

# Self-guided VRET for social anxiety: a possible waiting list primary care intervention

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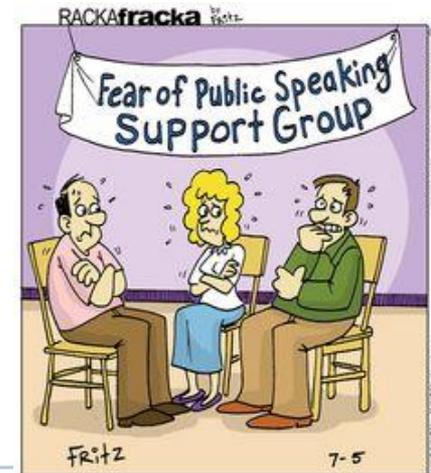


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# Social Anxiety Disorder (SAD)

- persistent and exaggerated fear that others will negatively evaluate, criticise or embarrass them
  - difficulties in psychosocial functioning
  - 40% with SAD have intense public speaking fear (Ruscio et al., 2008)
- Treatment challenges
  - poor engagement, drop-out (Wang et al., 2005)
  - over 80% of sufferers receive no treatment
  - CBT with exposure (Hoffman, 2008)
    - but face-to-face, homework compliance, over-exposure, increased costs (Powers et al, 2013)



# Virtual reality exposure therapy (VRET)

- used as an effective intervention for SAD
  - control, safety and flexibility, without over-exposure
  - 90% would prefer VR to in vivo exposure therapy
  - more effective than waitlist and usual treatment for multiple mental health conditions, including SAD

(Valmaggia et al., 2016)

## ➤ Efficacy is established

- ... usually examined in combination with CBT
- ... and as therapist-led/controlled VRET

(*c.f.* Powers & Emmelkamp, 2007)

# Virtual reality exposure therapy (VRET)

## • Self-guided VRET

- ✓ does not require to **face** a therapist
- ✓ transferring ***control of exposure*** entirely to the patient
- ✓ **empowering** to regulate own therapy
- ✓ may heighten the patient's **self-efficacy**
- ✓ increase **compliance**
- ✓ **engage** those who refuse or delay treatment
- ✓ reduce **costs**

# Research Aims

- (1) predictors of public speaking anxiety
- (2) develop a self-guided VRET app for public speaking anxiety
- (3) evaluate VRET.1 in highly anxious students**
  - **Self report (public speaking and social anxiety)**
  - Biometrics (heart rate and GSR)
- (4) evaluate VRET.2 in community sample (current)
  - including biofeedback

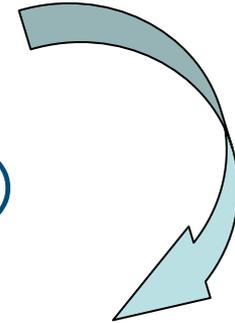
## Hypotheses

- Reductions in public speaking, anxiety, avoidance
- Sustained effects at follow-up

# VRET – Phase 1: Participants

- Within-subjects design:

1. Psychometric Survey for pre-selection (N~336)
2. Session 1: VRET (N=32)
3. Session 2: VRET (N=27, 1 week later)
4. Psychometric 4 week follow-up (N=22)



- 32 NTU students with public-speaking anxiety

- Social Anxiety Thoughts Inventory (mean=97, SD=7.8; >3SD)
- Mean age 21.38 (SD=4.92)
- 84% female; 16% previous/current diagnosis of SAD

# Methods

## • Materials

- **Samsung Gear VR** Innovator Edition headset + **Galaxy Note 4**
- **VR exposure app** designed by the Interactive Systems Research Group
- **Microsoft Band 2**: biometric wristband – 11 advanced sensors for heart rate & GSR



## • Measures:

- **Psychometrics** for social anxiety, public speaking anxiety and fear of negative evaluation (online)
- **VASs** for anxiety, arousal, avoidance (in VRET)

If you were to give another virtual reality presentation like this one again, how much would you wish to avoid it?

