



# Teaching Presentation and Social De-Escalation Skills with Crowd Feedback Simulation in Virtual Reality

What Students Think About It

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# Who are we ?



**Univ.-Prof. Dr.-Ing Heribert Nacken**  
*Projektleiter*



**Patrick Querl, M.Sc.**  
*Unity Entwicklung,  
Programmierung, Software Engineering,  
Künstliche Intelligenz*



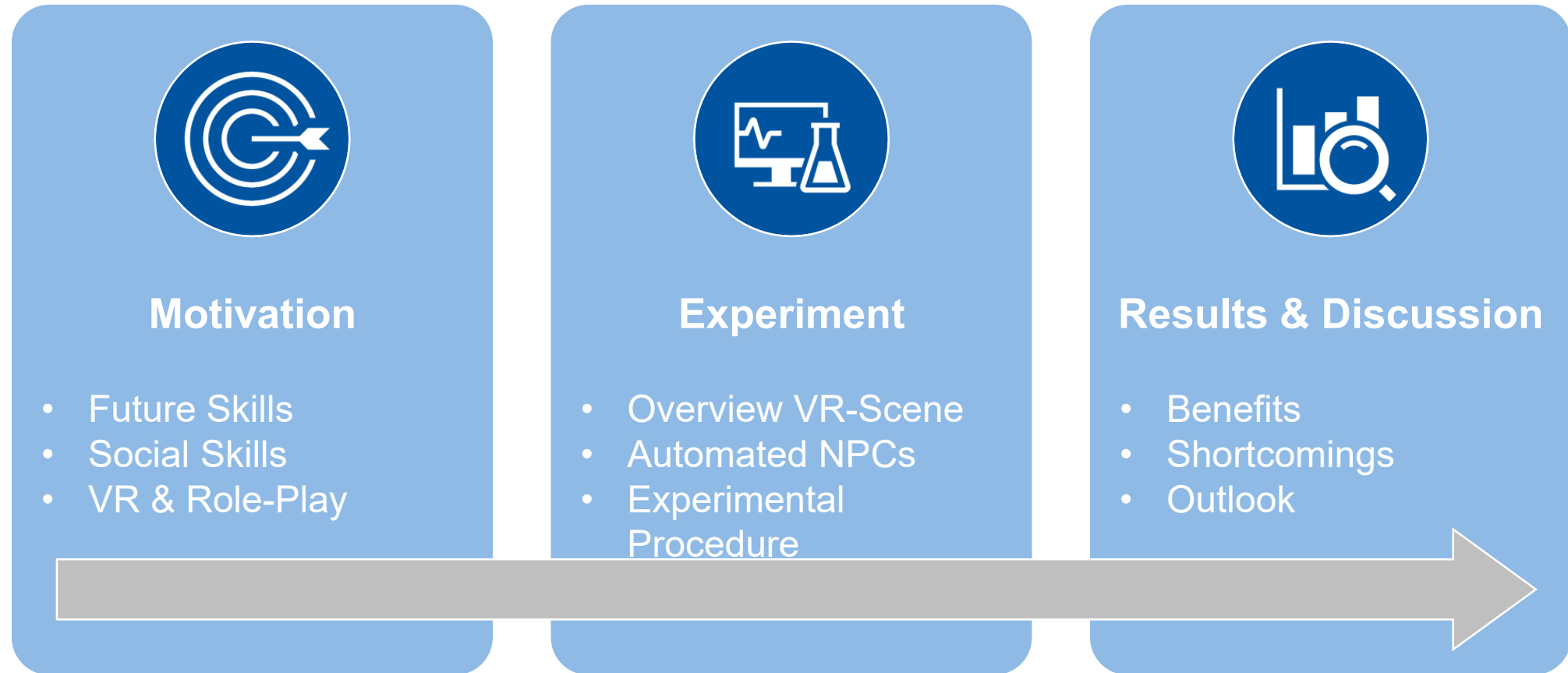
**Raymond Chandra, M.Sc.**  
*Unity Entwicklung,  
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**Koen Castermans, M.A.**  
*Unity Entwicklung,  
3D-Design und Modellierung*



## Role-Playing in VR



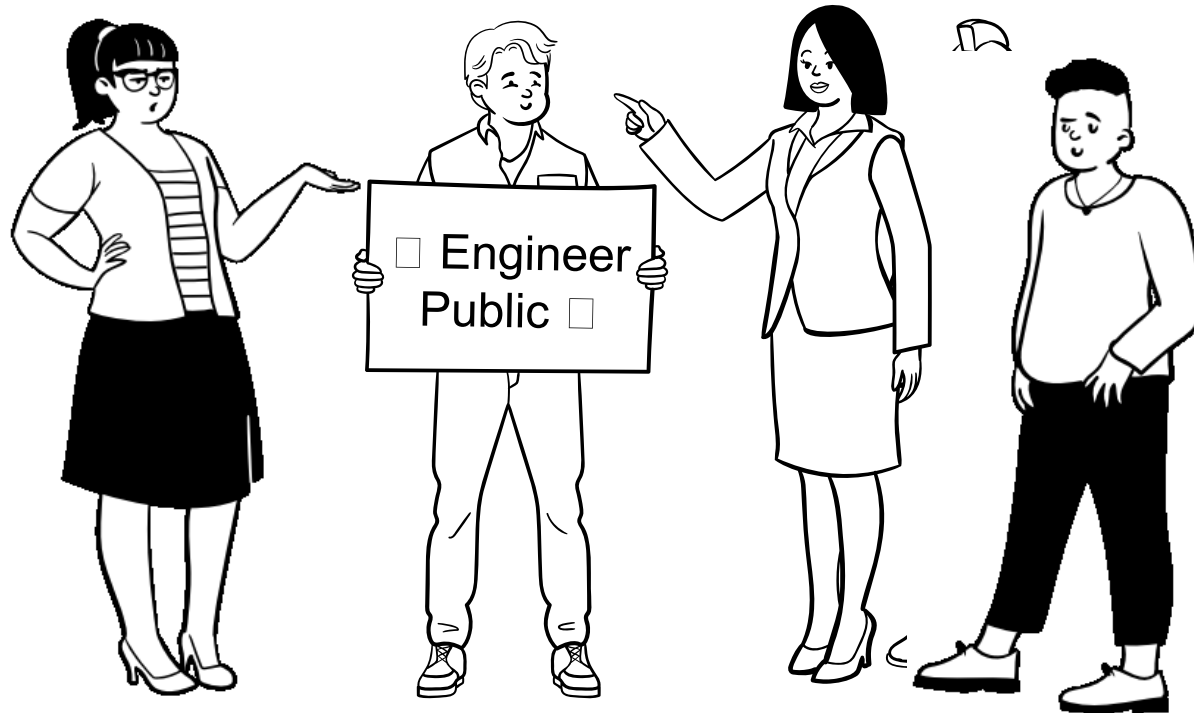


## Future Skills

- ~60% of an engineer's job involves communication.
- More and more social challenges.
- Subject/Expert knowledge on its own loses value.
- Communication skills are needed to facilitate expert knowledge.
- Example:
  - Civic participation in infrastructure projects.
  - Ability to take responsibility.



