

Investigating the construct of aeronautical English listening testing: a qualitative analysis of the ICAO rating scale

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Title of thesis

Defining the construct of aeronautical English listening for pilots: Insights from the literature, the ICAO rating scale, and key stakeholders' perceptions



Background and research need

ICAO LPR Test Design Guidelines – Criterion 3

Test instruments need to contain tasks dedicated to assessing listening comprehension, separate from tasks designed to assess speaking performance..



Research need and research need

1

Minimize construct
irrelevant variance

2

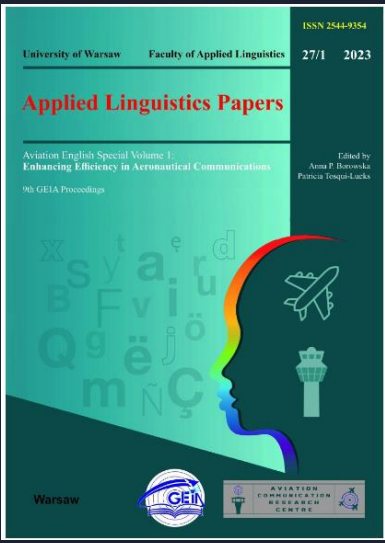
Pilots listen to
recordings

3

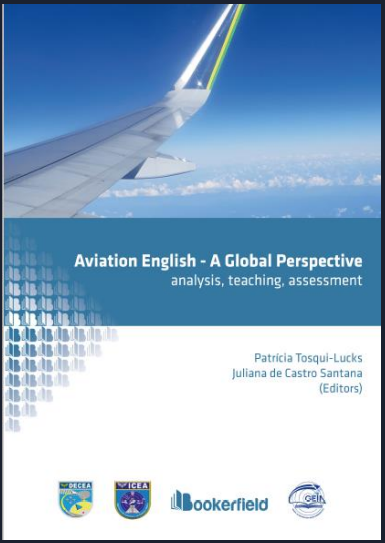
Pilots need to
maintain situational
awareness



The five manuscripts



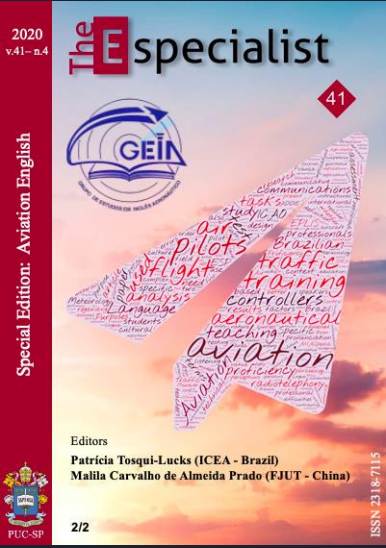
1



2



3



4



5

Background

<i>LEVEL</i>	<i>PRONUNCIATION</i> <i>Assumes a dialect and/or accent intelligible to the aeronautical community.</i>	<i>STRUCTURE</i> <i>Relevant grammatical structures and sentence patterns are determined by language functions appropriate to the task.</i>	<i>VOCABULARY</i>	<i>FLUENCY</i>	<i>COMPREHENSION</i>	<i>INTERACTIONS</i>
Expert 6	Pronunciation, stress, rhythm, and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.	Both basic and complex grammatical structures and sentence patterns are consistently well controlled.	Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced, and sensitive to register.	Able to speak at length with a natural, effortless flow. Varies speech flow for stylistic effect, e.g. to emphasize a point. Uses appropriate discourse markers and connectors spontaneously.	Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.	Interacts with ease in nearly all situations. Is sensitive to verbal and non-verbal cues and responds to them appropriately.
Extended 5	Pronunciation, stress, rhythm, and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.	Basic grammatical structures and sentence patterns are consistently well controlled. Complex structures are attempted but with errors which sometimes interfere with meaning.	Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete, and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.	Able to speak at length with relative ease on familiar topics but may not vary speech flow as a stylistic device. Can make use of appropriate discourse markers or connectors.	Comprehension is accurate on common, concrete, and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.	Responses are immediate, appropriate, and informative. Manages the speaker/listener relationship effectively.
Operational 4	Pronunciation, stress, rhythm, and intonation are influenced by the first language or regional variation but only sometimes interfere with ease of understanding.	Basic grammatical structures and sentence patterns are used creatively and are usually well controlled. Errors may occur, particularly in unusual or unexpected circumstances, but rarely interfere with meaning.	Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete, and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.	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.	Comprehension is mostly accurate on common, concrete, and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.	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.

