The Pragmatics of Aeronautical English: an investigation through Corpus Linguistics

A Pragmática do inglês aeronáutico: uma investigação pela Linguística de Corpus

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Abstract: The ICAO Language Proficiency Rating Scale offers parameters for aeronautical English teaching and assessment focused on oral skills. It assists governments worldwide in assessing pilots and air traffic controllers' English proficiency, licensing them for international operations. This paper addresses two of the six linguistic areas listed in the Rating Scale, namely fluency and interaction, to understand what conversational elements are present in pilot-controller communications with a view to informing pedagogical material. The analysis is based on a corpus of pilot-controller radio communications in abnormal situations, revealing a more spontaneous code as opposed to the documented Standard Phraseology mandated for routine situations. Corpus Linguistics is the methodology chosen for this investigation, concentrated on the top frequent three-word clusters extracted from the corpus. Investigation of these clusters reveals that fluency and interaction are interconnected and should be considered in a broader perspective that takes into account language in use. To illustrate, 'we'd like' and 'if you can' are commonly employed as requests in this specific register. The paper concludes by suggesting that learners' awareness of pragmatic aspects of language is pivotal in the aviation English classroom.

Keywords: Plain Aviation English; fluency; interaction; Corpus Linguistics; Pragmatics.

Resumo: A Escala de Proficiência Linguística da ICAO oferece parâmetros para o ensino e a avaliação do inglês aeronáutico focado nas habilidades orais. Serve para os governos em todo o mundo avaliarem a proficiência em inglês de pilotos e controladores de tráfego aéreo, licenciando-os para operações internacionais. Este estudo aborda

duas das seis áreas linguísticas elencadas na Escala, quais sejam, fluência e interação, para compreender quais elementos conversacionais estão presentes nas comunicações entre pilotos e controladores com o objetivo de subsidiar materiais pedagógicos. A análise se baseia em um *corpus* de comunicações via rádio entre pilotos e controladores em situações anormais, revelando um código mais espontâneo, diferentemente da Fraseologia Padrão oficial mandatória nas situações rotineiras. A Linguística de *Corpus* é a metodologia utilizada nesta investigação, concentrada nos mais frequentes blocos de linguagem de três palavras evidenciados no *corpus* de estudo. A investigação desses blocos de linguagem revela que fluência e interação são interconectadas e deveriam ser consideradas a partir da perspectiva da língua em uso. Para ilustrar, 'we'd like' e 'if you can' são normalmente empregados como solicitações. Conclui-se sugerindo que a conscientização dos aprendizes sobre aspectos pragmáticos da língua é fundamental na sala de aula do inglês aeronáutico.

1 Introduction

Even following the spread of the communicative approach and the stimulus in promoting authentic language in the language classroom, research shows a different scenario (RÜHLEMANN, 2008). This may be a result of a lack of understanding of the characteristics of language use, in particular of the importance usually given to language form rather than language use (MCCARTHY; CLANCY, 2018). On one hand, authenticity in the classroom is sometimes criticized over certain features found pedagogically difficult to deal with, such as hesitation, false starts, and speed of delivery (cf. WIDDOWSON, 1998). On the other hand, promoting strategies that help the learner tackle authentic language use may contribute to the learning process from the start (FIELD, 2009).

In language testing, particularly in the field of English for Specific Purposes (ESP), Douglas (1999) argues that real-life tasks should be implemented in language proficiency tests as a means of truly and fairly analyzing the candidates' production. This has shown to be highly relevant in aviation English studies such as Kim (2018), which compares the language production of both novice and experienced air

traffic controllers and pilots: the more experienced the professional, the better the performance when assessed in real-life tasks.

Increasing attention has been drawn to aviation English since pilots and air traffic controllers were required to show sufficient English language proficiency to operate internationally. This proficiency requirement is described in the Manual of Implementation of the Language Proficiency Requirements (ICAO, 2004, 2010), which also specifies the Language Proficiency Rating Scale (Scale henceforth) that guides raters responsible for granting licenses to the above-mentioned professionals. The Scale is divided into six language areas: pronunciation, structure, vocabulary, fluency, comprehension, and interaction distributed across six different levels of proficiency.

Some studies have criticized the Scale by questioning its authenticity, particularly when considering radio communications held between pilots and controllers in abnormal situations, an avowed interest of the International Civil Aviation Organization (ICAO), as noted in the second edition of the Manual (ICAO, 2010). ICAO documents recommend that Standard Phraseology, a specialized and rehearsed register, be used in all routine situations of a flight. However, when abnormalities occur, such as engine failures or bird strikes, pilots and controllers need to resort to what is referred as "Plain Aviation English", a more spontaneous language placed between the documented Standard Phraseology and everyday conversations (BIESWANGER, 2016, p. 83). Both Standard Phraseology and Plain Aviation English belong to the realm of aeronautical English and are equivalent to the language used by pilots and controllers on the radio; all other portions of language (produced by crew members, mechanics, flight attendants) go under the umbrella of Aviation English (TOSQUI-LUCKS; SILVA, 2020). For the purposes of this paper, I aim to study the Plain Aviation English, that is, a sub-register of aeronautical English.

In aviation, any minor problem can become a disaster (cf. FRIGINAL, MATHEWS; ROBERTS, 2020; WEIR, 1999), and all areas of communication therefore deserve attention. Many studies, including those listed in Doc 9835 (ICAO, 2010), draw on accidents to which miscommunications were a contributory cause (FRIGINAL, MATHEWS; ROBERTS, 2020). Nevertheless, Mathews (2012, 2020) claims that there may be more incidents and accidents to which language is a contributing factor than we are aware of, given that accident investigations often fail

to consider linguistic expertise, stressing that the knowledge and tools applied in the investigation of operational and mechanical complications are far more meticulous than those used in human factor issues, particularly in communication.

Most research has tended to focus on aeronautical English as this is the main interest of ICAO Language Proficiency Requirements (LPRs). Some studies have pointed out the lack of attention or even vagueness in the description of language areas (cf. ESTIVAL; FARRIS; MOLESWORTH, 2016; GARCIA, 2015). Others address the need for more research into communicative elements excluded from the Scale, such as interactional competence (MONTEIRO, 2019), cross-cultural competence (BOROWSKA, 2017), and ELF communicative strategies (ISHIHARA; PRADO, in press). Beyond merely pointing out problems with the Scale, these studies suggest linguistic manifestations that may equip Scale users, such as the lack of correspondence between the Scale and real-life scenarios may cause misunderstandings among Scale users and, more dangerously, misconceptions (cf. PFEIFFER, 2009).