[1, 2]



## Role-Play

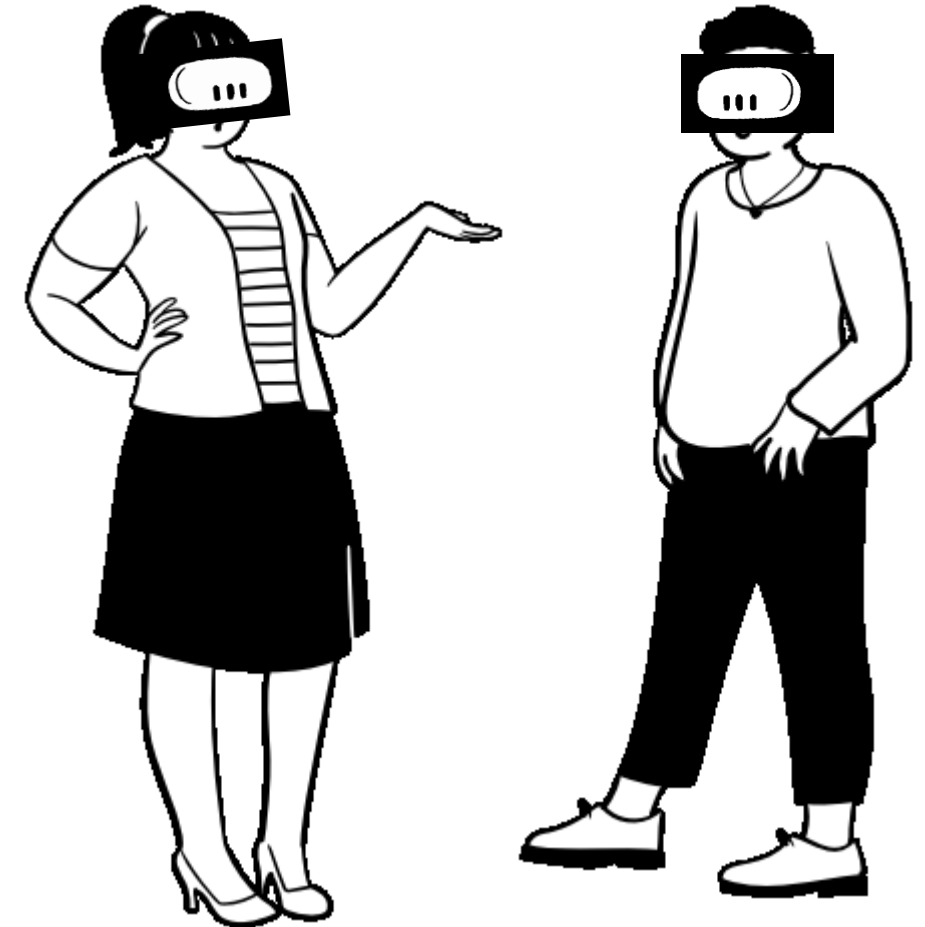
- Effective in training social skills.
- Can simulate difficult social interactions in safe environments.
- **BUT:** A lot of people are involved and difficult to repeat.

[3]

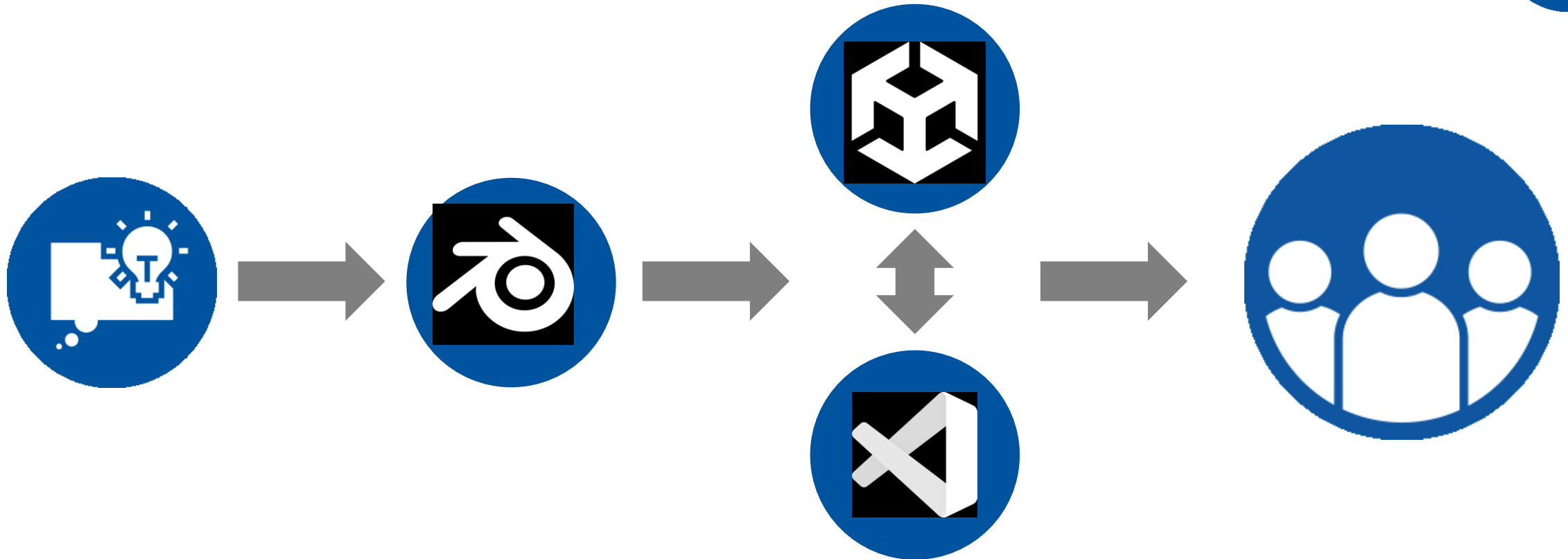


## Role-Play in VR

- Overcomes spatial limitations.
- Can reduce number of participants.
- Controllable, repeatable, comparable conditions.
- VR is typically received well among students.
- High presence & agency of VR allow for effective simulation of role-play scenarios.



