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Inter-Cultural Issues in Air-Ground Communication: A Case Study – Triggers for Miscommunication

Aline Pacheco
Embry-Riddle Aeronautical University / Pontificia Universidade Catolica do Rio Grande do Sul,
aline.pacheco@pucrs.br

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Aline Pacheco

Pontifícia Universidade Católica do Rio Grande do Sul

Abstract

Air-ground communication and its intercultural nature is a rich field of analysis for linguists and professionals in the aviation area since it intrinsically encompasses a number of aspects to be taken into account at the moment of speaking. This article is intended to study a specific event, EVA Air Flight BR015, in order to analyze it through triggers for miscommunication - linguistic occurrences that are likely to have caused confusion which, in this case, turned out into a conflict that almost led to a mid air collision and a crash into a mountain. The poor language proficiency of the pilots is mostly evidenced by the lack of immediate compliance with instructions. The air traffic controller (ATCO) does not make use of standard phraseology in a context that would clearly require attention with the unfolding of the situation. Missed readbacks and hearbacks, change of call signs, multiple corrections are also evidence of the ATCO's confusion in this scenario. The identification of some real language features that have potentially accounted for a miscommunication episode is a relevant source of research and may actually be a good strategy for training professionals involved in aeronautical operations to raise their awareness towards the correct language to be used and to develop language and communication skills for aviation safety. Language is a factor in aviation safety and, as such, should be given more attention especially because it entails intercultural features that can be potentially harmful if not trained appropriately.

Keywords: Air-ground communication, Intercultural issues, Miscommunication triggers.

Introduction

The main goal of the article[1] - as was of the workshop, is to provoke some thoughts and discussion on language features that can be considered potentially harmful to trigger miscommunication episodes in the intercultural context of aeronautical communications, more specifically between pilot and ATC. By looking into a specific case, EVA Air Flight BR 015, we try to raise some examples that have accounted for the confusion that could have had a negative ending.

We agree with Farris and Molesworth (2016) when they say that is "important to take a proactive approach in examining the contexts in which these communications take place, for the purpose of understanding the conditions under which these interactions are most likely to be successful" (p. 92).

Our intention is to shed more light on discussions that approach miscommunication and interculturality in aviation, so that we can have more elements as teachers, researchers and aviation professionals to design curriculum and, ultimately offer our contribution to aviation safety.

As it follows, we will see that our case features most of the factors predicted by Prinzo and Campbell (2008):

> As the volume of U.S. and foreign flagship carriers increases, so will the number of transmissions necessary to provide air traffic control (ATC) services. These services include clearances and instructions, as well as traffic and weather advisories, reports, and requests. Given that the present air-ground communications system is reaching pre-9/11

[1] This article is based on a workshop delivered in May, 2018 at the ICAEA Conference, hosted by Embry-Riddle Aeronautical University, Daytona Beach, FL, USA.

saturation levels during peak traffic periods, it is common for some controllers to send longer and more complex messages to reduce the number of times they need to communicate with individual aircraft (Prinzo, Hendrix, & Hendrix, 2006) and use non-standard phraseology to decrease the amount of time on frequency (e.g., go fast, good rate), or both. The ability to quickly decode, understand, read back, and comply with these messages can be a problem for all pilots, especially those who are unfamiliar with how ATC services are delivered by controllers in a particular region. (p. 1)

Analysis

EVA Flight BR 015

The case

EVA 015 performed by a Boeing 777-35EER, was bound to Taipei and departed Los Angeles, LAX Airport on December 16, 2016 at 01.25 local time.[2]

According to the flight plan, EVA 015 was assigned a Ventura 7 departure - which is 60km to the northwest of LAX.

When it switched to the SoCall departure frequency, it was instructed to climb to 7,000ft on the heading of 090º. The flight was cleared for an easterly heading, presumably, with the intention to turn it further south so that it could follow its prescribed departure route before beginning the oceanic path to the northwest.

[2] More detailed information can be found at https://aviation-safety.net/wikibase/wiki.php?id=192082http://www.latimes.com/local/lanow/la-me-ln-faa-investigation-plane-wrong-direction-20161220-story.html; http://www.jacdec.de/2017/05/18/2016-12-16-eva-air-b777-flew-astray-and-close-to-terrain-east-of-los-angeles/

The controller, then, cleared the flight to turn to 180º and continue the 7,000ft climb, which was read back by the pilot as "left turn 180°", not heard back or challenged by the controller.[3]

Following a northerly heading caused a separation issue with another flight, Air Canada AC788. The controller ensured a safe separation by instructing AC to expedite the climb and EVA 015 to stop climbing. At this time, the flight was flying at about 4,800ft.

