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# Happiness through virtual lens : The influence of immersion, social and nonsocial contents on positive emotion induction



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## INTRODUCTION

- ⇒ **Positive emotions** have **health benefits (1)** and are tightly linked to **well-being (2)**
- ⇒ Critical issue : How to foster well-being and positive experiences among users?
- ⇒ **Positive technology** framework suggests technologies may improve users' subjective, psychological and social well-being (3)
  - **Virtual Reality (VR)** appears as a suitable technology for inducing positive emotions and promoting well-being
  - But VR's efficacy has mostly been assessed with "**subjective**" measures (**questionnaires**), more rarely with "**objective**" ones (*e.g.*, **physiological measures**)
- ⇒ Widespread use of **natural (i.e., nonsocial) video contents** for inducing positive emotions in VR studies, yet social contents can have an influence on induced emotions and arousal (4)

## AIM OF THE STUDY



- Investigate VR's (*i.e.*, immersion) effects on positive emotion induction compared to a screen presentation
- Comparing social and nonsocial (landscape) contents influence on elicited emotions
- Confronting "subjective" and "objective" measures for assessing participants' emotional states

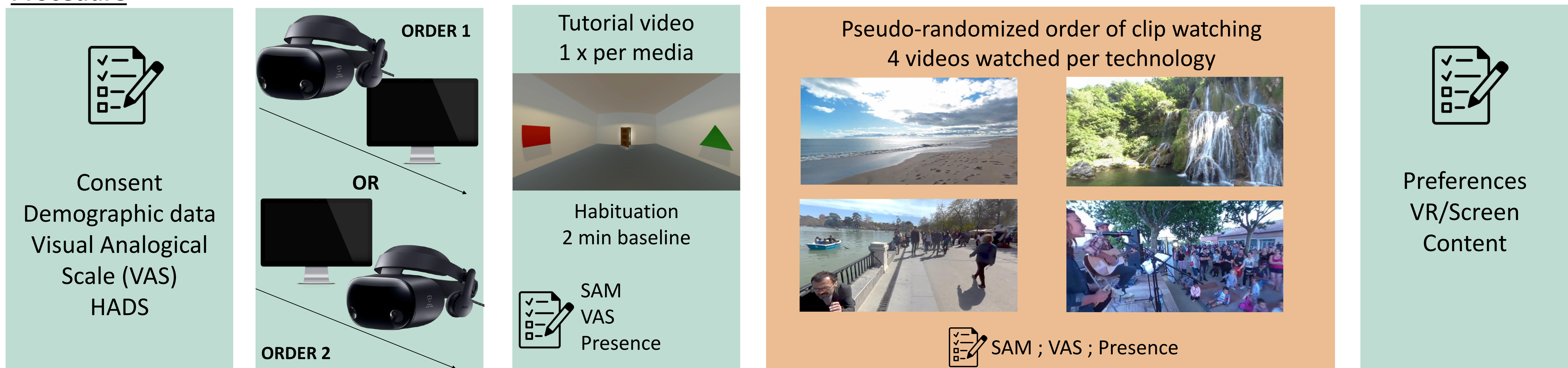
## METHOD

**Participants** : 28 healthy undergraduate students  
16 women, 12 men, 23 years ± 2.6  
Non-inclusion of participants having major psychiatric and/or neurological disorders (epilepsy).