Mathews (2020) points out that despite the criticism to which the LPRs have been subjected, this was a useful starting point because it brought about not only testing and teaching programs worldwide but also academic research. As one of the designers of ICAO documents, Mathews emphasizes that academic and industrial collaborations are key to advances in this area.

Bearing in mind that, in aeronautical English, Plain Aviation English should resemble the Standard Phraseology in aspects such as clarity and objectivity, and seeking to examine how the description of fluency and interaction present in the Scale compares to the specific verbal-only communication in moments considered non-routine, I compiled a corpus described in Section 4 of this paper of pilot-controller radio communications in abnormal situations to allow for an investigation of such elements. This corpus allows for an examination of the data so as to consider two questions, which are (1) what linguistic elements correspond to interaction and fluency in radio communications in abnormal situations?; and (2) what elements can compose an aeronautical English teaching curriculum?

This paper is structured as follows: I first address research on conversational elements of aeronautical English. Next, I discuss characteristics of oral language as well as findings from studies of spoken

corpora. The methodology and the corpus used for this investigation are then presented, followed by the analysis of the data highlighted. I conclude by raising the importance to intercultural pragmatics and communicative strategies in the pedagogy of Aviation English and offer suggestions for how to approach these in the aeronautical English classroom.

2 Oral elements in Aeronautical English

The two linguistic areas, fluency and interaction, this paper intends to address are now described, starting from fluency:

> Produces stretches of language at an appropriate tempo. There may be occasional loss of fluency on transition from rehearsed or formulaic speech to spontaneous interaction, but this does not prevent effective communication. Can make limited use of discourse markers or connectors. Fillers are not distracting.

This is the rationale for a level 4 candidate, that is, a candidate who is granted the language proficiency license for international operations. In fluency, keywords such "tempo", "discourse markers", "fillers" can be spotlighted and paralleled to the viewpoint common at the time of the publication of Doc 9835 (ICAO, 2004), which refers to hesitation as an "occasional loss of fluency". However, the last years have seen a change in this perspective, as studies on spoken corpora have shown that hesitation, especially the filled pause (e.g. uh, um, er), is an important item used as a strategy to request assistance from the interlocutor or to signal a change of ideas, for example, and, as such, should be considered a word or a linguistic event rather than an indication of a loss for words (GÖTZ, 2013). This updated definition of fluency brings it closer to Monteiro's study (2019) of interactional competence in aviation English testing.

In interaction, the Scale states the following for level 4:

> Responses are usually immediate, appropriate and informative. Initiates and maintains exchanges even when dealing with an unexpected turn of events. Deals adequately with apparent misunderstandings by checking, confirming or clarifying.

The concern over prompt responses as well as their quality calls attention to another feature that has been questioned elsewhere: that of placing the burden of the communication on a person only, rather than considering it as a two-way endeavor (MCNAMARA, 2011). The transition from Standard Phraseology to Plain Aviation English is also taken into account – as it is stated in fluency as well. Communicative strategies are listed as "checking", "confirming" and "clarifying", which are related to communication repairs. However, such strategies can be used in routine situations and it is worth investigating what other strategies can be employed in abnormal situations (e.g. MONTEIRO, 2019).

Mell (2004) analyzed a corpus built in France from transactions between French controllers and international traffic. He verified that more than 75% of the language used in radio communications in routine situations regards the management of the communication itself through functions such as the "expression of satisfaction or complaint, reprimand, concern or reassurance, apologies, […] opening or closing, self-correction, readback, acknowledgement, checking, repetition, confirmation, clarification, or relaying" (MELL, 2004, p. 13). A more thorough list compiled by Mell in his thesis defended in 1991 can be found in one of the annexes to the ICAO Manual (ICAO, 2004, 2010). Lopez (2013) followed in Mell's footsteps and investigated an updated version of the corpus. She too concluded that social conventions play an important role in radio communications and language and that even in a restricted environment such as aviation, language cannot be controlled.

Nevertheless, Garcia and Fox (2020) argue that listening – or comprehension, as expressed in the Scale – should have an exclusive scale given that it is a much more complex activity. Regarding pronunciation, specifically speech rate, ICAO's Standard Phraseology recommends that a maximum of 100 words per minute be used (ICAO, 2007). However, a study of this speech rate revealed that it is too slow for radio environments and in fact compromises understanding (BIESWANGER, 2013). In a comparison between a radio communication corpus and a professional radio broadcaster's corpus, Trippe and Baese-Berk (2019) concluded that pilots and controllers tend to have a faster speech rate.

Kim (2018) conducted a study with six professionals, analyzing their perceptions of a real communication between a Russian pilot and a Korean controller. The professionals recognized that despite clear

linguistic limitations, the pilot acted professionally and handled the communication effectively, whereas the controller, even though he demonstrated a higher linguistic level, did not show the same experience in dealing with the problem, thus overloading the pilot. Along with work by Moder and Halleck (2009), Knock (2014), and Emery (2014), this line of research heeds technical knowledge combined with language proficiency. In addition, McNamara (2011) argues that air-ground communications are held between two participants at least as opposed to being an individual responsibility. Thus, training pilots and controllers to communicate effectively on the radio "should emphasize collaborative principles rather than focusing on terminology or isolated practices" (MORROW; RODVOLD; LEE, 1994, p. 255).

3 Studies of spoken language

The notion that spoken and written forms of language share the same characteristics has long been outdated, but it still orients many English as a Foreign Language (EFL) and English as a Second Language (ESL) coursebooks available in the market (cf. CARTER; MCCARTHY, 2017; RÜHLEMANN, 2008). Studies that emerged from the 1970s (SACKS; SCHEGLOFF; JEFFERSON, 1974; SINCLAIR; COULTHARD, 1975) turned to oral language from a more empirical perspective, with attention given to transcription modes, eventually including their storage in computers. Researchers then realized the need for a better – and as faithful as possible – representation of spoken language. This viewpoint allowed new fields such as Discourse Analysis, Conversation Analysis, and studies of spoken corpora to develop. Nevertheless, the challenges involved in gaining access to or recording natural spontaneous speech and transcribing it hindered advances in compiling large amounts of data, a situation that only began to change through projects such as the Santa Barbara Corpus of American English (DUBOIS, 1991) and the London-Lund Corpus of Spoken English (SVARTVIK, 1990).