The controller issued EVA 015 an altitude of 7,000ft and urged it to turn south several times, which is, eventually read back by the pilots, but, for some reason, not complied. The ATCO made repeated use of language that is not comprehended by standard phraseology.

In the developing situation, the flight then headed Mt Wilson (where the highest terrain elevation is of approximately 5,500ft), coming very close to terrain- an altitude estimated between 6,200 and 6,700. It then picked up the assigned direction, landing safely 14 hours later.

In short, what is observed is a confusing set of instructions given by the ATC that were not immediately complied by the pilots, which caused a conflict and almost led to a mid air collision and a crash into a mountain. The incident is still under formal investigation by the FAA.

In the picture below, we have a depiction of the path the flight ended up taking.

[3] Although "left", for some reason, was cut on the live ATC audio, we assume it was said because of the pilot's readback and from information given by an FAA spokesman that can be found at http://www.latimes.com/local/lanow/la-me-ln-faa-investigation-plane-wrong-direction-20161220-story.html

Vasaviation[4] features an illustration video based on LiveATC audios. Below, we present some selected parts from the transcripts, already labeled for our following analysis.

EVA 15: "Roger, EVA 15 heavy, climbing passing 1,900 for 5,000 "
SoCal Departure: "Hello Eva 015 heavy, SoCal Departure, radar contact, climb and maintain 7,000. Fly heading 090."
EVA 15: "Climb and maintain 7,000 , ***confirm heading*** *?" (1)*
SoCal Departure: "Heading 090, to 7,000, EVA 015 heavy."
EVA 15: "Heading 090, 7,000 EVA 015 heavy."
...
*SoCal Departure: "****(unreadable)..180*** *(2)****,*** *climb and maintain 7,000."*
*EVA 15: "****Left heading 180,*** *(3)climb and maintain 7,000 EVA 15 heavy."*
EVA 15:"EVA 15 heavy, request high speed climb."
SoCal Departure: "EVA 15 heavy, affirmative approved as requested."
EVA 15: " Approved, EVA 015 heavy"

SoCal Departure: "..turn right, turn heading 180."
*EVA 15: "****Copied, right heading 180, EVA 15 heavy.,,*** *(4)*
SoCal Departure: „heavy, please expedite your right turn."

[4] We highly recommend the reader to visit this page https://www.youtube.com/watch?v=tFdXax7Zh_g and watch the video to have more elements for the analysis.

EVA 15: "EVA 15 heavy, roger just passing heading 010, ***continue right turn heading.„***

SoCal Departure:" Air Canada 788, expedite your turn. Stop your climb and turn - correction - ***expedite your climb and turn left heading 360."****(5)*
ACA 788: "Left 360, stop the climb at 7000', Air Canada 788."
SoCal Departure: "EVA 15 heavy, stop your climb !"
EVA 15: "Stop climb, EVA 015 heavy."
SoCal Departure: Air Canada 788, expedite your climb. Climb and maintain 12000'. "
ACA 788: "Okay, confirm 12000' for Air Canada 788."

*SoCal Departure: "****EVA 015 heavy, turn left, left turn to a heading of ah.. 29..ah, 270."*** *(6)*
EVA 15: "Left heading 270, EVA 015 heavy."
SoCal Departure: "EVA 015 heavy, ***what are you doing ?****, (7) turn southbound now !, southbound now ! Stop your climb.„"*
*EVA 15: "****Confirm, EVA 015 heavy, maintain 5,000, left..right, right heading (unintelligible)."*** *(8)*

EVA 15 (different voice): "EVA 015 heavy, confirm the heading."
*SoCal Departure: "(unreadable) EVA 015 heavy, t****urn southbound, southbound*** *now." (9)*
EVA 15: "Roger turn southbound now, EVA 015 heavy."