Not at all avoid                      0                      Extremely avoid

# VRET1

- 20 mins talk, 5 pauses
- 5 parameters on 3 levels
  - Audience size
  - Audience reaction
  - Speech prompts
  - Saliency of self
  - Distance to audience



**Size:** Level 3

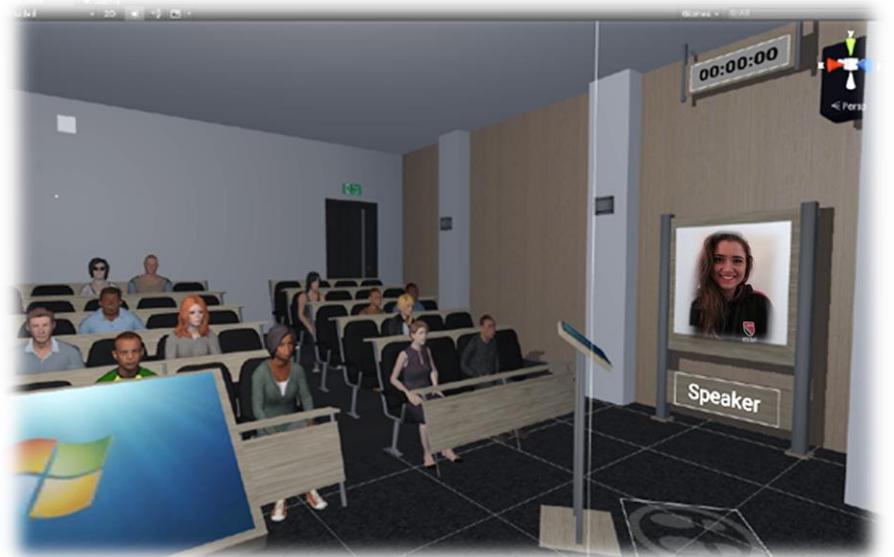
