Approaching language as a human factor in aviation: the challenges of pilot language training in the academic level in Brazil

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Approaching language as a human factor in aviation: the challenges of pilot language training in the academic level in Brazil

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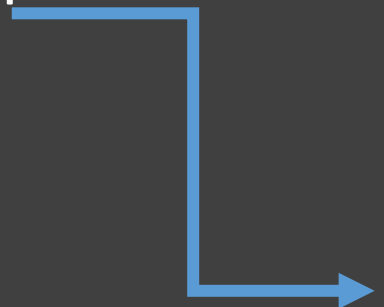
OBJECTIVE

Describe the teaching and learning context and showcase studies and practices in the Aeronautical Science Program at PUCRS



bridge the gap between specific language issues and underlying factors prior to or directly involved in the communication dynamics

True or False?

1. Around 1.50 billion people speak English (Native+ Non-native speakers)
2. 65% are non-native speakers
3. 10% of the conversations involve only native speakers
4. Native speakers have a repertoire of 25.000 to 30.000 words, against 2.000 to 3.000 of non-native speakers.
5. In Aviation English, 25% of the speakers are native against 75% of non-native.

1. *Around 1.50 billion people speak English (Native+ Non-native speakers)*

TRUE -1.5 billion (Statista, 2022)

2. *65% are non-native speakers*

TRUE – 66% (Yadav, 2018), 80% (Jenkins,2021)

3. *10% of the conversations involve only native speakers*

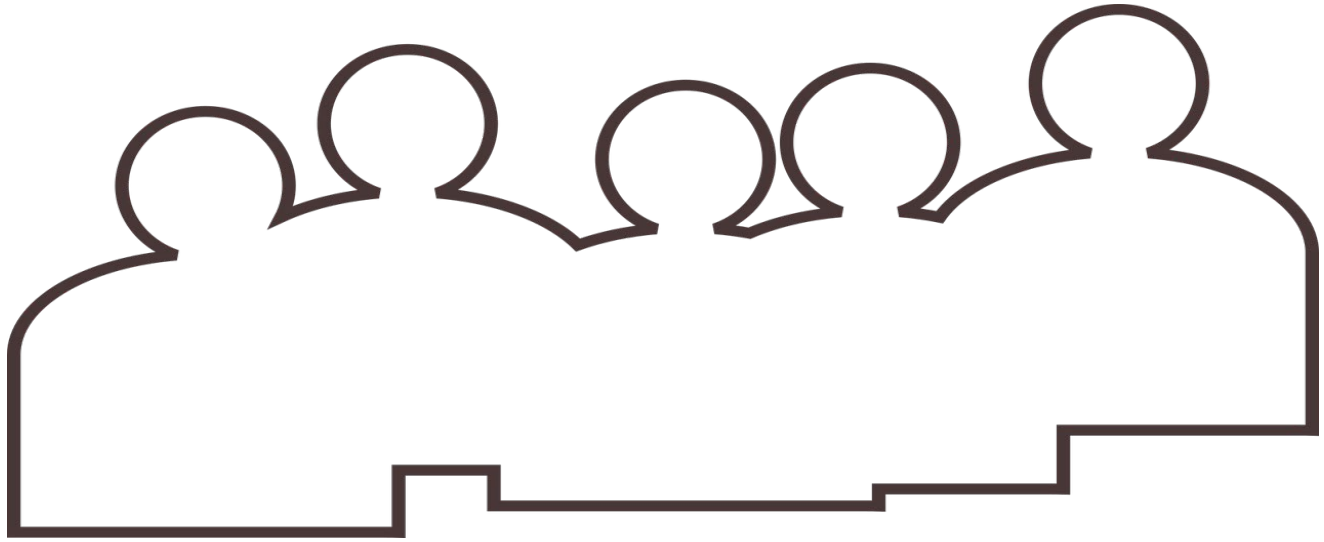
FALSE – 4% (Pascal, 2017)

4. *Native speakers have a repertoire of 25.000 to 30.000 words, against 2.000 to 3.000 of non-native speakers.*

TRUE – (Oxford Dictionary, 2018).

5. *In Aviation English, 25% of the speakers are native against 75% of non-native.*

TRUE - (Borowska, 2016)



- we have a system that depends on the interaction of people (human factor)
- These people have fundamental differences but have to manage them in order to communicate successfully
- It depends on a minimum language standardization and **what else?**

Training at PUCRS

Aeronautical Science Program

- Undergraduate level
- Bachelor's Degree, Frozen ATPL.
- 7 semesters, 3 ½ years
- Academic knowledge, theoretical support: licenses – PPL, CPL, CFI, ATPL
- Flight Training (simulators)
- Flight Training (partnered Flight schools)

Language Training

- Target Audience:

English as a Foreign Language (EFL) solid background + Aviation Knowledge

- **Aviation English** – a specialized language used in aviation (Standard Phraseology + Plain language) - (English for Specific Purposes , ESP)

- Based on **English** – as a Foreign Language (EFL)

