroke hold phase and “**” to mark the retraction.

However, in line with common practice in gesture studies, as the stroke phase is the only gesture phase that embodies meaning, we decided to only include those instances of “you know” that co-occur with a stroke phase for further analysis. In addition, we focus only on those instances of “you know” that exclusively or primarily co-occur with the stroke phase. In order to ensure that a given gesture is aligned in terms of meaning and function with an instance of “you know”, we allowed the gesture to extend by a maximum of two words beyond “you know”. The rationale for this is that the number of other words covered by the gesture does not exceed that of the target discourse marker. For instance, the stroke phase in “*almost like// [verbal/] {kind of graffiti you know}^//^*” co-occurs with “*kind of graffiti you know*”. As the stroke phase exceeds two words, we did not include this example in our analysis, as it is difficult to know whether the gesture is more aligned with

‘kind of graffiti’ in terms of function and meaning than with “you know”. After applying this criterion, only 74 out of the 115 stroke phases were selected for further analysis. Of the 74 strokes, the majority of them (65 instances, 87.84%) either exclusively co-occur with “you know” (e.g., *Um//[but/]{/ you know} *er**) or with “you know” and one other word (e.g., *that's good especially {you know for} ^a^ home conference*).

A key issue in this kind of analysis is the potential for circularity when it comes to identifying gestures on the basis of speech (McNeill, 2005). That is, it would be problematic to rely on the speech part to demarcate the stroke phases and then analyze the speech-gesture relationship on the basis of this demarcation. To address this issue, firstly, once an instance of “you know” was observed as being accompanied by any hand movements, we muted the sound when segmenting gesture phases. Secondly, while analyzing the hand in mute, it is necessary to also observe the gestures before and after the possible target gesture (i.e., observing a series of gestures) to increase the accuracy of coding. This approach was also used by the coders during the inter-rater reliability tests.

2.4 Gesture categorization

After selecting the 74 stroke phases, we categorize these into four types of gestures based on a framework derived from Kendon (2004). The framework is mainly functional in nature and it entails referential, pragmatic, deictic/pointing and beat gestures. We provide definitions here, but offer details of the forms and functions of these types in the analysis.

Following Kendon (2004), pragmatic gestures perform modal, performative and parsing functions (refer to Section 1 for definitions), whereas referential gestures contribute to the referential or semantic aspect of utterances and hence have referential functions. As set out by Kendon (2004), deictic/pointing gestures can also contribute to the semantic aspect of utterances by clarifying the meaning of a certain referent; however, other researchers (e.g., McNeill, 2005; Lücking, Pfeiffer & Rieser, 2015) tend to consider them as a separate category probably due to their relatively consistent gesture forms (e.g., the extended index finger) and functions (e.g.,

specifying abstract and concrete referents). Similarly, possibly because of their salient and consistent form-function pairing, beat gestures (i.e., biphasic movements of the hand) also tend to be regarded as a separate gesture type with the pragmatic function of emphasizing noteworthy information in discourse (McNeill, 2005). Therefore, we group deictic and beat gestures into separate categories even though they also belong to the referential and pragmatic functions, respectively.

2.5 Inter-rater reliability tests

Two research assistants were recruited to conduct inter-rater reliability tests on the coding of speech functions of all of the 401 instances. They were provided with the speech coding scheme and the concordance list (texts only) and carried out the coding independently. A high rate of agreement was reached in both tests, with one coder overlapping with 389 of the coding of the instances (97%) and the other with 393 of the instances (98%).

In addition, a third research assistant segmented the stroke phases co-occurring with “you know” and their accompanying speech in 20% of the 74 strokes identified for further analysis (i.e.,15 strokes). The same percentage has also been chosen by other researchers such as Hinnell (2018). The gesture coding scheme and procedures were explained to the coder, but the coder did the analysis independently without the presence of the researchers. The agreement rate here is 80% (12 out of the 15 strokes).

3 Data analysis

Figure 1 below provides an overview of the frequency of occurrences of the different speech functions of “you know” in the NMMC. Table 1 below shows the number of gestures co-occurring with those occurrences. The functions of ‘editing’ and ‘introducing’ account for the majority (71%) of the 401 instances. ‘Inviting inferences’ and ‘elaborating’ occur with a relatively high frequency compared with ‘marking reported speech’ and ‘approximating’. The numbers in the last two categories are minor compared to the others.

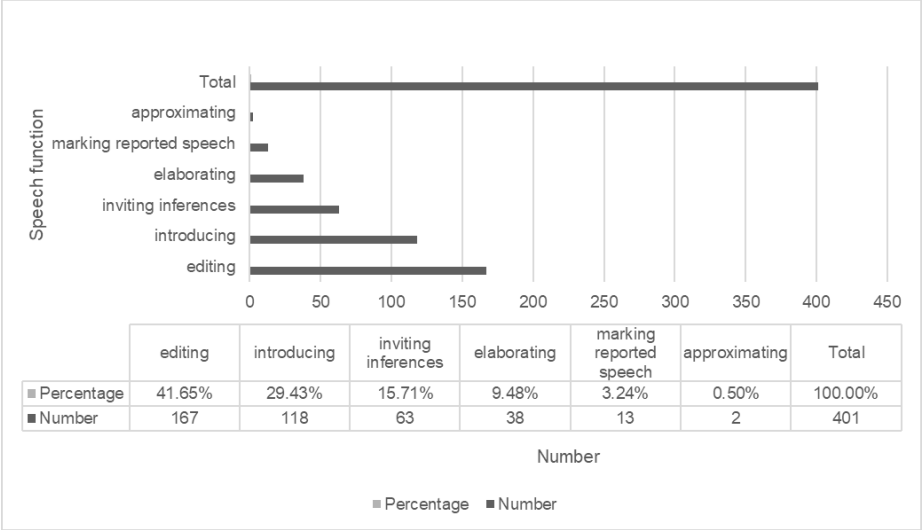

Figure 1. Frequency of speech functions in the NMMC.