Research questions

- Research Question 1 (RQ1): What is the listening in isolation construct represented in the descriptors for comprehension detailed in the ICAO Language Proficiency Rating Scale?
- Research Question 2 (RQ2): How may the descriptors for the other criteria help to define the construct of a test to assess listening in isolation?



Methods

- Qualitative research
- Document content analysis
- Bowen (2009) defines document analysis as “a systematic procedure for reviewing or evaluating documents” (p. 27), which “entails finding, selecting, appraising (making sense of), and synthesising data contained in documents” (p. 28).
- Interview technique – O’Leary, 2021



Interview questions

Q1) What are the common elements in the comprehension descriptor levels?

Q2) What elements are not recurrent among the comprehension descriptor levels?

Q3) How do the comprehension descriptors differentiate the different levels?

Q4) Do the comprehension descriptors make a difference between a test to assess interactive listening and a test to assess listening in isolation?

Pre-operational 3:

Comprehension is often accurate on common, concrete and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. May fail to understand a linguistic or situational complication or an unexpected turn of events.

Operational 4:

Comprehension is mostly accurate on common, concrete and work-related topics when the accent or variety used is sufficiently intelligible for an international community of users. When the speaker is confronted with a linguistic or situational complication or an unexpected turn of events, comprehension may be slower or require clarification strategies.

Extended 5:

Comprehension is accurate on common, concrete and work-related topics and mostly accurate when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events. Is able to comprehend a range of speech varieties (dialect and/or accent) or registers.

Expert 6:

Comprehension is consistently accurate in nearly all contexts and includes comprehension of linguistic and cultural subtleties.

Comprehension descriptors

Level	Comprehension in common, concrete, and work-related topics	Comprehension when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events
Extended 5	Accurate	Mostly accurate
Operational 4	Mostly accurate	May be slower or require clarification strategies.
Pre- operational 3	Often accurate	May fail to understand



Comprehension descriptors

Item	Construct	Applicability
1	Comprehension on common, concrete, and work-related topics	Levels 3, 4, 5
2	Comprehension when the speaker is confronted with a linguistic or situational complication or an unexpected turn of events.	Levels 3, 4, 5
2.1	In assessing 1, include accents or varieties sufficiently intelligible for an international community of users.	Levels 3, 4
3	Ability to ask for clarification when comprehension fails	Level 4
4	Comprehension of a range of speech varieties (dialect and/or accent) or registers.	Level 5
5	Comprehension in nearly all contexts	Level 6
6	Comprehension of linguistic and cultural subtleties	Level 6



Other interview questions

Q5) What may be considered a common topic?

Q6) What may be considered a concrete topic?

Q7) What may be considered a work-related topic?



Other descriptors

Pre-operational 3:

Vocabulary range and accuracy are often sufficient to communicate on common, concrete or work-related topics, but range is limited and the word choice often inappropriate. Is often unable to paraphrase successfully when lacking vocabulary.

Operational 4:

Vocabulary range and accuracy are usually sufficient to communicate effectively on common, concrete and work-related topics. Can often paraphrase successfully when lacking vocabulary in unusual or unexpected circumstances.

Extended 5:

Vocabulary range and accuracy are sufficient to communicate effectively on common, concrete and work-related topics. Paraphrases consistently and successfully. Vocabulary is sometimes idiomatic.

Expert 6:

Vocabulary range and accuracy are sufficient to communicate effectively on a wide variety of familiar and unfamiliar topics. Vocabulary is idiomatic, nuanced and sensitive to register.