SoCal Departure: "EVA 015 heavy, climb and maintain 5,000, ***and are you southbound now ? I see you're going northbound, climb and maintain 6,000****." (10)*
EVA 15: "..(unreadable)..south, maintain 5,000, EVA 015 heavy."
SoCal Departure: "EVA 015 heavy, climb and maintain 7,000."
EVA 15: "Climb and maintain 7,000, EVA 015 heavy."
SoCal Departure: "015 heavy, ***I see you're going southbound, turn south..cause I see you're going northbound, turn south now, climb and maintain 7,000."*** *(11)*

SoCal Departure: "Cathay 0- correction - Cathay 881, SoCal Departure, radar contact. Climb and maintain 7000'."
? EVA015 "left turn" (12)

SoCal Departure: "EVA 015 heavy, climb and maintain 7,000 and turn south NOW !"
SoCal Departure:"American 2452, turn right heading 210."
AAL2452: "Right 210, American 2452"

EVA 15 (different voice): "..(blocked transmission)..right turn to southbound, continue climb 7,000."
SoCal Departure: "EVA 015 heavy, affirmative."
EVA 15: "...continue right turn, climb to 7,000 to ***heading 1-8-0. (13)"***

SoCal Departure: American 2552 (14), maintain 5000' and contact Approach on 124.9 - 24.9; G'day."
AAL 2452: "Was that for American 2452?"
SoCal Departure: "American 2452, affirmative"
AAL2452: "Okay, climb for 5000' now on 124.9, confirm, for American 2452."
SoCal Departure: Affirmative, 124.9

EVA 15: "SoCal, EVA 015 heavy, 180, 7,000."
SoCal Departure: "EVA 015 heavy, affirmative, ***climb and maintain, maintain (15)*** *7,000."*
EVA 15: "Maintain 7,000, EVA 015."

Possible triggers for miscommunication

The exchange above clearly shows evidence of confusion with key pieces of information that eventually turn out into a conflict. Analyzing it more carefully, we came up with some "triggers" - language examples that can be considered crucial to have caused miscommunication. The following chart shows (i) the trigger sentence/ word/ phrase extracted from the audio transcripts, (ii) who said that and (iii) the problem itself.

TRIGGER SENTENCE/WORD/PHRASE	SAID BY	PROBLEM
1. "confirm heading?"	The pilot	The pilot points at the necessity of clarification of a crucial unit of information: the heading. Too much information?
2. 1.17 - unreadable "... 180, climb and maintain 7,000"	The ATC	The audio does not show what is said at the beginning of the sentence.
3. "left heading 180"	The pilot	A readback, not confirmed / disregarded by the controller - hearback error
4. "copied, right heading 180, EVA 15 heavy" "continue right turn heading"	The pilot	Correct readback, but did not comply with instructions - did not turn right
5. " XXX Correction XXXX" Stop X expedite	The ATC	Confusion (probably she is nervous, aware of a possible negative consequence)
6. "EVA 15 heavy, turn left, left turn to a heading of ah.. 29, ah, 270"	The ATC	Confusion - use of a different direction in the instruction - numbers (maybe, an evidence she is nervous)
7. "EVA 015 heavy, what are you doing? "	The ATC	Use of plain language
8. "Confirm, EVA015 heavy, maintain 5,000, left...right, right heading (uninteligible)"	The pilot	- confirm ? - affirm or a request? - "left… right" - evidence the pilots are confused

9. “turn southbound, southbound now”	The ATC	“southbound”: non-standard phraseology
10. “are you southbound now? I see you’re going north bound”	The ATC	Use of plain language non-standard phraseology - situational awareness (she seems surprised he is not following)
11. “ I see you’re going southbound, turn South, ... Cause I see you’re going northbound, turn south now,	The ATC	- Confusion (she is probably nervous) - Use of plain language / long sentence
12. “left turn”	The pilot	evidence of confusion in the cockpit
13. “continue right turn, climb to 7,000to heading 1-8-0.”	The pilot	- Heading: NOT read back by the controller - ? background noise? terrain awareness alert?
14. “American 2552”	The ATC	confusion with numbers, challenged and corrected by the AAL pilot
15. “climb and maintain, maintain 7,000”	The ATC	confusion in the instruction climb

In general, we could say that the triggers point to failure to communicate both on behalf of the pilots and the controller.