**Reaction:** Level 2

**Distance:** Level 1

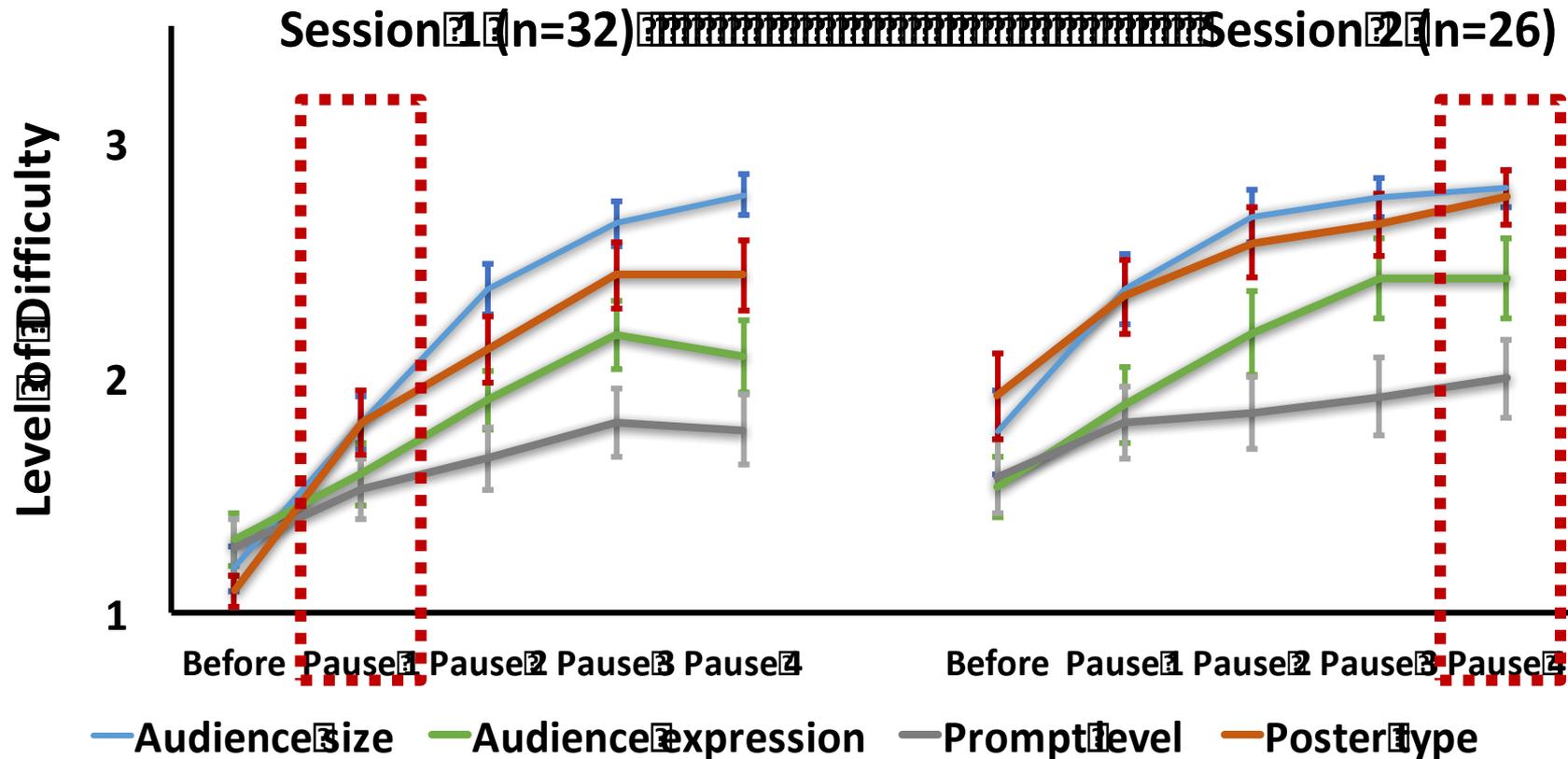
NOTTINGHAM  
TRENT UNIVERSITY

**What it's like to be  
a student at NTU**

*A student's perspective*

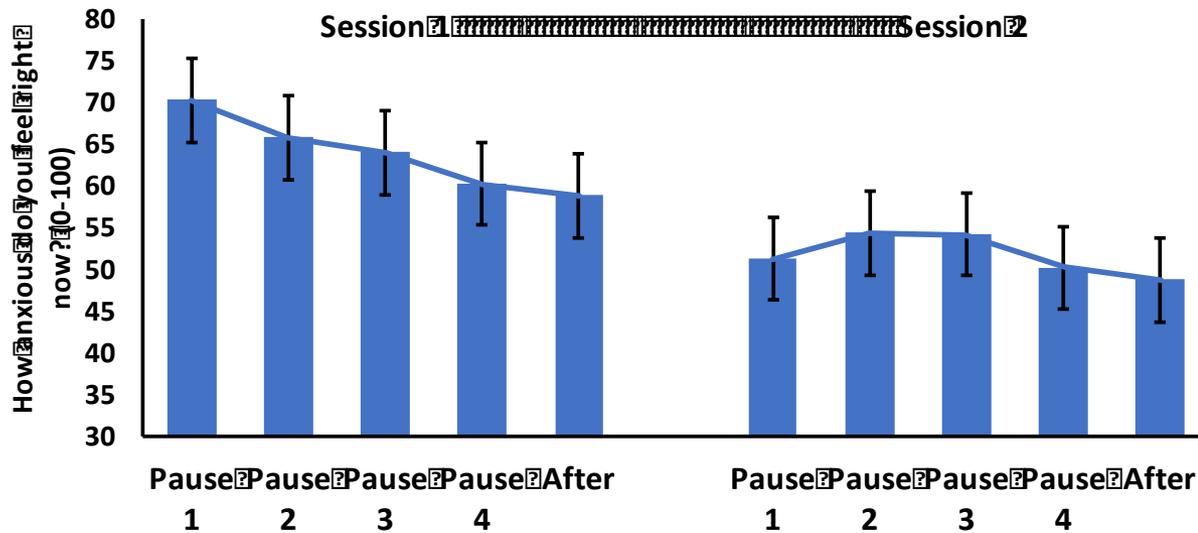


# Results: Exposure Levels manipulation



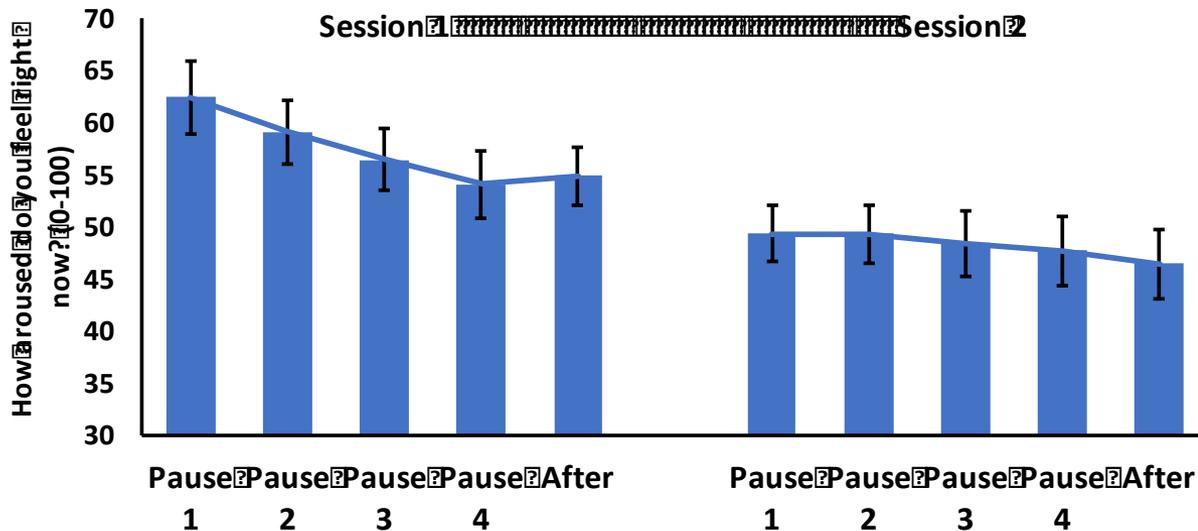
- ✓ significantly higher levels of exposure at the end of each session
