



**DipSUm**  
Dipartimento di Studi Umanistici

**DILLS**  
DOTTORATO IN STUDI LETTERARI,  
LINGUISTICI E STORICI



**UGA**  
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# IS IT POSSIBLE TO CREATE AN INDEX OF LISTENABILITY?

Hypotheses, attempts and doubts

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# Introduction

- My PhD project *Ascolto e Comprensione nell'educazione linguistica* (A&C) deals with **the study of listening and oral comprehension**.
- It stems from the need to affirm that the process of listening is **an active receptive skill** that requires the full cognitive and affective involvement of the listener in order to foster oral comprehension (Mariani, 2010, Voghera, 2019).
- It is funded by PON «Ricerca e Innovazione 2014-2020». It is about **green topics for overcoming the effects of the crisis of the COVID-19 pandemic and its social consequences**.
- The final aim is to promote **innovation and interchange between the world of research (the university) and the world of production (the school)**.
- My PhD wants to be a scientific spin-off in both theory and application



# The goals of the project A&C

- The first is to study listening and oral comprehension **to elaborate an index of listenability in Italian (L1)** that could measure the listenability of oral texts quantitatively and qualitatively.
- The second is to **promote an orality-oriented teaching**, making the index of listenability **a tool** and promoting **a model of listening activities** to evaluate the oral comprehension.
- To discover how many and which parameters have to take into account to elaborate the index and testing some teaching strategies, I created and did **an experimental protocol in a high school**.

# The state of art and the analysis of the context

1. **Gap between educational practice and real intentions** => listening and comprehension skills are poorly attended to or taken for granted (*Dieci Tesi*, 1975).
2. **Few listening activities** => oriented towards **quantitative results** (*how much did students understand?*) **and not qualitative results of comprehension** (*how did students understand and why did they find it difficult to understand?*) (Lo Priore, 2011, Torresan, 2020).
3. There is **no adequate methodology** to develop the receptive competence of listening comprehension across the Italian school curriculum (Loiero & Lugarini, 2019).
4. There is an index of readability by GULPEASE (Lucisano & Piemontese, 1988), but **not an index of listenability**

# Research Questions



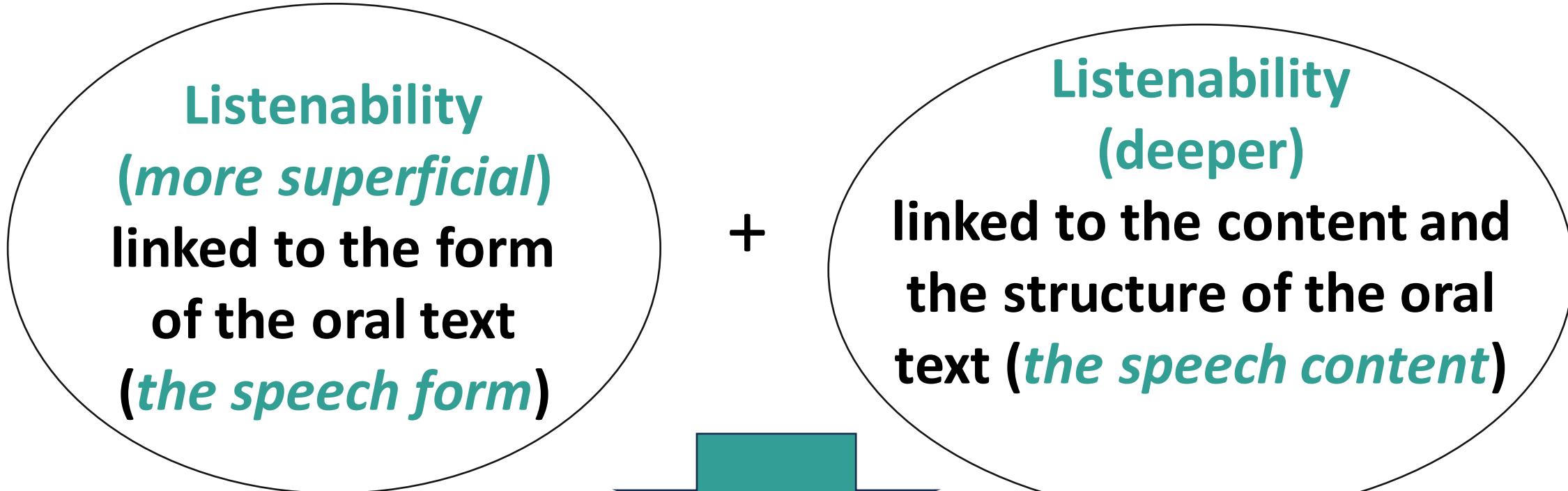
1. Is it possible to formulate an index of listenability able to establish a scale of parameters that make oral texts **+/- listenable** and **+/- comprehensible** for certain target of listeners?
2. Is it possible to transform the index of listenability into a **practical, accessible and user-friendly tool** for Italian teachers?
3. how should this index help them to **educate in listening and oral comprehension** by improving these skills at school?
4. How and what should A&C project do to make all **achievable**?



# What are the HYPOTESIS ON...?

- **What is listenability?**
- **Does listenability really mean «the ease with which oral or spoken texts can be understood by native listeners»?**
  - a) write a theoretical definition of listenability
- **What are the linguistic parameters taking into account to measure the listenability and elaborate the index?**
  - b) recognise the levels of analysis and the parameters to elaborate the index
- **What are the factors that could obstacle the oral comprehension in native listeners?**
  - c) identify the barriers in listening by evalutating the oral comprehension through a didactic sperimentation in a high school

# LISTENABILITY => «two sides of the same coin»



## Comprehensibility

depends on the listener's cognitive skills,  
knowledge and background experience

## Hypothesis:

LEVELS OF  
ANALYSIS TO  
ELABORATE  
THE INDEX OF  
LISTENABILITY

An oral or spoken text is **more or less listenable**, based on specific linguistic parameters that placed on different levels, that could be evaluated by a quantitative and/or qualitative point of view.

### THE PROCESS OF LISTENING (From Hearing to Comprehension)

1. **AUDITORY LEVEL => SOUND DETECTION** (sound vs noise)
2. **PERCEPTIVE LEVEL => SOUND DISCRIMINATION AS LANGUAGE ELEMENTS**
3. **PROSODIC LEVEL => IDENTIFICATION OF SUPRASEGMENTAL SPEECH TRAITS**  
(i.e. speech rate, pauses, disfluences and so on)
4. **LINGUISTIC LEVEL => RECOGNITION OF LINGUISTIC STRUCTURES**  
(i.e. morphology, syntax, semantics, lexicon, pragmatics)
5. **COGNITIVE LEVEL => THE COMPLEX MULTIDIMENSIONAL COGNITIVE PROCESS OF ORAL COMPREHENSION**  
(i. e. comprehension, attention, interest, motivation, recall)

# Hypothesis: PARAMETERS TO MEASURE THE LISTENABILITY

## QUANTITATIVE PARAMETERS OF THE LISTENABILITY (THE SPEECH FORM)

### Prosodic level

- SPEED RATE (wpm)
- NUMBER OF UTTERANCES
- NUMBER OF SYLLABLES
- NUMBER OF PAUSES
- NUMBER OF DISFLUENCES



PRAAT

Boersma e  
Weenink (2013)

### Linguistic level (LEXICON)

- GULPEASE
- NUMBER OF WORDS  
(i.e total words in a text and in an utterance)
- % BASIC VOCABULARY  
(fundamental, high availability and high usage)
- % PARTS OF SPEECH
- FREQUENCY OF MOST-USED WORDS



AntConc

**READ-IT**

Dell'Orletta F.,  
Montemagni S.,  
Venturi G.(2011)

## QUALITATIVE PARAMETERS OF THE LISTENABILITY (THE SPEECH CONTENT)

### Linguistic level (SYNTAX)

- THE STRUCTURE OF ORAL TEXT (hypotaxis, parataxis, redundancy, coherence and cohesion)
- TYPES AND USES OF PAUSES (establish the continuous from spontaneous to spoken read)

### Linguistic level (SEMANTICS)

- SEMANTIC NUCLEI (identify the keywords of the text)

### Linguistic level (PRAGMATICS)

- LINGUISTIC ACTS (recognise the purposes that the speaker wants to realize consciously by talking to)

### Cognitive level (COMPREHENSION)

- LISTENER INVOLVEMENT (the way of the speaker to express the content using linguistic strategies)

Only after the linguistic analysis of an oral text we could define if the text is **less or more listenable** for some specific parameters and if we compare it with another, we could be able to measure the degree of their listenability.