The pilots’ limited language proficiency is evidenced by the non-immediate compliance of instructions -most likely as a result of misunderstanding, and by the lack of immediate confirmation of instructions. DOC 9835 determines, through the holistic descriptors, that pilots must use appropriate communicative strategies to exchange messages, and that includes checking, confirming and clarifying information, which were clearly not performed by the pilots.[5]

[5] Although this article is not meant to address neither the effectiveness of the ICAO language proficiency requirements nor the means by which some foreign pilots manage to get their

The ATCO is clearly confused when not using standard phraseology, when failing in readbacks and hearbacks or issuing confusing instructions about directions – right and left being changed in a really short span of time. Not to mention some other minor mistakes, later corrected, which can be an evidence she was nervous and dealing with tremendous workload.

An important aspect to be highlighted here is the intercultural nature of the event. Aeronautical communications are expected to have multicultural agents and this poses the use of linguistic strategies in order to facilitate the understanding of both parties.

It is assumed that the professionals in aviation that are more specifically involved in operations are aware of that, and this is why there is the recommendation to use standard phraseology whenever possible and, most especially, in contexts where there is clearly evidence of confusion, which seems to be the case.

Taxonomy

Trying to establish criteria for a more specific analysis, we have to think of a method that could account for particular factors in which the triggers could be referred to. The LHUFT (Language as a Human Factor in Aviation) Center at Embry-Riddle Aeronautical University has been working on the design of a taxonomy as a method to be used for a kind of analysis that requires an organization of factors that work as "causes" of miscommunication (Mathews, 2011)

If we think of triggers as actual language occurrences to which miscommunication may be associated with, we can go from triggers to factors that have caused a given

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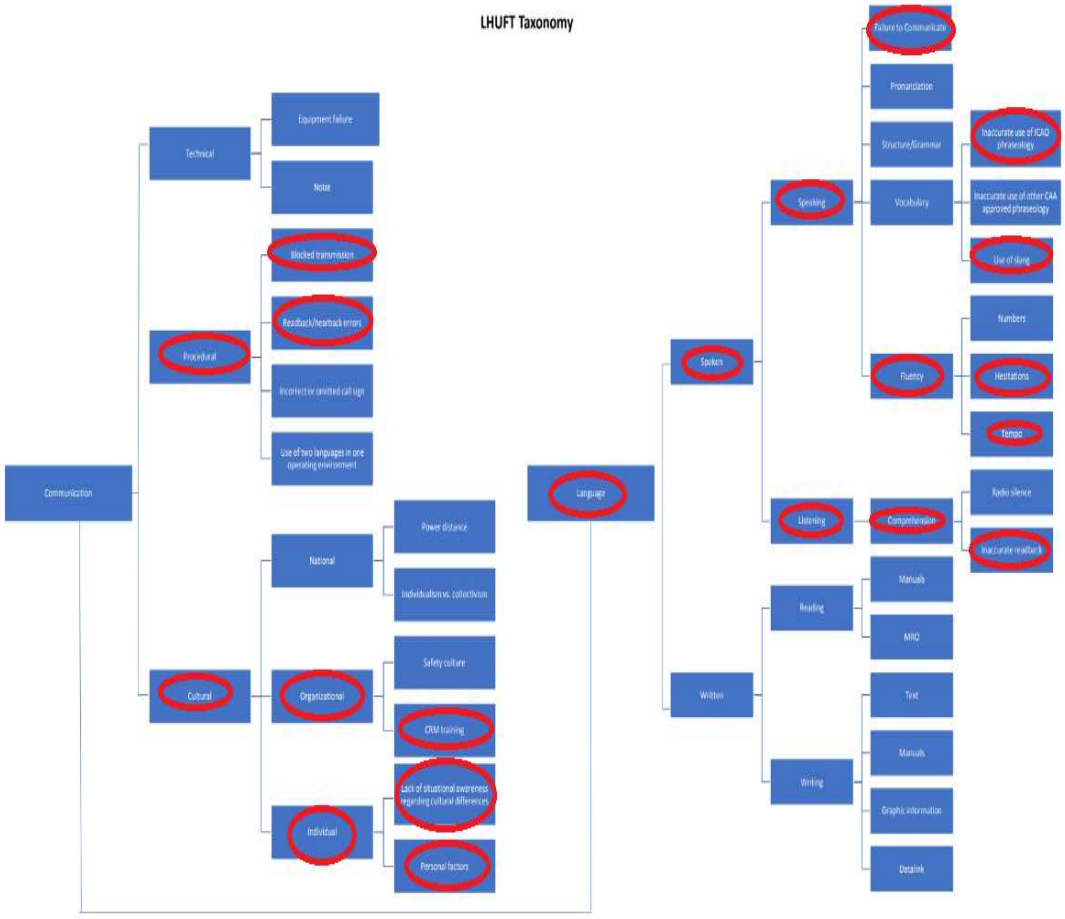
language proficiency endorsement, it is intended to call the attention of all professional involved in aviation to the risks of sustaining aeronautical communications without the necessary proficiency.

miscommunication episode in order to have a broader picture of the language factors that actually account for aviation safety.

