

Integrating Virtual Reality into Psychotherapy for Anxious Youth

BBRF 2019 Meet the Scientist Webinar Series

Michelle Pelcovitz, PhD

Assistant Professor of Psychology in Clinical Psychiatry

November 12, 2019

Today's Talk

- **Anxiety disorders in youth**
- **State of treatment today**
- **What can animals teach us about treating anxiety?**
- **Exposure therapy**
- **Virtual Reality in the literature**
- **Ongoing Study**
- **Next steps**
- **Take home messages**
- **Questions**

Anxiety Disorders in Youth

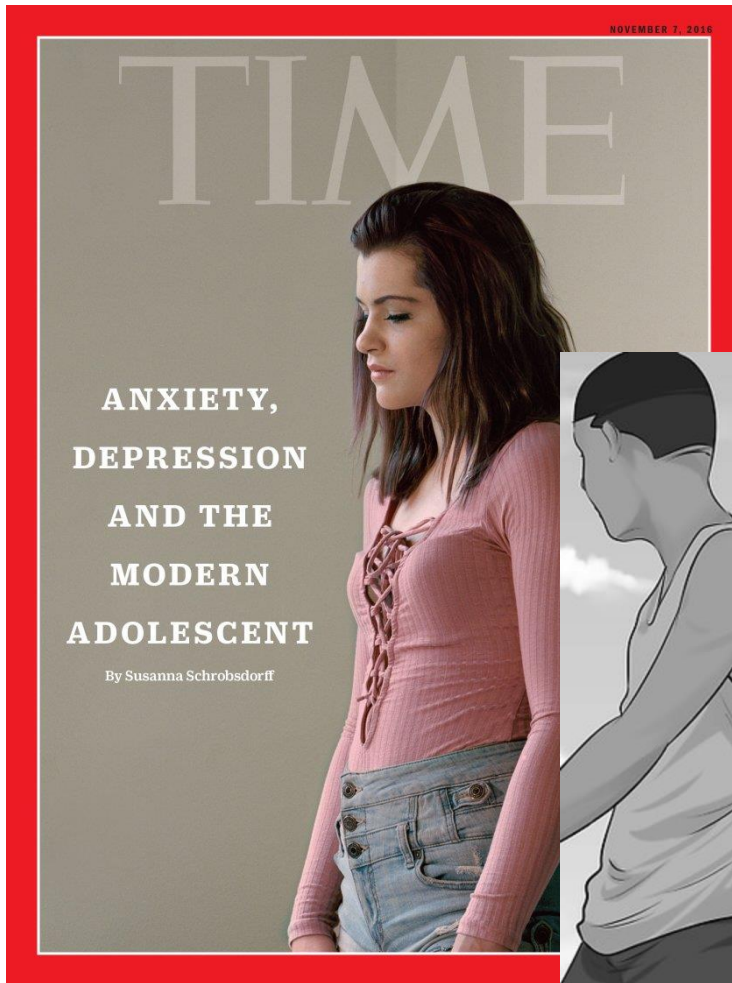


Image credit: <https://www.wikihow.life/Live-Alone-Happily>

Anxiety Disorders in Youth

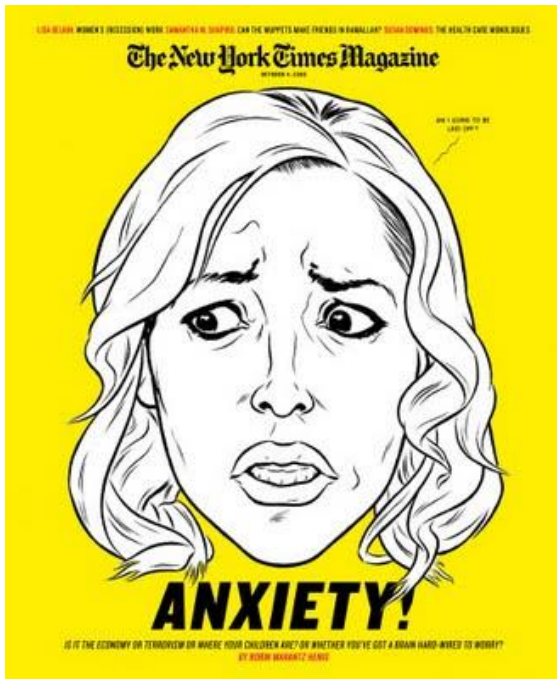
Anxiety Disorders **start young**, can be **chronic**, impact developmental trajectory, and result in **accumulated impairment** and co-occurring conditions over time