[4, 5, 6]



Concept

Design

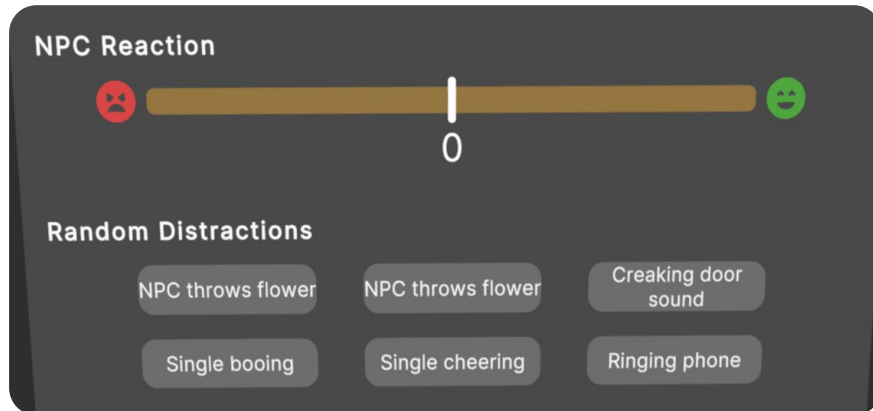
Engine Work

Role-Play

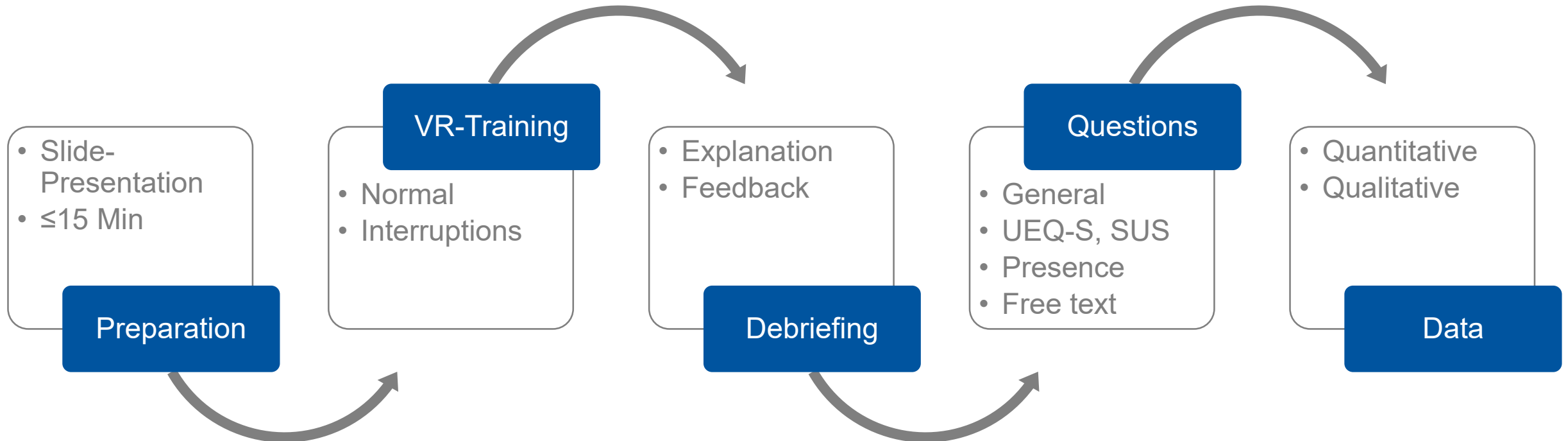


## Scene Design

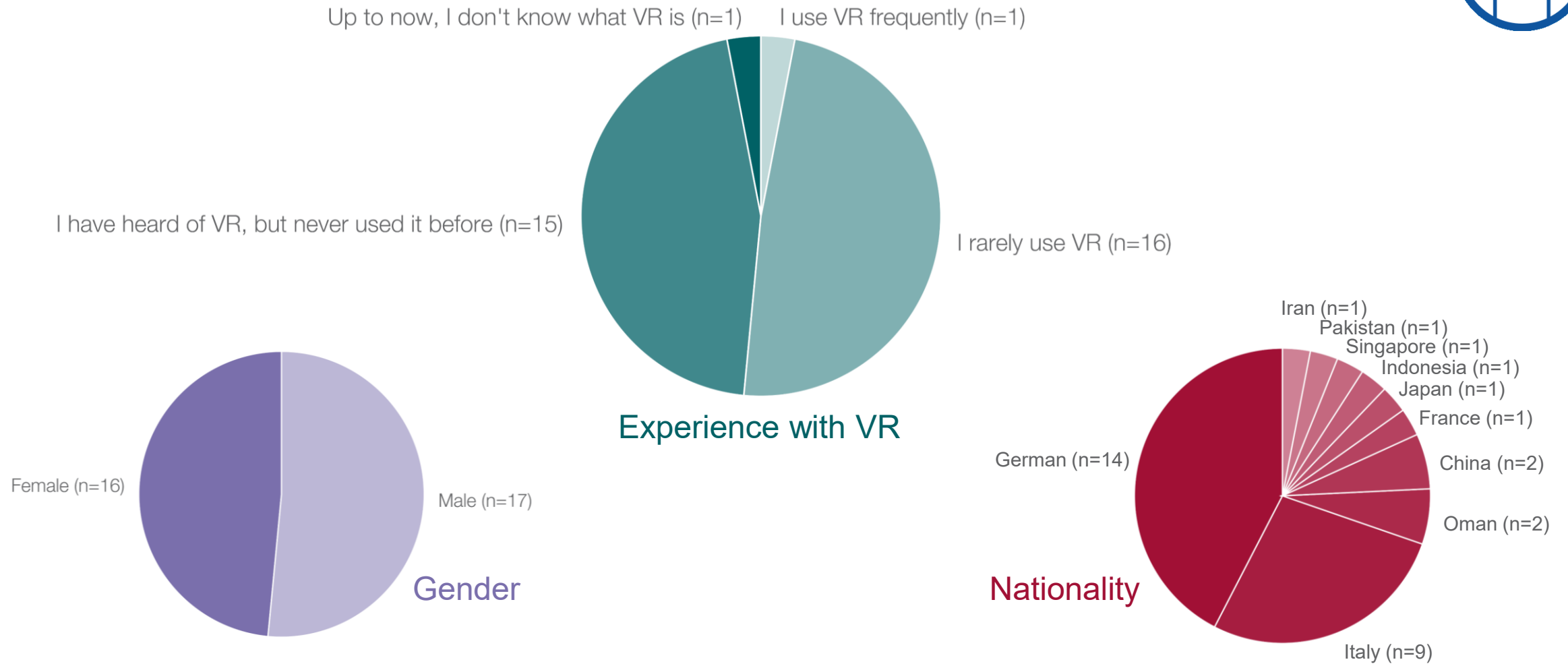
- Simple to avoid distractions.
- 24 randomized NPCs to simulate crowd.
- Realistic avatar system.
- Crowd reactions can be controlled.