Prof. Elizabeth Mathews and her team, which I am proudly part of, have been working on this taxonomy so to improve it as best as possible. It is a very empirical study, based on the search of language occurrences from real data. Ultimately, we aim at having enough evidence to support the claim that language is actually a factor in aviation safety and, as such, has to be included in official documents of aviation accidents or incidents along with its specificities.

LHUFT Taxonomy



Source: Mathews (2018), personal communication.

This version of the taxonomy presents the analysis of aeronautical communications in four branches: technical, procedural, cultural and linguistic.[6]

Going through the triggers of EVA 015, the following factors can be highlighted:

- Procedural: blocked transmission; readback/hearback errors
- Cultural: organizational - Crew Resource Management (CRM) Training; Individual- lack of situational awareness and personal factors
- Language: Spoken – Speaking (Failure to communicate; Vocabulary - inaccurate use of ICAO (International Civil Aviation Organization) phraseology and use of slangs; Fluency – hesitations and tempo); Listening (comprehension - inaccurate readback)

Discussion

Engle (2000) states that the primary goal of CRM in multicultural crews is to reduce crew errors by improving interpersonal communications taking into account factors such as power distance, uncertainty avoidance, individualism versus collectivism. Even though we cannot tell if there was a problem with the crew members judging by the audios, we can assume they were confused and it could make us wonder about an effective CRM training for these situations.

> CRM is a proven method for enhancing the safety of airline crews, and thus airline operations. However, CRM does suffer somewhat from a cultural bias toward Western, 'low context', cultural values. When CRM methods are taught to airline crews from other cultures, the effectiveness of the training could be enhanced by tailoring CRM to the culture of these crews. (p. 114)

[6] Another version of the taxonomy can be found at https://www.lhuft.org/taxonomy-of-communications-in-aviation

We assume Chinese pilots are trained to deal with situations of confusion with an American ATC both in terms of language and in-cockpit performance. However, the case seems to show that this training could be reinforced by raising awareness to the necessity of readbacks and confirmation of instructions whenever any possible miscommunication is sensed.

Triggers 3 and 4 illustrate that. The pilot reads back "left heading 180", which is disregarded by the controller[7], who, shortly afterwards, starts urging him to turn right.

Clark (2017) recommends that native English-speaking pilots and controllers should train in the use of ICAO phraseology in situations of stress and that language awareness training should incorporate awareness of non-native English listeners in training.

In this line, Merritt and Maurino (2004) point to the need of raising awareness of cultural interface via training and analysis, saying that "tying cultural interfaces to their management in the operating context is the bottom line" (p. 178)

Regarding communication, interculturality in aviation is a challenge for safety, and a solution for that is not to eliminate cultural interfaces but to manage the potential threats they pose through specifically designed programs that develop more cultural mediators.[8]

We assume that American ATCOs are aware of the fact they deal with non- native speakers of English who may not be as proficient as intended. Also, that they have, as part of their training, some kind of orientation through the use of communicative strategies in order to avoid miscommunication.

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[7] Presumably, not her intended heading.

[8] The authors interestingly suggest that systematic research of the interfaces in different regions around the world will uncover strengths and weaknesses in the global system.

Borowska (2015) says that experts speakers make errors in the context of aviation communication and non-native speakers will accuse them of not using proper phraseology: “they are aware of their linguistic power, namely that they are able to think and work quickly in their mother tongue and in this way to manipulate it to their own advantage at the expense of those who do not have it” (p.67)

These communication contexts feature a number of challenges. According to Farris and Molesworth (2016), and important challenge is that “Controllers are often very busy, and, as a result, particularly during periods when task demands are high, they may issue a number of instructions at a time to a pilot, in the interest of efficiency” (P. 97). They may be under high workload and have conflicting interests.