Lifetime prevalence of mental disorder is 50%

- **50% of all lifetime cases start by age 14,**
- **75% by age 24**

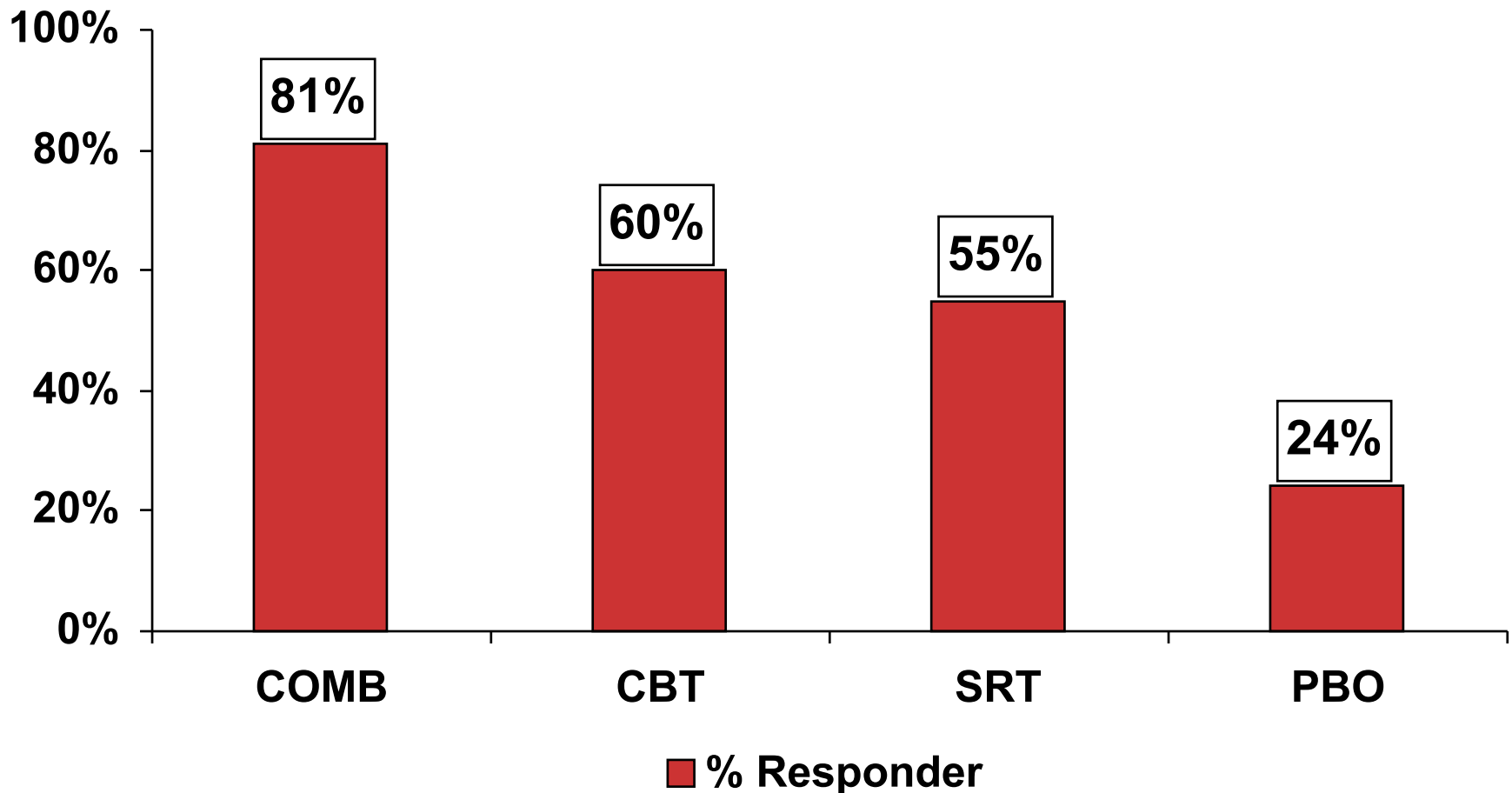
Median age of onset

- **Anxiety Disorders: 11 years**
- Impulse Control Disorders: 11 years
- Substance Use Disorders: 20 years
- Mood Disorders: 30 years