- ✓ significant increase in exposure from start of intervention (S1, P1) to the end of the intervention (S2, P4)

# Changes in VAS Anxiety and Arousal



Time:  $F_{(4,124)}=9.2, p<.001$   
 Session:  $F_{(1,31)}=31.1, p<.001$

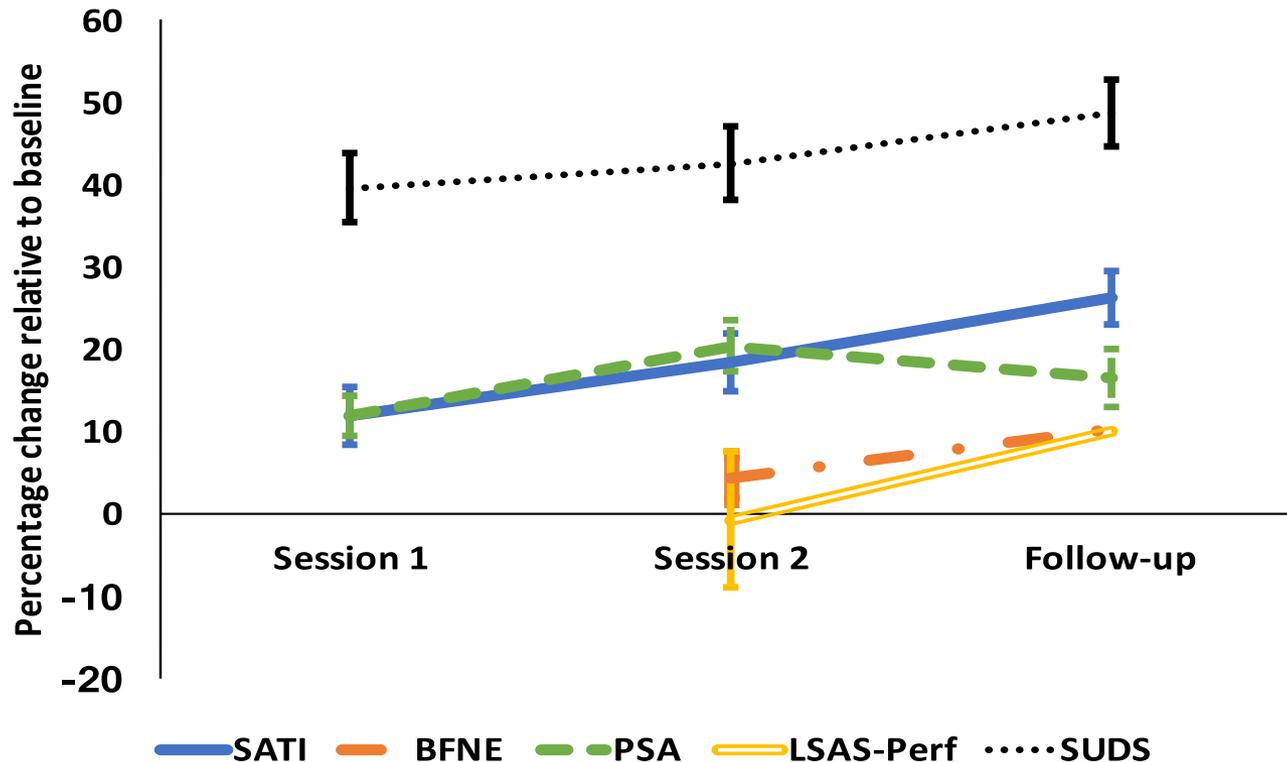
✓ **anxiety** was lower after each session compared to pauses 1 and 2 ( $ps<.001$ )