After the process of gesture selection outlined above, we were able to identify 74 stroke phases that co-occur exclusively or primarily co-occur with “you know”. We analyse these 74 instances for their speech-gesture functional relationship. The 74 strokes mostly co-occur with the top two functions, ‘editing’ and ‘introducing’, however, they only account for around 20% of the total number in each of these functions. Nine instances occur in the ‘elaborating’ function and 5 in the ‘inviting inferences’ function. There are no strokes qualifying for analysis in the ‘marking reported speech’ function, and only one stroke in the ‘approximating’ function.

Table 1. Instances of “you know” co-occurring with the stroke phases in each function

Speech function	Number of the speech function	Number of the stroke phase	Percentage of the stroke phase in each function
editing	167	36	21.56%
introducing	118	23	19.49%
inviting inferences	63	5	7.94%
elaborating	38	9	23.68%
marking reported speech	13	0	0.00%
approximating	2	1	50.00%
Total	401	74	18.45%

The small number of gestures co-occurring with the different speech functions necessarily limits our ability to generalise these findings, and a much larger dataset and more automated ways of coding and searching may become available in future which should enable further pattern analysis, hypothesis testing and (re-)conceptualisation of multimodal pragmatic units of analysis. However, the approach taken here highlights a clustering of gestures around specific functions, and this in turn allows us to develop new questions about the functional profiles of pragmatic markers (e.g., are there certain pragmatic markers that require a more pronounced/salient gestural component than others? Does the speech function of a pragmatic marker change depending on the gestural component co-occurring with the marker in a specific context? etc). These questions will ultimately not only advance our understanding of pragmatic markers such as “you know”, but also shed light on the role of gesture in pragmatic theory more generally.

3.1 Editing

3.1.1 Speech function

In this function, two criteria regarding the immediate discourse context were applied to distinguish this function from others, and any instance that meets either criterion was classified as the ‘editing’ function. The first criterion is the occurrence of at least one dysfluent feature immediately after “you know” such as filled pauses (e.g., *erm*, *er*, *mm*, etc.), pauses (longer than 0.2 seconds marked by “//”), repetitions, unfinished speech, etc., and the range of immediacy is set within three words following “you know”, including filled pauses. Dysfluencies have long been explored in psycholinguistics as indicators of speech planning (Corley & Stewart, 2008; Hartsuiker & Lies Notebaert, 2010). Such instances of “you know” are positioned at the beginning or in the middle of a (sub-)clause, rather than the end, where the meaning of the utterance is unfinished. Instances followed by fluent speech were not coded as ‘editing’ even when there are dysfluency markers preceding them. This is because the language planning stage may well be completed as the speaker starts to speak fluently. Figure 2 shows the first five of all instances in this category. It is noticeable from the instances that pauses

tend to occur right after “you know” in the middle of the utterances as an indicator of speech planning. Following the pauses, fluent speech resumes.

Item	Speech
S01FM_Stu1	[And/]{/ like you kno}*w*// like we said// last time
S01FM_Stu12	I think it's proved to me that it's it's do-able if I you know// pull my finger out for want of a better phrase
S01FM_Stu3	Um//[but/]{/ you know} *er*// you wouldn't really call it a pseudotitle if it was premodifying a an institution or a company
S02MM_Stu1	something that if one goes into academia has to do/ and erm// you know it's always er// it's a big step to take
S02MM_Sup10	because people have written about^// the er// you know//^ corpus linguistics/ and its relation to

Figure 2. Instances of “you know” as ‘editing’ followed by dysfluent features

The second criterion is the occurrence of self-repairs, such as restarts or reformulations, occurring immediately after “you know” without finishing the sentence before it (Figure 3). An instance of “you know” that only meets this criterion seems mainly to serve the purpose of marking self-repair rather than language planning. Of all the instances in this function, 70 meet the first criterion, 63 meet the second criterion and 29 meet both criteria.

Item	Speech
S01FM_Stu13	it's gotta be/ you know unless you've recorded every single bit of piece of text
S01FM_Stu4	so// when it's people call it pseaudotitles when it's not er an= [you know] {an adjec}tive or whatever it might be
S01FM_Stu9	because I I enjoyed presenting and I ^// you know overall^/ and er
S01FM_Sup1	//and then go back to [you know that original list you] {did for your up} grade// go back to that list
S01FM_Sup2	the bits that you've um// ^the bits that you've got these/ you know the bits where you said at the conference you've got these bits where you don't have the data^ 'cos it doesn't exist

Figure 3. Instances of “you know” as ‘editing’ followed by self-repair

3.1.2 Gesture patterns

Table 2 shows the occurrences of the four gesture types in the ‘editing’ category, which highlights a clear tendency of the function to co-occur with pragmatic gestures. The number of pragmatic gestures considerably exceeds the rest of the three types (i.e., beat, referential, and deictic) with 25 instances. The beat gestures (7 instances) have more occurrences compared with the referential and deictic gestures, both of which are very minor with only three instances and one instance, respectively. Furthermore, it is also worth mentioning that, as many instances of “you know” in this function are followed

by dysfluent features (e.g., pauses, *er, erm, etc.*), the stroke phases tend to stop immediately as the disfluent features start, either becoming a retraction or holding. This observation not only confirms the findings of existing studies on the temporal relationship between dysfluent speech and referential gestures (Graziano & Gullberg, 2018; Seyfeddinipur & Kita, 2001; Seyfeddinipur, 2006), but also offer new insights into pragmatic gestures.