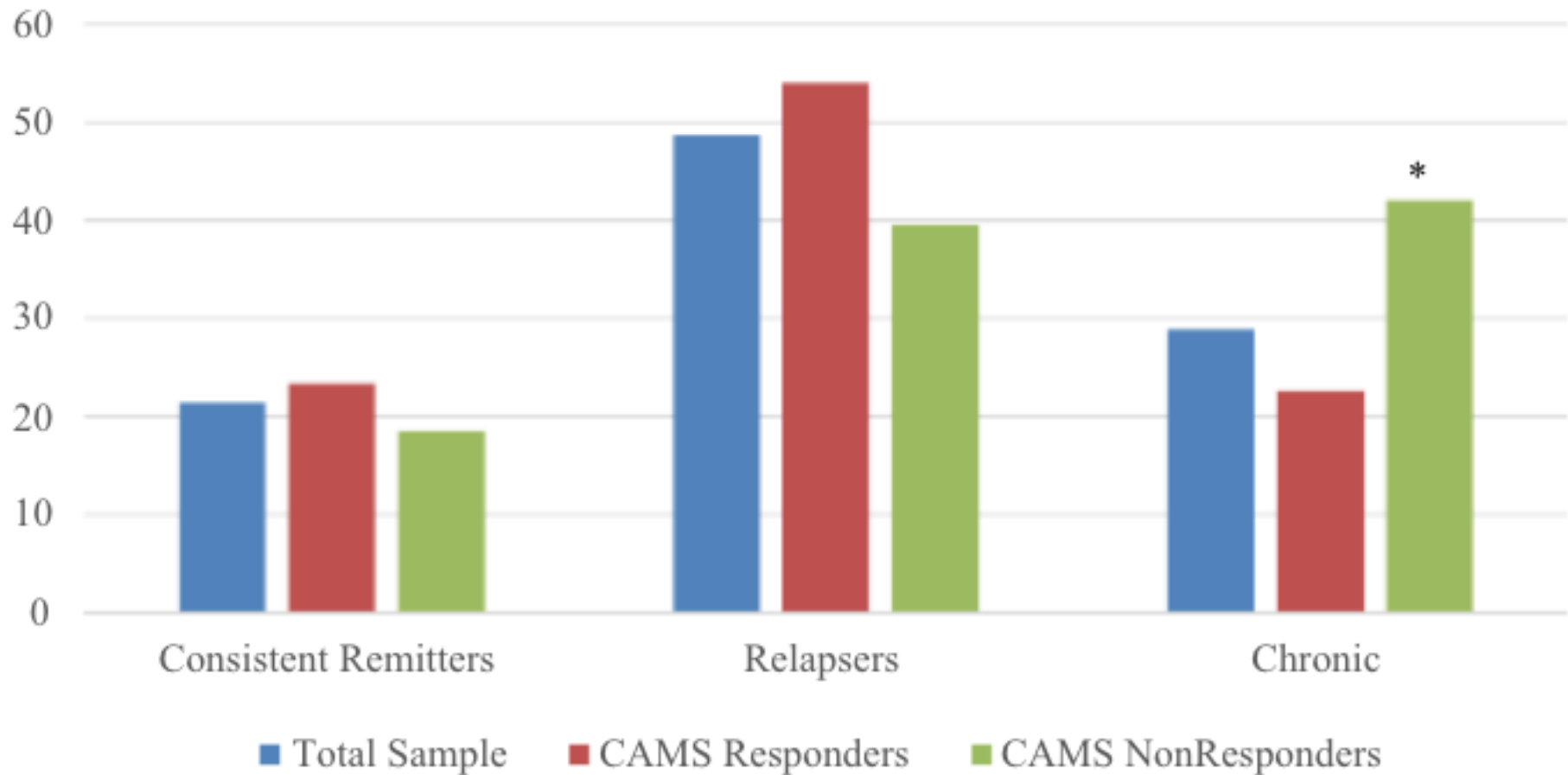
Kessler et al. (2005). *Archives of General Psychiatry*.