Time:  $F_{(4,124)}=2.6, p=.04$   
 Session:  $F_{(1,31)}=11.9, p=.002$

✓ **arousal** reduced in session 1 and remained lower in session 2

# Changes in Public Speaking & Social Anxiety



SATI, PSA, SUDS:  
 $F_{(3,93)} > 19, p < .001$

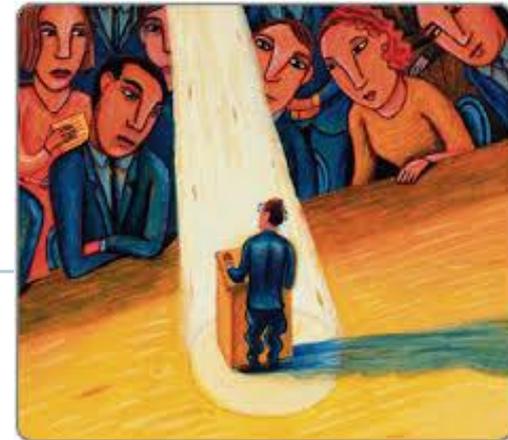
BFNE:  
 $F_{(2,62)} = 8.9, p = .002$

LSAS - perf:  
 $F_{(2,62)} = 5.8, p = .005$

- ✓ Relative to baseline, social anxiety improved at both sessions and follow-up, and also from session to session to follow-up

# Discussion

- Effective at reducing SA and public speaking fears and effects sustained at one-month follow-up
  - control over exposure to threat at own pace
  - strong resemblance to real life, according to ppts
  - cost-effective and portable: home, school, GP practices...
- encourage help-seeking, increase accessibility & adherence, and reduce NHS costs
  - adopt for waitlist or in therapy
  - use instead of or before *in vivo* exposure
  - Gamification appeal to young people
    - seek treatment after ~15-20 yrs (Grant et al, 2005)



# VRET – next Phases & Future Directions

- VRET2 – further developments and evaluations:
  - (i) practitioner point of view (semi-structured interviews)
  - (ii) effectiveness in wider community sample with high SA, and
  - (iii) integrate biofeedback to modulate arousal and anxiety to graded exposure
- VRET3 as a primary care wait-list intervention for adults and youth with mild social anxiety
- Understand the psychological and biological mechanisms
  - perceived control, self-efficacy and engagement (Sirur et al., 2009)
  - negative attentional bias to social cues (Arrais et al., 2010),
  - social reinforcement sensitivity (Stein & Stein, 2008)



Brain sensing headband

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***"I wanted to inform you that I did a (very informal) presentation last week. While I was still anxious and I found my heart pounded, I definitely noticed a difference! I didn't stutter and I was able to look my audience in the eyes. As the presentation went on I was more relaxed. I feel the virtual reality sessions really helped me meet my audience in the eyes. I'm definitely still anxious with presentations, but it's made me more able to face them"***

- Participant Feedback (emailed to RA)