Table 2. Occurrences of gesture types in 'editing'

Gesture types in 'editing'	Number
pragmatic	**25**
beat	**7**
referential	3
deictic	1
Total	36

Given the large number of pragmatic gestures in this function, we further explored the gesture forms that occur at least twice among the pragmatic gestures. Table 3 below shows the forms of recurring pragmatic gestures. Four gesture forms occur only once and were not analyzed. Examples of gesture coding for this purpose are provided below, and have been applied consistently to the data.

Table 3. Recurrent gesture forms of the pragmatic gestures occurring in the 'editing' function

Gesture forms	Number
open hand palm oblique	**10**
bounded space	**5**
open hand palm up	3
circular	3
others (each form only occurs once)	*4*
Total	25

The open hand palm oblique gestures (Kendon, 2004: 215) are the most frequent gesture forms in all of the pragmatic gestures in this function. Here

the speakers opens their hand until the palm is held open, mostly obliquely and vertically. It differs in form from the two well-known gesture families proposed and studied by Kendon (2004): Open Hand Supine (i.e., palm up) and Open Hand Prone (i.e., palm down or palm vertically away from the speaker). As shown in Figure 4 below, we identified three variations of the open hand palm oblique gestures: palm facing towards the left side of the speaker (the first example), the right side (the second example) and towards the speaker (the third example). The function of the open hand palm oblique gestures has not been discussed extensively, but Kendon (2004: 215) shows the use of this form as a pointing gesture when the speaker is demonstrating something. Although they are not pointing gestures here, they seem to have a similar function of presenting something to the interlocutor.

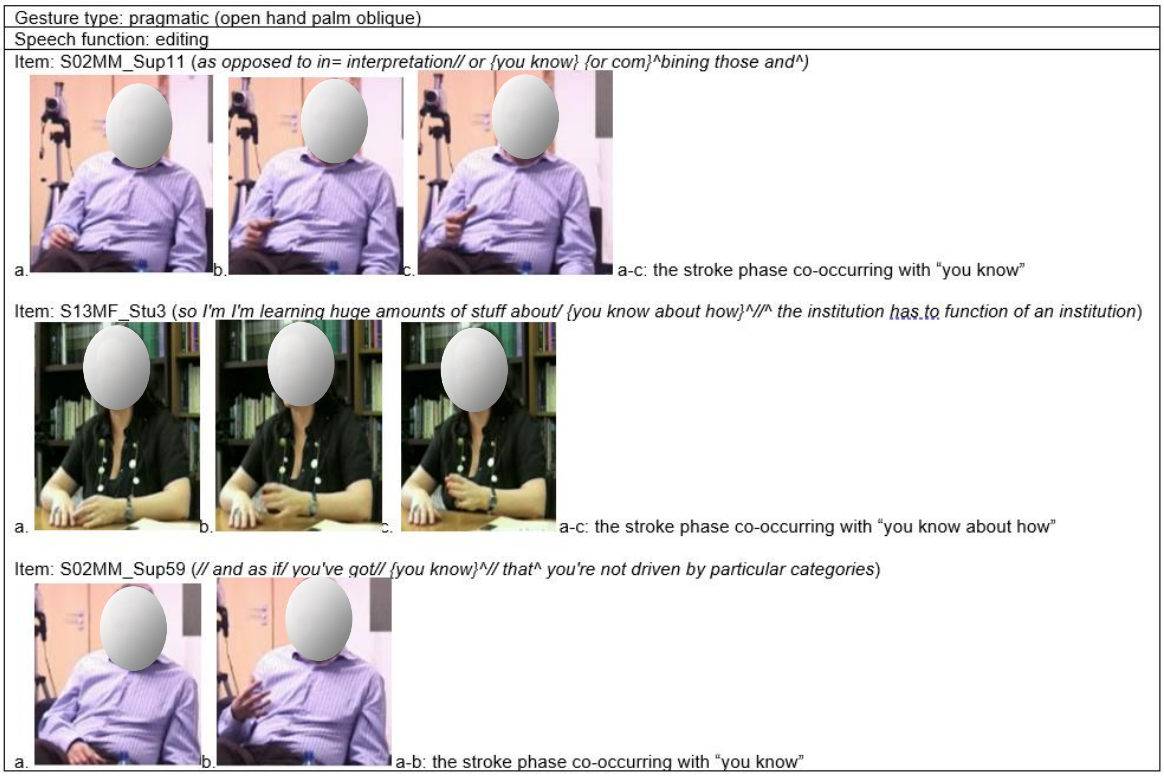

Figure 4. Instances of open hand palm oblique gestures

Figure 5 shows the variations of the bounded space gesture forms in which the speaker signals a bounded space between his hands (McNeill, 2005). In the first instance, the bounded space is formed when he is saying "you know", and, in the second, the bounded space has been signalled before, but the

speaker rotates the wrists back and forth slightly as if emphasizing the space when she is saying “you know we talked”. This gesture can be regarded as a metaphoric gesture (McNeill, 2005; Streeck, 2009) in which an idea is held between the hands as if it were an object being presented.