Warning: Listenability doesn't mean, however, comprehensibility.

Demonstrate that an oral text is less or more **listenable**, not necessarily means that is also **less or more comprehensible**.

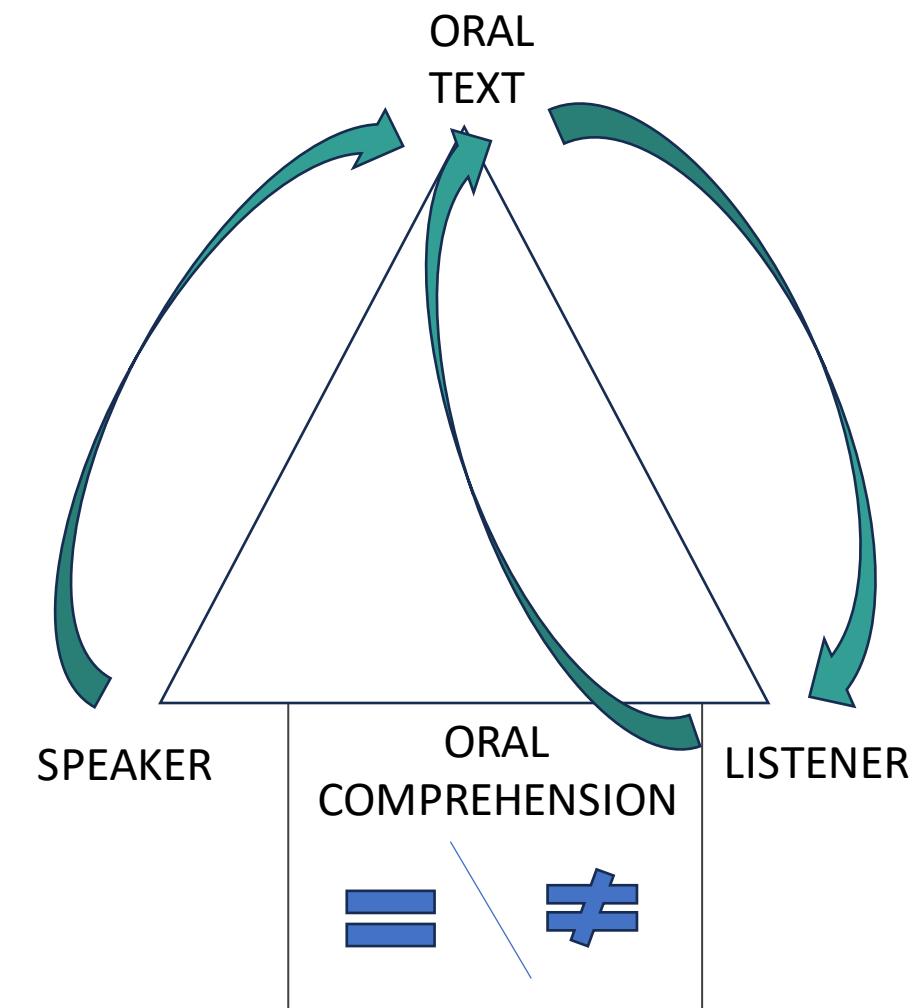


The **comprehensibility** is a **subjective component** that depends on the listener, his or her experience, knowledge and degree of development of the listening and oral comprehension skills.

## Hypothesis: Obstacles of oral comprehension

The main areas to identify **obstacles** in oral comprehension are:

1. **the text factor** => we will observe the results of the linguistic analysis of the oral text
2. **the speech or speaker factor** => we will observe the results of the prosodic analysis
3. **the listener factor** => we will assess both the product and the process of the oral comprehension



# Scientific basis of the research

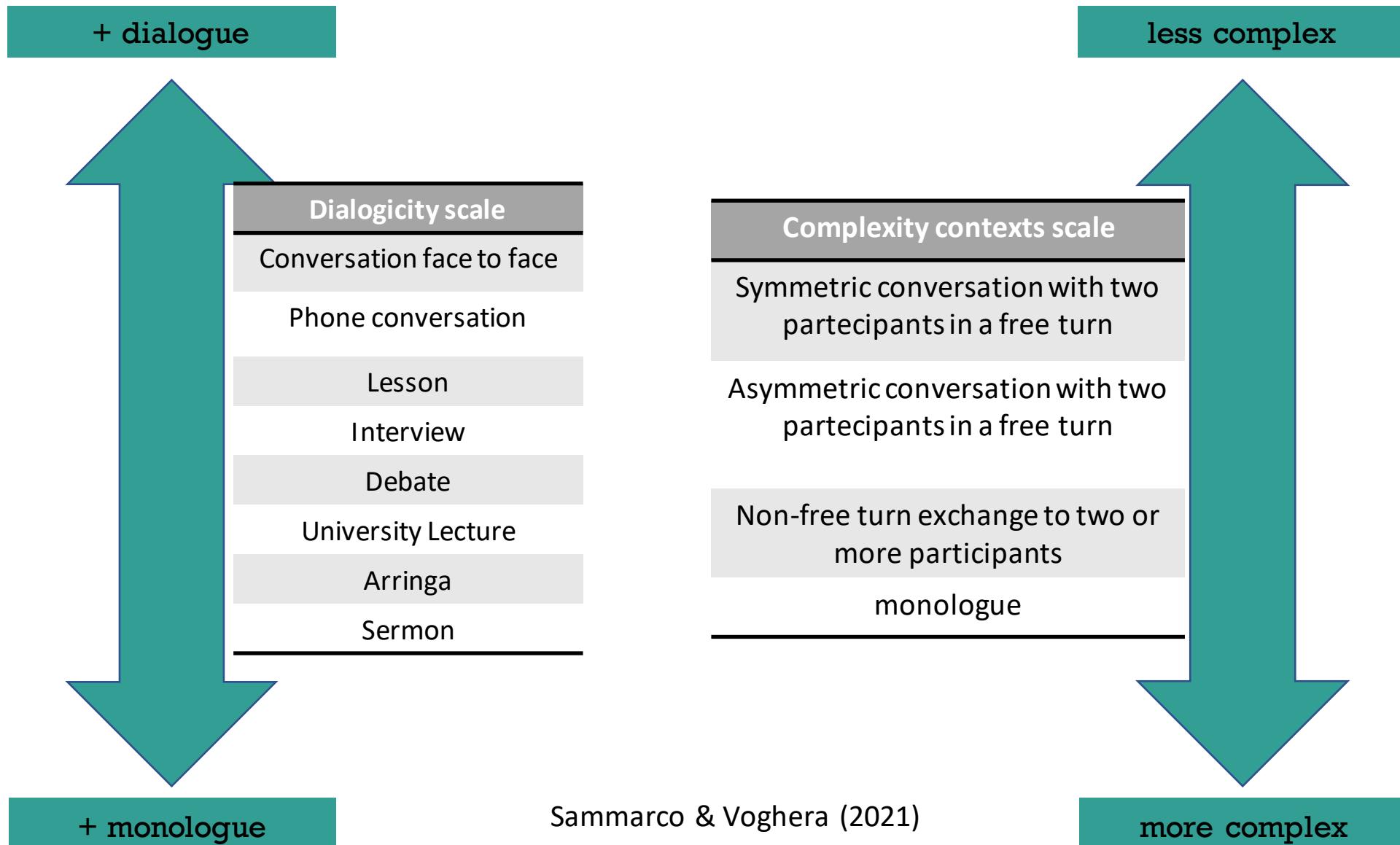
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In order to choose an oral text to measure its listenability, it is necessary to bear in mind some important factors that influence the listening result:

- a. **the characteristics of the oral text** (the input and/or intake for Krashen, 1985) determined by the variables of the situational context and the degree of difficulty in the different enunciative situations according to the specific values (Sammarco & Voghera, 2021):

VARIABLES	VALUES
number of speakers and listeners	from one to several
freedom of turn	from one to several
presence of the speaker and listener	yes, no, virtual
symmetry relationship	yes, no
topic	familiar or not
purpose	entertainment, information, narration, description, argumentation

## b. the complexity of contexts

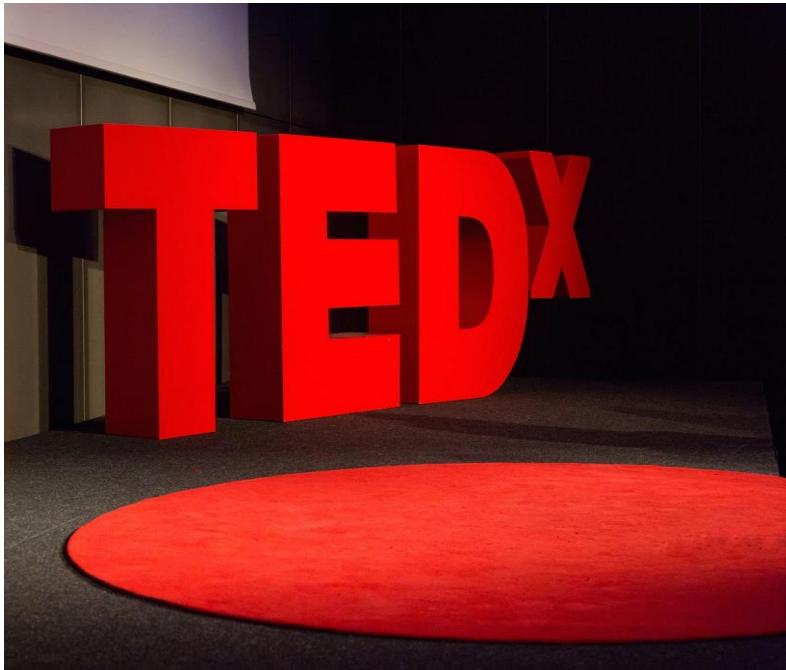


- c. **the listener's profile**: socio-linguistic aspects, cultural background, support or otherwise of cognitive processes such as attention, concentration, recall, but also interest and motivation (Cornoldi et al. , 2018);
- d. **the role of the listener within the communication**: interlocutor, hearer, receiver, non-participant, etc. (Lugli & Mizzau, 2010).

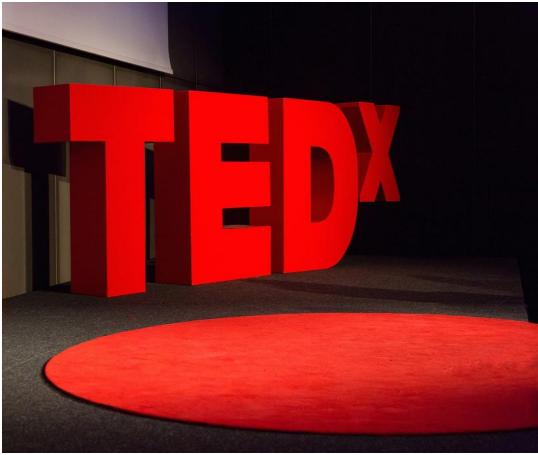
WHICH ORAL OR SPOKEN  
TEXTS SHOULD I USE TO  
EVALUATE THE INDEX OF  
LISTENABILITY?



## The TEDx Talks



- TED means ***Technology, Entertainment and Design***. It is an association founded in 1984.
- TEDx talks have the power **to popularize science and culture**, invite **reflection on our everyday lives** and share **the experiences of people** from the most ordinary to the most incredible in an engaging way.
- The format provides for talks of a maximum of 18 minutes and are therefore very **easy to follow, never boring** the viewer (listener).



- The characteristics of the selected Tedx

**TEDx1** – *Posizione e Rotta* by Sandro Carniel, oceanologist.

**TEDx2** – *La crisi climatica* by Fabio Deotto, writer and journalist.

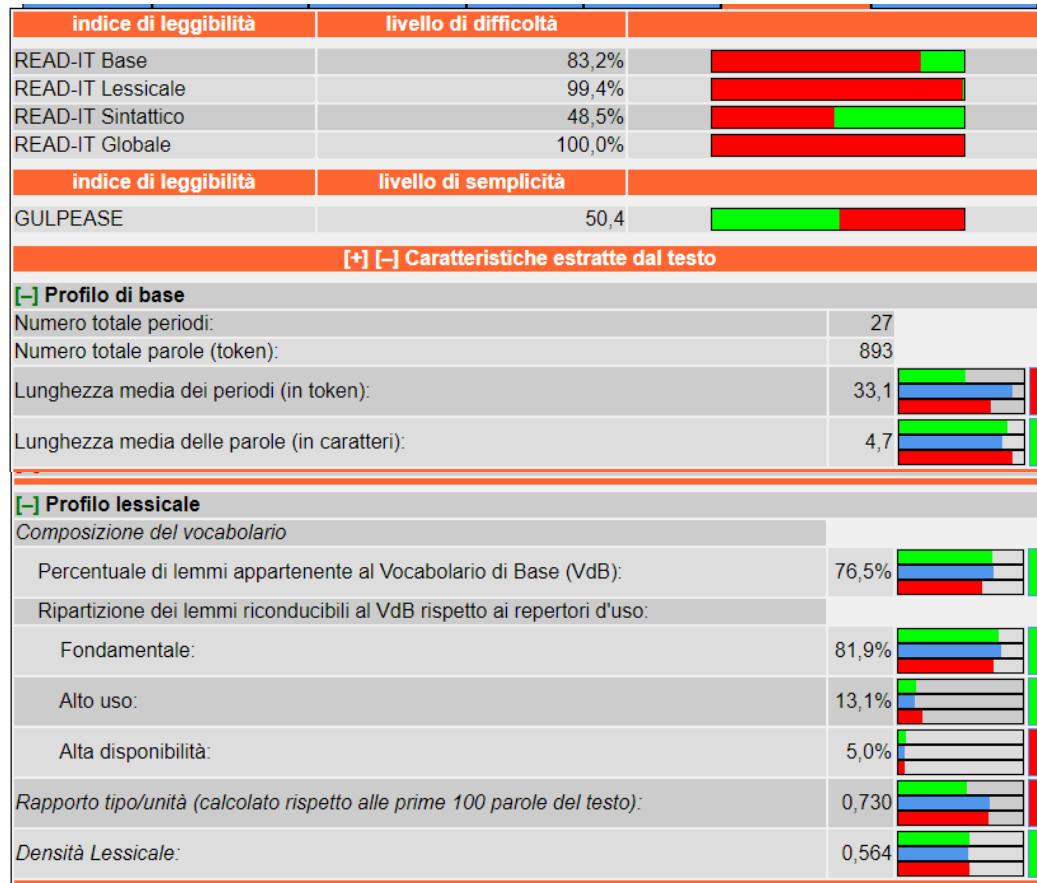
### Italian Speakers (from the north of Italy)

- 2 monologues of a popular genre on current topics => to generate interest
- cut and re-edited for an audio of maximum 6 minutes => to not bore
- listened to without video (**audio only**) => the first obstacle for the listener (he can't see the speaker and his gestures) but important to measure the listening parameters
- manipulated in listening speed (+/- 25%):  
slowed down (**0,75x**) and accelerated (**1,25x**) compared to the original (**1x**)

# READ-IT

# TEDx1

# GULPEASE: 50,4



utterances: 27

total words: 893

average word length: 4,7

average utterance length: 33,1

VdB: 76,5 %

F: 81,9%

AU: 13,1%

AD: 5 %

Lexical density: 0,56

## [+] Profilo sintattico

"Misura" delle categorie morfo-sintattiche (%)

Sostantivi:

23,4%

Nomi Propri:

2,1%

Aggettivi:

6,9%

Verbi:

16,1%

Congiunzioni:

4,8%

Coordinanti:

67,4%

Subordinanti:

32,6%

## Struttura sintattica a dipendenze

Articolazione interna del periodo:

4,704

Numero medio di proposizioni per periodo:

Proposizioni principali vs subordinate (%)

92,7%

Principali:

7,3%

Subordinate:

## Part of speech

Noun 23,4%

Proper Noun 2,1%

Adjective 6,9%

Verbs 16,1%

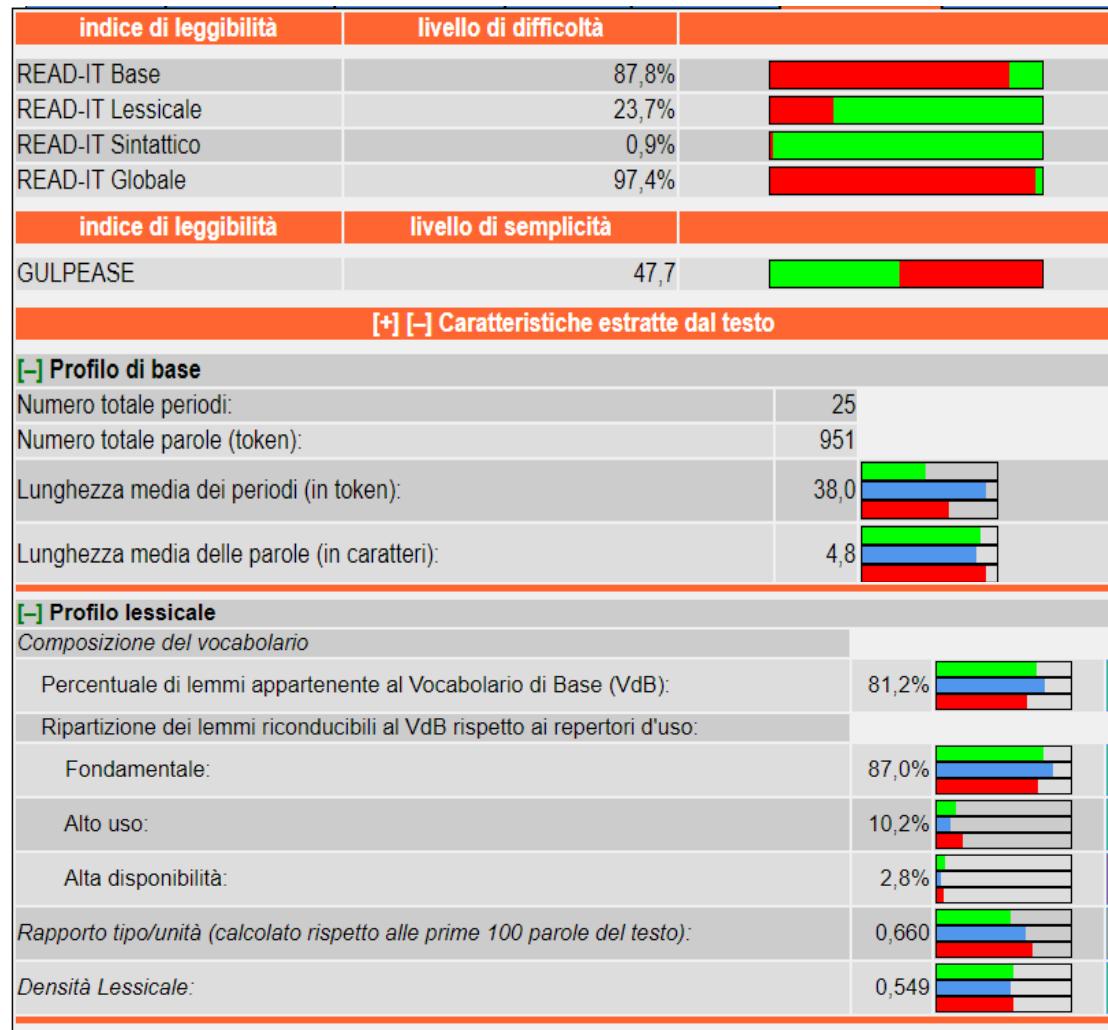
Coordinating sentences 67,4%

Subordinating sentences 32,6%

## Utterances:

Main 92,7%

Subordinate 7,3%



utterances: 25

total words: 951

average word length: 4,8

average utterance length: 38

VdB: 81,2 %

F: 87%

AU: 10,2%

AD: 2,8 %

Lexical density: 0,54

# GULPEASE: 47,7

## [+] Profilo sintattico

"Misura" delle categorie morfo-sintattiche (%)

Sostantivi:

17,9%

Nomi Propri:

0,4%

Aggettivi:

9,6%

Verbi:

19,7%

Congiunzioni:

8,3%

Coordinatori:

51,9%

Subordinanti:

48,1%

## Struttura sintattica a dipendenze

Articolazione interna del periodo:

6,520

Numero medio di proposizioni per periodo:

Proposizioni principali vs subordinate (%)

84,7%

Principali:

15,3%

Subordinate:

## Part of speech

Noun 17,9%

Proper Noun 0,4 %

Adjective 9,6%

Verbs 19,7%

Coordinating sentences 51,9%

Subordinating sentences 48,1%

## Utterances:

Main 84,7%

Subordinate 15,3%



- TEDx1:**  
*Location and Route*  
by Sandro Carniel, oceanologist.
- TEDx2:**  
*The climate crisis*  
by Fabio Deotto, writer and journalist.

**Utterances:** TEDx1 (27)  
TEDx2 (25)

### 1. The oral text features:

	WORDS	TIME	SPEED (B)	SPEED (A)	SPEED (C)
TEDx1	893	6'	142 wpm	104 wpm	184 wpm
TEDx2	951	5' 28"	180 wpm	132 wpm	225 wpm

### 2. The READ\_IT Analysis:

	GULPEASE (Index of readability)	Parts of speech
TEDx1	50,4	+ N; + PN ; - Adj; -V; + Coord. Conj
TEDx2	47,7	- N; - PN ; + Adj; +V; - Coord Conj

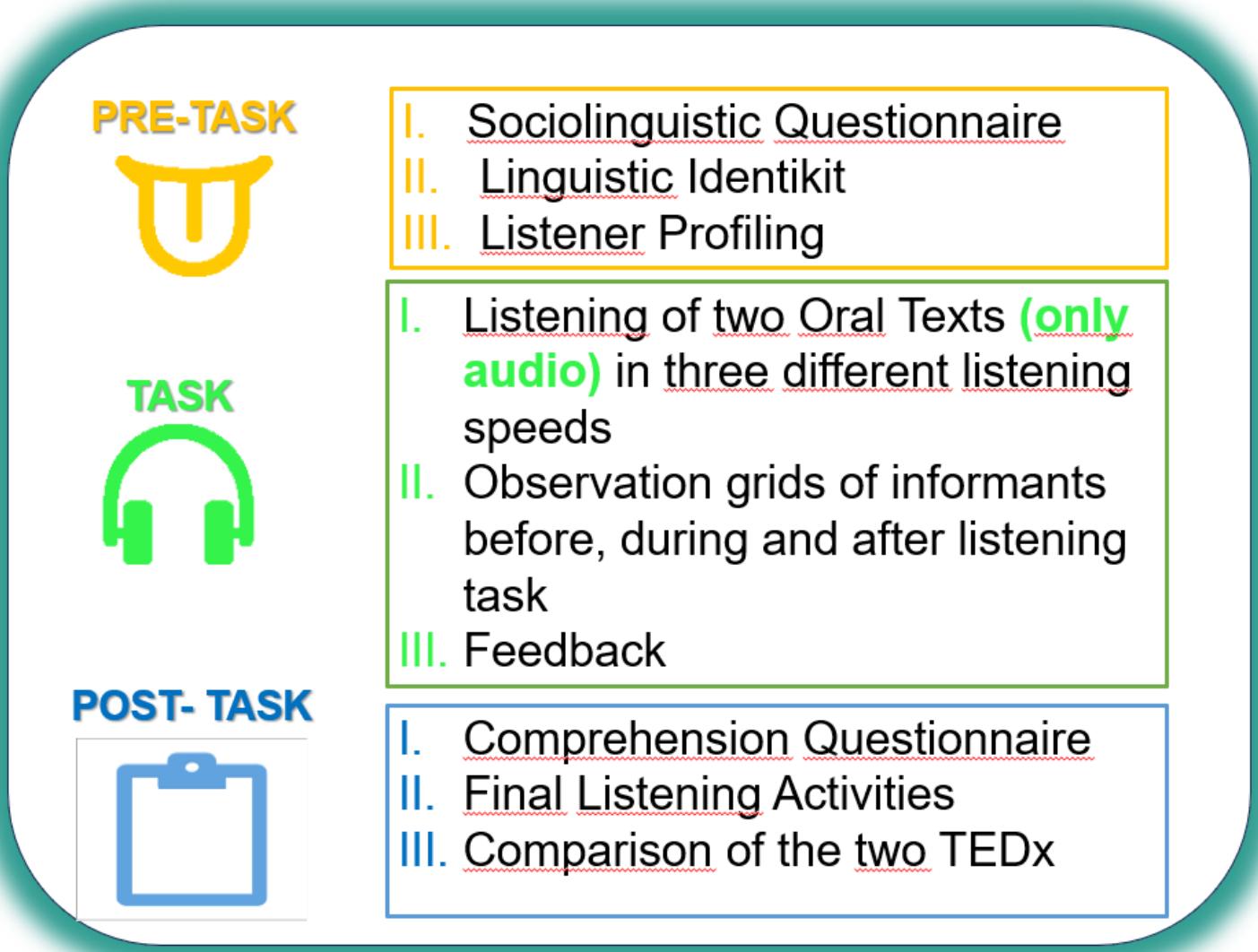
De Mauro (2016):	VdB (The Basic Vocabulary of Italian Language)	Fo (The Fundamental Vocabulary)	AU (The high-use vocabulary)	AD (The high-frequency vocabulary)
TEDx1	76,5%	81,9 %	13,1%	5,1%
TEDx2	81,2%	87%	10,2%	2,8%