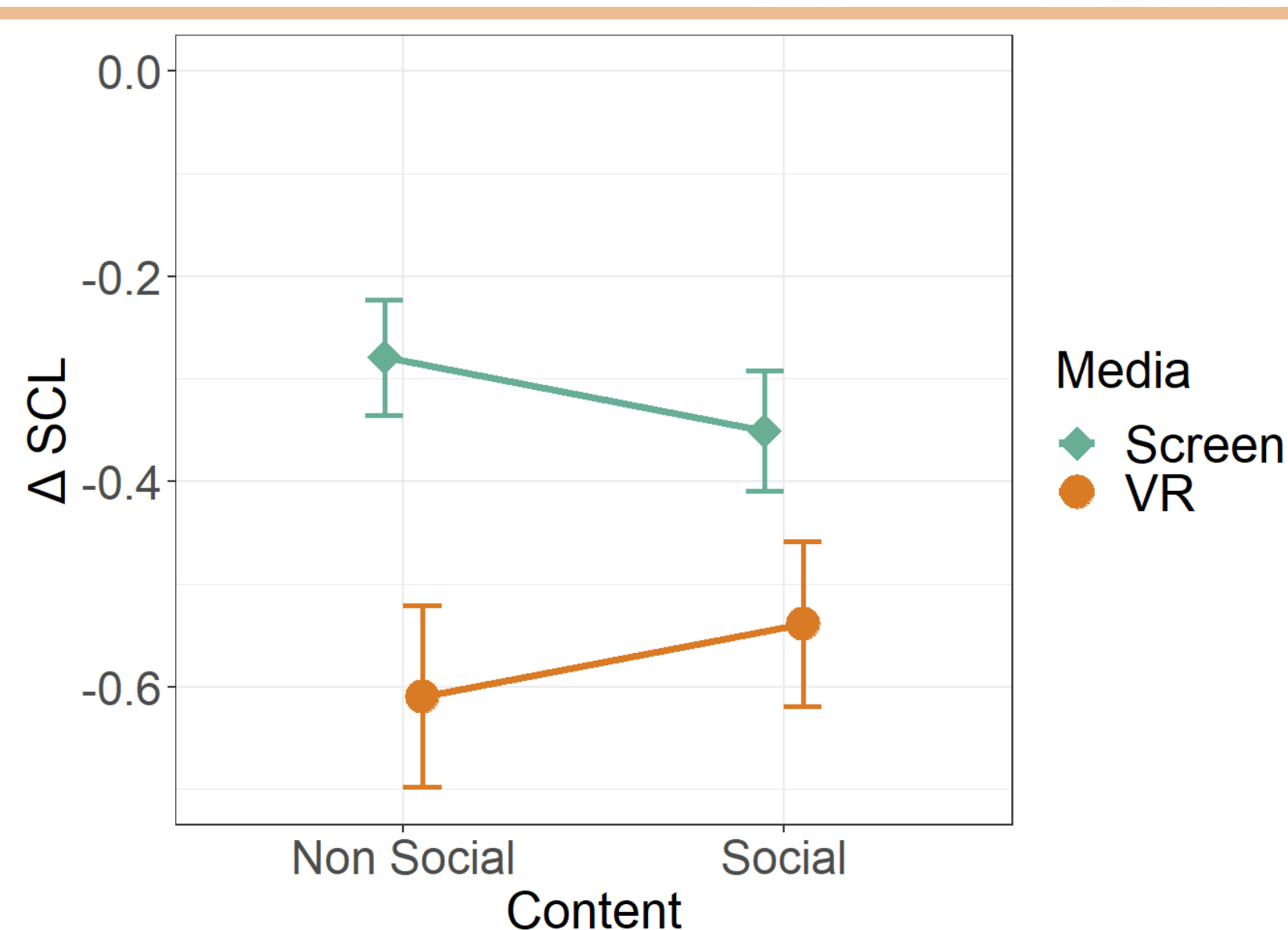
**Material** : 25" screen (resolution of 1920 x 1080 pixels)  
HMD Samsung Odyssey+ (110° Fov, resolution of 1440 x 1600 pixels)  
Empatica E4 wristband