Other interview questions

Q8) What accents or varieties may be considered sufficiently intelligible for an international community of users?

Pre-operational 3:

Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation and frequently interfere with ease of understanding.

Operational 4:

Pronunciation, stress, rhythm and intonation are influenced by the first language or regional variation, but only sometimes interfere with ease of understanding.

Extended 5:

Pronunciation, stress, rhythm and intonation, though influenced by the first language or regional variation, rarely interfere with ease of understanding.

Expert 6:

Pronunciation, stress, rhythm and intonation, though possibly influenced by the first language or regional variation, almost never interfere with ease of understanding.

Other descriptors

Q9) What can be considered a linguistic complication?

Pronunciation

Pronunciation

Stress

Rhythm

Intonation

Structure

Complex grammar

Vocabulary

Unfamiliar or
uncommon
vocabulary

Fluency

Hesitations

Slowness

Fillers

Inappropriate
discourse
markers or
connectors

Unvaried
speech flow

Other descriptors

Q10) What can be considered a situational complication?

Vocabulary

Unfamiliar or
uncommon
vocabulary

Interactions

Dealing with
misunderstandings

Comprehension

Unexpected turn of
events



Other descriptors

Q11) What is an unexpected turn of events?

Structure

Predictable situations

Interactions

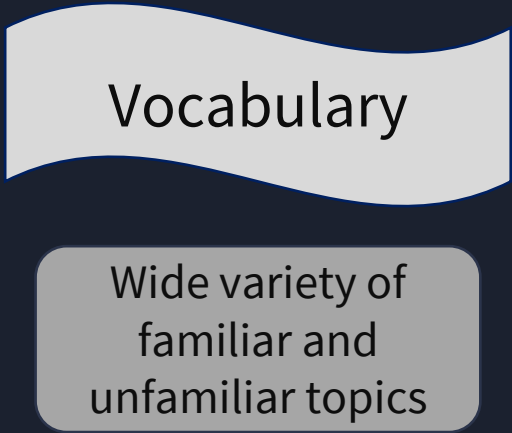
Predictable situations

Not immediate,
appropriate, or
informative
response



Other descriptors

Q12) What is meant by nearly all contexts?



Vocabulary

Wide variety of
familiar and
unfamiliar topics



Elements test developers may consider when developing a listening test to assess pilots and ATCOs' listening in isolation

Include pronunciation, stress, rhythm, and intonation both influenced and not influenced by the first language or regional variation

The accents and varieties that may be considered sufficiently intelligible for an international community of users, as mentioned in the comprehension descriptors for levels 3 and 4, might be the ones whose pronunciation either rarely (level 5 in pronunciation) or almost never (level 6 in pronunciation) interferes with ease of understanding

Include a range of speech varieties (one parameter might be pilots and ATCOs who were awarded level 4 or below in pronunciation)

Include the assessment of the ability to understand vocabulary used on common, concrete, and work-related topics, idiomatic vocabulary, vocabulary used on a wide variety of familiar and unfamiliar topics, nuanced vocabulary

Comprehension of a wide variety of familiar and unfamiliar topics may help to understand what the comprehension descriptors for level 6 mention as comprehension “in nearly all contexts”

Elements test developers may consider when developing a listening test to assess pilots and ATCOs' listening in isolation

A linguistic complication might be caused by:

- **Interference of pronunciation, stress, rhythm, or intonation**
- **The use of complex structures**
- **The presence of uncommon or unfamiliar vocabulary**
- **Inappropriate phrasing and pausing, slowness in producing language, use of too many fillers, or use of inappropriate discourse markers or connectors**

An unexpected turn of events is one situational complication, and might be caused by a misunderstanding, or by a response which is not immediate, appropriate, or informative, among other possibilities.