# WHAT IS THE FIRST ATTEMPT TO VALIDATE THE INDEX OF LISTENABILITY?

A. CREATE AND DO  
THE EXPERIMENTAL PROTOCOL (A&C)  
IN A HIGH SCHOOL

# The EXPERIMENTAL PROTOCOL





Evaluate the parameter of speech rate (wpm)

**Informants: 41** (28 M 13 F)

**Age: 15-16 years old**

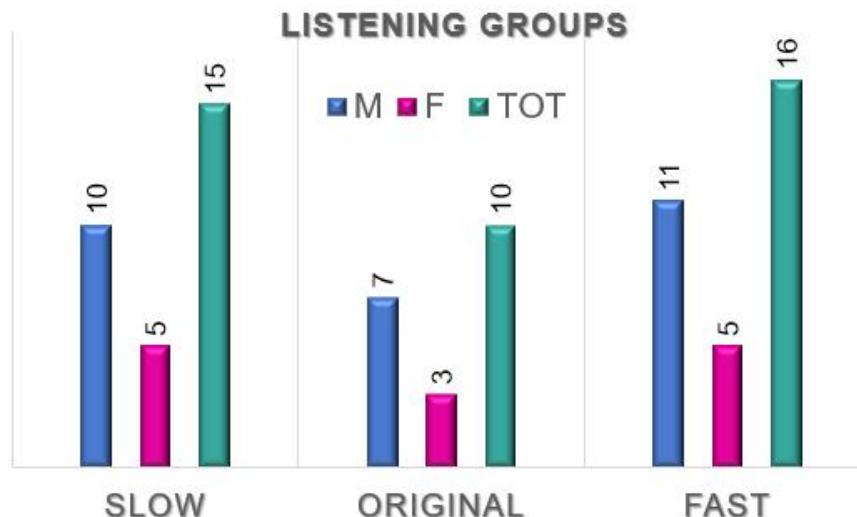
**Institute:** Scientific High School

**City:** Santa Maria Capua Vetere  
Caserta (CE) – Italy

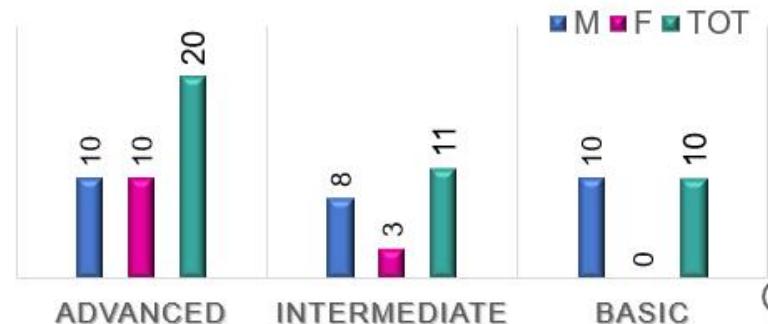
**Classes:** 3

**Groups of Listening:** 3

**Listening tasks:** 2



LEVELS OF ASSESSMENT AT SCHOOL



LISTENING LEVEL OF INFORMANTS

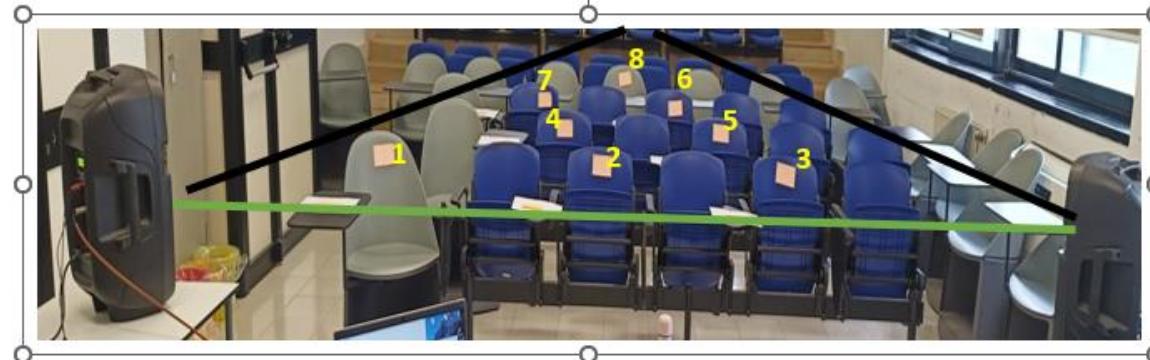
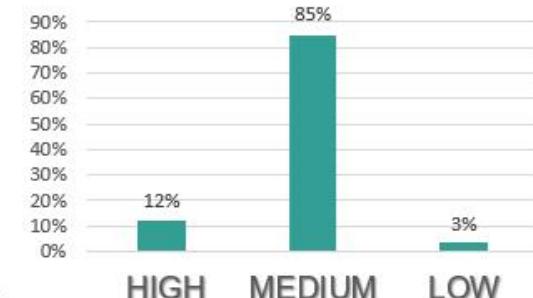


Fig. 1- Experimental Set in Listening Tasks

The 1<sup>st</sup> Trial: 2-12 May 2023

The 2<sup>nd</sup> Trial: 21-24 October 2023

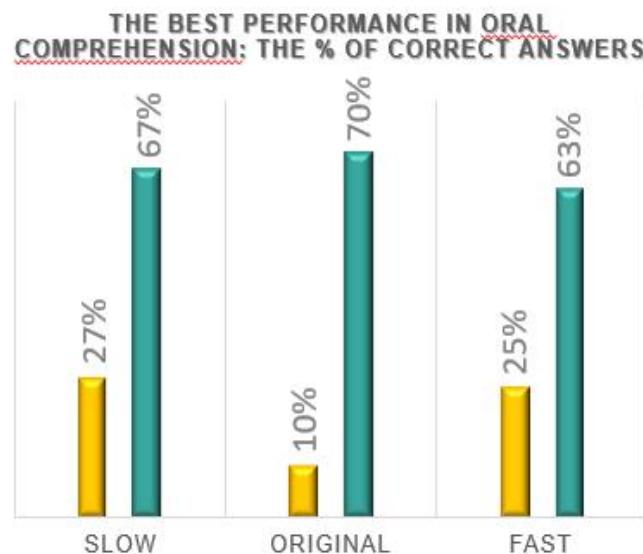
# THE RELEVANT RESULTS OF THE EXPERIMENTATION