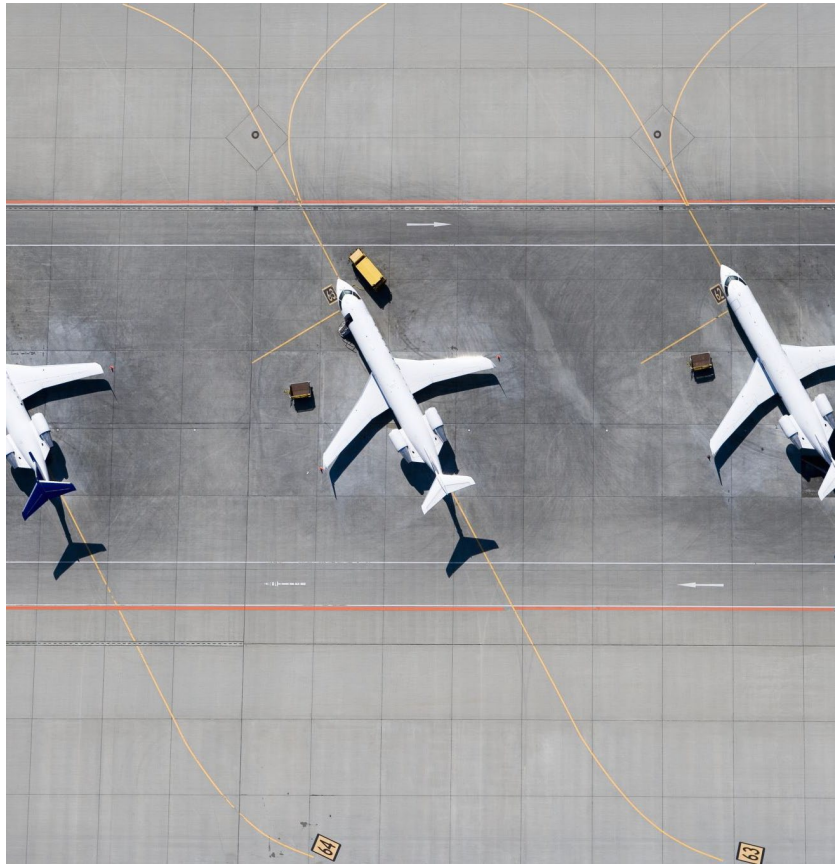
- **as a Lingua Franca (ELF)** (Jenkins, 2007)

"speakers who come from different linguacultural backgrounds"

"English learnt for intercultural communication"

CHALLENGES: skills that go beyond linguistic features or proficiency

- thorough comprehension of effective communication in aviation as a non-technical skill
- cultural features underlying the linguistic behavior
- Intercultural awareness: "acknowledging possibilities of various interpretations" (Borowska, 2013)



Intercultural Competence

"*Possessing some knowledge of various cultures and their products" (Borowska, 2013)*

"Having a proper attitude - openness and tolerance towards your conversational partner"

"Mutual negotiation involving efforts and adjustments from all parties" (Jenkins, 2009)

Language Adjustments
(Jenkins, 2007)

Paraphrasing

Code- switching

Repetition

echoing of items that would be considered errors for native speakers

the avoidance of local idiomatic language

Examples of Training Tasks at PUCRS: AWARENESS

1. Definition of Concepts in the beginning of the Program

English as a Lingua Franca (ELF), English as a Foreign Language (EFL)

English for Specific Purposes (ESP), Aviation English (AE)

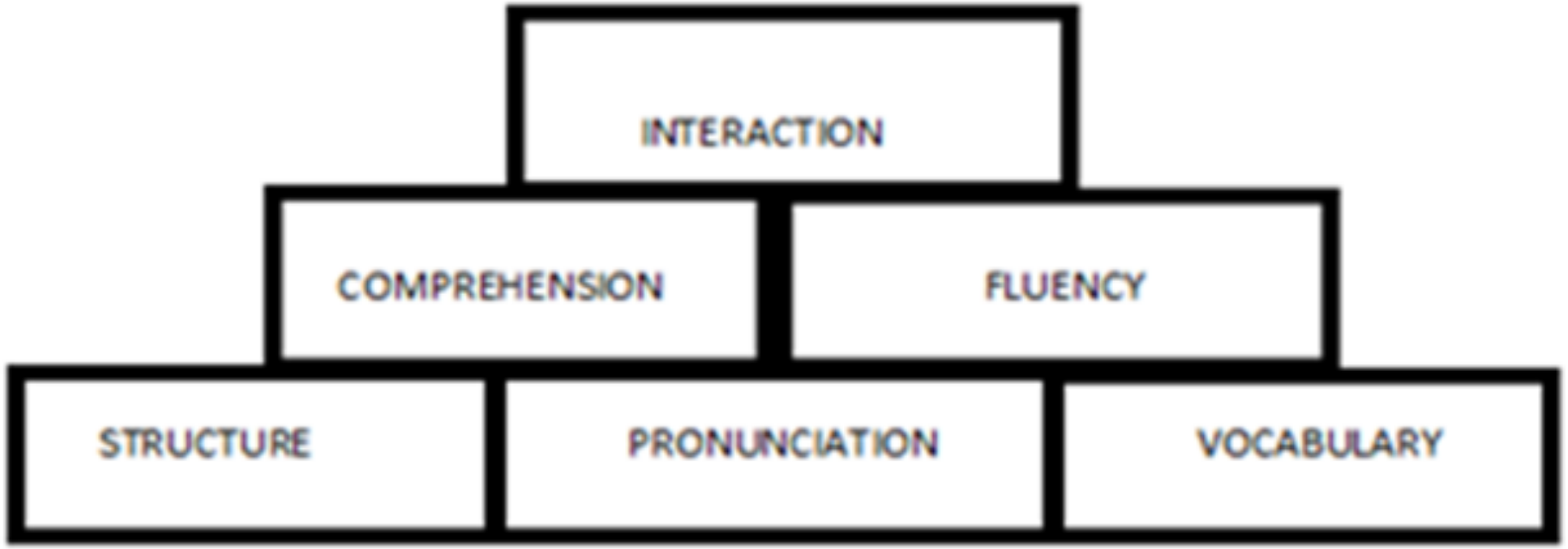
2. Skill-based training tasks

ICAO Skills Pyramid (ICAO Document 9835)