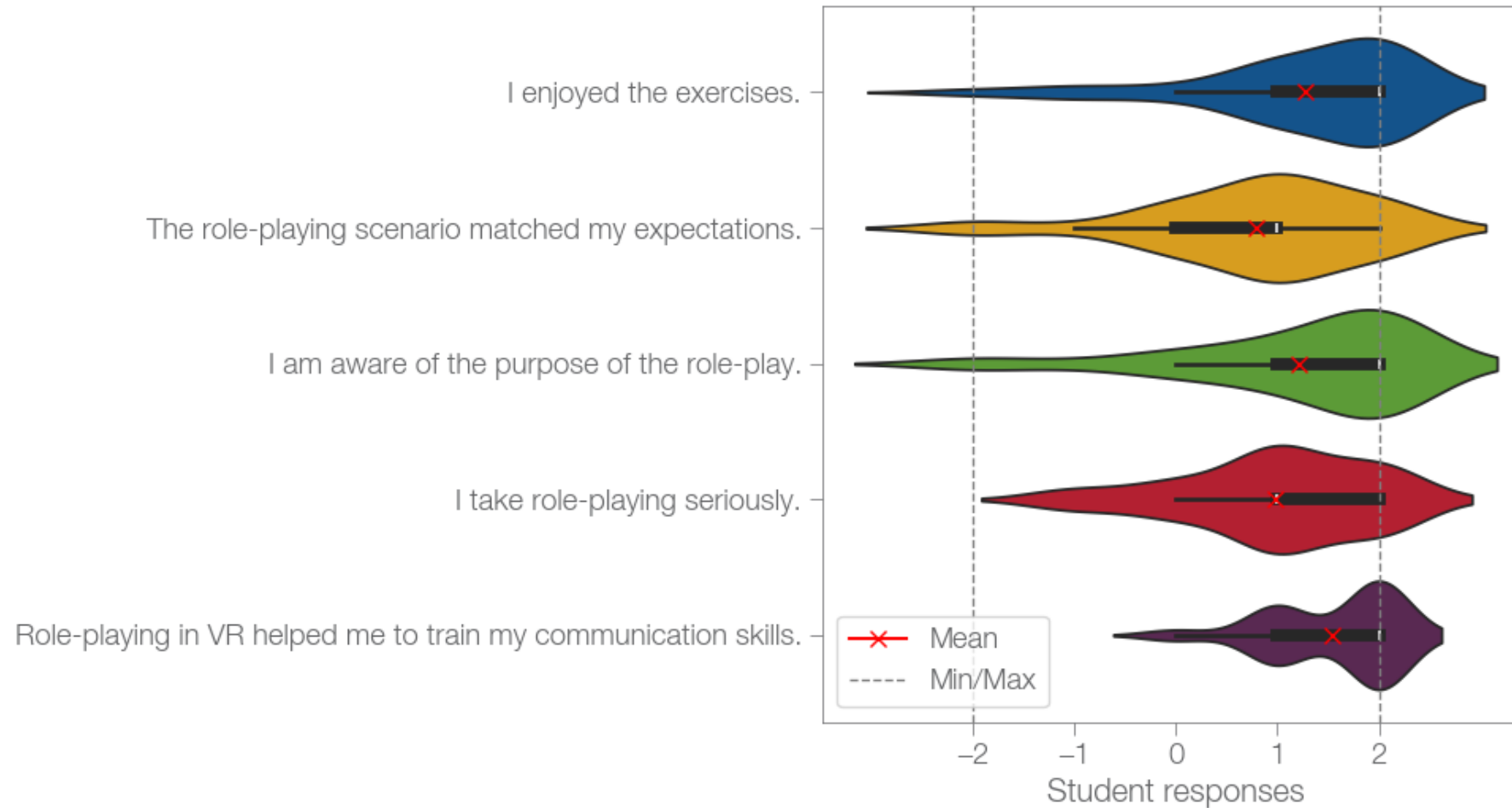




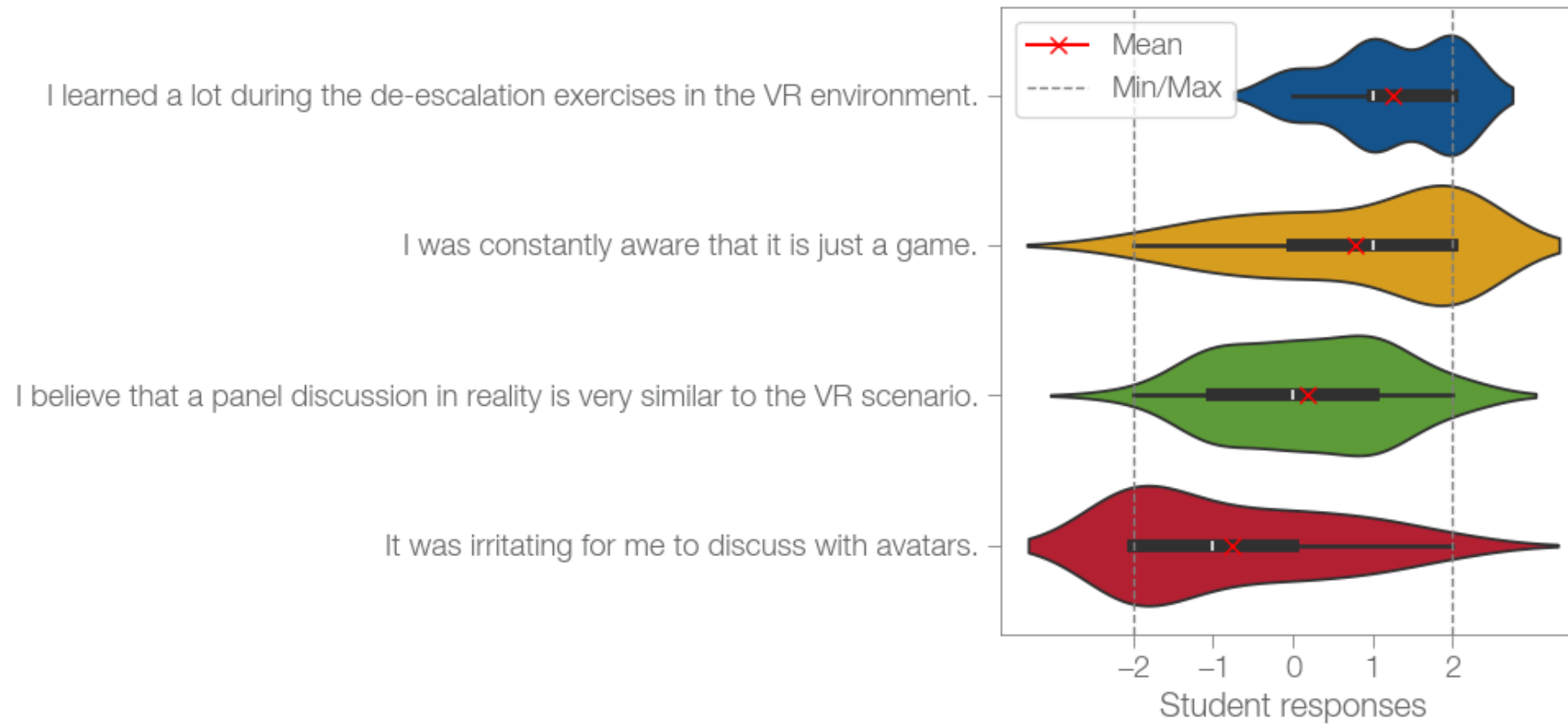