**Stimuli** : Eight 360° videos shot with a GoPro 360° camera and a tutorial video

## Procedure

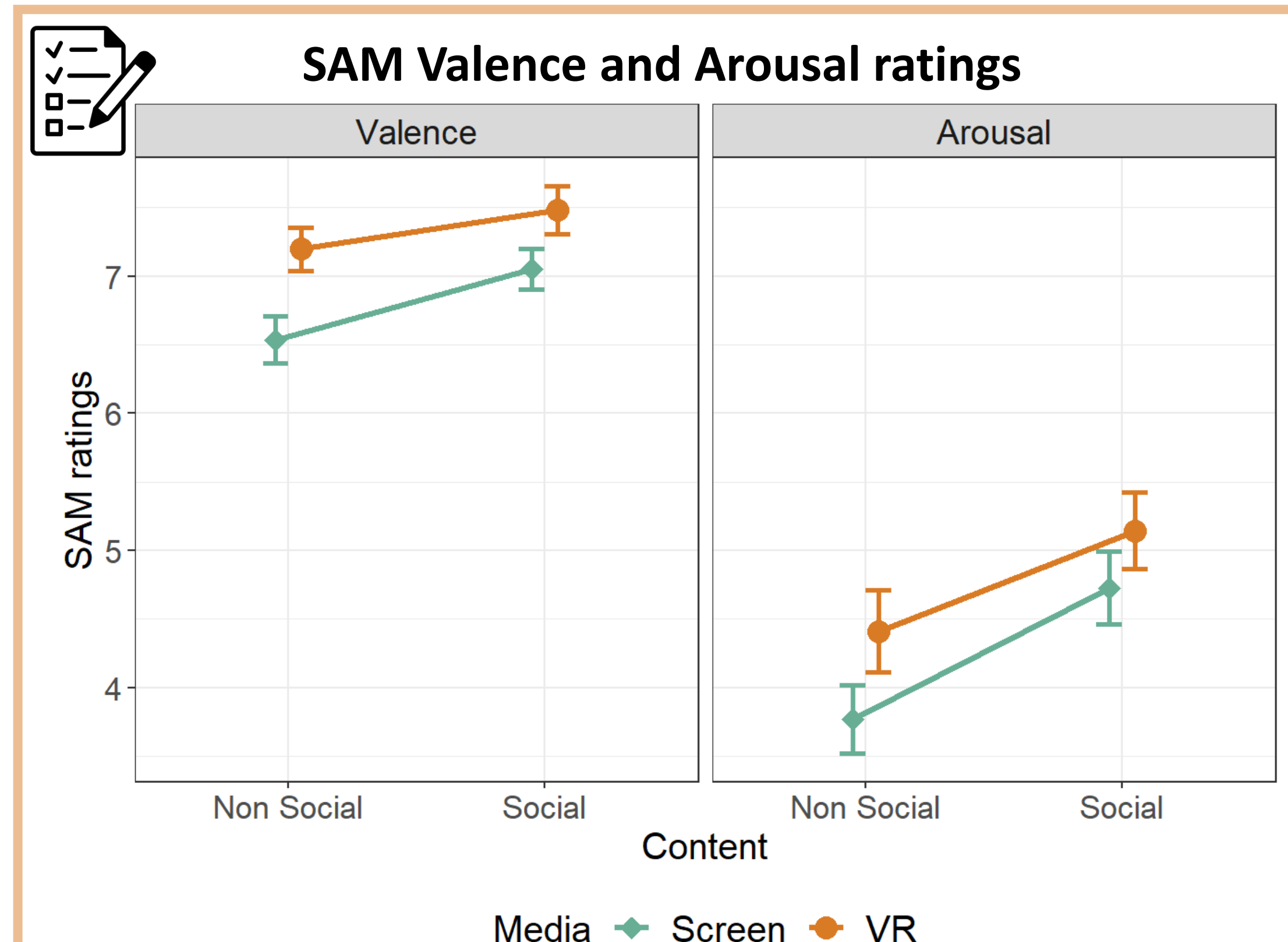


## RESULTS

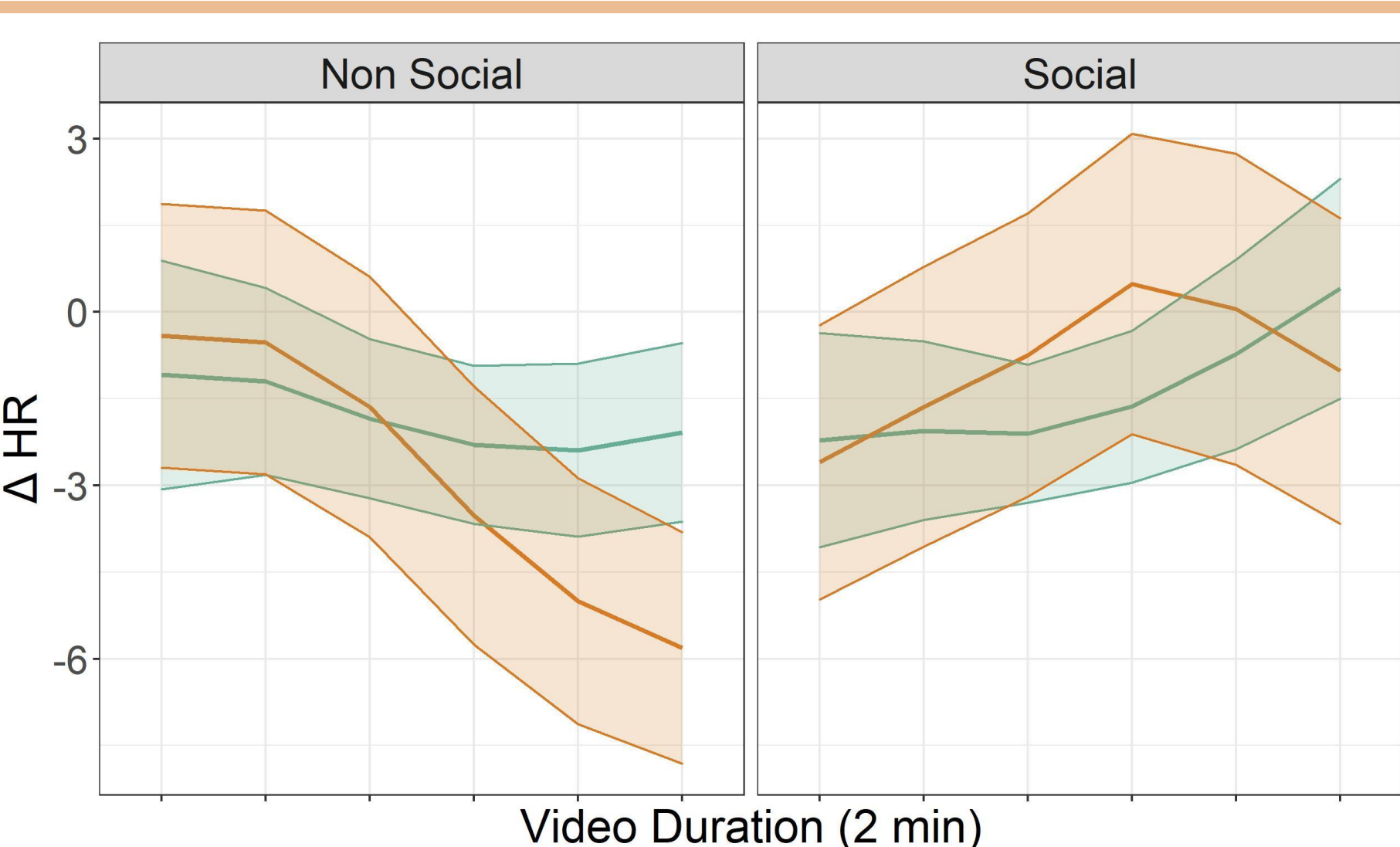


### Effect of Media and Content on Skin Conductance Level Change (ΔSCL)

Significant **SCL decrease** when watching **nonsocial contents in VR** compared to a screen  
⇒ **Natures' relaxing properties**  
Same difference, in favor of VR, for social contents  
**VR tends to elicit higher levels of physiological arousal** compared to a screen



**Main effect of immersion** : VR induced **more positive emotions and arousal** compared to screen presentation  
**Main effect of content** : **Social videos** are perceived as **more positive and arousing** than nonsocial video contents  
No Media x Content interaction on valence or arousal ratings



### Temporal Heart Rate Change (ΔHR) in response to media and video contents

Important **HR deceleration** while watching **nonsocial contents in VR** compared to screen presentation  
Less clear differences between VR and screen for social video contents  
Perspective: **compute HR variability (HRv)**

## CONCLUSION

- The **immersive nature of VR** leads to more positive emotions and arousal on both subjective and objective levels
- Nonsocial contents seem particularly efficient on a physiological level = **Natures' well-known benefits for relaxing and restoring resources (5)**
- **Social contents** seem to be more efficient on a **subjective level** for inducing positive emotions
- **Potential applications**: foster well-being through VR and positive emotions induction for more vulnerable and/or isolated users (*e.g.*, elderly users)



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