



Virtual reality A promising tool in youths who stutter

Anne-Lise Leclercq
Lucie Ménard
Stéphane Bouchard
Anne Moïse-Richard



Virtual reality - A promising tool in youths who stutter



Introduction



Methods



Results



Discussion



Questions

Anxiety and stuttering

- **Youths who stutter are likely to encounter speaking anxiety** (Iverach et al., 2016; Blood et al., 2001; Erickson & Block, 2013; Mulcahy et al., 2008)
 - **Impact on quality of life** (Iverach et al., 2017)
- **Talking in front of an audience is a situation frequently feared by people who stutter** (Blumgart et al., 2010; Craig, 2014; Craig & Tran, 2014; Davis et al., 2007; Vanryckeghem et al., 2017)

Exposure and virtual reality

- Exposure-based therapy for social anxiety disorder (Yang et al., 2019)
- Not always possible to repeatedly talk in front of a real audience
- Virtual reality exposure therapy (Bouchard, 2011; Gutiérrez-Maldonado et al., 2009; Parrish et al., 2016; Wong Sarver et al., 2014)

Virtual reality



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Virtual reality

- Predictable
 - Enables gradual exposure
 - Multiple opportunities to expose youths who stutter
- A promising tool in youths who stutter?

Virtual reality in adults who stutter

- Virtual environments may be clinically useful tools
 - Challenging and supportive job interviews (Brundage et al., 2006)
 - Virtual and live audiences (Brundage & Hancock, 2015)
 - A virtual audience vs. a virtual empty room (Brundage et al., 2016)

Research questions

- Do a virtual class and a live audience create similar levels of stuttering and anxiety in youths who stutter?
- Are these levels higher than those observed in an empty virtual apartment?

Methods

■ Participants

- 10 school-age and adolescents who stutter (8 boys; 9 - 17 y)

■ Material

- Personal Report of Confidence as a Speaker scale (Heeren et al., 2013)
- Liebowitz Social Anxiety Scale for Children and Adolescents (Schmits et al., 2014)
- Subjective Units of Distress Scale (SUDS): 0-10
- Stuttering severity rating scale (SR) : 0-9
- ITC - Sense of Presence Inventory (Baus & Bouchard, 2017)