The faithfulness of transcriptions is often questioned as transcriptions represent only part of the actual event (ZANETTIN, 2009). However, analysis carried out from empirical evidence yields findings that once were solely based on intuitions (cf. RÜHLEMANN, 2008). Comparisons between spoken and written forms generated materials

aiming at new descriptions of language in a more grammar-usage based style (e.g., CARTER; McCARTHY, 2006), lexically centered (LEWIS, 1993), or even drawing attention to lexico-grammatical patterns (SINCLAIR, 1991). Coursebook writers and material designers then began to employ these findings but still within frameworks built mostly upon generative or universal concepts of linguistics (DAVIES, 2004). Eventually, social theories began voicing the importance of other competences to be included in the EFL/ESL curriculum, including pragmatic, interactional, and strategic competence (CORBETT, 2003; DAVIES, 2004; YOUNG, 2000). Research followed suit, eventually shifting from years of work about grammar, lexicon and pronunciation to a more process-oriented perspective, particularly in studies that used corpora in pragmatics (cf. O'KEEFE; CLANCY; ADOLPHS, 2011), English as a Lingua Franca (ELF) (MAURANEN, 2018), and learner language (GRANGER, 2008). However, this product-oriented focus on lexico-grammatical patterns (and, to a lesser extent, on pronunciation; see JENKINS, 2000) highlighted in the usage-based data was widely perceived as "wrong" data as it did not correspond to the norms prescribed by grammarians and native speaker standards (MAURANEN, 2018). In Mauranen's words, "linguistic structures reflect the demands of communication, not the other way round, with communication shaped by available linguistic structures" (MAURANEN, 2018, p. 13).

The process-oriented approach concerns empirical observations of certain phenomena co-constructed within the interaction. It considers communication as a social, conventional enterprise that evidences transparent elements such as lexical choice, level of politeness, register, and less transparent items such as power relations and cultural factors (including indirect speech acts), among others. Some of these elements are described in literature on communicative strategies (KAUR, 2019), turn initiators (TAO, 2003), fluency enhancement strategies (GÖTZ, 2013), speech acts (ADOLPHS, 2008), mitigation (CAFFI, 1999) and communication breakdowns (GARDINER; DETERDING, 2018), to name a few. Such investigations also review concepts in the teaching of English, especially grammar, which, according to Rühlemann (2008), should focus on the structures of spoken grammar, found in strings of language that contain a "functional profile" (ADOLPHS, 2008), or pragmatic speech act. This can range from a speech act to a false start and is constrained by the context of language production.

4 Method

This study's chosen methodology derives largely from Corpus Linguistics (CL). CL's starting point is the compilation of a corpus, a computer-stored bank of texts collected mostly with research purposes in mind (TAGNIN, 2013) – although more and more uses of corpora are now seen in areas such as glossary making or teaching (CHENG, 2015). To be included in a corpus, texts must meet certain conditions such as emerging from naturally occurring environments, whether in written or spoken form or belonging to any specific genres, among others.

Two key principles underlie CL research: the open-choice principle, and the idiom principle (SINCLAIR, 1991). The first corresponds to the creative use of language, whereas the latter regards the storage of semi-structured language available to the user. The idiom principle is the interest of the present research as it conceptualizes language as socially produced, through entrenchments cognitively stored and conventionalized through common use by a given community; these strings of language, or clusters, spare the speaker the burden of producing new language on every occasion (O'KEEFE *et al.*, 2011). Because the interest of CL is conventionalized patterns, analysis usually starts from generating lists based on the frequency of occurrence in the corpus, which in turn highlight the most frequent words. Researchers then look at them more deeply, using tools such as keyword lists (by comparing two corpora, the researcher can extract those words that are exclusive to or more commonly used in the corpus), but also cluster lists (frequent two-, three-, four- or more strings of words), and concordance lines (the lines of text excerpts in which a node word appears centrally so that it may be observed in its surroundings), among others. The choice of tools depends on the research question.

I now turn to the methodology used in this study. In the investigation of spoken phraseology, that is, patterns commonly used in oral speech, Altenberg (1998) generated two-, three-, four-, five- and six-word clusters and compared their frequency with single word lists in the London-Lund Corpus of Spoken English (http://www.helsinki.fi/varieng/CoRD/corpora/LLC). Through this comparison, the researcher identified clusters corresponding to up to 80% of the corpus. Apart from functional or grammar words such as *in, the,* or *of,* the most frequent single words were not as frequent as many of the two-, three- and four-word clusters. The researcher then grouped these clusters under grammatical categories

such as dependent clauses, independent clauses, and incomplete clauses (ALTENBERG, 1998). Following a similar methodology, McCarthy and Carter (2002) extracted two-, three-, four-, five- and six-word clusters from the Cambridge and Nottingham Corpus of Discourse in English (CANCODE: cf. https://www.nottingham.ac.uk/research/groups/cral/projects/cancode.aspx), but rather than using grammar as an overarching element, they observed pragmatic integrity in the clusters. That is, when analyzed in the concordance lines and in the source texts, each cluster demonstrated common pragmatic categories such as discourse marking, facework, politeness, and purposive vagueness. These categories broadly correlated with the pragmatic routines in Bardovi-Harlig (2012, p. 208) in that in order to be identified as a pragmatic routine, an expression must: (1) contain at least two morphemes; (2) be articulated without any interruption; (3) be repeated in the same way; (4) be dependent on the context; and (5) be community-wide.

To identify the spoken phraseology of Aeronautical English in abnormal situations, I investigated the RadioTelephony Plain English Corpus (RTPEC – PRADO; TOSQUI-LUCKS, 2019). RTPEC consists of 130 audio files transcribed into 110,737 words. All audio files feature communications between pilots and controllers in which abnormal situations occur and presumably contain Plain Aviation English (BIESWANGER, 2016). Guiding the abnormal situations represented in the corpus is another document published by the ICAO, namely Taxonomy of Occurrences, a list that standardizes accident and incident reports (ICAO, 2006). The occurrences presented in this taxonomy refer to operational problems that might occur during a flight such as engine failure, loss of flight controls, bird strikes, weather-related phenomena such as windshear or icing, even human-related scenarios such as problems with passengers or violations such as runway incursions (i.e., inadvertent entry onto the runway). For each of the 33 categories listed in the Taxonomy of Occurrences, there are four to six audio files, of which at least one must have been held in international traffic, that is, an aircraft foreign to that airspace or airport, as a way of ensuring ELF interactions in the corpus (cf. PRADO, 2019).

