

**Saufnay S., Etienne E., Schyns M.**

Board meeting

Product presentation

Thesis defense

Crisis communication

Project presentation

Giving a lesson

Sales pitch

Investor pitch

Product launch

Investor pitch

School project

Oral exams

Promotion request

Competition

Speech

Presentation

Pitch

Lesson

Discussion

Interview

Management

Interaction

Client

Court

Speech

Team meetings

Company announcement

Speaking at a conference

Collaborate with coworkers

Going for a job interview

Classroom management

Having difficult discussions

Conducting a job interview

Interacting with clients

Pleading in court

Giving a speech



**Validated library of nonverbal behaviors** (Etienne et al., 2023)

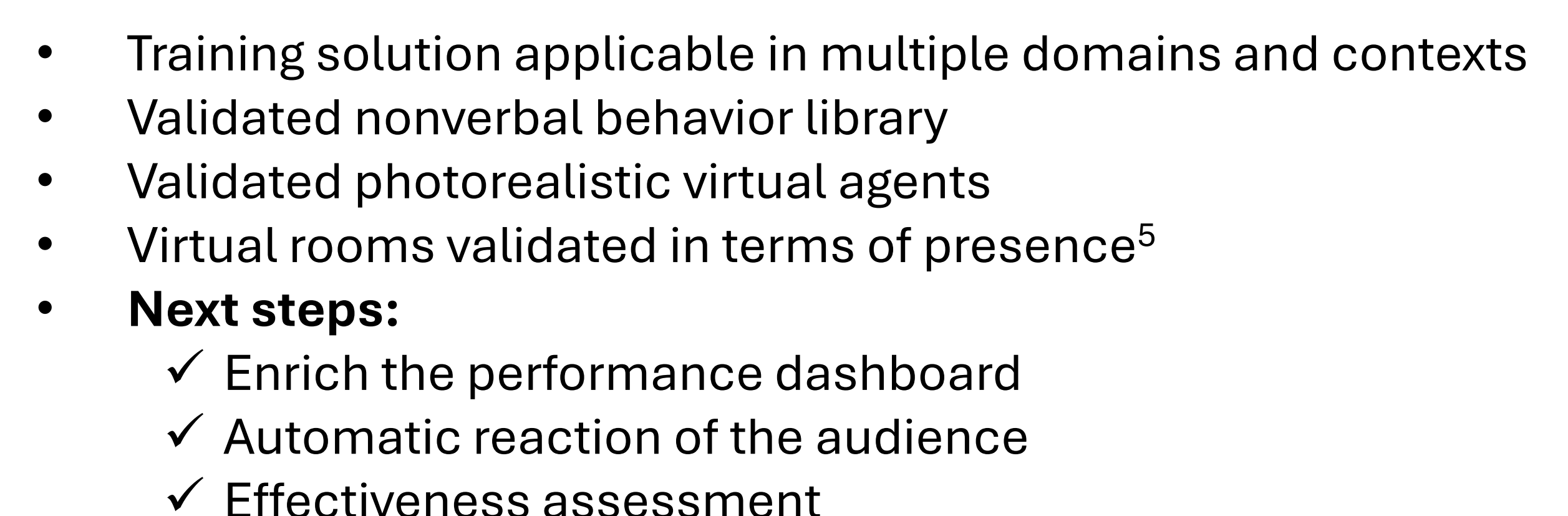
### *Perception of virtual audiences*

→ Influence of agents' **gender** and **nonverbal behavior** on the perception of valence and arousal

### Events and behaviors **based on the simulated public speaking context**

- **Photo-realistic agents** of various age, ethnicities, and genders
- No uncanny effect observed<sup>1</sup>

## CONCLUSION



**Multimodal cues** are better predictors of performance<sup>3, 4</sup>

The diagram consists of three rounded rectangular boxes arranged horizontally. Each box has a title at the top and a list of items below. The first box is titled 'Linguistic' and contains a list of four items: 'Word count', 'Words used', 'Language diversity metrics', and '...'. The second box is titled 'Paralinguistic' and contains a list of four items: 'Fundamental frequency (pitch)', 'Voice intensity', 'Speech rate', and '...'. The third box is titled 'Nonverbal' and contains a list of four items: 'Stage usage', 'Hand movements', 'Gaze', 'Body language', and '...'.

<i><b>Linguistic</b></i>	<i><b>Paralinguistic</b></i>	<i><b>Nonverbal</b></i>
✓ Word count	✓ Fundamental frequency (pitch)	✓ Stage usage
✓ Words used	✓ Voice intensity	✓ Hand movements
✓ Language diversity metrics	✓ Speech rate	✓ Gaze
✓ ...	✓ ...	✓ Body language
		✓ ...

- <sup>1</sup> E. Etienne, A.-L. Leclercq, A. Remacle, L. Dessart, and M. Schyns. Perception of avatars nonverbal behaviors in virtual reality. *Psychology and Marketing*, 40(11): 2464–2481, 2023. doi: 10.1002/mar.21871.
- <sup>2</sup> M. Chollet and S. Stefan. Perception of virtual audiences. *IEEE Computer Graphics and Applications*, 37(4): 50–59, 2017. doi: 10.1109/MCG.2017.3271465.
- <sup>3</sup> L. Chen, C. W. Leong, G. Feng, C. M. Lee, and S. Somasundaran. Utilizing multimodal cues to automatically evaluate public speaking performance. In *2015 International Conference on Affective Computing and Intelligent Interaction, ACII '15*, pages 394–400, USA, 2015. doi:10.1109/ACII.2015.7344601.
- <sup>4</sup> T. Wörtwein, M. Chollet, B. Schauerte, L.-P. Morency, R. Stiefelham, and S. Scherer. Multimodal public speaking performance assessment. In *Proceedings of the 2015 ACM International Conference on Multimodal Interaction, ICMI '15*, page 43–50, New York, NY, USA, 2015. doi: 10.1145/2818346.2820762.
- <sup>5</sup> S. Bouchard and G. Robillard. Validation canadienne-française du questionnaire de présence auprès d'adultes immergés en réalité virtuelle. In *87e Congrès de l'ACFAS*, 2019.