# Participants



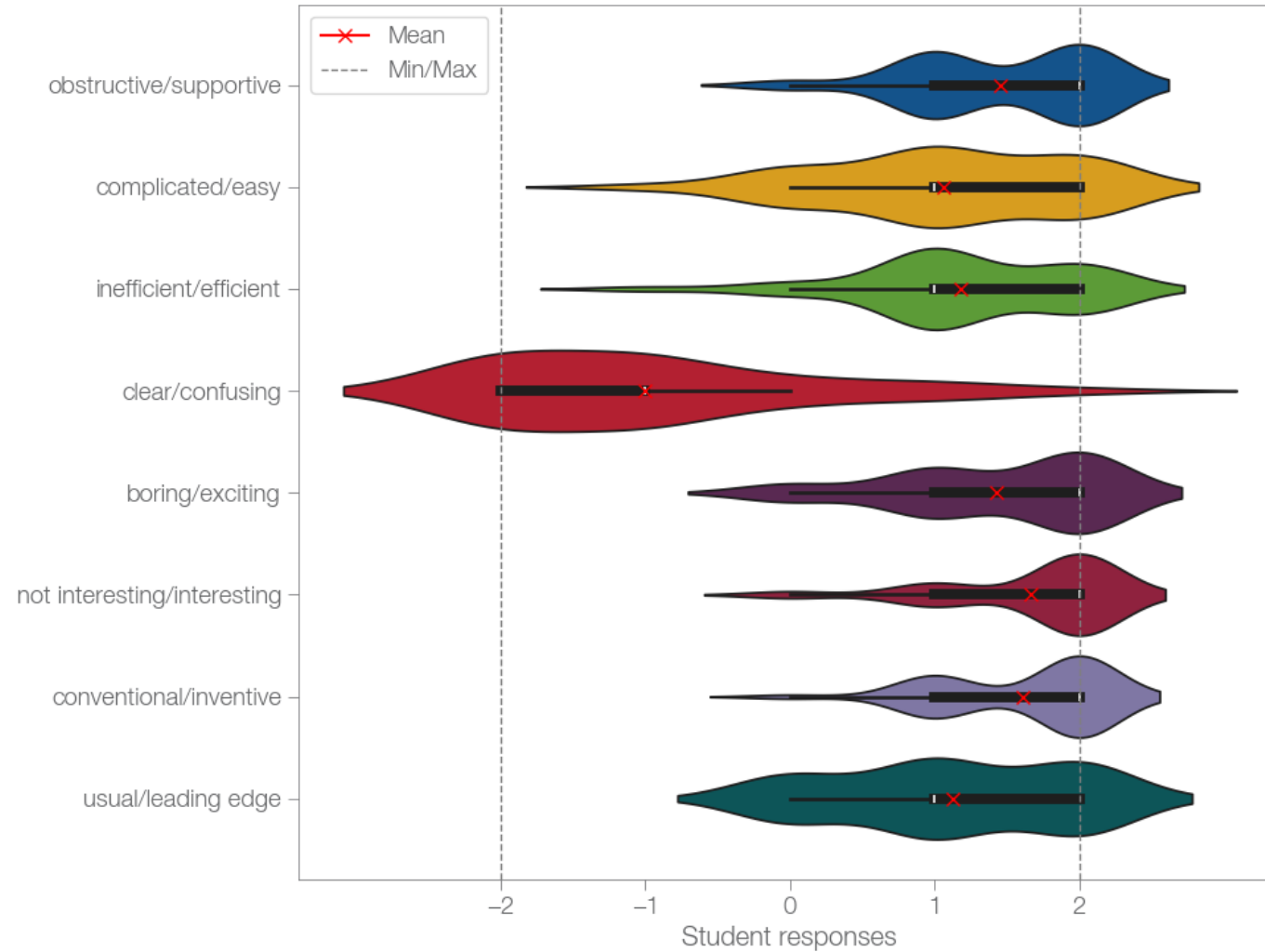
# General Impressions (1)