The transcriptions partially followed the model of Language Into Act Theory (CRESTI, 2000). However, the linguistic or metalinguistic information suggested was not included because the corpus is also intended for pedagogical material design. Still, the principle that oral

language is prosodically centered (see example below) rather than sentence or verb centered conducted the transcriptions. The fact that meaning is constructed through islands defined within prosodic frontiers allows us to observe each island as containing units of meaning, which in turn correspond to a speech act (CRESTI, 2014). Each prosodic unit is represented as an utterance between single slashes, and a full utterance, identified by the fall in intonation, is closed by two slashes. The following extract illustrates this point:

> Uh **you know what** / I'd like to turn back and maybe go to republic if that's okay / uh seven nine November //

The islands are the portions of language between the slashes. Because of the slashes, it is possible to identify "uh you know what" as a string and "I'd like to turn back and maybe go to republic if that's okay" as another string. If the slash had not been used, the researcher might consider "you know" as a string and "what I'd like to" as another. The prosodic fall, identified by the slash, may separate the strings, or the islands. These strings match the idiom principle (SINCLAIR, 1991 – see Section 2) in the sense that conventionalized entrenched language, including collocates, colligates, and clusters, is easily spotted in the concordance lines that exhibit the slashes. Table 1 illustrates this point:

TABLE 1 – Sample of concordance lines with "you know what"

N Concordande
1 orty-five // Alright / **you know what** / in that case just pu
2 said Juliet // Okay / **you know what** / for now just hold sh
3 trying to imply // Uh **you know what** / I'd like to turn bac
4 ted fifteen? // Well / **you know what** / they're gone / but q
5 the runway // Okay // **you know what** / Tower / Can you have
6 ed somebody else // Uh **you know what** / most of us sir are l
7 d have known by now // **you know what** / they told us it was

In Table 1, the seven occurrences of the expression "you know what" mostly follow fillers (*alright, okay, uh, well*) and occur at the beginning of utterances. These occurrences were previously selected out of 17 because of their common feature, namely that they function as discourse organizers, a fact we can only observe when investigating

the cluster in question in the source text. It is therefore more practical to identify a cluster as being within an utterance. If an investigated cluster is separated by double slashes, it is disregarded as it does not form a unit of meaning. This transcription model benefits the search for units of meaning that are not semantically transparent, that is, clusters that contain only functional or grammar words. However, the high frequency of such elements in spoken corpora may signal certain uses in the community that could have gone unnoticed if other transcription models had been adopted. Although concordance lines assist the researcher in looking at clusters within utterances, they still do not reveal the context or even the exchange in which the cluster was used (WEISSER, 2018). Therefore, a careful examination of each cluster within the context of production is indispensable.

To run the analysis of the corpus, in line with McCarthy and Carter (2002), I generated two-, three- and four-word cluster lists through Wordsmith Tools (SCOTT, 2016), intending to extract the conventional elements – or the spoken phraseology (ALTENBERG, 1998) – present in the corpus and compare them to the two linguistic areas, fluency and interaction, targeted at in this paper. The most frequent clusters were selected for individual analysis in concordance lines to identify whether or not they belonged to the same cluster, specifically in the same island (CRESTI, 2014), and then in the source text, so as to investigate their pragmatic function by observing the features listed in Bardovi-Harlig (2012). The next section presents the analysis.

5 Analysis and Discussion

To observe whether clusters in the corpus are more frequent than single words, as in McCarthy and Carter (2002), I ran a broader investigation of two lists: a wordlist (TABLE 2) and a two- to four-word cluster list (TABLE 3) by means of Wordsmith Tools (SCOTT, 2016).

TABLE 2 – RTPEC Wordlist with 60 most frequent words

N	Word	Freq.	N	Word	Freq.	N	Word	Freq.
1	THE	2,800	21	IT	615	41	SO	260
2	YOU	2,795	22	S	589	42	GOOD	258
3	TO	2,536	23	HAVE	577	43	WITH	257
4	UH	2,124	24	TURN	526	44	BY	254
5	WE	1,830	25	JUST	521	45	WILL	245
6	AND	1,648	26	IN	508	46	OFF	244
7	ON	1,211	27	ARE	476	47	DOWN	242
8	RIGHT	1,056	28	CAN	474	48	THIS	238
9	FOR	998	29	NOW	449	49	GET	232
10	I	967	30	YOUR	417	50	LIKE	229
11	A	964	31	LL	413	51	BACK	224
12	RUNWAY	931	32	BE	406	52	UP	224
13	THAT	853	33	THANK	392	53	WHAT	223
14	LEFT	837	34	DO	384	54	FROM	218
15	IS	822	35	THERE	366	55	OUT	213
16	RE	756	36	GO	348	56	AIRCRAFT	207
17	AT	683	37	IF	347	57	HERE	201
18	OF	683	38	NEED	295	58	AN	199
19	OKAY	673	39	SIR	285	59	ME	199
20	HEAVY	625	40	GONNA	277	60	WHEN	199

TABLE 3 – RTPEC 2-, 3- and 4-word cluster lists

2-word clusters			3-word clusters			4-word clusters		
N	Word	Freq.	Word	Freq	Word	Freq.		
1	WE RE	436	WE RE GONNA	111	CLEARED FOR TAKE OFF	72		
2	THANK YOU	392	HOLD SHORT OF	74	THANK YOU VERY MUCH	45		
3	ON THE	330	ON THE RUNWAY	62	LINE UP AND WAIT	41		
4	YOU RE	273	D LIKE TO	51	WE D LIKE TO	33		
5	TO THE	271	I DON T	50	CLEARED TO LAND RUNWAY	32		
6	WE LL	233	WE D LIKE	49	ESTABLISHED ON THE LOCALIZER	24		
7	AND UH	212	LET ME KNOW	46	HOLD SHORT OF RUNWAY	20		
8	UH WE	211	THANK YOU VERY	45	ARE YOU ABLE TO	19		
9	YOU CAN	202	YOU VERY MUCH	45	DID YOU COPY THAT	19		

10	IF YOU	200	UH WE RE	44	I DON T KNOW	19
11	IT S	186	DO YOU HAVE	42	WOULD YOU LIKE TO	16
12	THAT S	185	YOU RE CLEARED	41	DO YOU WANT TO	15
13	I M	177	AND UH WE	40	JUST LET ME KNOW	15
14	DO YOU	175	SOULS ON BOARD	40	LET ME KNOW WHEN	15
15	WE HAVE	172	WE NEED TO	38	WE RE GONNA HAVE	15
16	WE ARE	164	YOU NEED TO	38	ME KNOW WHEN YOU	14
17	RE GONNA	149	DO YOU WANT	37	RE GONNA HAVE TO	14
18	ARE YOU	137	AT THIS TIME	36	SOULS ON BOARD AND	14
19	YOU HAVE	126	OKAY THANK YOU	36	THE AIRPORT IN SIGHT	14
20	RIGHT NOW	124	I M GONNA	35	WE RE GOING TO	14
21	NEED TO	119	I M SORRY	35	WHEN YOU RE READY	14
22	AND WE	118	TO THE GATE	35	YOU WANT US TO	14
23	DON T	112	AND WE LL	33	AND UH WE RE	13
24	I LL	111	IF YOU CAN	32	I NEED YOU TO	13
25	YOU NEED	106	DO YOU NEED	31	I LL GIVE YOU	12
26	LIKE TO	99	YOU RE GONNA	30	IN FRONT OF YOU	12
27	WHEN YOU	92	WE LL BE	29	PAN PAN PAN PAN	12
28	WILL BE	91	DECLARING AN EMERGENCY	28	WE RE GONNA NEED	12
29	CAN YOU	85	TO THE RAMP	28	ARE YOU READY TO	11
30	YOU WANT	85	UH WE ARE	27	BACK TO THE GATE	11