Child/Adolescent Anxiety Multimodal Study



Walkup et al, 2008 *N Engl J Med*;
Peris et al, 2015 *J Consult Clin Psych*

CAMS Long Term Follow Up Relapse Rates

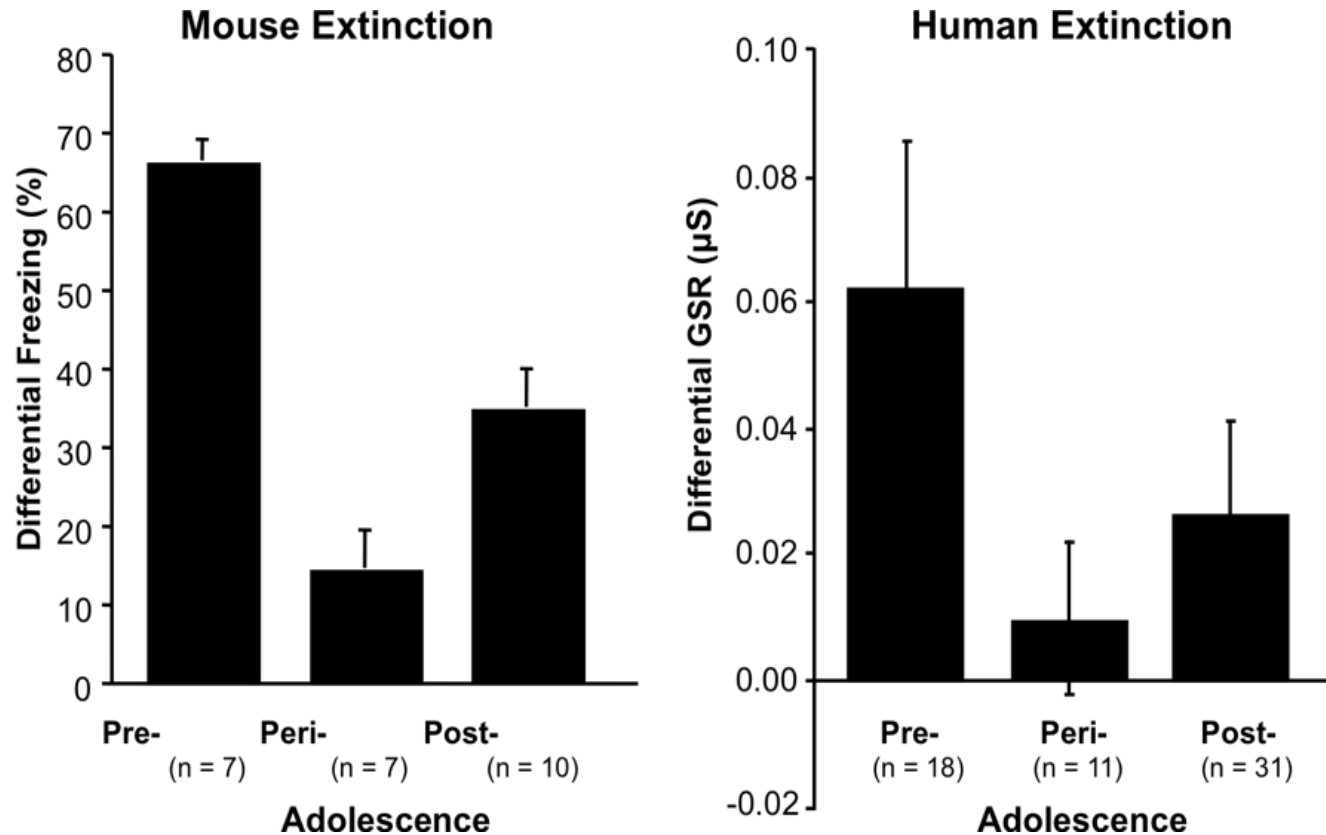


Ginsburg et al, 2018 *JAACAP*
Piacentini et al., 2014, *JAACAP*

What have we learned from anxious mice about anxious adolescents?