FOCUS on INTERACTION and possible variations for each skill

e.g, L1 Transfer on pronunciation, vocabulary and structure

ICAO Skills PYRAMID (ICAO Doc 9835)



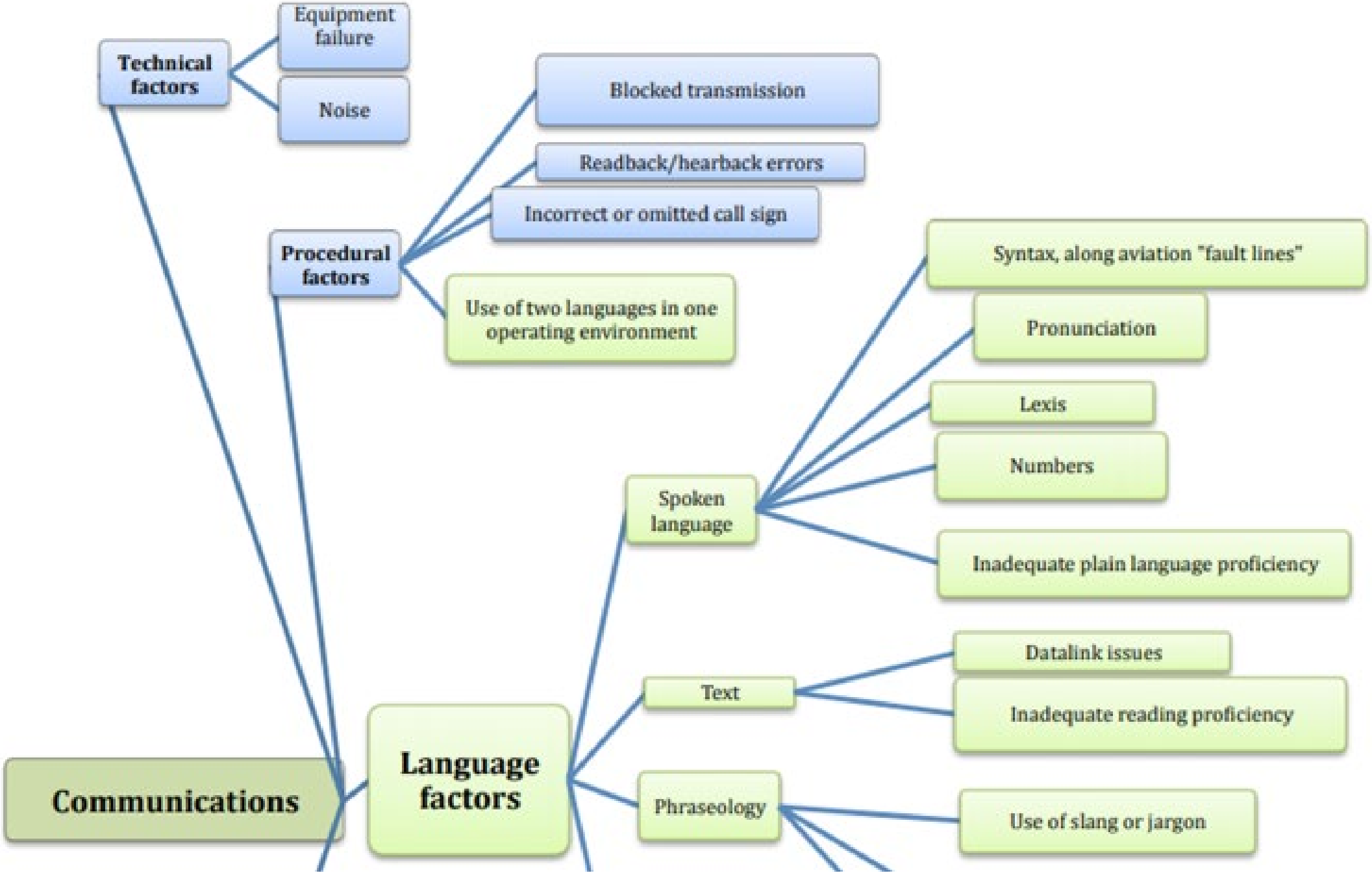
3. Research – Accident Investigation and Taxonomy