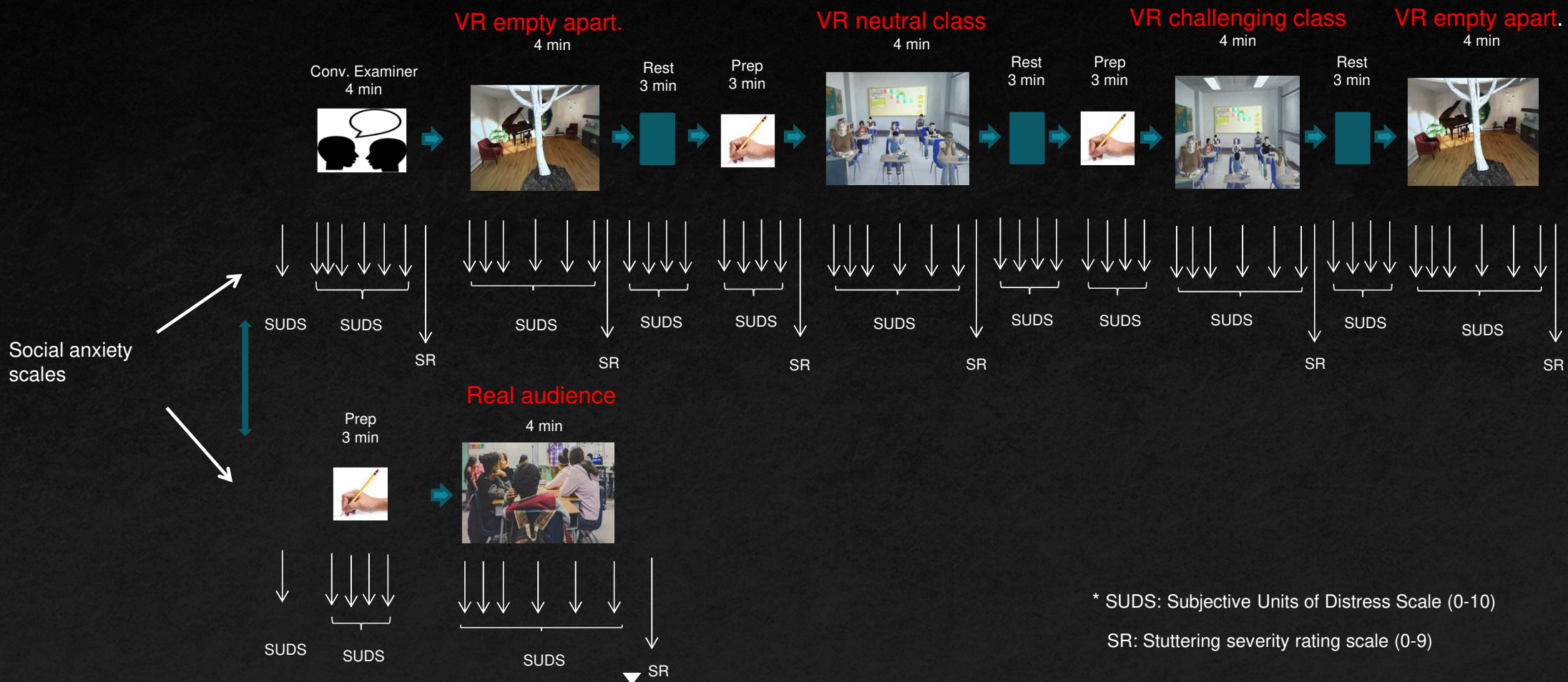
Speaking conditions

- Virtual class (*InVirtuo, Inc.*)
 - Neutral
 - Challenging (7 students yawning or laughing; unhappy teacher)
- Real audience
 - 4 other participants and two adults
- Virtual apartment : control (*RV training room, InVirtuo, Inc.*)



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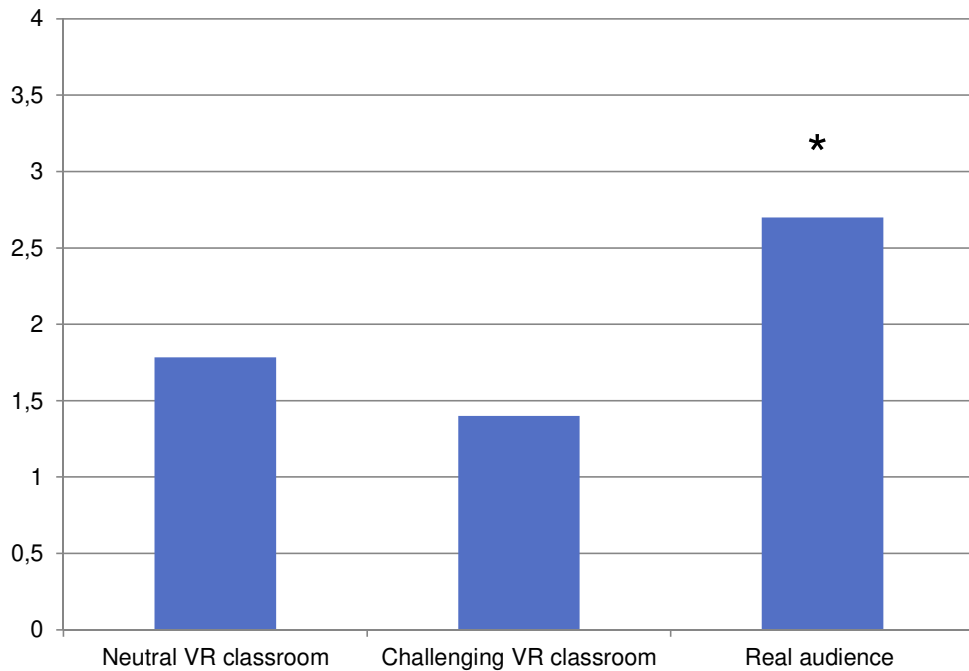
Procedure



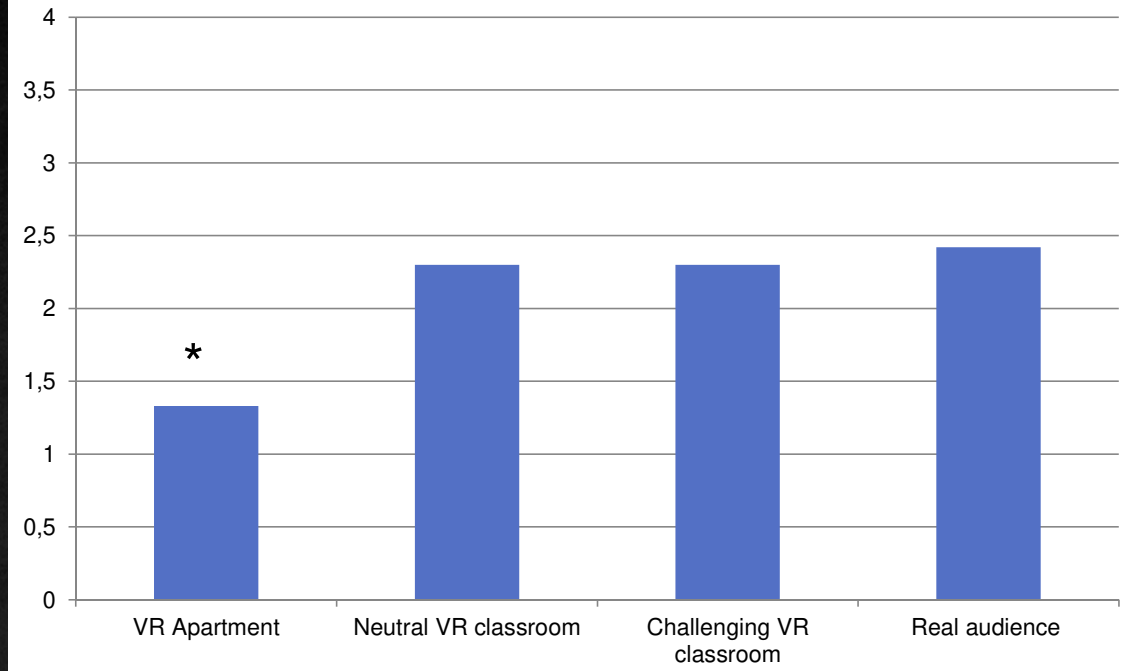
* SUDS: Subjective Units of Distress Scale (0-10)
 SR: Stuttering severity rating scale (0-9)