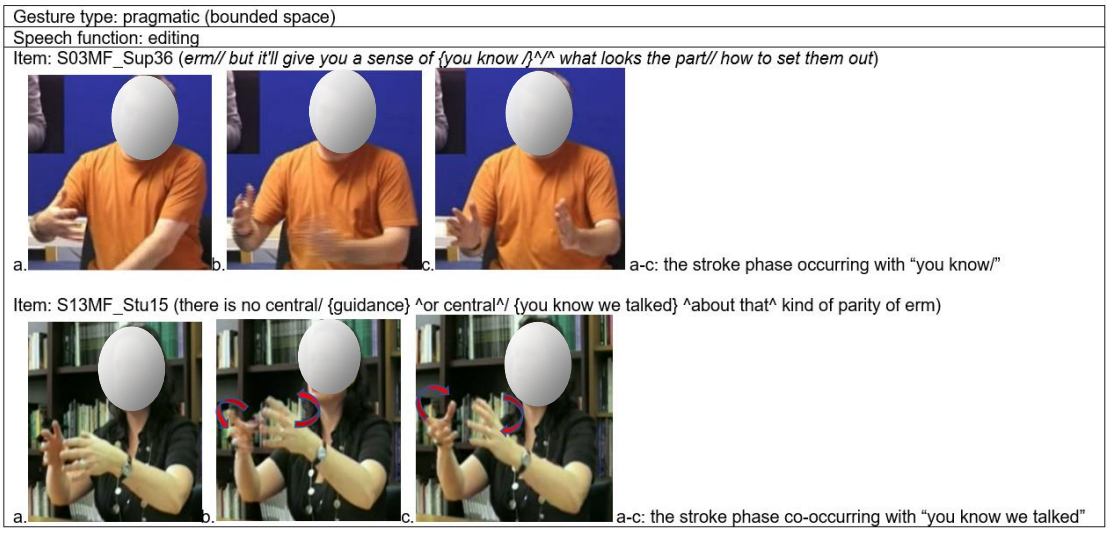

Figure 5. Instances of bounded space gestures

The palm up gestures in Figure 6 belong to the Open Hand Supine gesture family proposed by Kendon (2004) and are also termed the Palm Up Open Hand (PUOH) gestures by Müller (2004). The strokes can be formulated starting from a rest position as in the first instance, or instantly from a previous gesture phase as in the second. Similar to the bounded space gestures above, they are also metaphoric gestures (McNeill, 2005), embodying the metaphor of ideas as objects that can be supported and presented by a cupped hand.

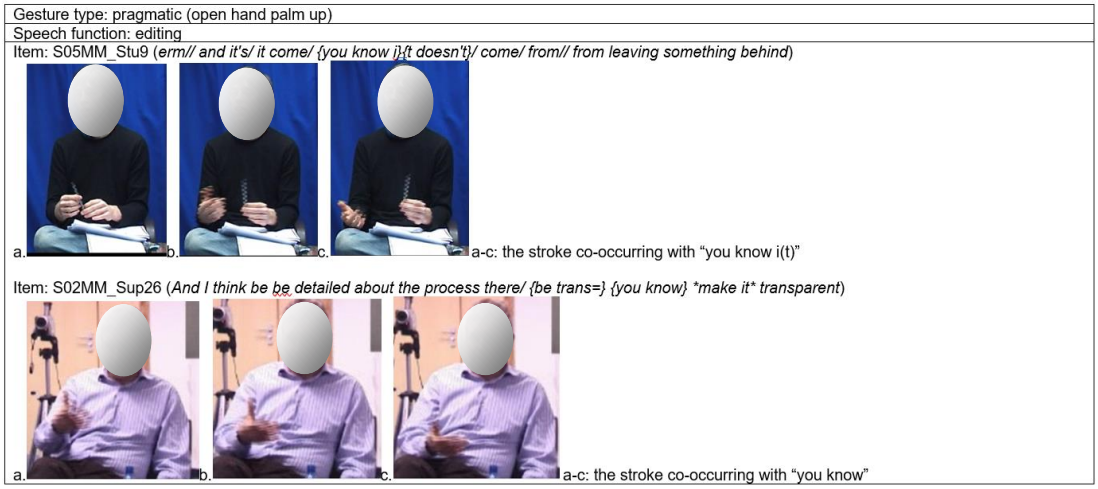

Figure 6. Instances of open hand palm up gestures

Figure 7 includes an example of a circular gesture [Author(s), 2022], in which the speaker rotates both hands inwards and then outwards, depicting a circle. This gesture has been explored previously as mainly carrying the metaphoric meaning of continuity [Author(s), 2022; Calbris, 2011; Ladewig, 2011].

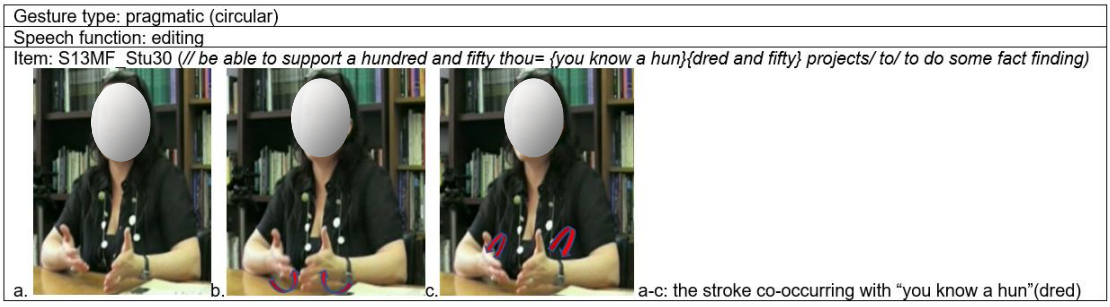

Figure 7. An instance of the circular gesture

Hence, the pragmatic gestures that co-occur with "you know" in the 'editing' function seem to indicate the intention to present information. These gestures help the speaker to foreground their intention to continue the talk and to offer further information while still editing the speech.

The remaining three gesture types (i.e., beat, referential and deictic) were coded consistently throughout our research, and we briefly discuss their forms and functions here. Figure 8 below shows one instance for each type. The first instance is a typical beat gesture in which the speaker moves the hand up and then down in a symmetric and rhythmical manner (i.e., each

move is similar in tension and speed to the other). The beat gesture can have different hand shapes, but is defined by the biphasic movements of the hand (e.g., up and down, left and right, forward and backward, etc.). There may be a series of such movements at times, and these were coded as one stroke if no pauses occurred during the process. The beat gestures tend to have the pragmatic function of emphasizing noteworthy information in utterances (McNeill, 2005). Hence, in this context, the gesture plays a complementary role in informing the listener that, while the speaker is still in the process of speech editing, important information is still to come.