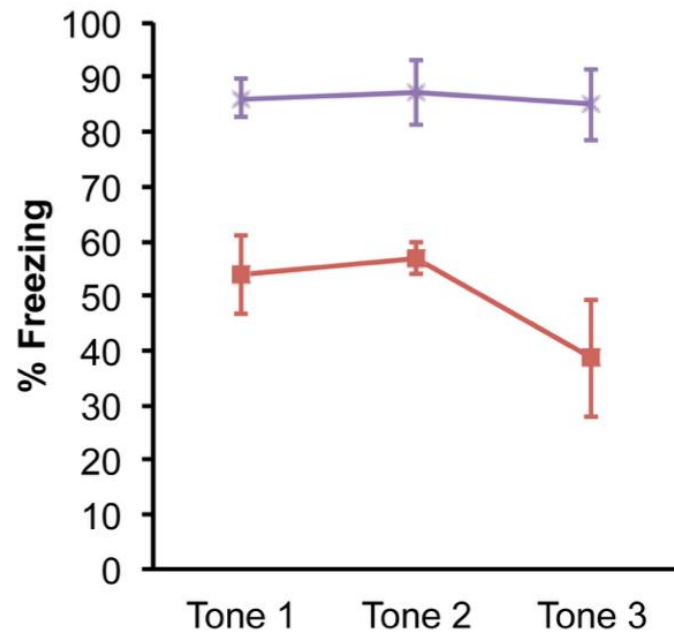
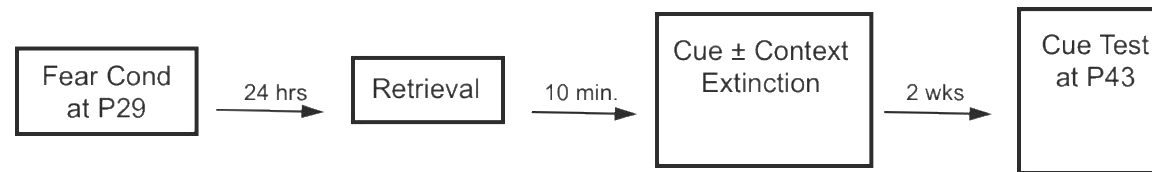
Attenuated Fear Extinction during Adolescence



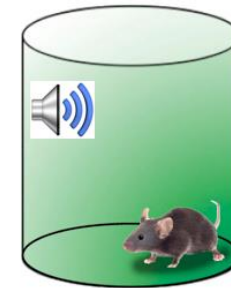
*** $p < .001$ compared with other groups