Another challenge is that pilots and controllers “may not only be strangers, but are often of very different sociolinguistic backgrounds, and cannot see each other, making it more challenging to achieve mutual understanding and shared situational awareness”, which can result in controllers “ trying to convey a lot of information in a single message and possibly not taking the time and attention required to listen carefully to pilots’ readbacks, failing to ensure that there are no errors contained therein.” (p. 102)

This remark seems to apply to the case study of this article. Trigger 1 could be considered an indication that too much information has been given. At the very beginning of their interaction, the controller gives information about the call sign and identification in detail, altitude and heading. When the pilot asks “Confirm heading?”, the controller could have assumed he had a problem understanding the last instruction. The unfolding of the events confirm the crucial importance of any kind of misunderstanding with regard to the “heading” issue. Trigger 8 is an evidence of the predicament the pilot is in, when he says: “confirm, EVA015 heavy, maintain 5,000, left...right, right heading…”

Barshi (1997) analyzed speech-rate, workload, message length as variables to readback accuracy and concluded that message length was a factor "controllers should limit the length of their messages to three commands or information units, in order to ensure accurate pilot comprehension and retention of controller messages". (p. 104)

In another study, Barshi and Healy (1998) compared native speakers to proficient non-native speakers and low proficient native speakers and concluded that all participant groups performed less accurately in response to longer messages.

In short, these results support the idea that "the robust message length effects obtained in this and in previous experiments could be attributed to basic cognitive processes (i.e. working memory constraints) as opposed to processes that are associated specifically with language or with a specific language" (p. 106)

The authors recommend that, when communicating with pilots of low EL2 proficiency, controllers should limit the length of their messages to two commands, in the interest of facilitating accurate comprehension.

Triggers 12 and 13 also show the pilots are confused with the heading. Trigger 12 is barely perceived in the audio due to a background noise that could be an alarm to alert a crash into terrain. Trigger 13 is an attempt on behalf of the pilot to confirm a correct information, not read back by the controller.

Barbara Clark (2017), in her study based on mandatory occurrence reports in the UK, pointed at the non-standard phraseology use as a key problem, and emphasized, as a key recommendation, the importance of using ICAO standard phraseology, whenever possible, to pilots and controllers, especially native English speakers.

The author concluded that "native speakers play a significant part in language-related miscommunication, most frequently by not adhering to ICAO standard phraseology and the

overuse or over reliance on plain language" (p. 14) and that "Native speakers sometimes show impatience with non-native speakers, often reflected in increasing speech rate and volume" (p. 30)

This is clearly the case when the ATCO says "What are you doing?" as pointed in trigger 7, as well as in triggers 10 and 11, when she says "I see you're going northbound". These examples are not standard phraseology and are put in a nervous tone that can be perceived not only by the audios but also by her mistakes (triggers 6, 14, 15) - minor errors, later corrected, that evidence she may be distressed.

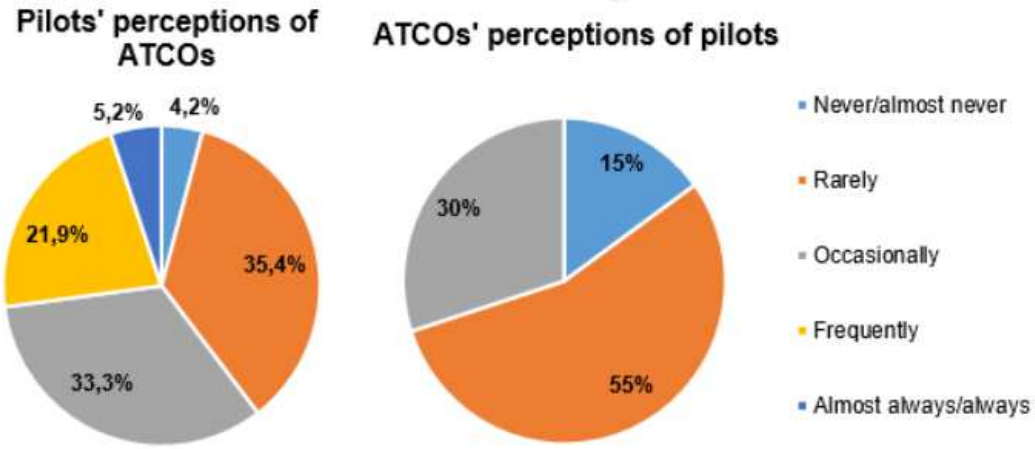
The term "southbound", constantly employed by the ATCO, is not supposed to be used as an indication of exact heading in standard phraseology. It is not clear enough, especially in that situation: the ATCO first sends the pilot to the left, then to the right, then back to the left, then southbound - to the left or right?