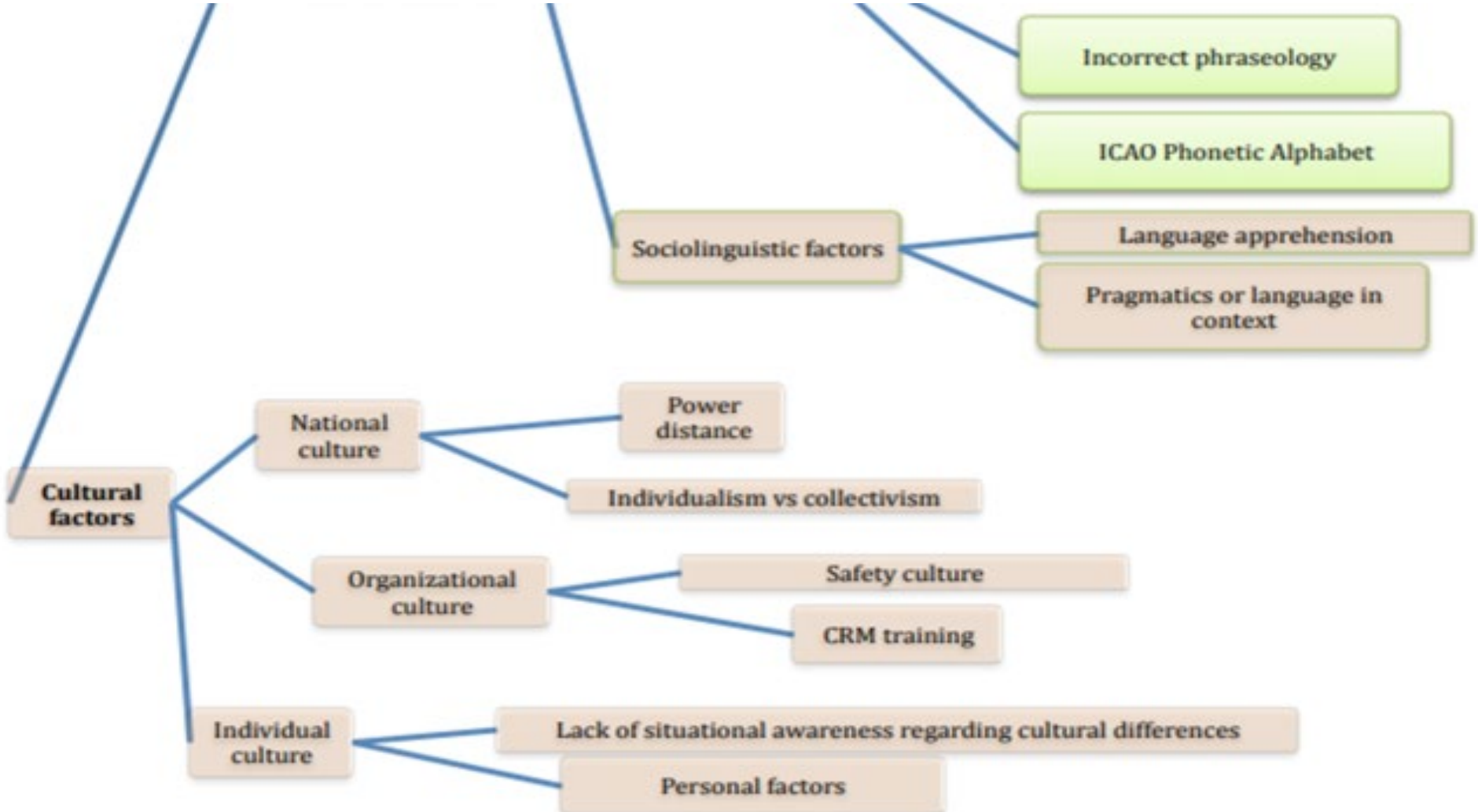
Language as a Human Factor (LHUFT) Perspective (Mathews, 2013)

Accident analysis and discussion - Case study - allows for a more comprehensive understanding of language issues in aviation as it factors technical, procedural and cultural features immediately comprised in aeronautical communication