## THE COMPREHENSION QUESTIONNAIRE

- **22 questions** (17 closed + 5 open)
- **focused on 3 listening comprehension skills:**
  - A. GLOBAL COMPREHENSION
  - C. IMPLICIT AND EXPLICIT INFERENCES
  - E. TEXT INTERPRETATION

(Basile, 2016)



LISTENING TASKS	F	M	ADVANCED	INTERMEDIATE	BASIC
TEDx1_slow	1	3	2	2	0
TEDx2_slow	4	6	6	2	2
TEDx1_original	0	1	1	0	0
TEDx2_original	2	5	3	3	1
TEDx1_fast	2	2	4	0	0
TEDx2_fast	5	5	6	2	2

## FOCUS ON THE BEST INFORMANTS: THEIR SEX AND LEVEL OF ASSESSMENT

### Purpose to the Comprehension Task:

1. How much does the parameter of speech rate (wpm) affect the comprehension of the oral texts?



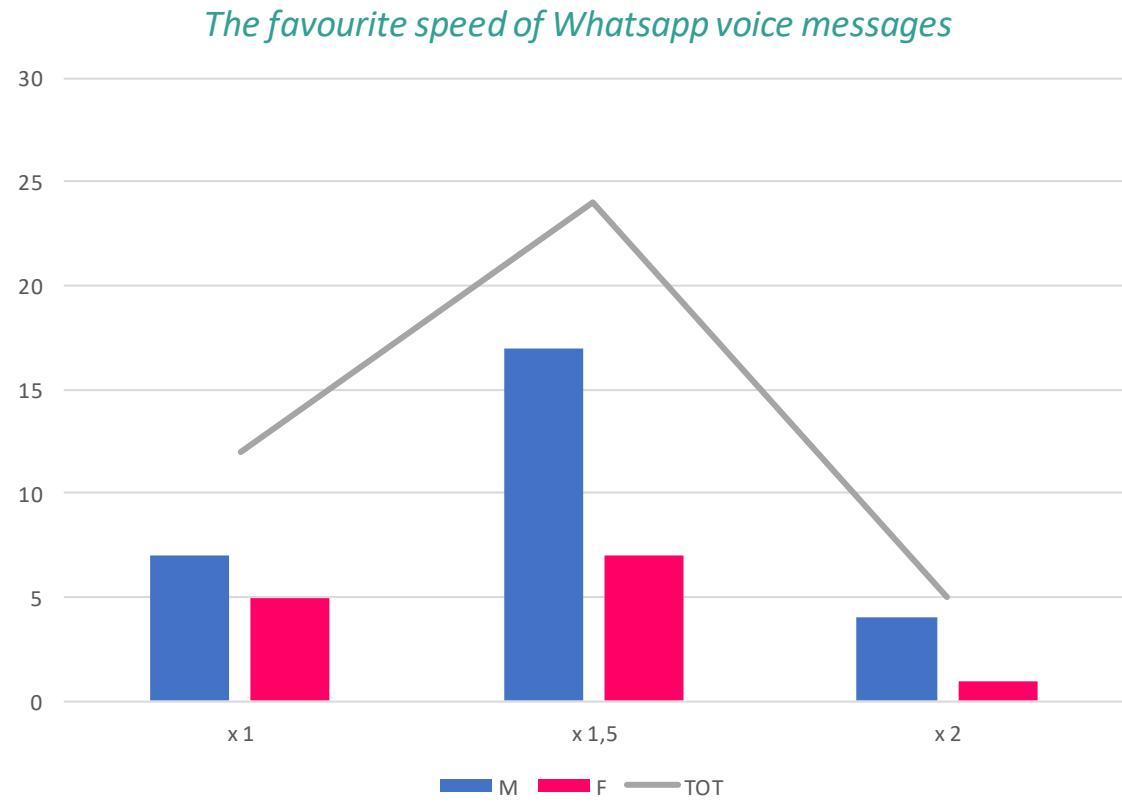
### What do we observe?

- The oral comprehension seems to depend on the type of TEDx and not on the speed rate.
- We notice, in fact, that for all the listening groups there is a big difference in the percentage points (+40% slow; +60% original; +38% fast) in term of best performance.
- Is the TEDx2 is more "comprehensible" or "listenable" than the TEDx1?
- is the TEDx2 more interesting and more attractive than the TEDx1 for other cognitive and extralinguistic aspect? And why?

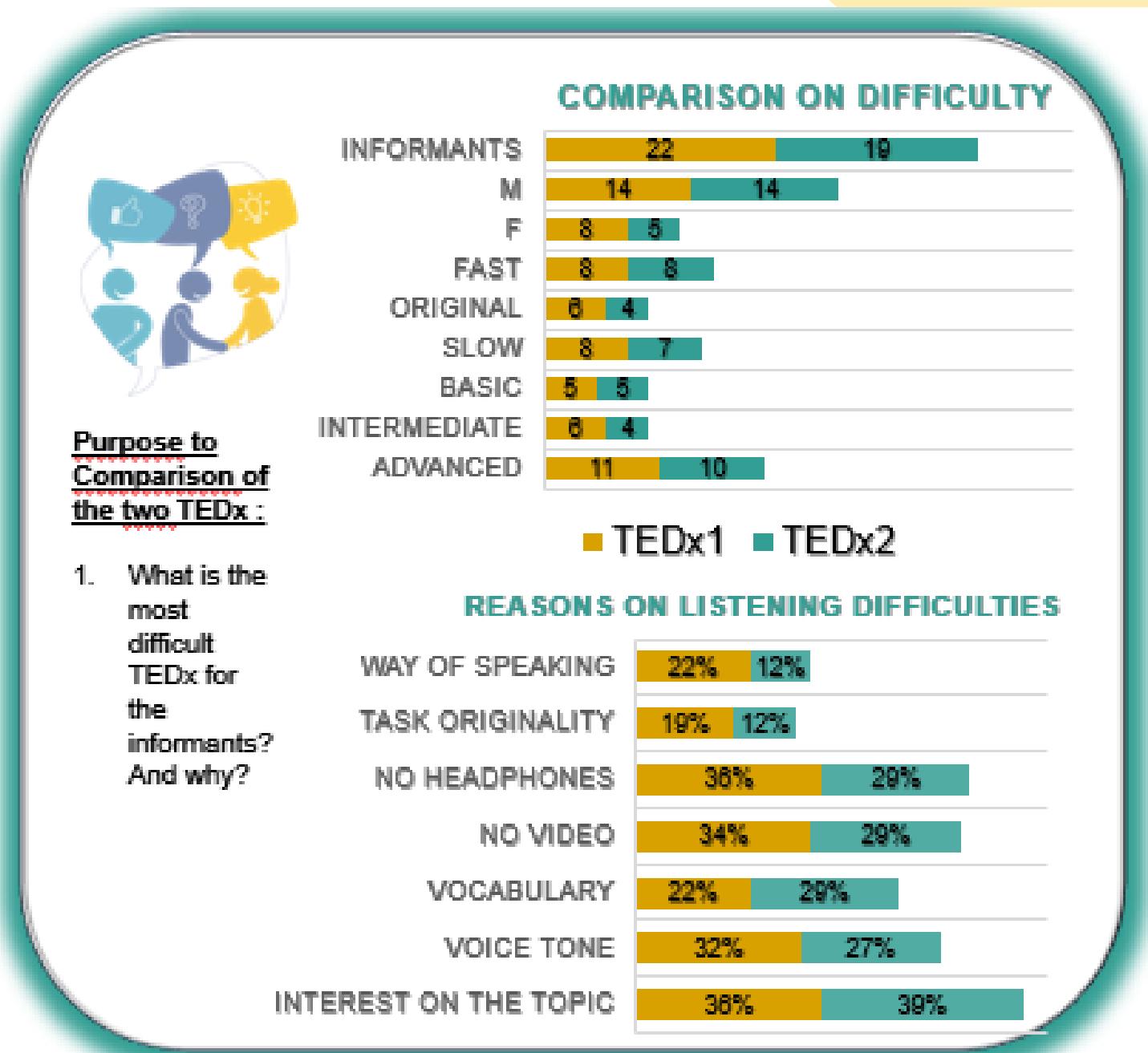


# Why doesn't the speech rate obstacle the students?

- There is a tendency among teenagers **to listen to audio content or watch videos on Youtube at increased/accelerated speeds**.
- The experimentation can **confirm this behaviour** observing the answers given by informants to the question: "At what speed do you prefer to listen to Whatsapp messages?"