As previously mentioned, trigger 8 confirms this confusion, when the pilot says "confirm, EVA 015 heavy, maintain 5,000, left...right, right heading". Shortly afterward, trigger 9 shows the ATCO saying "turn southbound, southbound now" as an answer to the third request of the pilot for heading confirmation. That is, the pilot had, so far, asked three times for heading confirmation and at this point of the events, she answers with "southbound".

Research conducted at the Pontifical Catholic University of Rio Grande do Sul (PUCRS) adds further data to our discussion. Scholler (2017) brings an analysis of miscommunication in an environment with a multilingual background in aviation radiotelephony, by interviewing Brazilian pilots (who fly internationally) and Brazilian ATCOs.

In the charts below, we can see the frequency they perceive each other's use of plain English instead of standard phraseology.

Chart 1: Frequency with which pilots and ATCOs perceive each other using plain English instead of standard phraseology



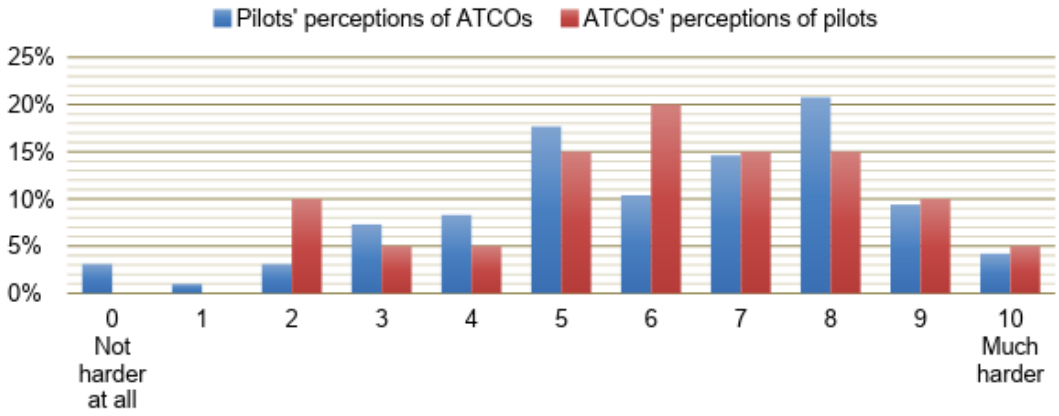
Source: Scholler (2017)

According to the respondents, pilots perceive more ATCOs (from Brazil and abroad) making more use of plain English other than standard phraseology than ATCOs perceive pilots - controllers reported hearing less plain English from pilots (35%) than the pilots from controllers (55%). Scholler (2017) says that there are a number of possible reasons for this, but "one candidate explanation is that controllers must more often issue instructions to pilots that require details, complements or repetition of information than pilots have requests with those demands."

Our case seems to support this idea: the American ATCO used more plain English when standard phraseology was recommended and she was actually in charge of issuing detailed instructions.

A second chart shows that pilots consider it much harder to perceive ATCOs when using plain English.

Chart 2: How much harder pilots and ATCOs consider each other to understand when the other uses plain English – on a scale from 0 to 10