Source: https://aviation-safety.net/database/events/dblist.php?Event=FCL

Method: Taxonomy

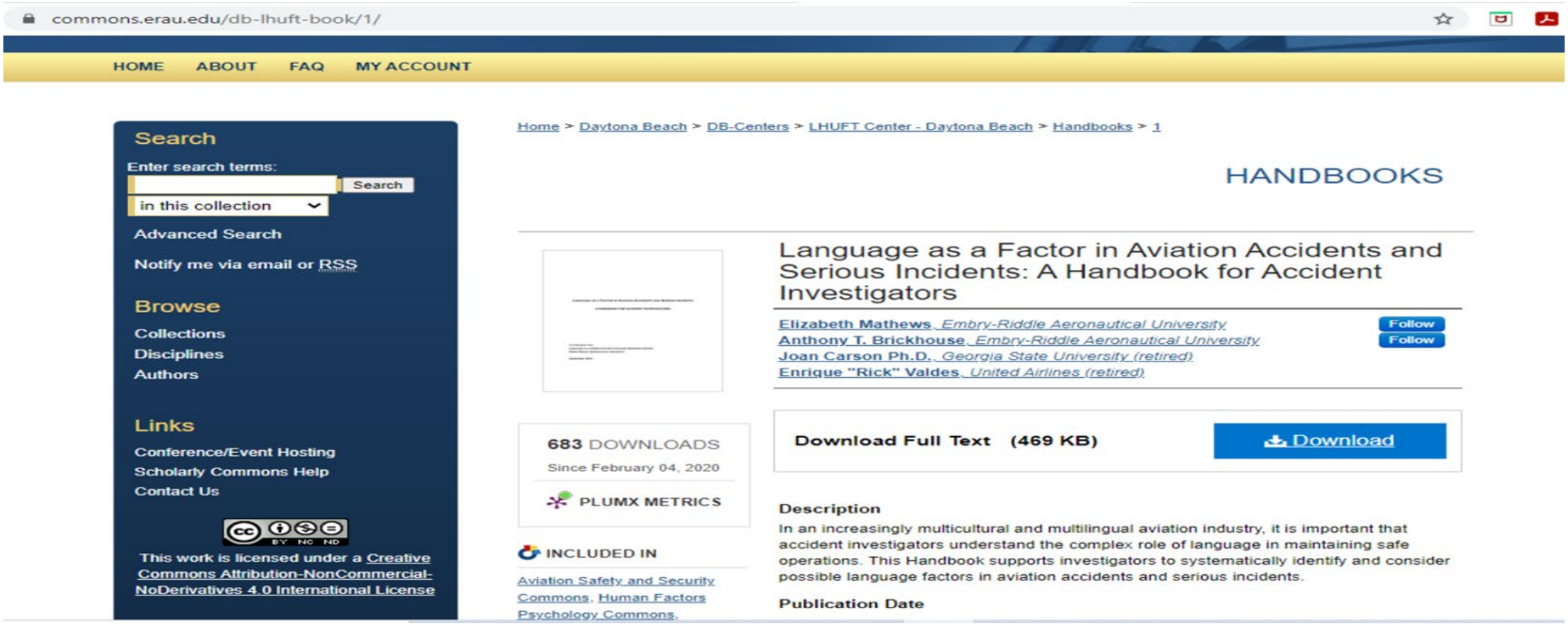

Communications
Language factors
Technical factors
Equipment failure
Noise
Procedural factors
Blocked transmission
Readback/hearback errors
Incorrect or omitted call sign
Use of two languages in one operating environment
Spoken language
Syntax, along aviation "fault lines"
Pronunciation
Lexis
Numbers
Inadequate plain language proficiency
Text
Datalink issues
Inadequate reading proficiency
Phraseology
Use of slang or jargon

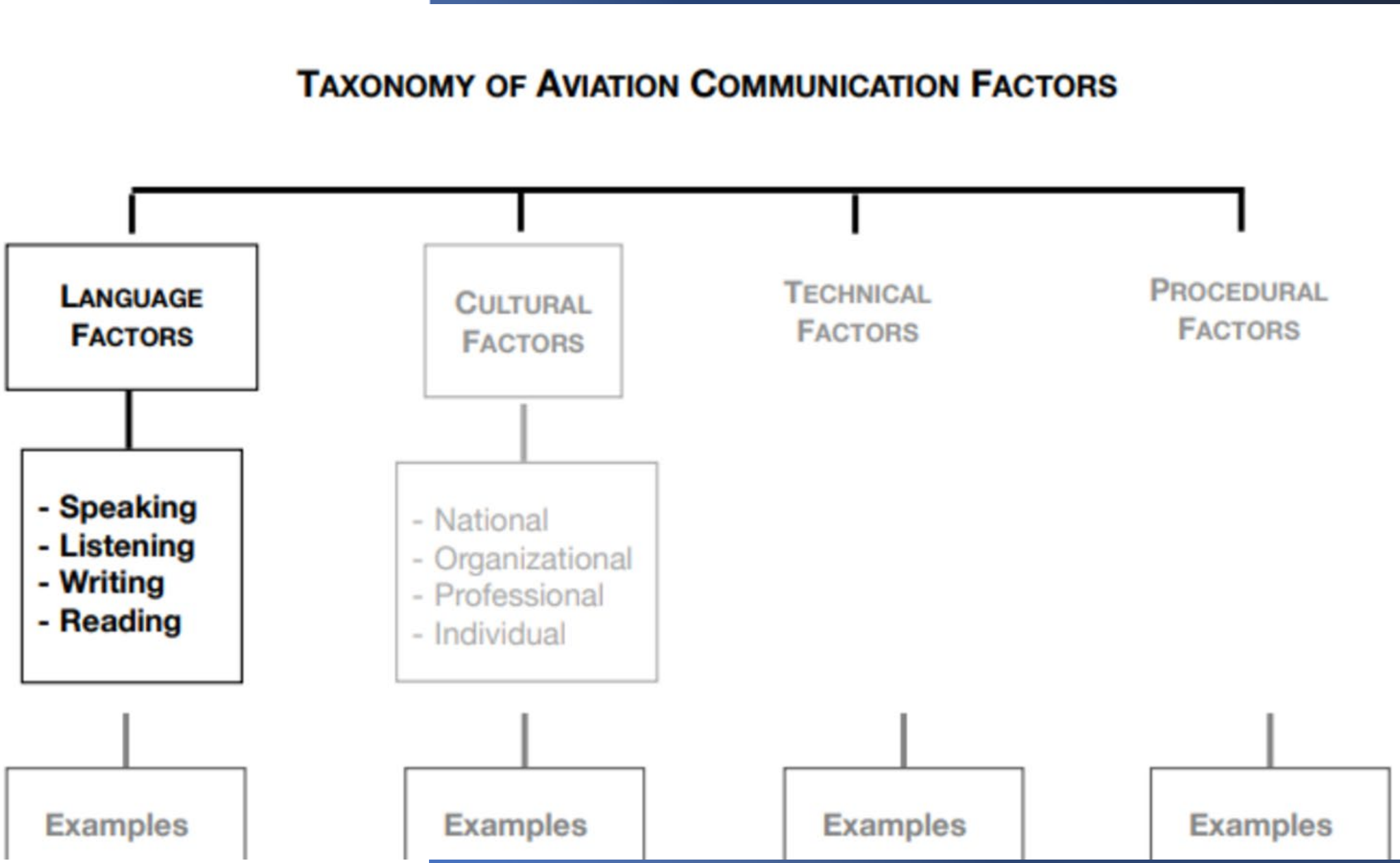


Categories are representative not inclusive

Elizabeth Mathews 2013.