A comparison of Tables 2 and 3 shows that only 29 single words (TABLE 2) are more frequent than the most recurrent cluster, which is "we're" (TABLE 3). Other than revealing the importance of clusters as inherent in radio communications, the high presence of clusters in this register also supports the view that radio communication in problem-solving situations resembles oral speech, as predicted in Lopez (2013).

As the objective of this study research is not to investigate Standard Phraseology but the Plain English used in radio communications, a stoplist was needed to remove Standard Phraseology words such as numbers, items from the ICAO phonetic alphabet (Alpha, Bravo, Charlie), and proper nouns (airports, airlines), among others. The search for five- and six-word clusters only brought up strings such as "thank you very much sir." Therefore, these were excluded from the list of items to be investigated.

This initial investigation also highlighted how most two-word clusters were in fact segments of three-word clusters such as "do you" ("do you have" or "do you need"). Below is a list of the 100 top three-word clusters; the highlighted expressions are aviation-related and confirm the nature of the communications (TABLE 4).

TABLE 4 – RTPEC 100 most frequent 3-word clusters

N	Word	Freq.	N	Word	Freq.
1	WE RE GONNA	111	51	THANK YOU SIR	22
2	HOLD SHORT OF	74	52	TO THE RIGHT	22
3	**ON THE RUNWAY**	62	53	WHEN YOU GET	22
4	D LIKE TO	51	54	WHEN YOU RE	22
5	I DON T	50	55	DON T HAVE	21
6	WE D LIKE	49	56	GONNA HAVE TO	21
7	LET ME KNOW	46	57	RE GOING TO	21
8	THANK YOU VERY	45	58	RE GONNA HAVE	21
9	YOU VERY MUCH	45	59	ROGER THANK YOU	21
10	UH WE RE	44	60	UH WE HAVE	21
11	DO YOU HAVE	42	61	YOU RE READY	21
12	YOU RE CLEARED	41	62	**AIRPORT IN SIGHT**	20
13	AND UH WE	40	63	IN FRONT OF	20
14	**SOULS ON BOARD**	40	64	IT S A	20
15	WE NEED TO	38	65	LL GIVE YOU	20
16	YOU NEED TO	38	66	**OF THE AIRCRAFT**	20
17	DO YOU WANT	37	67	**TAXI TO THE**	20
18	AT THIS TIME	36	68	UH DO YOU	20
19	OKAY THANK YOU	36	69	WE HAVE A	20
20	I M GONNA	35	70	YOU HAVE A	20
21	I M SORRY	35	71	AND WE RE	19
22	**TO THE GATE**	35	72	AS SOON AS	19
23	AND WE LL	33	73	FOR YOUR HELP	19
24	IF YOU CAN	32	74	**IN THE COCKPIT**	19
25	DO YOU NEED	31	75	**PAN PAN PAN**	19
26	YOU RE GONNA	30	76	WE HAVE UH	19
27	WE LL BE	29	77	WE LL GET	19
28	**DECLARING AN EMERGENCY**	28	78	YOU ABLE TO	19

29	**TO THE RAMP**	28		79	YOU COPY THAT	19
30	UH WE ARE	27		80	AT THE MOMENT	18
31	WOULD LIKE TO	27		81	CALL YOU BACK	18
32	WOULD YOU LIKE	27		82	GIVE YOU A	18
33	YOU WANT TO	27		83	IF YOU WANT	18
34	DON T KNOW	26		84	THAT S WHAT	18
35	IF YOU NEED	26		85	TO THE LEFT	18
36	A LITTLE BIT	25		86	WE LL CALL	18
37	BE ABLE TO	25		87	AND I LL	17
38	LET YOU KNOW	25		88	NEED YOU TO	17
39	THAT S FINE	25		89	OKAY WE LL	17
40	UH WE LL	25		90	SO WE RE	17
41	BACK TO THE	24		91	THANK YOU AND	17
42	**OFF THE RUNWAY**	24		92	WANT US TO	17
43	OKAY WE RE	24		93	YOU KNOW WHAT	17
44	WE VE GOT	24		94	APPEARS TO BE	16
45	WE DON T	23		95	I NEED TO	16
46	WE RE GOING	23		96	KNOW IF YOU	16
47	YOU HAVE THE	23		97	ON THE GROUND	16
48	ARE YOU ABLE	22		98	RE GONNA BE	16
49	**HOLD YOUR POSITION**	22		99	RE READY TO	16
50	**OF THE RUNWAY**	22		100	SIR WE RE	16

Some interesting findings emerge from this list, the first to call attention being the high presence of modal verbs and personal pronouns, two of the language items that according to ICAO (2007) must not be employed in radio communications, but are also common in general English spoken corpora (MCCARTHY; CARTER, 2002). An analysis of each of these clusters first in concordance lines and then in the text they are taken from show that the modal verbs function as mitigators (CAFFI, 1999, p. 882), that is, features related to the management of the interaction that weaken risks such as "self-contradiction, refusal, losing face, conflict, and so forth". Given the problem-solving purpose that oriented this corpus compilation, pilots and controllers seem to attenuate their speech acts, which also change in this scenario as, for example, controllers start to offer alternatives rather than stating commands. The following extract illustrates the mitigation identified in the expression "would/'d like to".