Pattwell, Duhoux, Hartley et al 2012 *PNAS*

Contextual Extinction Learning



Cue Extinction



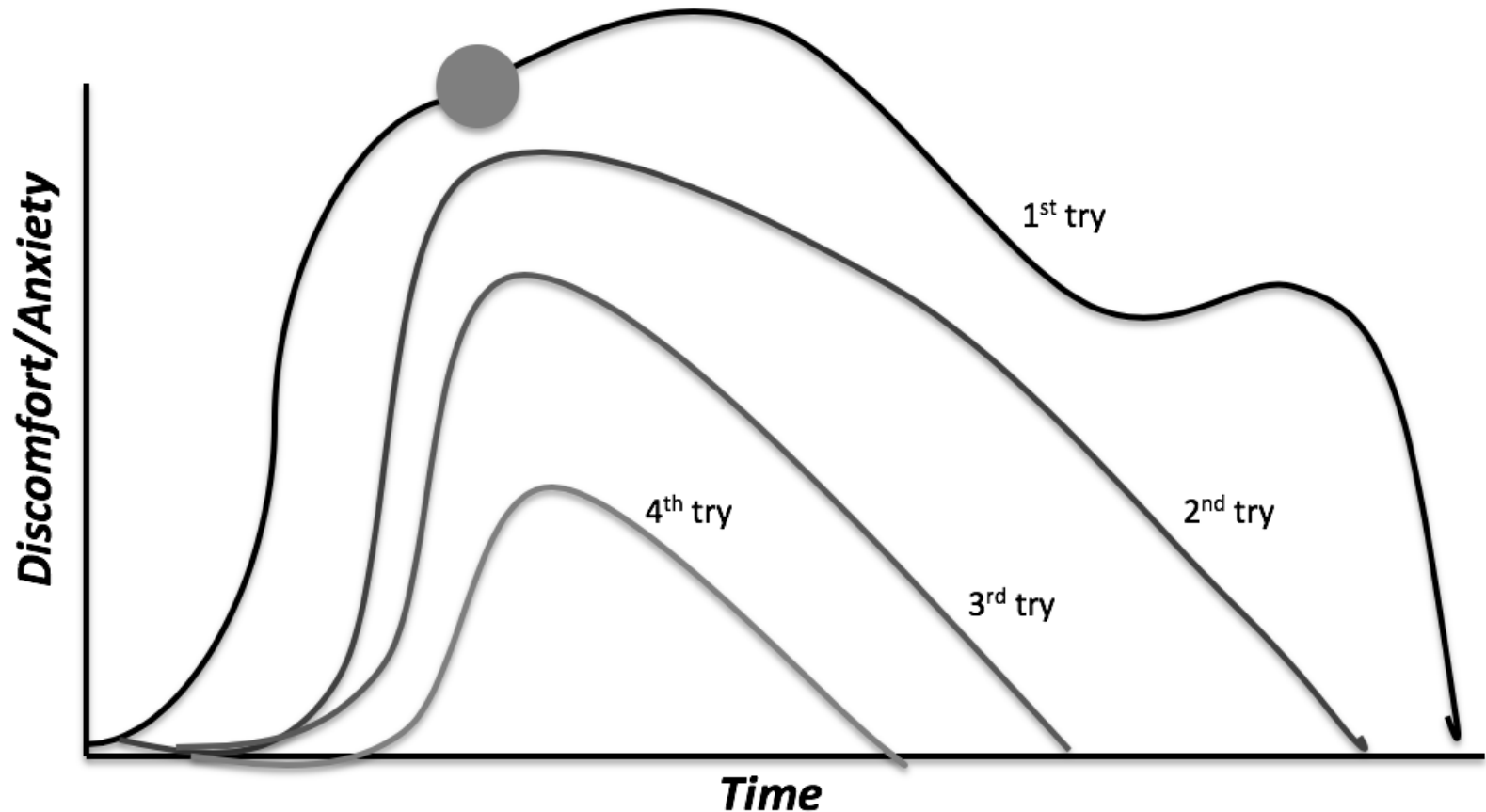
Contextual+Cue fear extinction paradigms attenuate fear memories acquired during adolescence