Handbook (2019, 2021)




TAXONOMY OF AVIATION COMMUNICATION FACTORS
LANGUAGE FACTORS
CULTURAL FACTORS
TECHNICAL FACTORS
PROCEDURAL FACTORS
- Speaking
- Listening
- Writing
- Reading
- National
- Organizational
- Professional
- Individual
Examples
Examples
Examples
Examples

Intercultural Communication in Multicultural Environments

- Historical increase in intercultural exchanges in aviation market:
  - Localized demand
  - Better payment/Working conditions
- Oversight regarding Intercultural Communication Difficulties
  - Lack of proactiveness in developing an Interculturally Aware personality.

Effective aeronautical communications in multicultural contexts and the role of intercultural communication as a non-technical skill.

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KEY-WORDS:

- **Culture;** (ICAO, 2004)
- **Multicultural Flight-Deck Environments;** (ALKMIN & PACHECO, 2021)
- **Intercultural Competence;** (CHEN & STAROSTA, 1996; HAMMER, et al., 2003; JENKINS, 2007; BOROWSKA 2013)
- **Intercultural Awareness;** (ADLER, 1987; ZHU, 2011)
- **Non-Technical Skills.** (FLIN et al., 2008)

- Culture and Communication in Aviation
  - English as the Aviation Language (ICAO doc 9835, 2010; Monteiro, 2012; Hazrati, A. 2015; Pacheco, 2018)
  - Cross-cultural factors in aviation (Merritt and Maurino, 2004; ICAO Human Factors Digest N°16, 2004)
  - Multicultural Environments (Monteiro, 2012; Van Der Zee and Van Oudenhoven; 2000)

- Studies that approach intercultural communication difficulties
  - Power distance and social identities (Hofstede, 1997, 1991; Pacheco and Alkimin, 2021; Gudyknust, 2005)
  - Intercultural Communication difficulties and Flight Safety (Cheng, 2014; Orasanu et al., 1997)

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Objectives:

- Address cultural factors and intercultural difficulties that pose a challenge to pilots, companies and the related personnel;
- Sharpen the aeronautical community awareness to cultural factors;
- Suggest proactiveness in the development of interculturally aware and competent professionals;

Methodology:

- Quantitative and qualitative digital questionnaire;
- 10 questions
  - Respondent identification – flight experience, base country and previous experiences (Q. 1-3)
  - Intercultural communication difficulties assessment (Q. 4-10)
- 18 respondents – total (anonymous);
- Data collected between August 26th and September 25th, 2022.

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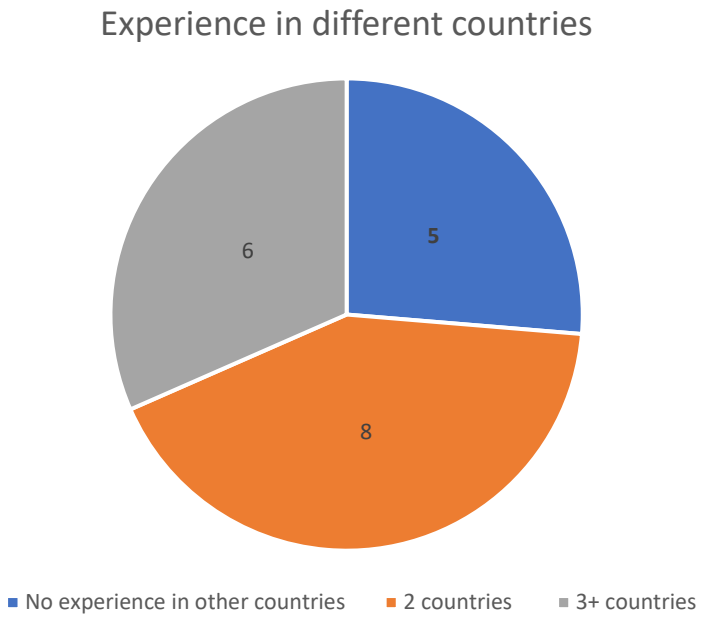
- **Preliminary Results**
  - Respondents base:
  - **8** based in the UAE
  - **6** based in Brazil
  - **3** based in Qatar
  - **1** based in Hong Kong



- Flight Experience:
  - **11:** 10,000h+
  - **4:** 1,500-5,000h
  - **2:** 500-1,500h
  - **1:** 5,000-10,000h

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- **Intercultural communication difficulties assessment**
  - **Accent (5)**
  - **Speech pace (3)**

  "Speaking fast."

  "Accent, slangs, and speed."