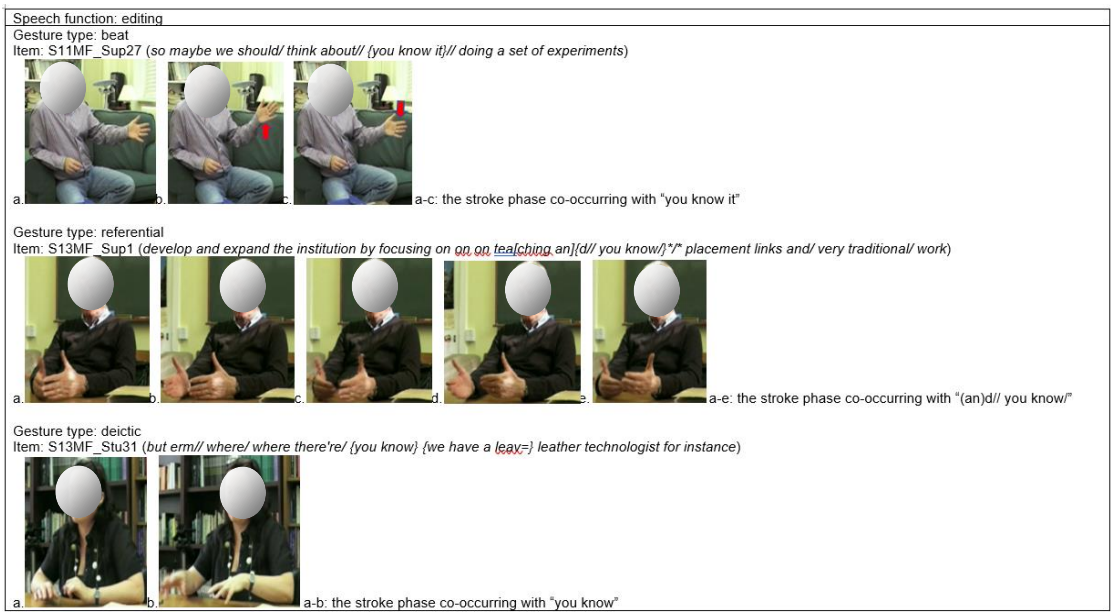

Figure 8. Instances of the beat, referential and deictic gestures.

The second gesture in Figure 8 is a referential gesture that seems to embody the meaning of "placement links" by continuously moving the two hands back and forth in turn. Similar to this instance, the other referential gestures in the data are all co-expressive with the speech immediately surrounding "you know". The referential gestures hence contain referential information that does not reside in "you know", hence kinesically and visually making the focal information of the utterances more salient.

We have only identified one deictic gesture in this function (the third example in Figure 8), with the other two deictic gestures occurring in the function of 'introducing'. In the instance above, the speaker holds both palms

facing downwards using the space to coincide with her description of a “leather technologist”. The other two instances are more typical in form, in which the speakers use a pen and an index finger to point to the referents. All of the deictic gestures co-occurring with “you know” in the ‘editing’ function precede the referents to which they are referring, hence carrying the role of emphasising the information that the speakers intend to deliver.

3.2 Introducing

3.2.1 Speech function

All of the instances in this function meet either of the two criteria. The first type of discourse context in which this function is realized occurs when “you know” occurs at the beginning of a (sub-)clause followed by *fluent* speech that contains certain propositional information (Figure 9). 82 out of 118 instances of this function belong to this type. As described in 3.1.1, when there are dysfluent features within three words following “you know”, they were coded as the function of ‘editing’. Also, pauses tend to occur before “you know” rather than after as indicators of the start of fluent utterances.

Item	Speech
S01FM_Stu10	and er// {you know} ^like you said I get some good^ feedback
S01FM_Stu11	I think that it showed that// you know you can take a two week// period
S01FM_Stu15	on getting a cd// version// {You know} *the li*brary might even have it
S01FM_Stu16	the library might even have it// {/you know} ^then^ *it/* probably worth doing
S01FM_Stu18	Well you know I've got things/ if I got things I've got things on a list

Figure 9. Instances of “you know” as ‘introducing’ occurring at the beginning of a (sub-)clause followed by *fluent* speech

Furthermore, the co-occurrence of those instances of “you know” that co-occur with other discourse markers (e.g., *well*, *so*, *and*, *I mean*, *well*, etc.) and *conjunctions* (e.g., *and*, *but*, *because*, etc.) in clause-initial position is frequently observed, and those discourse markers and conjunctions tend to precede “you know” rather than follow it. This is an important observation and criterion for distinguishing “you know” as ‘introducing’ from “you know” as ‘inviting inference’, where “you know” occurs in the (sub-)clause final position and precedes the discourse markers and conjunctions of the subsequent

(sub-)clauses.

Buysse (2017) further divides the propositions into four sub-categories, including claims, events, arguments and background information. However, more fine-grained categories will lead to smaller numbers of examples in each category, and this does not necessarily aid the analysis of co-occurring gesture patterns. We might hypothesise that the larger the number of instances in each speech function, the more salient the observed gesture patterning is. In addition, unlike others (e.g. Holmes, 1986), we do not assume a priori status of shared mutual ground between participants when a speaker uses “you know”, even though the intention of reaching such a status might be implied in the basic meaning of this expression (Tree & Schrock, 2002). Making such an assumption runs the risk of over-interpretation in the analysis (Macaulay, 2002).

The second type of discourse context in which this function is realized occurs when “you know” is positioned in the middle of a (sub-)clause rather than the beginning, connecting the constituents before and after in one single sentence (Figure 10). The speech immediately following “you know” has to be fluent, which would otherwise be coded as the function of ‘editing’. These instances serve the same function of introducing subsequent information as those in the first type; however, with 35 instances overall, there are considerably fewer examples in this type.

