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## Appraisal-based affect recognition in healthcare: Insights from the THERADIA WoZ corpus

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# therado. WoZ: An Ecological Corpus for Appraisal based Affect Research in Healthcare

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## INTRODUCTION

### Context of the project

Developing an empathetic virtual agent to accompany cognitive remediation therapy (CRT) at home

### Problematic

- Relevant automation of emotion recognition is a challenge in the context of healthcare <sup>1</sup>
- Few corpora applied to the healthcare context are available for training models

### Objectives

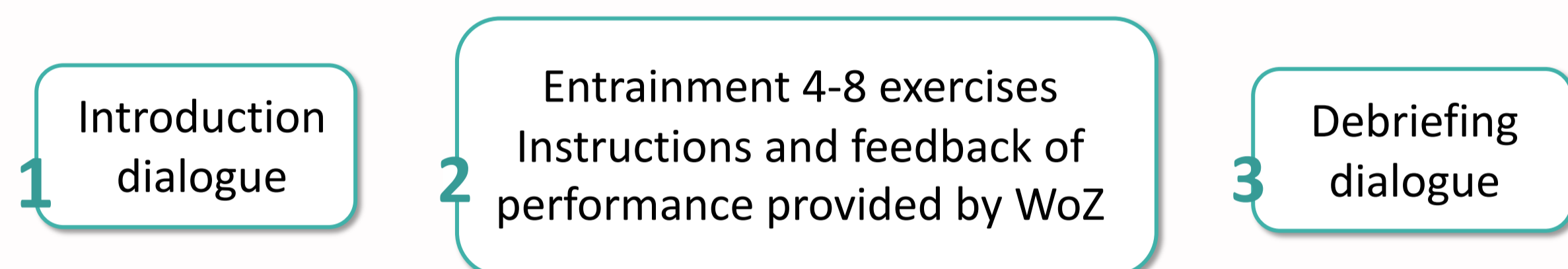
1. Proposing an ecological corpus applied to the healthcare for affect research consisting of:
  - Audio video segments of both healthy senior and Mild Cognitive Impairment (MCI) participants performing a CRT accompanied by a Wizard of Oz (i.e., experimenter posing as a virtual assistant)
2. Annotation:
  - Over time and in a summarized form based on appraisal dimensions (arousal, novelty, intrinsic agreement, goal conduciveness, coping) <sup>2</sup>
  - In a summarized form based on 23 affective labels relevant for task achievement and learning <sup>3</sup>
3. Identifying a coreset of the most relevant affective labels in the context of healthcare
4. Providing performance of baseline models trained from the THERADIA-WoZ corpus

## METHOD

### Data collection

Fifty-two healthy seniors ( $M = 68$  ans,  $SD = 5$ ) and nine MCI ( $M = 76$  ans,  $SD = 2$ )