Include predictable situations (to contrast with unexpected situations)



Conclusion

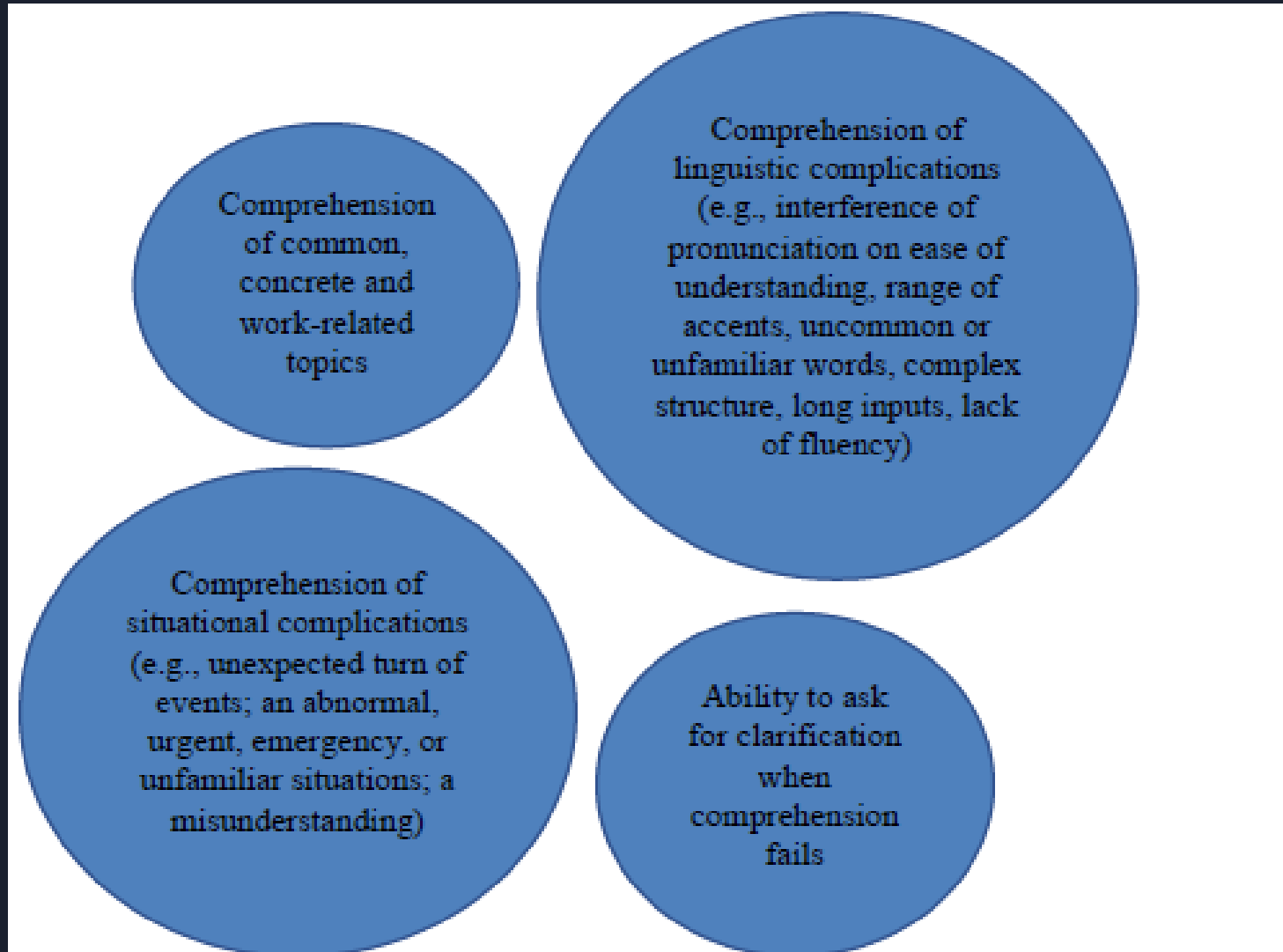
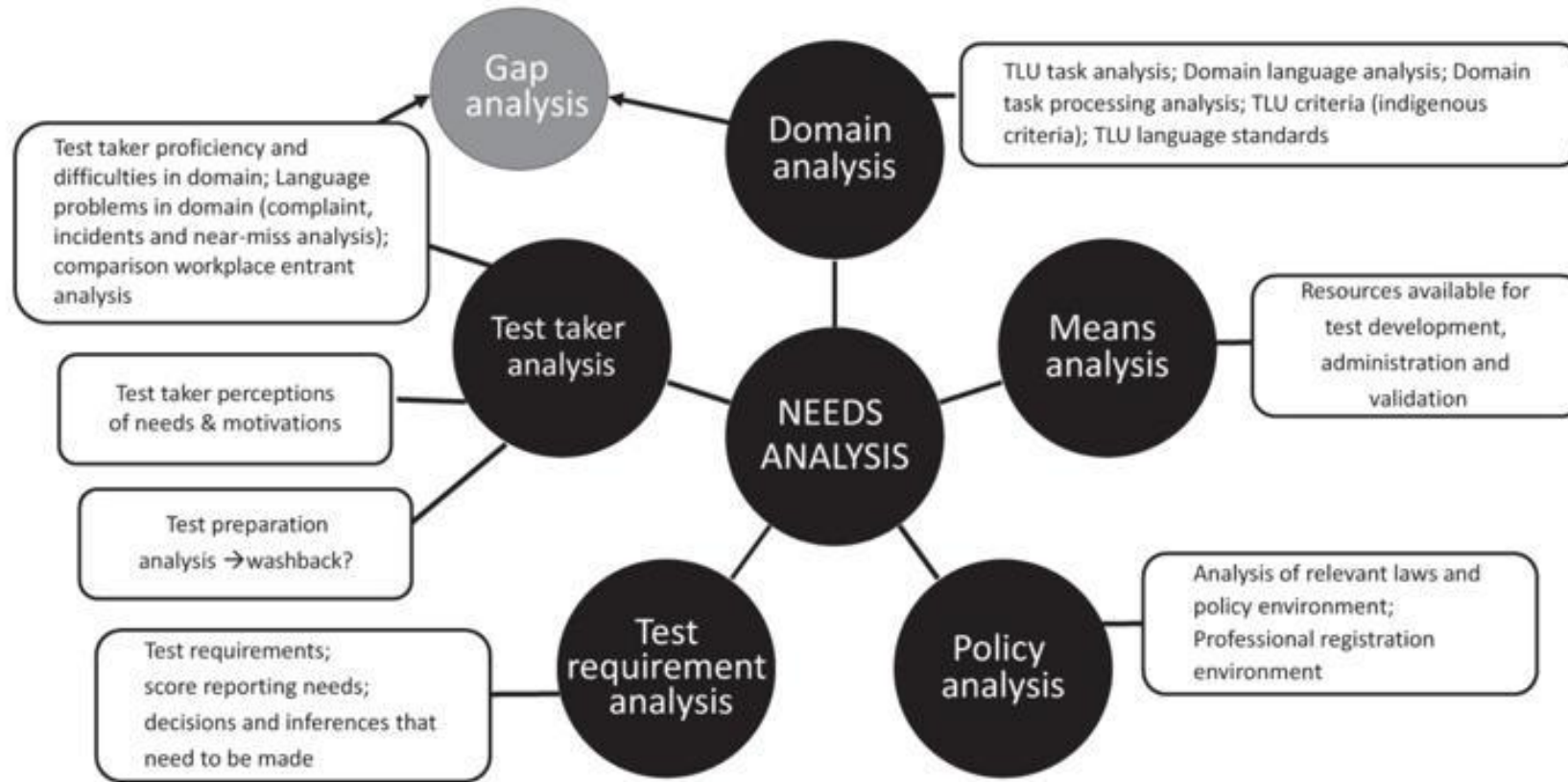


Figure 3. Four spheres of the listening construct represented in the ICAO rating scale

Conclusion



References

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. *Qualitative Research Journal* 9(2), 27–40.

O’Leary, Z. (2021) *The Essential Guide to Doing Your Research Project*. 4th edition. SAGE Publications.



Thank you!

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