- The majority of informants thought that the TEDx1 is more difficult than TEDx2 because of:
- **the way of speaking**
- **the absence of headphones**
- **the absence of the speaker and the video**



# WHAT IS THE SECOND ATTEMPT TO VALIDATE THE INDEX OF LISTENABILITY?



## B. RECOGNISE THE OBSTACLES OF ORAL COMPREHENSION



TEDx1



TEDx2



- Listening to the two TEDx
- Do you notice some differences in the way they produce their speech?
- if so, on what could it depend?

**At this point...**

**I began to wonder if the obstacles in oral comprehension of the TEDx1 could also depend on how the speaker constructs or exhibits his TEDx speech**

# THE ANALYSIS with



PRAAT

## How do I measure the length of pauses?

If the duration of the pause is less than the average of twice the duration of the two syllables delimiting it, the pause is short <pb>; if it is longer, it is long <pl> (Romano, 2008)



TEDx1

[1] sono un oceanografo <pb> meglio oceanologo <pl> e mi occupo soprattutto di oceano <pl> e clima oceano non oceani perché in realtà di oceano <pl> ce n'è uno solo <pb>

(presentation)

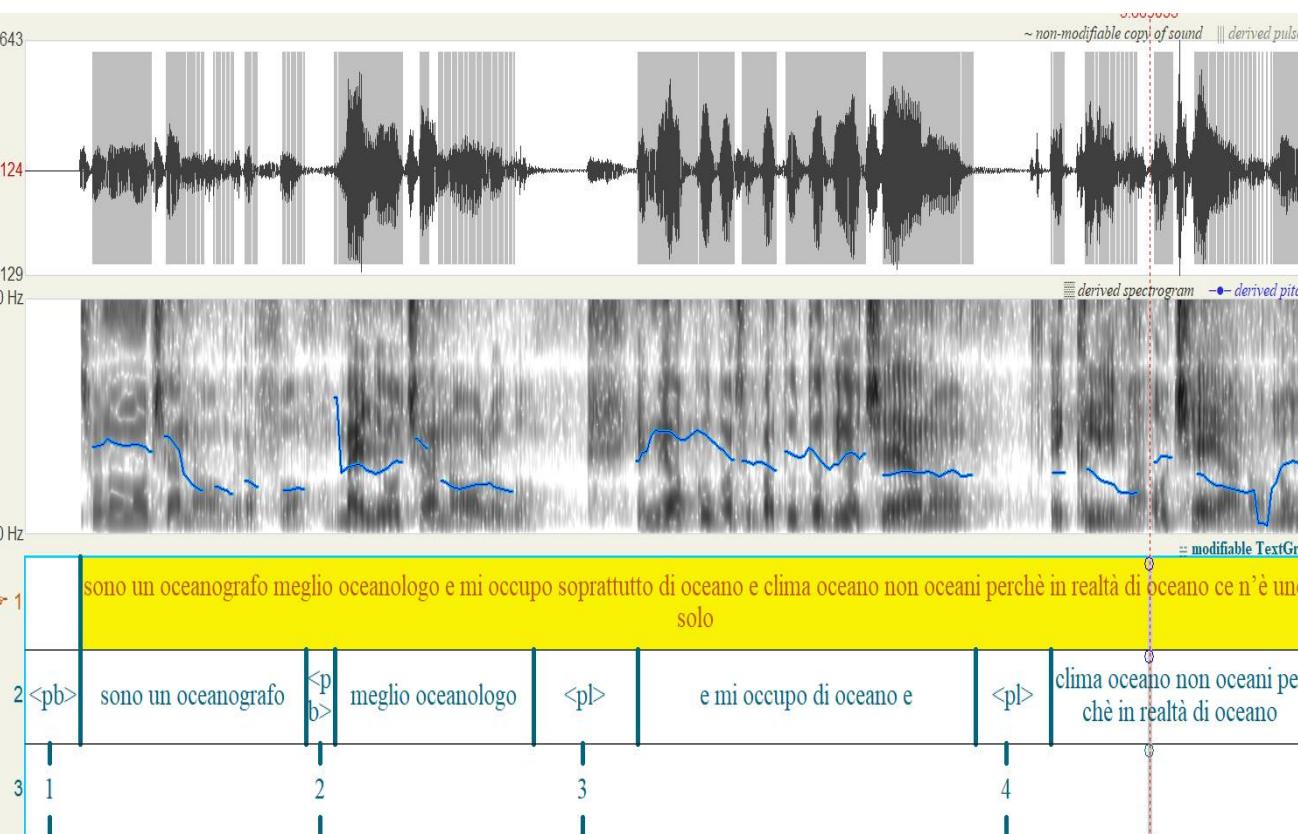
[2] girando il mondo <pl> qualche storia l'ho sentita e oggi vorrei proporvene <pb> due <pl>

(introduction of the topic)

[3] perché in fondo vedete <pl> anche <eeh> in questa regione <pl> che noi chiamiamo di solito indistintamente Polinesia <pl> già quattromila anni fa le persone che <pb> solcavano <pl> i suoi mari con queste canoe a bilanciere avevano lo stesso problema dell'uomo <pb> moderno <pl> conoscere la propria posizione <pl>

(explanation)

Trascrizione ortografica convenzionale (Savy et al., 2006)