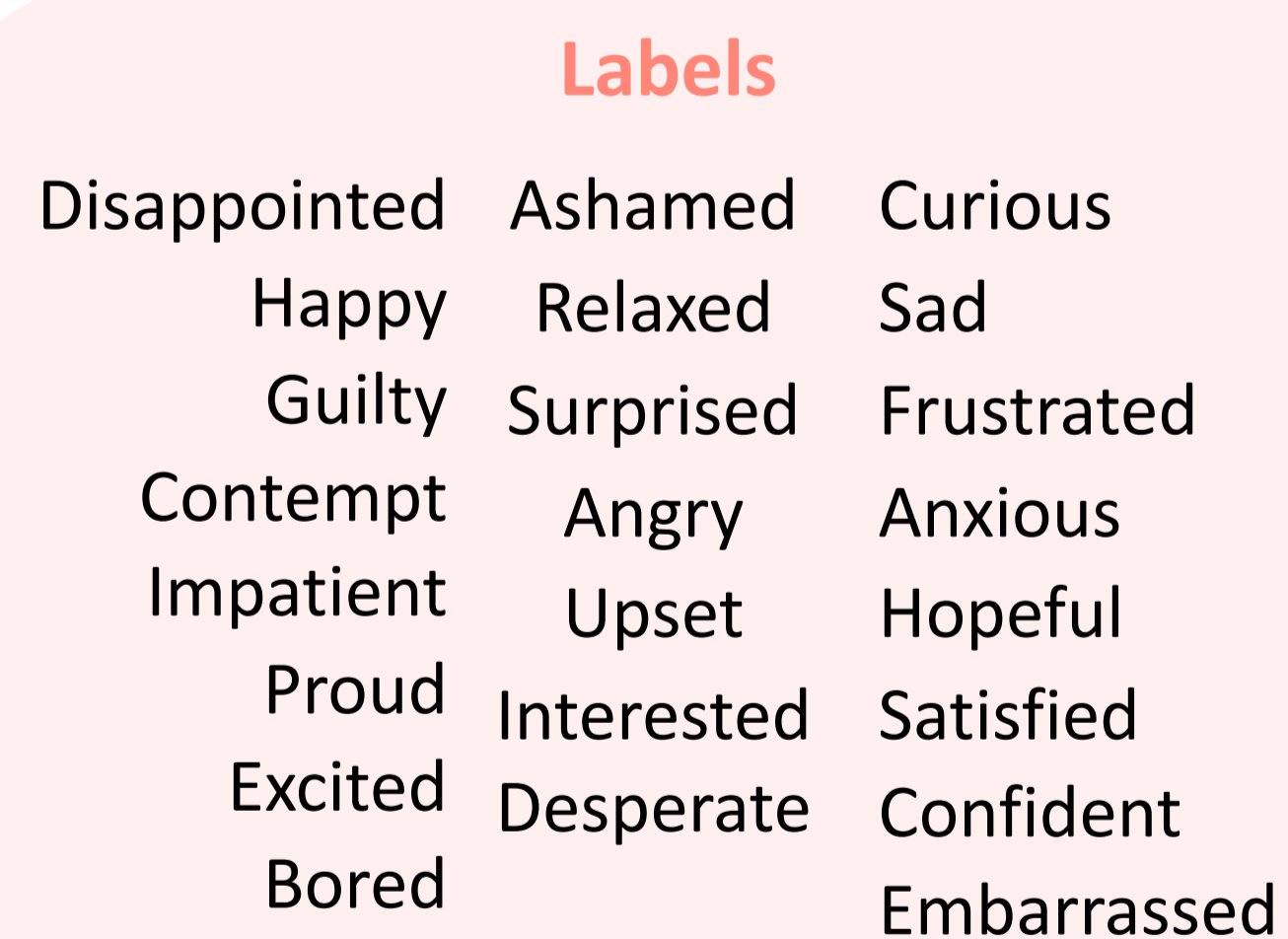
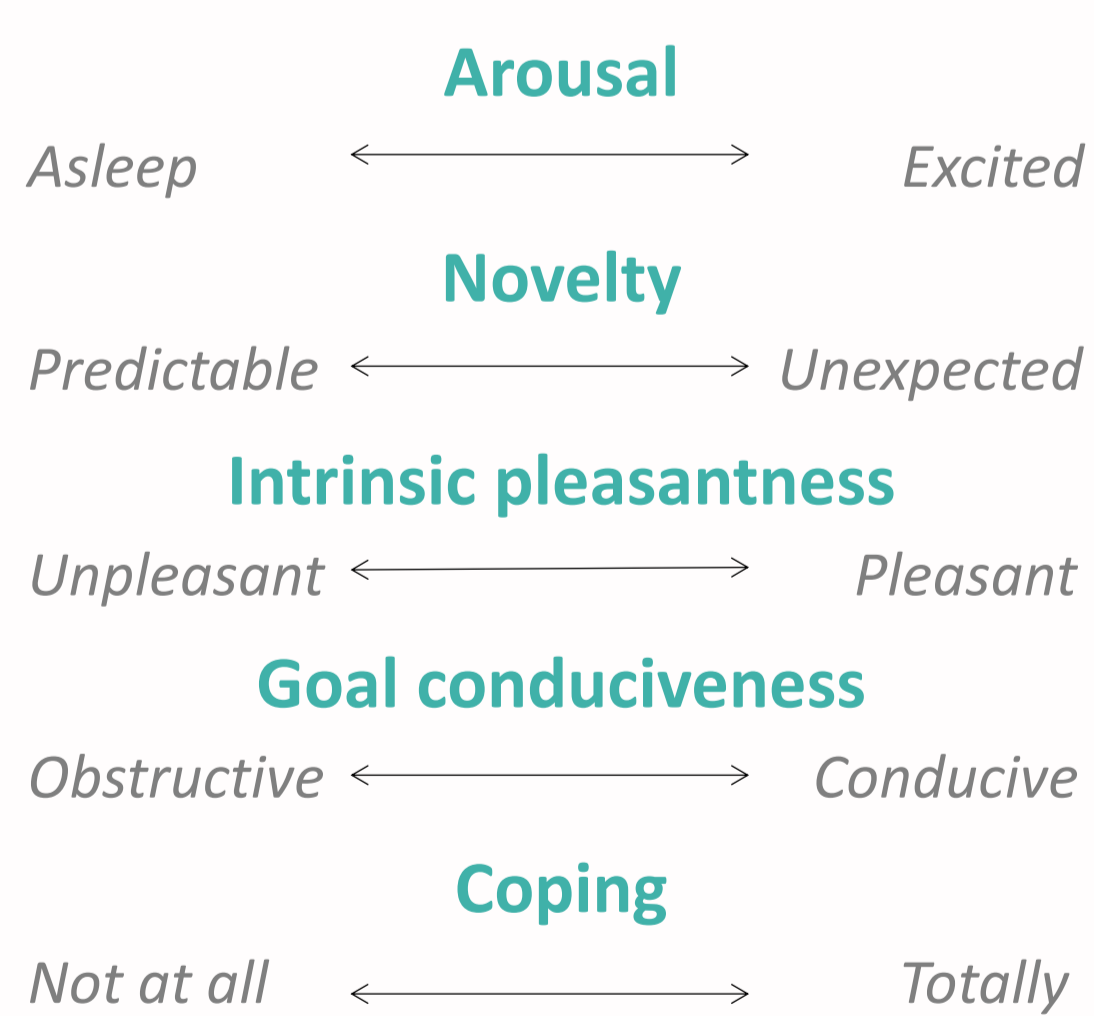
Performed one or two sessions of CRT accompanied by a WoZ consisting of:



Resulting in audio-video data manually segmented and transcribed then selected for annotation:

	Participants	No. of segments	Mean duration ( $SD$ )	Total duration
Transcribed	Seniors	14,788	9.00s (7.82)	36h59m16s
	MCI	1,105	8.24s (5.03)	2h31m44s
	Total	15,893	8.95s (7.66)	39h31m00s
Annotated	Seniors	2,513	8.20s (5.27)	5h43m27s
	MCI	222	10.09s (6.49)	37m20s
	Total	2,735	8.35s (5.40)	6h20m47s

### Annotation



### Core set selection

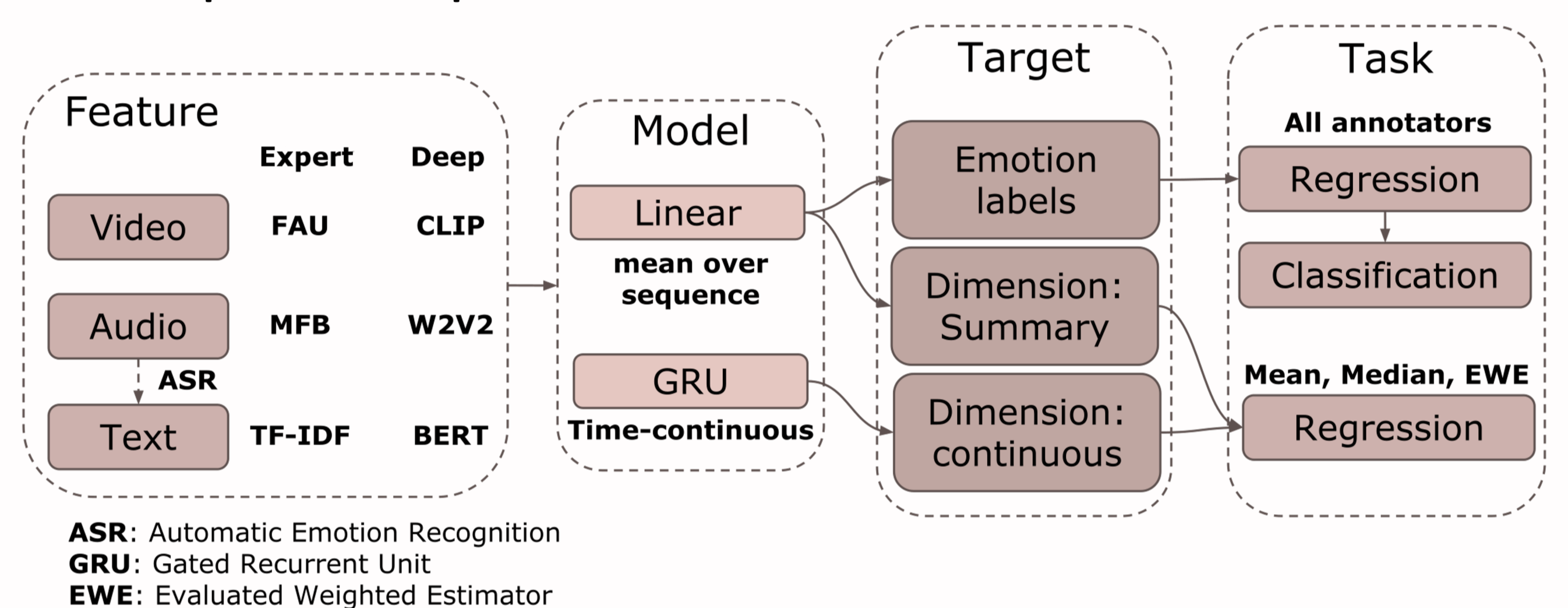
(val) Label	Frequency	inter-annotator agreement		
		Presence	Intensity	Label x Dimension
(+) Relaxed	1683	59.24%	.114	V
(+ Interested	1525	54.99%	.194	V
(-) Frustrated	1315	59.05%	.211	V
(+) Satisfied	1216	60.69%	.097	V
(+) Confident	1238	60.97%	.116	V
(+) Happy	902	62.81%	.280	V
(-) Surprised	851	58.44%	.260	V
(-) Annoyed	856	57.52%	.130	V
(-) Desperate	826	58.99%	.276	V
(-) Anxious	783	54.43%	.283	V

## MODELING

### Partition

	Training	Validation	Test	Total
Participants	34	14	13	61
Videos	1,110	851	774	2,735
Duration	2h44m36s	1h51m42s	1h44m28s	6h20m47s
Population group				
Senior	29	12	11	52
MCI	5	2	2	9
Gender (seniors)				
Homme	6	3	3	12
Femme	23	9	8	40
Education (seniors)				
High school	5	2	1	8
Professional certificate	3	1	2	6
Undergraduate	9	5	3	17
Graduate	12	4	5	21

### Overview of predictive experiments



### Results of multimodal predictions

Label	Presence (UAR)	Intensity (CCC)
Annoyed	69.4%	.280
Anxious	67.6%	.214
Confident	76.0%	.487
Desperate	75.7%	.252
Frustrated	74.5%	.465
Happy	76.7%	.508
Interested	64.1%	.300
Relaxed	74.0%	.529
Satisfied	75.3%	.486
Surprised	62.3%	.275
<b>Average</b>	<b>71.6%</b>	<b>.380</b>

Dimension	Summary (CCC)	Continuous (CCC)
Arousal	.310	.691
Novelty	.559	.339
Intrinsic pleasantness	.609	.370
Goal conduciveness	.662	.420
Coping	.666	.418

## CONCLUSION

- This work provides one of the few affective corpora relying on appraisal theories applied to the healthcare context
- The predictive results of the baseline models are encouraging for robust automatic emotion recognition

## REFERENCES

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