Results - Anxiety

SUDS when preparing the speech (0-10)

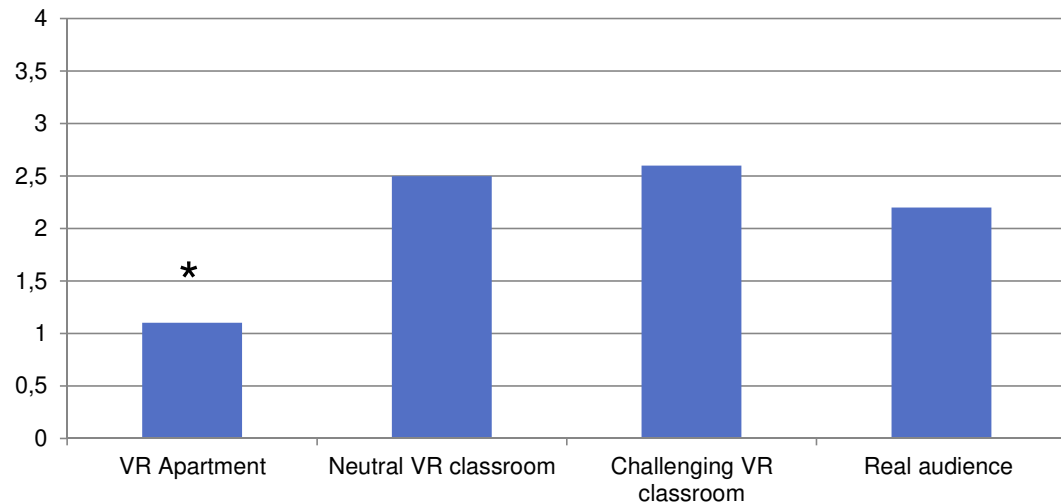


SUDS during the speech (0-10)

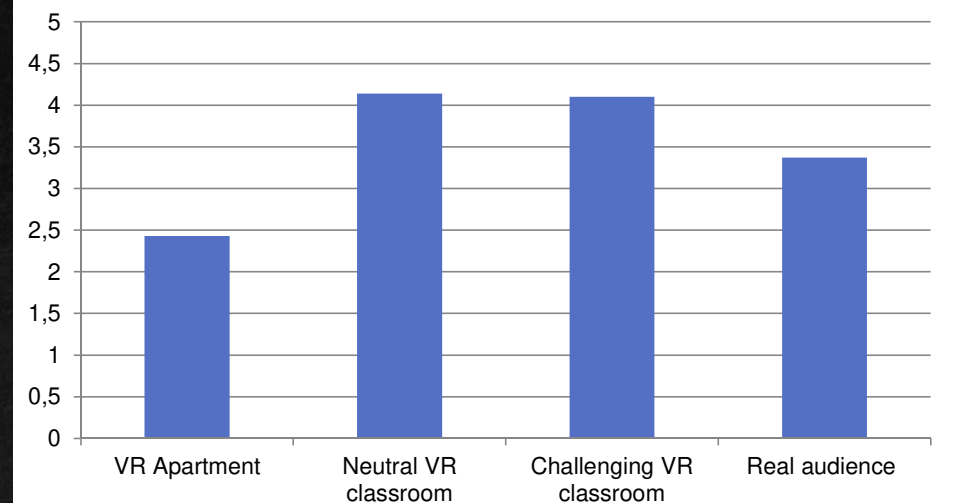


Results - Stuttering

Stuttering Severity Ratings (0-9)



% Stuttered syllables



Results – Presence and immersion

- Acceptable levels of presence and immersion (ITC- Sense of presence inventory)
 - *'When they started laughing, I froze for one second. I thought it was real.'*
- Usefulness
 - *'It's easier to do an oral presentation if we practice in the virtual environment before.'*

Discussion

- The virtual and live audiences create similar levels of stuttering and anxiety in youths who stutter
- These levels are higher than those observed in an empty virtual apartment
- Relevance of a virtual class to work on anxiety in youths who stutter



Limitations and future directions

- No difference between the neutral and challenging VR classrooms
- Larger sample size
- Physiological measures of arousal
- Control group
- Future therapy studies

Questions



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