Extract 1:

ATCO	Aircraft seven thirty-six / roger the pan pan / are you ready for the turn here for me? //
Pilot	Uh **we'd uh we'd like to** solve up the problem and **we'd like uh to** return into Sydney / it's better //
ATCO	Aircraft seven thirty-six / **would you like to** return now? //
Pilot	Uh affirm //
ATCO	Aircraft seven thirty-six / turn left heading two one zero / maintain five thousand feet //
Pilot	Left turn heading two one zero / maintaining five thousand / Aircraft seven seven thirty-six //
ATCO	**Would you like to** hold somewhere or are you ready to land now? //
Pilot	We'll keep you advised and tell you later / okay? //
ATCO	Aircraft seven thirty-six / roger / **if you'd like** to hold / what place **would you like to** hold at? //
Pilot	Uuh / we'll advise to you later / we are trying to solve up the problem and we are now <break> engine number one is on idle power / and we are uh <pause> and uuh determing [sic] whether to dump some fuel or uh just check the performance / okay? //

This extract is from a communication about an aircraft that suffered an engine failure after take-off, with the pilots deciding to return to the airport of origin. The extract starts from the pilots saying that they need to work on the problem by means of checklists *and* return to the airport at the same time. The controller rechecks this last information by using "would you like (to return now)." Following the confirmation, the controller gives instructions to enable the pilots to return to the airport, followed by the pilot's readback. However, the controller is still unsure as to whether the pilots need to fly over an area (hold) to prepare the aircraft for landing or if they are ready to land, and thus uses the cluster "would you like to" once again. The pilots use two pieces of information that show they are still not clear as to what their next step should be and when they should take it ("We'll keep you advised and tell you later / okay?"). The controller then asks a question in order to prepare for the next possible action: "if you'd like to hold / what place would you like to hold at?" The pilots finally state their current condition: they are checking their weight and limitations to decide whether or not they will need to dump fuel to reduce weight for landing.

The recurrent use of the expression "would like to" exemplified in this last extract suggests that when pilots and controllers are dealing with an emergency such as engine failure, they tend to mitigate their

language as a means of sharing responsibility over the problem. This can also be seen in the following extract.

Extract 2:

Pilot	Mayday <unreadable> zero five <unreadable> fire on board / **request** immediate turn back to Budapest //
ATCO	Roger / two stations / say again your call sign //
Pilot	Aircraft one six nine five / mayday / **request** turn back and descend to Budapest //
ATCO	Aircraft one six nine five uh roger uh / right is approved / descend to flight level two zero zero //
Pilot	Descend flight level two zero zero / Aircraft one six nine five // Aircraft one six nine five / **can we** turn back to Budapest? //
ATCO	Aircraft one six nine five / affirm / cleared to turn back to Budapest / right turn and uh descend to flight level two zero zero //
Pilot	Right turn flight level two zero zero / Aircraft one six nine five //

The pilot declares an emergency ("mayday") due to fire on board, one of the most critical problems a flight crew can experience. Adhering to Standard Phraseology, the pilot uses the word "request." The controller replies with "roger," a word that means "acknowledged" (but not an affirmative response), states that two radios were in use at the same time ("two stations"), thus blocking the radio frequency, and requests repetition of the call sign (flight number). However, the controller does not refer to which aircraft his request was addressed to. The pilot of the aircraft in the emergency repeats the call sign, the emergency status ("mayday"), and the request ("request turn back and descend to Budapest"). The controller replies once again with "roger," this time also acknowledging the call sign, and gives instructions. However, as the controller does not give any indication that he is complying with the pilot's request, the pilot switches to the use of the mitigation device "can we turn back to Budapest?" The controller finally uses the proper Standard Phraseology to signal to the pilot that they are working together ("affirm / cleared to turn back to Budapest").

The use of "can we" to emphasize the request in an emergency situation reinforces the idea exposed earlier that when involved with a problem, the participants in the interaction under study here migrate to more spontaneous – and mitigated – language. It is worth noting that although "can we" is not a three-word cluster, it was investigated along with the cluster "if you can" (with 24 occurrences), also commonly used for requests.

The second element to be addressed is the high frequency of personal pronouns and referential words such as *here* and *there*, or deixis. Deixis are "aspects of language whose interpretation is relative to the occasion of utterance" (FILLMORE, 1966, p. 220), that is, items that anchor the elements expressed by the participants to the context of production. These can be demonstrative pronouns, personal pronouns, adverbs of place and time, verb tenses, or even verbs such as *come* and *go* (LEVINSON, 2004, p. 74). Such elements, which are highly dependent on the context of production and particularly on the location of the participants in the interaction, should not be used according to Standard Phraseology as precision is a key element in radio communications. However, a further analysis of deictics within their clusters corroborate an investigation by Garcia (2016) of the communication held in the accident of the Airbus 320 that landed on the Hudson River in New York. Through Conversational Analysis, Garcia showed that the portion of language used to describe this unusual event was signaled by linguistic items such as hesitation markers, deixis, and *okay* as a turn opener. Let us observe the transcript of another communication in the following extract.

Extract 3:

ATCO	<interrupted> one two thousand / maintain two five zero knots //
Pilot	Descend to one two thousand and maintain two five zero knots / Aircraft one ninety-two heavy // **and Chicago / just confirm Aircraft one ninety-two heavy / we are cleared down to one two thousand feet / two five zero knots? //**
ATCO	Aircraft one ninety-two heavy / are you declaring an emergency **or just** need to return back as a precaution? //
Pilot	**Uh** just a precautionary return at the moment / we're gonna have the aircraft inspected as it was uh a fairly large flock of birds that made a mess on the front windshield and we're worried about the radome //
ATCO	**Okay** / roger //
Pilot	We are down to one two thousand / **was that last clearance for one ninety-two heavy?** //
ATCO	Aircraft one ninety-two heavy / **uh** affirmative / descend and maintain one two thousand and uh maintain two five zero knots //
Pilot	Down to one two thousand / two five zero knots / Aircraft one ninety-two heavy //

The parts in bold correspond to the elements listed by Garcia (2016). They signal the transition from the rehearsed language of Standard Phraseology (starting from the second turn) to the Plain Aviation English used when the interactions are built around the problem (turns 2-5). These elements, which signal a transition, are usually repetitive, which

can be seen through the investigation of clusters of elements such as "uh we're," "and uh we," "uh we're," and "okay we're" but also functional words such as personal pronouns, hesitation markers, conjunctions (*but, so, and*) and prepositions, confirming Garcia's finding.

Another feature of this discourse is that these elements are related to the organization of the discourse, as can be seen in Table 5.

TABLE 5 – Sample of concordance lines with "and uh we"

```
N  Concordande
1  tihad four five one // understood // and uh we' ll give you five minutes' notice
2  of course all over the windscreen / and uh we' caught one of them on one of the
3  tors / fly heading zero niner zero / and uh we' ll expect runway two eight center
4  're at the process of slowing down / and uh we' ll call the base circuit at one e
5  op on the runway for an inspection / and uh we' re gonna evaluate the situation t
6   tially was fire / there is no fire / and uh we' are waiting for your notification
7  s // They've got the longer runway / and uh we' re gonna get you uh the most uh a
8  / we're having landing gear issues / and uh we' need to sort it out / we're gonna
9  the fuel remaining in pounds? // Uh and uh we' have it in kilos // Alright / wha
10 re just starting the checklist now / and uh we' try just to uh if that's the whol
```

Table 5 shows a sample (10 out of 40 occurrences) of the concordance lines with "and uh we" in the center, starting prosodic islands (lines 2-8) or utterances (lines 1 and 9). This implies that the cluster "and uh we" may function as a turn opener or as a strategy for holding the turn as silence may indicate that the other participant can press the radio button to speak. Again, let us turn to the text of production of one of the lines.