Item	Speech
S01FM_Stu6	That's more looking at it in terms of// um// {you know this idea of} language and and control
S02MM_Sup1	that's good especially {you know for} ^a^ home conference// it did/ it was very friendly
S02MM_Sup13	And {you know if you're looking} ^for// you know^ {large} frequencies and ignoring// er
S02MM_Sup23	so again that's something that// is an opportunity with Martin/ that {you know} {you wri}te// that aspect up
S02MM_Sup37	Don't I mean y= you {don't need to go off} ^// er you know// too broadly in// you know kind of the sociology of

Figure 10. Instances of “you know” as ‘introducing’ occurring in the middle of a (sub-)clause

Previous research (Buysse, 2017; Macaulay, 2002) has coded these instances of “you know” in clause-medium positions as belonging to a distinctive category: highlighting the upcoming component of the (sub-)clause. We have not followed this approach as this kind of coding relies heavily on the subjective interpretation by the analyst as for whether a speaker intends to

emphasize the content following “you know” or not. Again, there is a risk of over-interpretation.

3.2.2 Gesture patterns

Table 4 shows the tendency of “you know” as ‘introducing’ to co-occur with pragmatic gestures rather than the other three types (i.e., beat, referential and deictic). The 16 pragmatic gestures account for 69.57% of the total of 23 gestures that co-occur with “you know”. The number of beat, referential and deictic gestures are only minor, and they play a similar role as analyzed in ‘editing’: they visually foreground or make salient the information that the speaker intends to emphasize. We analyze the pragmatic gestures in detail below.

Table 4. Occurrences of gesture types in ‘introducing’

Gesture types in ‘introducing’	Number
pragmatic	**16**
beat	3
referential	2
deictic	2
Total	23

Table 5 shows the recurrent gesture forms of the pragmatic gestures, among which the open hand palm oblique and palm up gestures have relatively more instances than the open hand palm vertical gestures (Kendon, 2004) and other gestures occurring once only. As shown in 3.1.2, both the palm oblique and palm up gestures carry the pragmatic function of presenting forthcoming information, which is well coordinated with the function of “you know” here (i.e., ‘introducing’).

Table 5. Recurrent gesture forms of the pragmatic gestures occurring in the 'introducing' function

Gesture forms	Number
open hand palm oblique	**7**
open hand palm up	**5**
open hand palm vertical	2
other (only occur once)	2
Total	16

The relationship between "you know" with an 'introducing' function and the open hand palm vertical gestures is less clear here. Figure 11 below shows an example in which the speaker opens his right palm until it is held vertically, or at least semi-vertically, and faces away from the speaker (see picture c). There are only two instances of open hand palm vertical gestures in which the palm faces away from the speaker. Kendon (2004) classifies this gesture form and the open hand palm down gesture form as variations of the Open Hand Prone gesture family, which are associated with the pragmatic function of negation (e.g., stop, reject, suppress, etc.). If the open hand palm vertical gestures in our data are interpreted in the way suggested by Kendon (2004), then the gestures indicate additional meaning of stopping the interlocuter from interrupting the speaker.

Gesture type: pragmatic (open hand palm vertical)
Speech function: introducing
Item: S02MM_Sup1 (*that's good especially {you know for} ^a^ home conference// it did/ it was very friendly*)

a. b. c. a-c: the stroke phase co-occurring with "you know for"

Figure 11. An instance of the open hand palm vertical gesture

However, when we interpret this gesture based on the discourse contexts, the contexts of both instances do not imply the meaning of negation, and it is possible that the open hand palm vertical gestures here have a similar function to the open hand palm oblique and up gestures (i.e., presenting

information). This result contrasts with the previous finding and may be the result of the corpus-based approach we are taking in our analysis. A possible explanation for our results can be found in Calbris' (2011) discussion of the relevant elements of meaning in gesture. Supported by ample evidence, Calbris (2011) demonstrates the analogic/metaphoric link between certain component(s) of a gesture (e.g., hand shape, movement, etc.) and the associated context. In other words, the discourse context primes certain gestural component(s) to be relevant; meanwhile other components are less relevant. In this case, the meaning of presenting embodied in the open hand palm vertical gesture may well lie in the open palm as the activated kinesic element in this context, and the vertical away elements may be less relevant.

3.3 Inviting inferences

3.3.1 Speech function

To be a candidate for inclusion in this category, an instance needs to occur at the end of a completed (sub-)clause, which can be followed by a *fluent* (sub-)clause or a response from the listener. In addition, pauses after "you know" in the 'inviting inferences' category are usually mandatory as they not only indicate the end of a (sub-)clause, but, more importantly, the intention of inviting the listener to take the time to make inferences or understand the preceding speech, unless they are instantly followed by a response from the listener without any pause in the turn-taking process. The instances of "you know" as 'inviting inferences' tend to occur before any discourse markers and conjunctions in the following (sub-)clauses, which draws a clear distinction between this function and 'introducing' (see 3.2.1).

Item	Speech
S02MM_Sup17	the whole issue of comparable corpora. And// erm// the whole issue of selectivity/ {you know/}/ who's selecting
S02MM_Sup22	he would probably admit that/ as a data management tool {/}^/^ *you know*// corpus linguistics/ is just// very very useful
S02MM_Sup61	almost like// [verbal/] {kind of graffiti you know}^//^ well I suppose graffiti is verbal
S02MM_Sup62	/[/ ki]{nd of publicly or// you know}*//*is it= it is= is it public or is it closed
S02MM_Sup65	as long as it's not too^// and un= unmanaged^*// you know*/ <$2> Definitely.