Number of pauses: 17 in the first three utterances

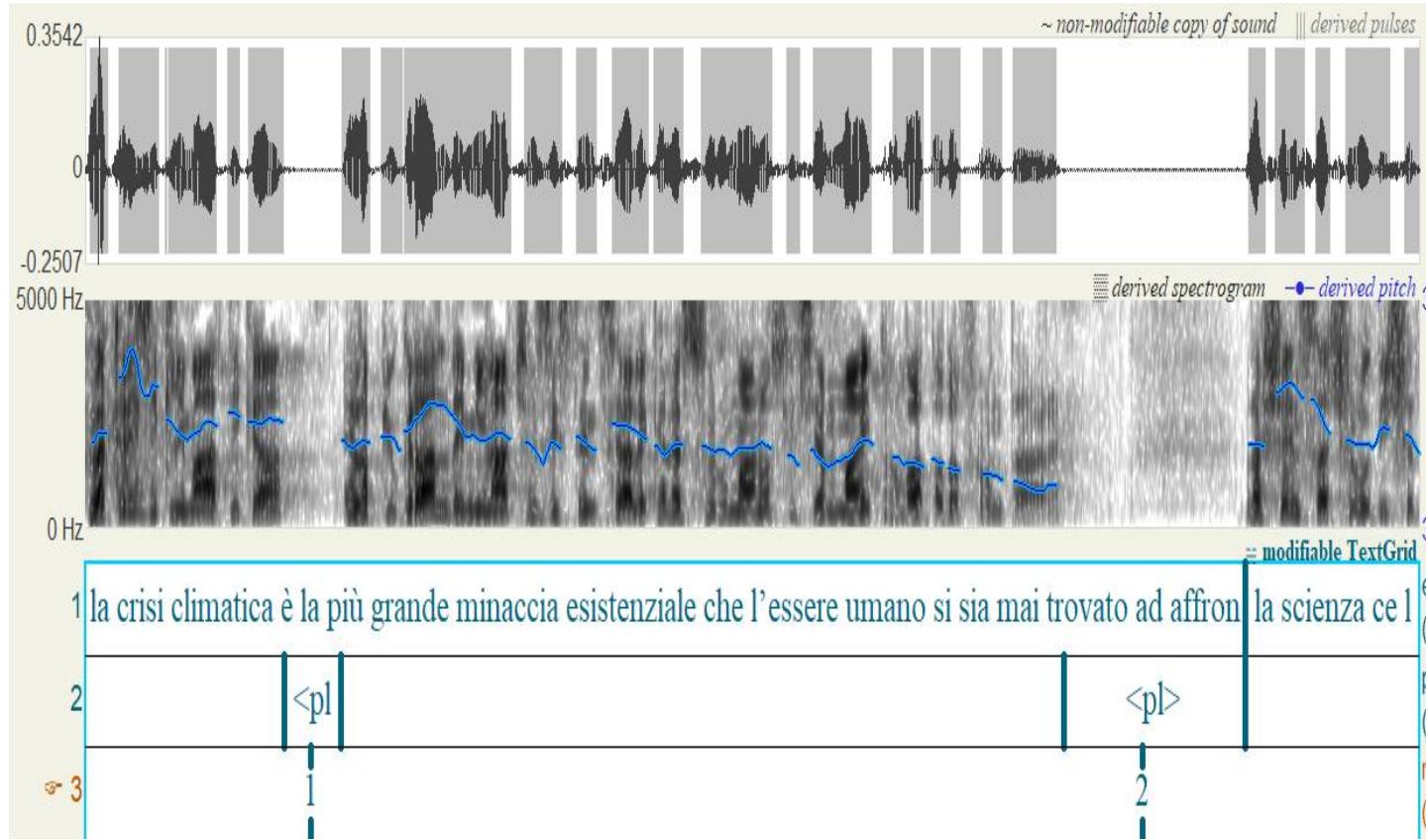


PRAAT

# THE ANALYSIS OF PAUSES



TEDx2



[1] la crisi climatica <pl> è la più grande minaccia esistenziale che l'essere umano si sia mai trovato ad affrontare<pl> *(introduction of the topic)*

[2] la scienza ce lo dice da decenni <pb> ma in realtà l'abbiamo visto anche noi con i nostri occhi soprattutto nelle ultime due estati <pl> caratterizzate<pb> da incendi incontrollabili alluvioni frane letali <pl>

*(argumentation)*

[3] solo che se è vero che è la più grande minaccia esistenziale è anche vero che è quella che siamo meno equipaggiati <pl> a prendere sul serio <pl> *(hypothesis)*

Trascrizione ortografica convenzionale (Savy et al., 2006)

Number of pauses: 8 in the first three utterances



Rank	Type	Freq
1	di	28
2	e	26
3	un	20
4	che	18
4	in	18
4	onda	18
7	a	17
7	I	17
9	è	15
10	la	12
11	il	11
11	per	11
13	perché	10
14	delle	9
14	lo	9
16	le	8
16	più	8
16	vento	8
19	da	7
19	del	7
19	dell	7
19	una	7

In the top 22 positions we find:

- the keywords: **wave** (18) and **wind** (8)
- the connectives: **e** (26) **che** (18) **because** (15)
- the verb to be is widely used **in the third singular person of the present tense** (15)

Linguistic strategies to engage the listener:  
i.e. **use of the first plural person => 3 times**

Left Context	Hit	Right Context
due perché in fondo vedete anche in questa regione che	noi	chiamiamo di solito indistintamente Polinesia già quattromila anni fa
a forma di mattoncino lego il resto è storia per	noi	però rimane ancora quest'altra geniale intuizione prevedo oggi
la colpisce meglio di un gps cambiamo per un attimo	noi	posizione questa volta e ci portiamo nella costa sud-



Engaged  
well the  
listener

Rank	Type	Freq
1	che	45
2	è	31
3	a	29
3	e	29
5	di	23
6	in	20
7	la	17
8	per	16
8	un	16
10	non	15
11	il	14
11	noi	14
13	anche	12
14	più	11
15	I	10
16	ci	9
16	vero	9
18	questo	8
19	climatica	7
19	crisi	7
19	futuro	7
19	le	7
23	abbiamo	6

In the top 23 positions we find:

- the keywords: **climate** (7), **crisis** (7), **future** (7)
- the connectives: **che** (45), **and** (26)
- the verb to be is widely used **in the third singular person** (31)

Linguistic strategies to engage the listener:  
i.e. use of the first plural person => 14 times

Left Context	Hit	Right Context
trasmettere esperienze in maniera immersiva sono praticamente delle palestre dove	noi	possiamo fare esperienza di qualcosa che non abbiamo vissuto
può essere abbracciata con un solo sguardo è vero che	noi	possiamo prendere in prestito quelli degli altri e sovraporli
quello che i neurologi chiamano viaggio nel tempo mentale ossia	noi	siamo in grado di proiettare un'immagine di noi
ed è la nostra capacità di fluire e creare storie	noi	siamo letteralmente dipendenti dalle storie anche quelli tra voi
prima a qualcun altro in un altro posto rispetto a	noi	abbiamo la tendenza a quando ci dicono che qualcosa
dice da decenni ma in realtà l'abbiamo visto anche	noi	con i nostri occhi soprattutto nelle ultime due estati
evoluzione che è sempre così parsimoniosa ha fatto sì che	noi	dedichiamo così tanto tempo ed energie a cose che
riscaldamento globale e per capire perché dobbiamo prima ricordare che	noi	esseri umani siamo degli animali e come tutti gli
per per pensare al passato e questo fa sì che	noi	facciamo molta fatica a immaginare un futuro
radicalmente diverso		
ossia noi siamo in grado di proiettare un'immagine di	noi	nel passato quando ricordiamo o nel futuro quando
non tocca nessuno di questi tasti il risultato è che	noi	pensiamo
succedere a controllare cosa stanno facendo le persone intorno a	noi	non riusciamo a sviluppare una paura viscerale per la
le persone intorno a noi prima di entrare in allarme	noi	prima di entrare in allarme noi stessi e questo
stimolo che riescono ad attivare il nostro sistema d'allarme	noi	stessi e questo è l'effetto spettatore ma soprattutto
		tendiamo a entrare in allarme quando la minaccia è

### 3. DOUBTS and new research perspectives



TEDx1 

TEDx2 

- Should the use of pauses and the type of pauses determine that an oral text the continuum of an oral text from a more spontaneous to more spoken readable?
- Should pauses become another main parameter in measuring the listenability of an oral text?
- If listenability does not depend on comprehensibility, why could we observe several obstacles in oral comprehension? Could we systematise and categorise? how?

# The continuum of listenability

- The idea is to create a continuum of listenability

Less  More  
listenable listenable

- Analysing another type of oral or spoken texts with the same methodology:
- To validate the **parameters** and try to understand which are more relevant to take into account
- To create the **corpus of oral texts** in which I can assign the appropriate level of listenability to evaluate the comprehensibility levels of a specific listener

# The advantages of the index of listenability

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- It **helps teachers to choose oral materials** (often inappropriately difficult or too easy) in order to improve both motivation and interest => promoting a listening-oriented teaching.
- Teachers reduce time and effort in **the research for oral texts** that are qualitatively and quantitatively "listenable" and therefore "appropriate" to the levels of linguistic competence => thanks to the support of the **A&C Corpus of oral texts** measuring with the index of listenability and with listening activities to evaluating the oral comprehension that I'm going to create.
- It offers an **objective method** (hopefully in the future also automatic) to establish parameters that could obstacle in listening and oral comprehension of native listeners => like readability indices.

# Previous Conclusions

- a. Unlike readability indices, **the index of listenability is more complex to elaborate** because several linguistic parameters are involved in the process of listening and comprehension.
- b. Some of the factors have less to do with linguistics and more to do with psychological and cognitive aspects, which **the listener couldn't still have control**.
- c. The listenability is mainly **influenced not only by the speaker's fluency**, the speech speed, the way the speaker organizes the content of his/her speech and decides to expose it, but also **by the listener's background and experiential knowledge** and the level of interest, attention and motivation showed to listen to that speech.
- d. The A&C project seems to be **the first attempt to identify the most relevant linguistic parameters to elaborate the index of listenability**.

# Thank you for listening



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