Pattwell, Bath, Casey et al 2011 *PNAS*

Context Really Matters



Exposure Therapy



Virtual Reality

What is it?

- Computer-generated simulation
- Three dimensional images / video
- Uses special electronic equipment
- Immersive

What is it used for?

- Gaming and entertainment
- Architecture
- Flight training
- Military training
- Medical education



Image credit <https://newatlas.com/why-vr-virtual-reality-matters-future/46739/>

Virtual Reality Exposure Therapy




Applications of Virtual Reality in Youth



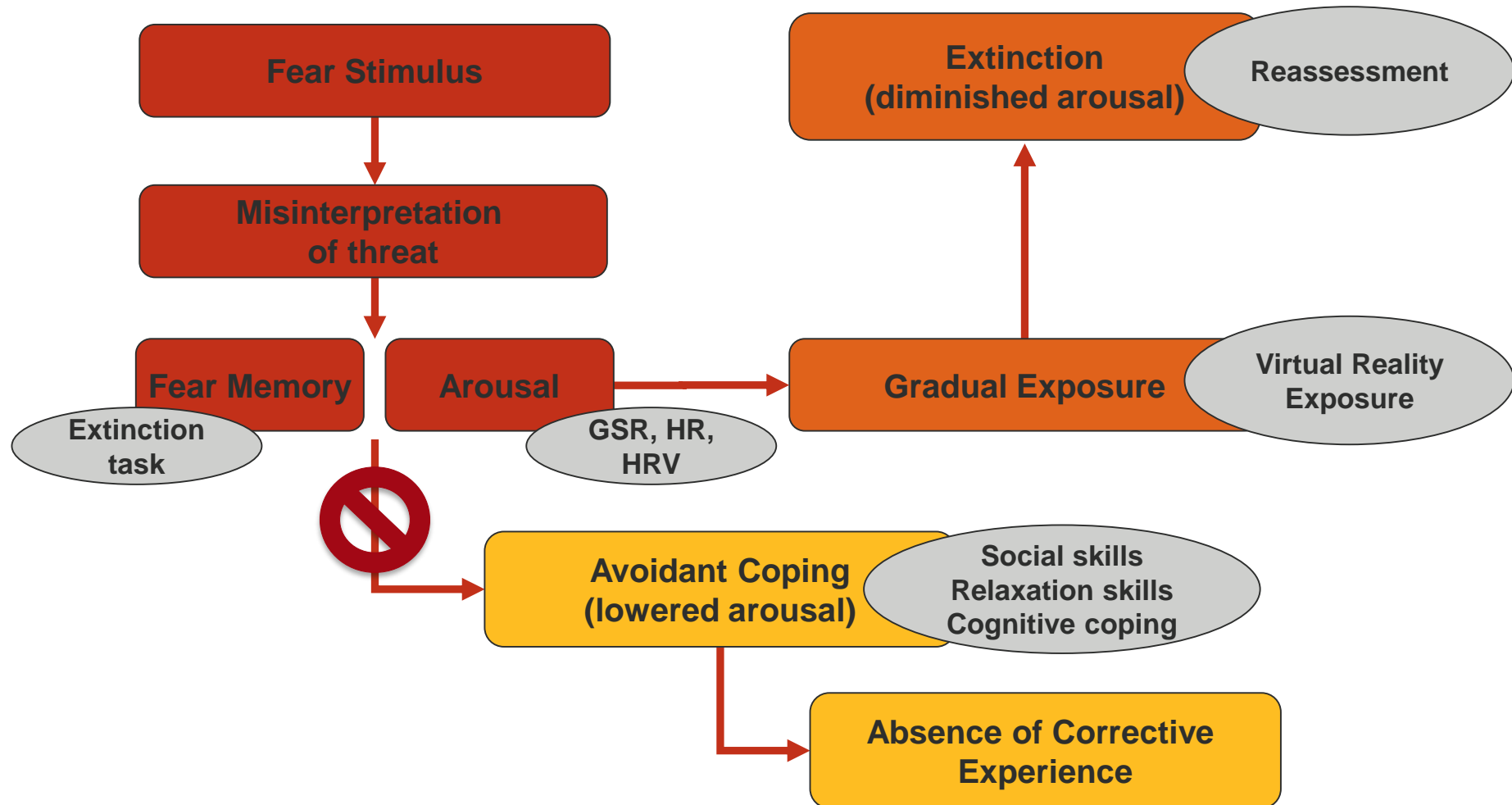
- **Medical**
 - Pain, distraction, and procedural anxiety (e.g., Birnie 2018, *J Ped Onc Nurs.*, Hua et al, 2015, *Pain Manag Nurs.*)
- **Psychiatric**
 - Autism Spectrum Disorder (Mesa-Gresa et al 2018, *Sensors*)
 - Aggression (Dellazizzo et al 2019, *npj Schiz*)
- **Non-clinical settings**
 - Emotion regulation (Hadley et al 2018, *J Ped Psych*)
 - Anxiety management (van Rooij et al 2016, *CHI*)
- ...we have a lot more to learn about clinical applications of VR, particularly for exposure therapy in youth

Safety Considerations

- “Cybersickness”
 - Similar to motion sickness
 - Risk of falling
 - Extremely low risk of seizures
- 
- A photograph of a person wearing a white VR headset, looking upwards. The background is dark blue.
- Addressed by
 - excluding individuals with history of severe motion sickness and seizures.
 - Participants in VR carefully monitored.