Figure 12. Instances of "you know" as inviting inferences

It is also worth mentioning that, in line with the observation made by Östman (1981), listener responses after the inferential “you know” are optional, and hence cannot be used as a reliable proxy for this function. In the supervision meetings in the NMMC, listeners often provide minimal responses with verbal (*yes*, *mhm*, *right*, etc.) and non-verbal (e.g. head nodding) feedback in interaction so it is not clear whether a minimal response is triggered by the use of ‘you know’ or simply a function of the discourse context.

3.3.2 Gesture patterns

Among the 36 instances of “you know”, we are only able to identify five strokes in this function (Table 6). This might be due to the fact that “you know” mainly occurs at the end of a sentence in this function where it is used to invite inferences and check understanding and the strokes tend to co-occur with the speech before “you know”, leading to many instances of “you know” co-occurring with the retraction and post-stroke hold phases.

Table 6. Occurrences of gesture types in inviting instances

Gesture types	Number
referential	3
pragmatic	2
Total	5

It is the only function in which the number of referential gestures is slightly higher than the pragmatic gestures; however, further research is required to confirm this observation given the very limited number of instances. The referential gestures co-occurring with “you know” visually embody the speech contents on which the speakers invite the listeners to make inferences and reach the mutual ground. That is, the referential gestures add and emphasize the semantic contents of the utterance. The two pragmatic gestures are the open hand palm up and circular gestures. As analyzed above, both gestures indicate the intention of offering information when the speech “you know” is ‘inviting inferences’. In this sense, the functions of speech and gesture are coordinated.

3.4 Elaborating

3.4.1 Speech function

To code the function of elaboration, firstly, the immediate speech following “you know” has to be fluent, which would otherwise be assigned to the function of ‘editing’. Secondly, to further reinforce the purpose of elaboration, the coders must specify the component in the prior speech on which the following utterance is ‘elaborating’, which would otherwise be classified as the function of ‘introducing’. For instance, the third instance in Figure 13 below clarifies the meaning of “debate” and the fourth one specifies “underdeveloped”.

Item	Speech
S01FM_Stu17	um sports reports from that kind of ^area//^ {you know} {the Guardian for example} the sports reports are bigger than the Daily Mail
S01FM_Stu7	but on the other// all thee= this evidence[/ you know the] {premodifying adjectives et cetera et cetera
S02MM_Sup15	So again you've got another// debate if you like to be had there/ haven't you/ in terms of// you know is this an appropriate// or or relevant
S02MM_Sup20	area of healthcare= language research is// still// hugely underdeveloped// you know just in terms of simple descriptions of what takes place in interactions
S02MM_Sup29	in in some ways that's kind of// what a thesis is// [you know you're] {moving around and er}/ [not] shoring up,T=S02M-supervisor

Figure 13. Instances of “you know” as ‘elaborating’

3.4.2 Gesture patterns

In ‘elaborating’, again, there are more pragmatic gestures than referential and beat gestures (see Table 7). Both of the referential and beat gestures play a role in foretelling the forthcoming of further elaborations following “you know”. The referential gestures achieve this by directly embodying the referential contents of the elaborations in gesture, and the beat gestures do this by moving the hand up and down as if ‘beating’ on something important. Among the six pragmatic gestures, we have identified three open hand palm oblique, two open hand palm up and one bounded space gestures. As analyzed previously, all of them can play a pragmatic role in presenting further information, which is aligned with the speech function of elaboration here.

Table 7. Occurrences of gesture types in ‘elaborating’

Gesture types in ‘elaborating’	Number
pragmatic	**6**
referential	2
beat	1
Total	9

3.5 Marking reported speech

3.5.1 Speech function

For this function, what has been largely missing from the literature is a discussion of the flexibility of “you know” when it comes to its placement in relation to such quotes. Our data shows that “you know” may occur at the start, middle or end of quotes while not being part of the reported speech. With the co-occurrence of the quotation marker “say”, this use of “you know” is relatively easy to identify in most circumstances; however, as also pointed out by Buysse (2017), sometimes it can be difficult to judge whether “you know” is part of the quoted speech or not. Without denying this possibility, on balance, we have coded all the instances of “you know” surrounding quotations as belonging to the ‘marking reported speech’ function. The examples below show the first five instances of this function (Figure 14).

Item	Speech
S01FM_Stu14	or just say [“look” /you know/] {“the general} *trend's there* and that's all that matters”
S02MM_Sup42	erm language which evokes catastrophe// yeah?/ [“it's all] {it's all fi}*nished”// you know/* /“I'm done with”. erm
S02MM_Sup43	erm// "It's black"/ you know "I'm in a pit"
S02MM_Sup46	They will usually say that// [you know]{//} ^"Don't^ worry/ I'm not going to do anything
S02MM_Sup51	erm "why don't you have my record collection"// you know/ "I don't need it anymore"

Figure 14. Instances of “you know” as ‘marking reported speech’

3.5.2 Gesture patterns

Although there are 13 instances in this category, we are unable to identify any strokes in this function that only or primarily co-occurs with “you know”. The stroke phases tend to co-occur with the speech contents in the actual quotes immediately preceding or following “you know” (see the gestural annotations in Figure 14 above). Accordingly, “you know” tends to co-occur with the

preparation and retraction gesture phases instantly preceding or following the stroke phases that accompany the quotes.

3.6 Approximating

3.6.1 Speech function

In this function, the speaker seems to expect the listener to activate relevant knowledge to reach mutual understanding without further specification or explanation. In the NMMC, we have only identified two such instances as shown below in Figure 15. Buysse (2017) also reported that the number of this use is negligible.