  "Deal with different accents"

  - **Silent language and gestures**

  "Wobbling heads have different meanings all over the globe…"

  - **Unproper use of standardized languages (e.g. Standard Phraseology in English – ICAO 9835)**

  "Accent and non-standard phraseology"

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- **Actions already taken to mitigate intercultural difficulties**
  - **Communicative development**
    - Language classes;
    - Communication/Speech skills;
  - **Cultural and language assessment**
    - Interlocutor language level assessment and adaption;

    "Quickly assess your interlocutor level of English to adapt your vocabulary and speed."
    - Cultural background introduction;

    "…give a cultural background to the listener so that he might understand your expressions."
  - **Use of consolidated tools to prevent miscommunication**
    - Standard Call-Outs; English proficiency tests; Standard Phraseology;

    "Using the standard communication"; "CRM as a tool for the benefit of safety…"

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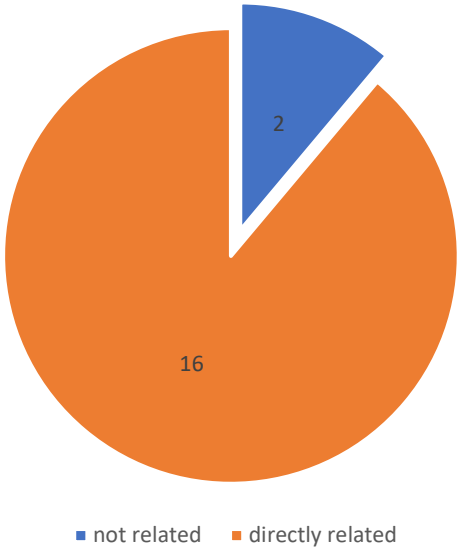
Language and Cultural differences involvement[1] in communication breakdowns and/or losses of S.A.

1- in multicutlural environments

S.A.: *Situational Awareness*

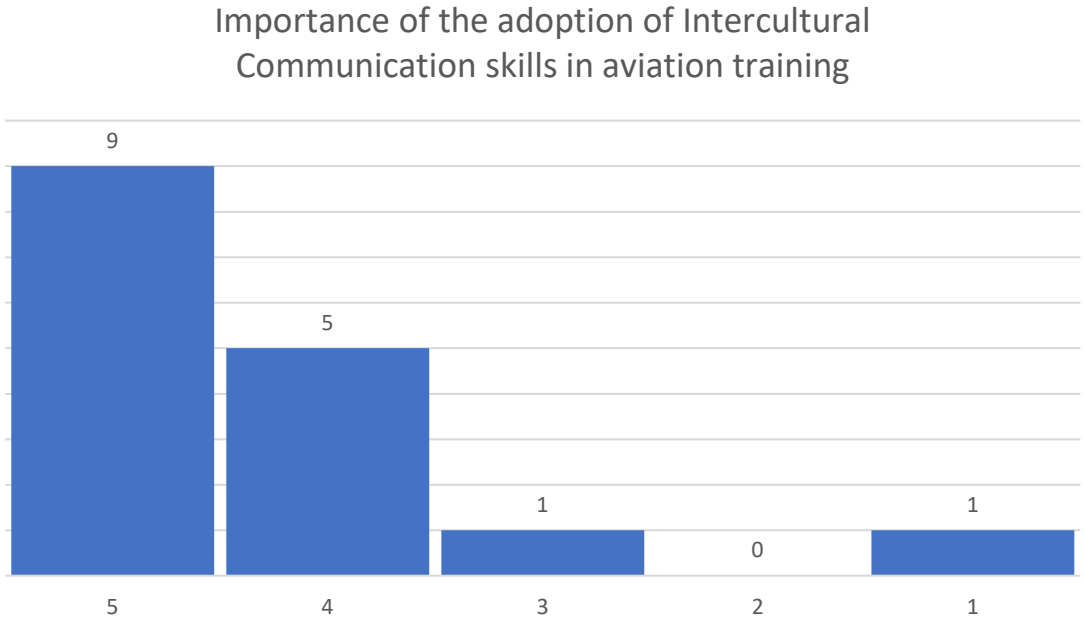


16 believed there are ties between language and cultural differences and degrading communication and loss of Situational Awareness.