## General Impressions (2)

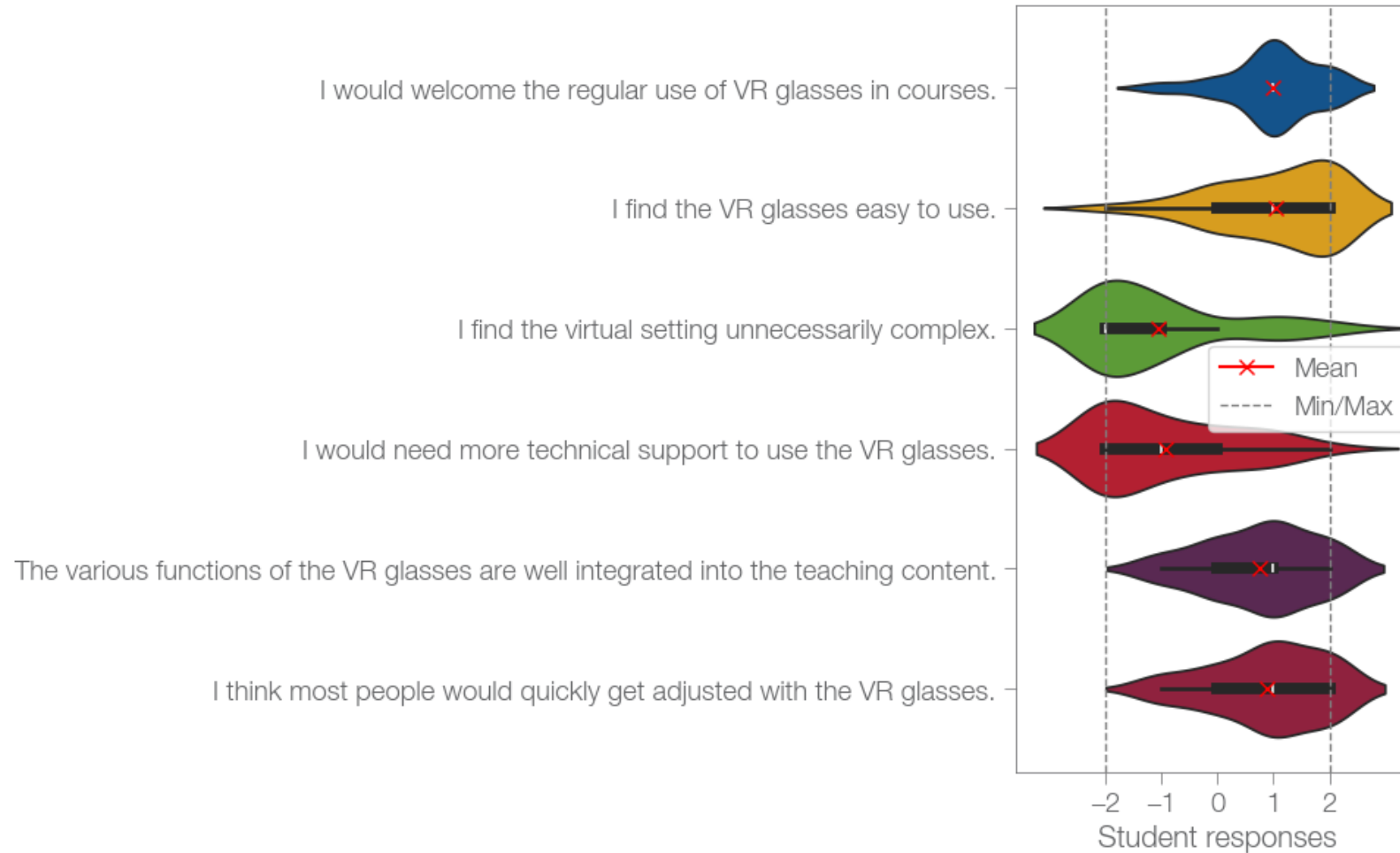


# User Experience Questionnaire

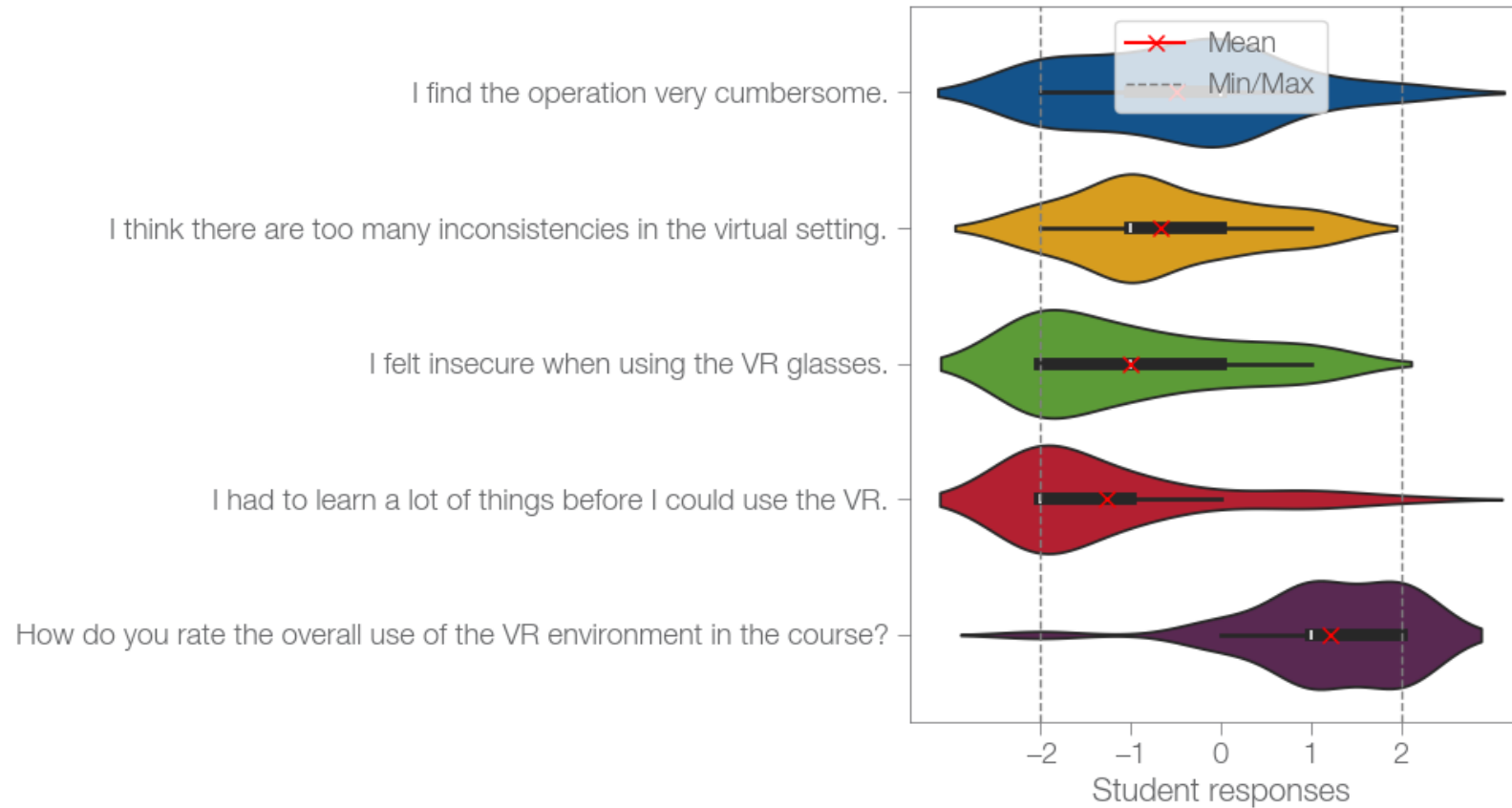


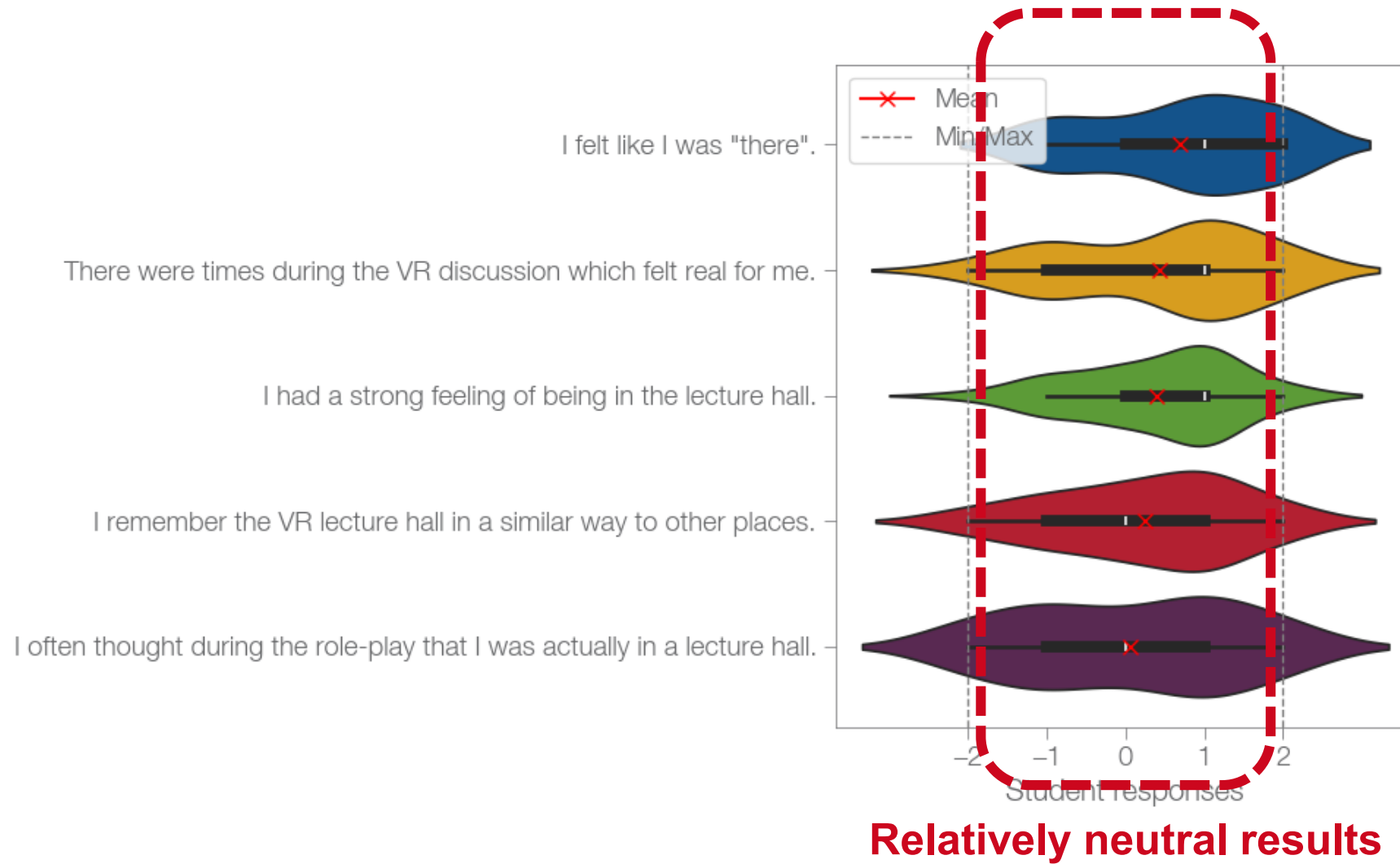


# System Usability Scale (1)



## System Usability Scale (2)







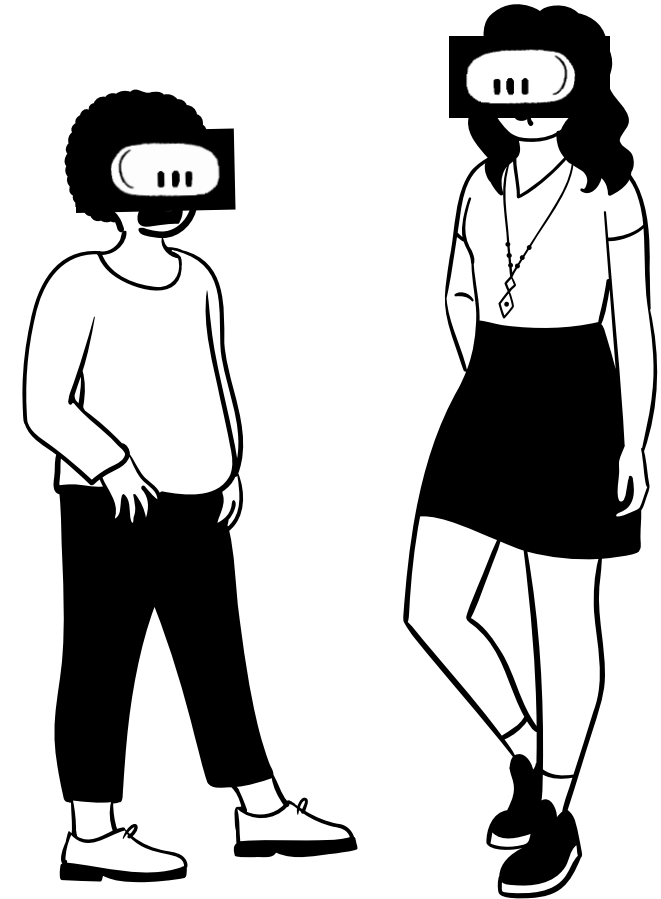
### Qualitative Questions

1. How did you feel during the VR training?
2. What are the advantages of the Role-Play scenario?
3. What are the disadvantages of the Role-Play scenario?
4. Do you have any ideas or comments for further development?