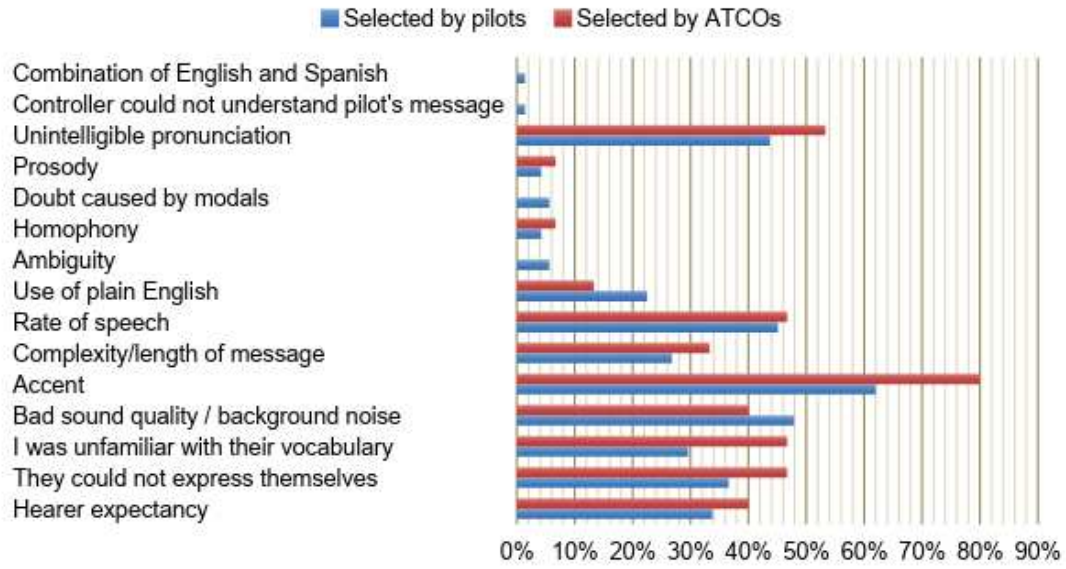


Source: Scholler (2017)

In his study, Scholler (2017) concludes that pilots and ATCOs face a considerably high and equal amount of struggle when trying to understand each other in plain English. However, with our case in mind, we dare to say that the difference spotted in his research is actually meaningful due to the fact that, in this case study, the pilot seemed to have a harder time trying to understand the ATCO that the other way round.

Scholler (2017) also brings another remarkably relevant chart illustrating the main causes of miscommunication spotted by Brazilian pilots and ATCOs. Our attention should be drawn to the fact that the results represent information from interactions of these professionals interacting with each other and also with foreign pilots and ATCOs.

Chart 3: Main causes reported to have contributed to the understanding problem



As the author, we understand that pilots and ATCOS do not seem to face significant differences from each other given that the pointed factors are pretty much the same. Yet, regarding the case of EVA 015 and the use of plain English, the chart shows that pilots say they experience more problems with ATCOs use of plain English. In fact, the data is from pilots who fly abroad, who could be said to face the same problems as the Chinese pilot in our case.

The investigation is not finished and detailed information about the instructions (e.g. the original intention of the controller when issuing a left turn at first and the following constant changes) has not been made available as of yet.

A number of variables have been assumed by specialists who are intrigued by the event. As stated before, our goal here is not to blame the ATCO or the pilots, but to reflect upon factors that have strongly contributed to the confusion in order to work towards actions to mitigate episodes like this, developing language and communication skills for safety.

There are a number of teaching activities that can be developed in the aviation English training scenario which can widely contribute to that. Activities that could raise the awareness of student pilots or student ATCOs are a way to approach language as a factor in aviation safety. A

recommended strategy is to use database from real accidents or incidents caused by miscommunication, having the students spot the possible triggers for a language problem, directly discussing what should have been said.

There is, undoubtedly, a need for more data and research is this field. At PUCRS, we are trying to build a corpus that we have been calling CORPAC – Corpus of Pilot and ATCO Communications, which is supposed to be a master corpus made of other corpora, so that we can actually count on real data to be more empowered to design curriculum that is closer to our reality in aeronautical communications. So far, we have been working on the CORPAC - RES (Real Emergency Situations). This specific corpus allows us to have a broader picture of the language used in emergency situations. The access to an organized database with the target language would allow for great improvements towards determining specific problems and improving training, eventually impacting in safer skies.

Conclusion

The aim of this article was to study a specific aeronautical incident, EVA Flight BR015, that featured a miscommunication episode in order to illustrate this issue through triggers - particular language occurrences that are evidence of the confusion that could have turned out tragically.

The analysis revealed that the constant use of non-standard phraseology, associated with lack of readbacks and hearbacks on behalf of the ATCO may have highly contributed for the non-compliance of instructions on the pilot's side. For instance, the multiple use of the term "southbound" in contexts where she could have used "right" may be taken as evidence that controllers are not properly trained to deal successfully with non-native speakers of English.

Consensually, the orientation is to stick to standard phraseology whenever possible and especially when in an emergency. And facts like the ones presented in the case study suggest that

we should put more effort into raising the awareness of professionals involved in aviation operations to miscommunication that may derive from intercultural issues.

This data may work as a support for the claim that language is a factor in aviation safety and that interculturality in an intrinsic aspect of operations which should be seriously taken into account in training, screenings and test endorsements.

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