Scale: 1 to 5

1: not important/unecessary

5: very important



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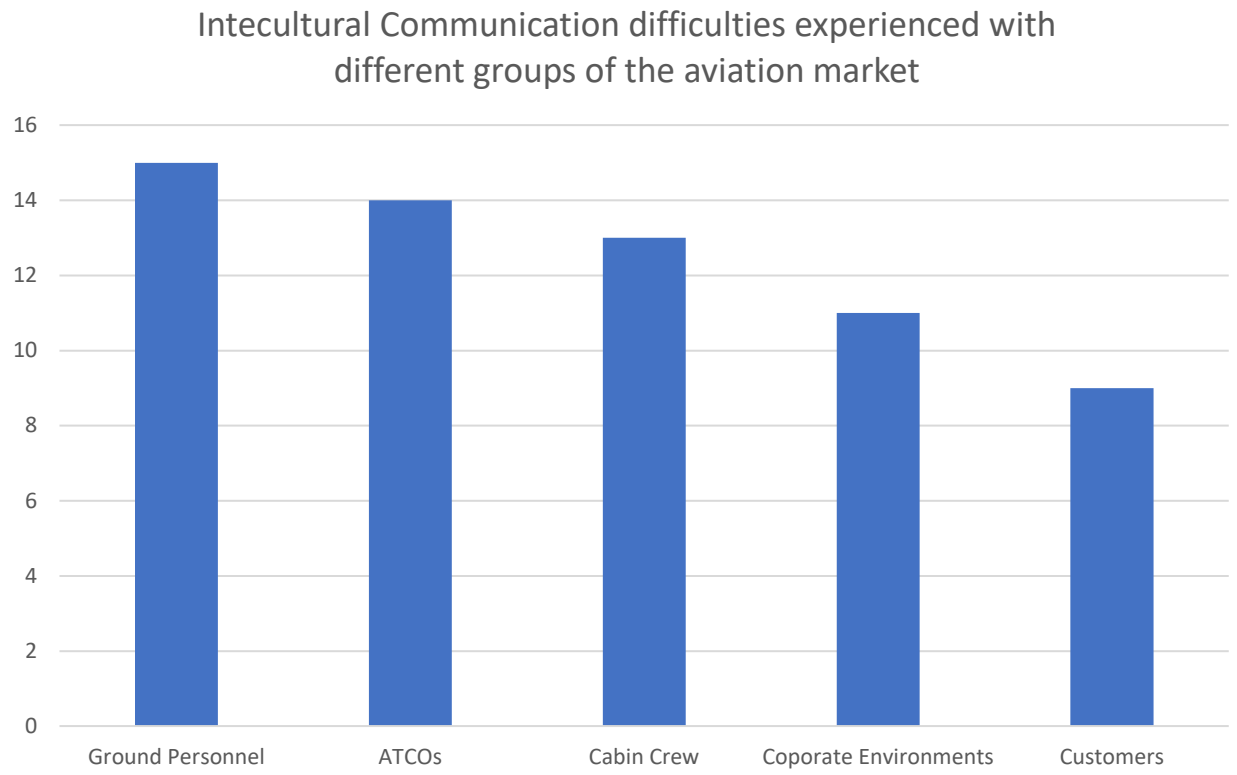
Pilot's difficulties while interacting with other groups of the industry:

- Cabin Crew – **13**
- Ground Personnel – **15**
- Air Traffic Control Organs – **14**
- Corporate Environments – **11**
- Customers – **9**



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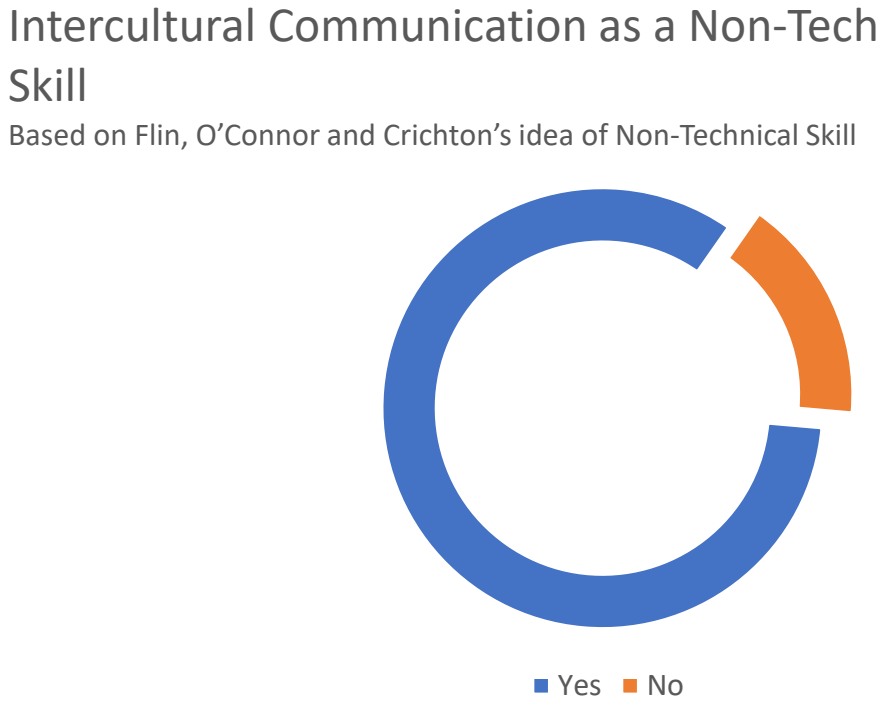

Throughout the whole professional spectrum, specially across high-risk occupations, some widespread aspects are highlighted such as decision-making, situation awareness, communication, team coordination, stress/fatigue management (Flin, et al. 2008).

Based on Flin, O'Connor and Crichton's idea of Non-Technical Skill, 15 ou of the 18 respondents believed in intercultural communication as a Non-Technical Skill.

FINAL REMARKS

- **Positive Results:**

AWARENESS of communication problems and strategies that can be used to mitigate them

- **Perspectives:**

- Safety II (Prof. Eric Holnagel)/ Safety Differently (Prof. Sydney Dekker):

Focus on elements that have worked well regarding safety

-Try to focus on "The Human Factor"-
facilitate the interaction of the components of the system (people – people, people technology) - CPDLC

technology as a facilitator to the human component (Vicente, 2006)

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Thank you!

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