Item	Speech
S01FM_Stu2	so I can look at the use of modals with/ pronouns/ "you should" or "we should"*// um or* {“we must”}/ *you know* and things like that
S03MF_Sup8	you attack somebody else's [ideas] {or you know that} *sort of idea*

Figure 15. Instances of “you know” as ‘approximating’

3.6.2 Gesture patterns

Only one of the two instances here co-occurs with a stroke phase: a pragmatic gesture in a bounded space gesture form. Hence, the gesture carries the function of emphasizing the intention of offering information while the speech “you know” functions as an ‘approximating’ marker. Again, the speech and the pragmatic gesture is functionally coordinated.

4 Discussion and Conclusion

Our research sets out an approach for exploring gesture patterns that co-occur with pragmatic markers such as “you know”. The preliminary findings relating to the use of “you know” are significant in terms of furthering our understanding of the functional relationship between speech and gesture of pragmatic markers. The results suggest the functional coordination between speech and gesture modes as shown in previous research on recurrent speech and gesture [Author(s), 2021; Debras, 2021].

To summarize the main results, firstly, we suggest that the pragmatic

marker “you know” may have the core meaning of emphasizing the intention of offering further information, which is shared by the three frequently occurring speech functions: ‘editing’, ‘introducing’ and ‘elaborating’ (323 out of 401 instances, 81%). In terms of gestures, four types in our framework (i.e., pragmatic, beat, referential and deictic) all co-occur with the three functions (except for deictic gestures which do not co-occur with ‘elaborating’). Gestures play a role in visually foregrounding or making salient the intention of the speaker to offer more information. In addition, all of the three speech functions tend to co-occur with the pragmatic gestures (51 out of 74 strokes, 68.91%) that are mainly associated with the function of presenting further information (Kendon, 2004).

Further analysis of the forms and functions of pragmatic gestures in the three functions also shows other results that are worth noting. It suggests that the most frequent pragmatic gesture form is the open hand palm oblique gesture (Kendon, 2004). This is an under-explored gesture form compared to the other forms in our data, and this gesture form may be worthy of investigating further. The use of the open hand palm vertical gesture associated with the function of introducing further information is also of interest as it has been discussed mainly in the context of carrying the meaning of negation in previous studies (Harrison, 2018; Kendon, 2004). This finding suggests the need for more corpus-based research on the meanings and functions of open hand gestures, as well as on other recurrent gestures (Harrison, Ladewig & Bressem, 2021).

The second major finding is that the data also indicate variations in gestures in accordance with variations in speech functions. For instance, the function of ‘editing’ has slightly more instances of beat gestures than the other two (i.e., ‘introducing’ and ‘elaborating’). This may be due to the nuanced differences in the discourse contexts between ‘editing’, ‘introducing’ and ‘elaborating’. The former (followed by self-repair and dysfluent speech) places more emphasis on the speech editing process and the latter two (followed by fluent speech) focus more on the intention of presenting. Hence, the ‘introducing’ and ‘elaborating’ functions may be more closely aligned with the pragmatic gestures that primarily embody the meaning of presenting rather

than beat gestures that mainly intend to emphasise something, leading to fewer instances of beat gestures in both functions.

While there are only five instances in the ‘inviting inferences’ function, it is interesting to note that this is the only function in which the referential gestures outnumber the pragmatic gestures. The three representational gestures co-occurring with “you know” are iconic of the information that needs to be inferred/understood by the listener. However, no such referential information is embodied in the pragmatic gestures. Hence, referential gestures may be more frequently used to foreground and remind the listener of the intention of the speaker than pragmatic gestures. Given the small number of instances in our data, all of these results are necessarily preliminary, and our discussion about the trends revealed in our analysis remains tentative and subject to further replication.

Alongside the work of other scholars in this area (Culpeper & Gillings, 2019; Huang, 2021) our study contributes to a growing body of research that uses multimodal data as the basis for pragmatic analyses. Our research offers a framework for analyzing pragmatic markers in a more holistic way, taking account of speech and gesture, in an area where descriptions have largely been based on textual evidence and intuition. Furthermore, our research sets out an approach to multimodal ‘corpus’ pragmatic analysis, which enables us to identify the patterned uses of different modes in video-recorded interactional data. In particular, we show examples of the patterned uses and functional coordination of speech and gesture of pragmatic markers. This kind of functional coordination also suggests that there might be a possibility of using gestures to recognize the core meanings of functional variations in spoken discourse, leading to more nuanced descriptions of similarities and differences of individual pragmatic functions.

Our research highlights various challenges for conducting multimodal pragmatic research. Many issues are commonly acknowledged, including the lack of multimodal corpus data, the complex nature of analyzing and representing multimodal data, and the time-consuming process of manual coding due to the lack of technology for automating any of these processes. All of these challenges result in datasets and analyses which are limited by

the small number of instances that form the basis for the analysis and we have acknowledged this limitation throughout our study.

In introducing the importance of taking a multimodal corpus pragmatic approach to the study of pragmatic markers, we recognize that our analysis is further limited in other crucial ways. Firstly, there is no doubt that other modes further influence the meaning of pragmatic markers, such as prosody and gaze. We do not account for these here; however, we anticipate that, with an increase in the availability of automated tracking technology, future studies may well arrive at an even more fine-grained description of the multimodal functional unit of meaning, here applied to pragmatic markers specifically. In addition, as we mainly examine the function of “you know”, the question remains whether or not the broader discourse context (e.g., the pragmatic function of the utterance in which “you know” is used) may also affect or even prime the functions of “you know” and their co-occurring gesture patterns. Our preliminary observations seem to suggest that the speakers in the data are mostly involved in explanation, elaboration, or demonstration, and such contexts may prime the most frequent use of this marker (i.e., presenting information) and the co-occurring pragmatic gestures with a similar function.

Our study therefore serves as an early demonstration of how we might think about the description of pragmatic markers in future, how we might approach their analysis in a multimodal data context and how we might use a corpus-informed approach to extract patterns of speech and gesture that might ultimately lead to new insights about the way in which we perform language functions in interaction.

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