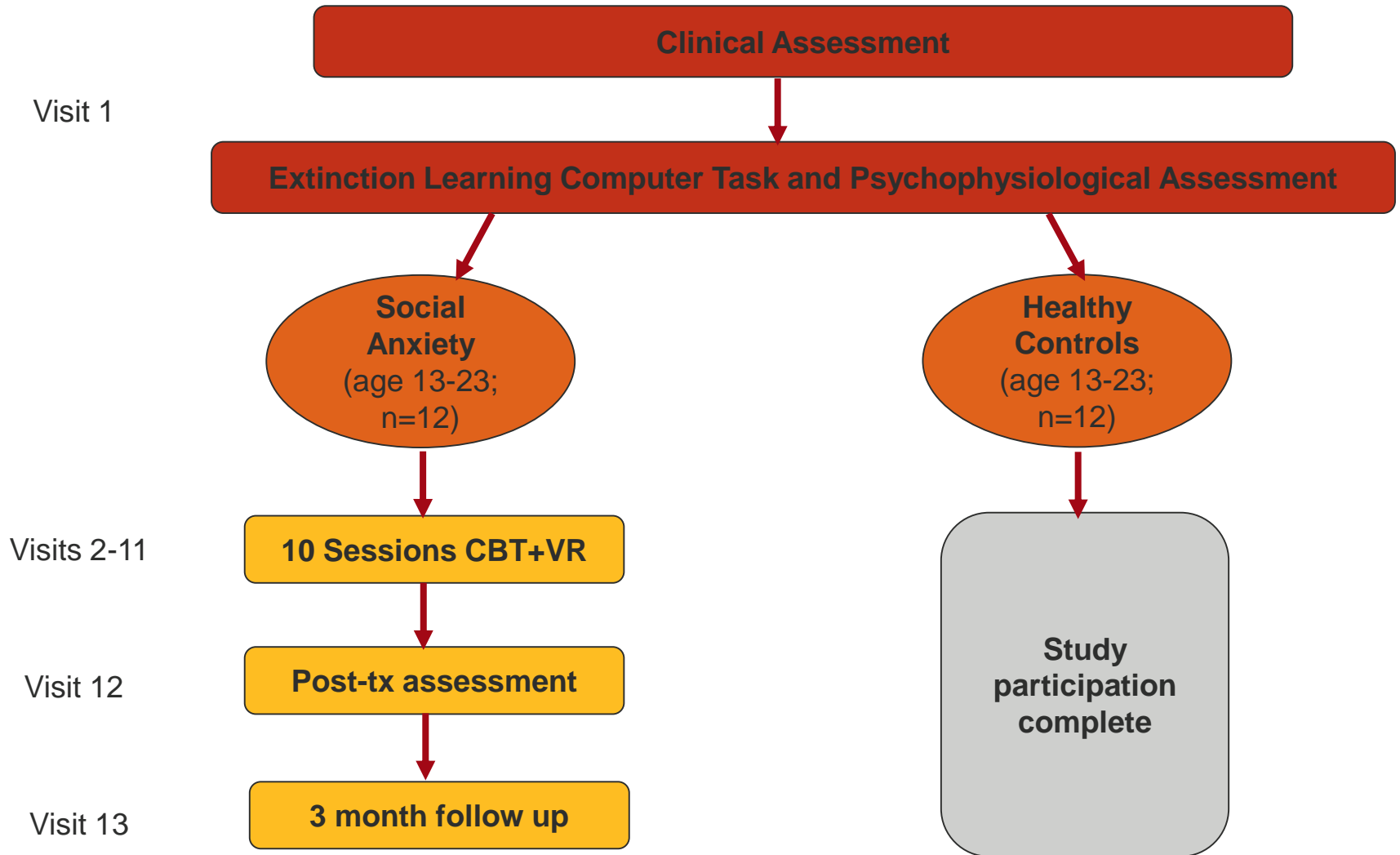
Won 2017, *Children*

Current Study



Adapted from PracticeWise ©

Current Study



VR Environments



VR Environments



Image credit <http://www.presentationssimulator.com/>

VR Environments



What's Next?



- Establishing **efficacy** and **effectiveness**
- Further understanding of the **neurobiological mechanisms** of treatment response and fear learning in youth

Future for VR research in youth:

Taking quality care **out of the psychiatric clinic** and into other settings, including the home.

Acknowledgements

Renae Beaumont, PhD

Shannon Bennett, PhD*

JoAnn Difede, PhD*

Shannon Gasparro, BA

Faith Gunning, PhD

Francis Lee, MD, PhD*

Justin Mohatt, MD

Seth Norrholm, PhD

Melissa Peskin, PhD

Jen Schild, BS

John Walkup, MD*

NYP Youth Anxiety Center

Thank you to the **Brain & Behavior Research Foundation** and their donors for their generous support of this work and the advancement of early career investigators.

mip2051@med.cornell.edu

* NARSAD YI Grant Mentor / Collaborator

Take Home Messages

- **Anxiety disorders are pervasive in youth**
- **Current treatment (exposure therapy) needs augmentation**
- **Exposure therapy and coping skills training in youth might be enhanced in realistic contexts**
- **VR could be the key and has already improved treatment in other domains and populations**
- **If integrating VR into CBT is feasible and acceptable, future directions could include:**
 - **Understanding neurobiology of treatment response in youth**
 - **Improving accessibility to quality mental health care**



NewYork-Presbyterian
Youth Anxiety Center