Extract 4:

ATCO	Aircraft four nineteen heavy / when you have a chance **just uh** call me back on this frequency please / it's from the Tower //
Pilot	Yup / okay **uh so we** have a chance to call you back **so** / what do you need? //
ATCO	I just need **uh you** you're coming out of Dulles so what's your destination / Aircraft four nineteen heavy? / and your registration number please //
Pilot	Okay / the registration is delta alpha bravo yankee tango / **and the uh** destination was Frankfurt echo delta delta foxtrot //
ATCO	Aircraft four nineteen heavy / thank you very much / have a good night //
Pilot	Thank you **and uh we** uh how do we get onto the position? / we have no signals / nothing is there / so how do we get in? // is there a follow me? //

In this extract, the hesitation marker is also bolded in other clusters. The cluster "and uh we" seen in the last turn is followed by another hesitation marker and then a correction, showing that it was used as a false starter. The other clusters – "uh so we" and "and the uh" – also confirm their function as discourse organizers (starting and holding the turn, respectively). As in Tao (2003), which used CL to support Conversation Analysis studies of repeated language functioning as turn openers, in radio communications, certain clusters seem to function as discourse organizers, supporting Mell's finding (2004) (see Section 2). Other clusters employed here as discourse organizers are: *uh we're* (44 occurrences), *and uh we* (40 occurrences), *I'm gonna* (35 occurrences), *and we'll* (33 occurrences), *you're gonna* (30 occurrences), *uh we are* (27 occurrences), *uh we'll* (25 occurrences), and *okay we're* (24 occurrences), among others.

Specific speech acts also compose this specific genre (cf. BHATIA, 1993). Doc 9838 (ICAO, 2010) offers a list of communicative functions drawn from Mell's 1991 (see Section 2). As Mell's study was based on radio communications in routine situations, his roll of functions is more extensive than those examined in this study (see TABLE 7). Moreover, many of the functions described by Mell are manifested in RTPEC. To illustrate this point, controllers are in charge of giving information about weather, traffic, and airport status but mostly of giving directions, which are transmitted with verbs in the imperative form (such as *climb*, *descend*, etc). Sometimes, as predicted by Standard Phraseology, controllers request pilots to provide some information, such as "report when ready to copy" or "report when reaching flight level 230". However, RTPEC shows that, in abnormal situations, clusters such as "let me know" and "do you have" are more commonly used. This could be related to the mitigation described previously, as can be observed in the concordance lines with "let me know" in the center (TABLE 6).

TABLE 6 – Sample of concordance lines with "let me know"

N	Concordande		
1	wo two left approach and	**let me know**	if you need anything di
2	ou // Romeo Oscar Mike /	**let me know**	if you want lower than
3	lot one five one heavy /	**let me know**	if you get the age of t
4	orth of alpha? // Okay /	**let me know**	if that changes i'll ke
5	two two left localizer /	**let me know**	if you need me to put y
6	y // it's no big deal //	**let me know**	if you need any more as
7	a minute // Okay / just	**let me know**	if you can maneuver all
8	ck to you here // Okay /	**let me know**	if you need anything //
9	n as we are // could you	**let me know**	if there's any change t
10	can sixteen forty / just	**let me know**	if you need any lower t

These concordance lines exhibit some common collocates such as "okay," "if," and "you." When analyzing the concordance lines in the transcript, we find the following extract.

Extract 5:

ATCO	Aircraft one eighty / Kennedy Ground / continue via fox bravo / hold short of runway two two right / remain this frequency //
Pilot	Okay / can we hold on just a second / we need to run a few checklists for one eighty //
ATCO	Aircraft one eighty / roger / **let me know when you're ready to taxi** //

The cluster "let me know" is used when pilot and controller migrate to a more spontaneous discourse implying an undeclared problem (Turn 2). Even though the pilot does not say what the problem is, by stating that he needs to run checklists, he suggests that he has a technical situation to handle. This switch to a more spontaneous code appears to confirm the need for mitigation in radio communications when the abnormal happens.

The linguistic areas of fluency and interaction specified in the ICAO Language Proficiency Rating Scale seem to lack elements such as mitigation or even the signals that call for the collaboration of the participants. It is then possible to confirm that the perspective adopted needs to be updated with more current research from applied linguistics, in this case with recent studies in Pragmatics. Being concerned with language in use, Pragmatics – or pragmatic awareness – should be a useful path for guiding teachers preparing activities or designing materials.

Aeronautical English teachers should also consider the spoken grammar that organizes the conversation between pilots and controllers.

To inform curriculum or pedagogical activities, all 100 three-word clusters in the corpus were analyzed within their context of production and grouped according to their functional profile (ADOLPHS, 2008). This can relate to pragmatic awareness, assisting teachers or material designers with the development of activities. The result is as follows (TABLE 7).

TABLE 7 – Clusters distributed according to their functions

Functions / Speech acts	Clusters	Functions / Speech acts	Clusters
Request	*we'd like (something or someone)* *can you* *we need to* *you need to* *if you can*	**Mitigators**	*you know what* *a little bit* (usually before mentioning the problem) *we / I need you to* (more assertive – for instructions) *I don't know if* (for offers or requests)
Request and provide information	*(just) let sb know…* *…when you get a chance* *…when you get to / on* (place) *…when you're ready* *…if / when you have a moment / second / chance* *as soon as * can / possible / practicable* *we'll call you back*	**State abilities or ask about abilities**	*(modal verb) be able to* *If you can* *are you able to*
Offer	*would you like (to)* *do you need (any)* *do you want* *if you need* *if you want* *if you'd like* *if you can* *we / I'll give you* *do you need* *we'll get* *give you a* *do you want us to* *can you*	**Open or hold the turn**	*and uh we* *uh we have* *uh do you* *and we'll / and I'll* *sir we're* *okay we're* *so we're* *uh we'll* *uh we are / we're* *that's what I / we*

State decisions	*we're gonna* *we'd like to* *I'm gonna* *gonna have to* *re going to* *we'll be* *would like to*	**Report other's instructions / decisions made previously**	*that's what*
Agree / allow / thank	*okay thank you* *roger thank you* *okay we're* *that's fine*	**Highlight the current moment**	*right now / now* *at this time* *at the moment* *momentarily* (in the meaning of "soon") *immediately*
Inform of the problem	*don't have* *we have a* *you have a* *we've got* *we don't* *we have uh* *it's a* *appear to be*	**Request information about a problem**	*do you have* *uh do you* *you have the* *can you tell me / give me*

Table 7 presents possible language that may assist teachers in developing syllabi, pedagogical materials, or activities and is not intended for memorization. Instead, the material designer or the teacher may consult this list when preparing activities targeted at Plain Aviation English, not at Standard Phraseology. This list can also inform ICAO Language Proficiency Rating Scale users when assessing a candidate's Plain Aviation English, for example, or when designing proficiency assessment tasks.