### General feedback

- **Positive Emotions:**  
Excitement, curiosity, enjoyment, feeling comfortable or safe.
- **Learning & Adaptation:**  
Initial nervousness or strangeness fading with experience; increased confidence after practice.
- **Challenges:**  
Technical difficulties (e.g., button issues), physical discomfort (e.g., device heaviness), pressure from audience simulation, anxiety about realism or performance.
- **Realism & Immersion:**  
Many felt it was realistic enough to trigger genuine reactions but still aware it was a simulation.

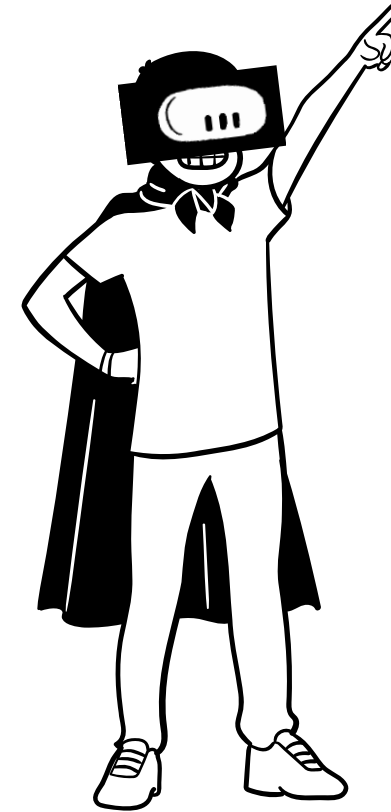






### Advantages of the Role-Play Scenario

- **Skill Development:**  
Practice communication/public speaking skills in realistic settings; exposure to difficult scenarios (interruptions, de-escalation).
- **Immersion & Realism:**  
Simulates real-life presentations without needing a large audience; avatars can provide challenging reactions.
- **Accessibility & Efficiency:**  
Enables training from any location with fewer resources; easier to organize than real events.
- **Safe Environment:**  
Lower stakes allow for mistakes and learning; less stress compared to actual public speaking.





### Disdvantages of the Role-Play Scenario

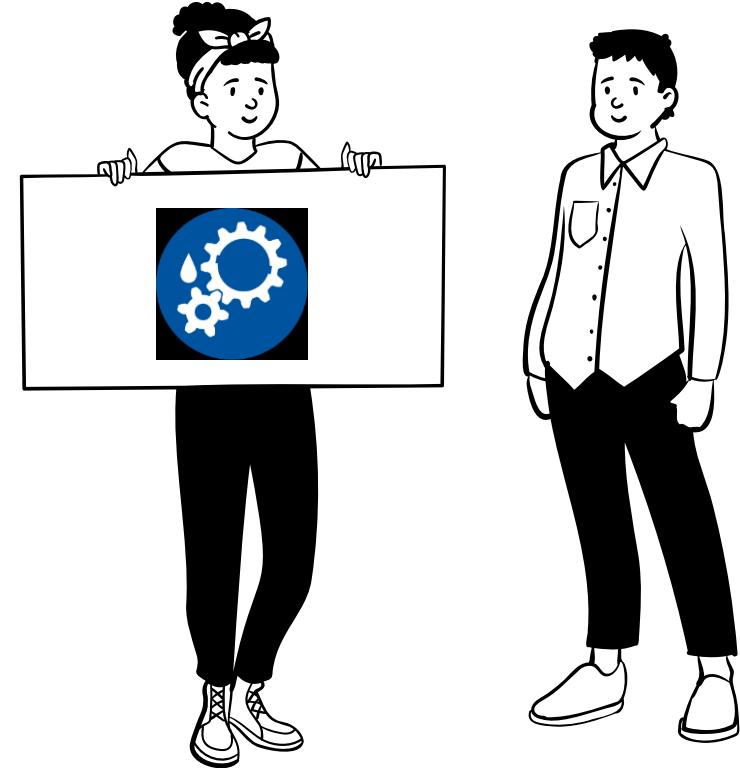
- **Lack of Full Realism:**  
Avatars/animations not life-like enough; some reactions feel unnatural or exaggerated.
- **Technical Limitations:**  
Device discomfort (weight, fit), motion sickness, technical glitches (shaking screens), limited body awareness/movement translation.
- **Psychological Gaps:**  
Easier to dismiss the seriousness since it's “just” a simulation; may not fully replicate real-world pressure.
- **Physical Needs:**  
Equipment requirements can be a barrier for some users.





### Ideas & Comments for Further Development

- **Improved Realism:**  
Better avatar graphics and more natural audience behavior; more immersive environments.
- **Scenario Expansion:**  
Group presentations/multi-person scenarios; more varied situations including other courses/topics.
- **Features & Usability Enhancements:**  
Note-taking areas in VR, pointers/tools during presentation, better audio/voice integration.
- **Broader Access & Integration:**  
Make available for students with social anxiety or those seeking extra practice; integrate into regular coursework.





### Social Skill Development with VR-Role-Playing

- Students liked the intervention.
- Improvement are needed.
  - More realistic surrounding needed.
  - Authentic avatars crucial.
  - Possible application of genAI

→ All part of new iteration.






# Thank you for your attention!



Access Slides

 <https://lfi.rwth-aachen.de/>

 [VR@lfi.rwth-aachen.de](mailto:VR@lfi.rwth-aachen.de)

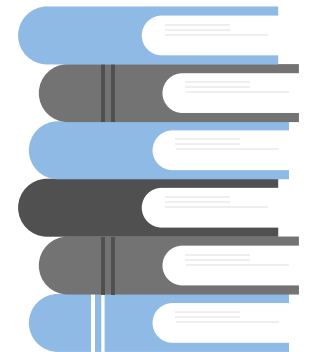
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