Understanding how users organize their discourse can assist learners as well as professional users such as aviators and controllers in signaling problems or abnormal situations or even in comprehending when to remain silent so that other crew with problems can manage their problem with the controller without interference. It also helps pilots recognize when it is time to press the button to take the turn on congested radio frequencies. Students, who are pilots in service, often report that it takes them long minutes before they finally take the turn at airports such as JFK. Another benefit regards the frontiers in the transition between Standard Phraseology and Plain Aviation English. Such an example can also be found in the corpus, as presented in the following extract.

Extract 6:

Pilot	Kennedy Tower / Aircraft eight zero eight zero / reporting balloon / final four right //
ATCO	Say again? //
Pilot	Eight zero eight two heavy / **reporting balloon / four right** //
ATCO	Aircraft eight zero eight two heavy / I'm having trouble understanding you / you are cleared to land four right / can you say again / please speak up //
Pilot	Okay / no problem // cleared to land four right / Aircraft eight zero eight two / **reporting hot balloon** uh final runway four right about five hundred feet //
ATCO	Reporting a bird? / Is that what you're saying? // tell me when you get on the ground //
Pilot	Okay //
ATCO	The wind is three two zero at one zero // eight zero eight two heavy / turn left on foxtrot bravo //
	Did you have windshear / is that what you are saying? //
Pilot	No / leaving on fox bravo / Aircraft eight zero eight two / **reporting hot air balloon** on final four right about five hundred feet //
ATCO	Balloon / you said? //
Pilot	Balloon //

Here, the Brazilian pilot reports a balloon (an uncommon hazard) in the surroundings of the airport. However, the pilot does not signal the transition from Standard Phraseology to Plain Aviation English to describe the uncommon hazard. By using the word "reporting," the pilot not only uses a word normally considered inappropriate to his participation in this interaction, but he also makes up a collocation that is unfamiliar to the interlocutor. The controller repeatedly tries to understand the pilot, but senses that this situation is not urgent and instructs the pilot to proceed with the landing.

When searching for the word "balloon" in the concordance lines, we find the following instances (TABLE 8).

TABLE 8 – Concordance lines with "balloon"

N	Concordande
1	void a balloon / we have a **balloon** right now on our right ha
2	ow turning left to avoid a **balloon** / we have a balloon right
3	e seven / disconnecting / **balloon** now on the right / uh sir
4	e seven / there is another **balloon** at uh UTBUR at uh flight
5	way just to go around the **balloon** // Roger / report back on
6	blished // We uh we got a **balloon** right in the way / we'd l

```
 7    sir // we have flown by a balloon  right at this time // Am
 8    tion uh there is a hot air balloon  final on final approach /
 9     we are we have a hot air balloon  on flight level one hundr
10     e need information about balloon  // Aircraft zero five sev
11    on uh hot to avoid hot air balloon  on approach / uh many bal
12     above us / there´s a free balloon  flying with a photo // Sw
13    scending to avoid a a free balloon  uh flying around here / d
```

The concordance lines reveal a common surrounding of the word balloon consisting of "there is", "I can see," and "we are deviating from". These strings reiterate that Plain Aviation English resembles simpler colloquial structures. However, a closer look at the context of production shows that despite the fact that all these lines come from the same radio communication, they are all enunciated by different international aircraft, one of them from a country (the United States) where English is the official language. By exposing students to this fact, teachers may address attitudes toward transfer (in Brazil, reports such as the one described here are made through the Portuguese word *reportar* (report) and the use of Plain Aviation English.

6 Conclusion

The objective of this paper was to identify what linguistic elements constitute fluency and interaction in the Plain Aviation English of air-ground radio communications in abnormal situations. These two linguistic areas were taken from the ICAO Language Proficiency Rating Scale and compared against a corpus built with a two-fold purpose: researching Plain Aviation English and informing pedagogical materials. Corpus Linguistics was shown to be useful in identifying patterns in the Plain Aviation English used in radio communications. Generating cluster lists enabled the analysis of the pragmatic functions of the clusters, identified as pragmatic routines and as items that assist in organizing the conversation. However, these conclusions were not drawn from mere frequencies. Instead, each cluster was examined one by one in concordance lines and in the transcripts, where information about the source was also displayed. These clusters were then grouped into a total of 12 functions, verifying that fluency and interaction can be interconnected into the broader perspective of Pragmatics.

The paper showed that the transition between Standard Phraseology and Plain Aviation English can be signaled by certain linguistic elements such as deixis and hesitation, which are also present in the organization of the conversation between pilots and controllers when sharing responsibility for a problem. This corresponds to the spoken grammar suggested by Rühlemann (2008) and can be pedagogically presented through activities that ask students to reflect on the co-construction of the conversation while also considering key components that act on the pilot-controller relationship.

The problem-solving objective that was inherent in the corpus design allowed for the observation of how the participants in the interaction share responsibility for making decisions and solving problems. Participants mitigate their language toward the same goal by engaging in a verbal-only communication, even in a hermetic context such as aviation, thus supporting Lopez' (2013) claim that social conventions in radio communications cannot be controlled.

Based on the analysis presented in this paper, what should be taken into account is a discussion of pedagogical concepts regarding the content dealt with in the Aeronautical English classroom. In response, a more appropriate syllabus should emphasize the development of the students' capacity of interacting while considering pragmatic awareness and cultural tolerance (DAVIES, 2004). Such a syllabus should consider fluency and interaction as a co-construction by at least two participants in the interaction. It should also contemplate activities that allow the student to enhance pragmatic strategies and pragmatic routines (ISHIHARA; COHEN, 2010). The analysis presented here points to teaching oriented by language use, the co-construction of the interaction among the participants, the context that regulates the community, and pragmatic awareness enhanced in such a way that it allows students to choose how to position themselves in their own community so that they can better perform their functions.

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