

XRP

XR in PEDIATRICS

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Project: Invite Only VR: A virtual reality game-based tool focused on the screening, prevention, and intervention of e-cigarette use and mental health concerns in adolescents





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XR in Pediatrics (XRP) focuses on the use of extended reality (virtual, augmented, and mixed reality) within research, clinical practice, and patient/family and provider education with the goal of improving lives and reducing disparities of youth, young adults, and their families.

Building upon over 12 years of experience and success in the development and evaluation of XR and game-based health interventions and simulation-based education and research, **XRP** is focused on improving the lives of youth and youth adults, particularly those at risk for experiencing health disparities associated with race/ethnicity, age, gender, sexual identity, socioeconomic status, and disability.

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Asher Marks, MD, Assistant Professor, Yale Pediatrics, co-director of XRP at Yale Pediatrics, Director of Pediatric Neuro-Oncology; Director of the Adolescent and Young Adult (AYA) cancer program for Yale New Haven Children's Hospital **(co-I)**

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Claudia Santi-Fernandes, EdD, LPC, Assistant Professor, Yale Internal Medicine; Deputy Director of Mental Health for the Yale Center for Health & Learning Games/play2PREVENT Lab; licensed clinical psychologist **(co-I)**

Veronica Weser, PhD, Associate Research Scientist, Yale Pediatrics; Associate Director, play4REAL XR Lab, associate director, XRP at Yale Pediatrics **(project manager)**



For this project, we have assembled a multidisciplinary team of researchers, clinicians, game developers, and stakeholders with expertise in:

- Use of virtual, augmented, and mixed reality (extended reality or XR) in adolescent health interventions
- Serious videogames for behavior change and health promotion in adolescents and young adults
- Clinical application of digital technologies
- Substance use prevention, including e-cigarette use and nicotine addiction
- Mental health screening and treatment in schools
- Adolescent and family supportive care
- Implementation of game- and VR-based interventions in
- Conducting feasibility and acceptability pilot studies and randomized controlled trials with adolescents

Why Game-based Virtual Reality Interventions ?

Can be tailored specifically to schools and communities, high fidelity

Engaging, captured audience

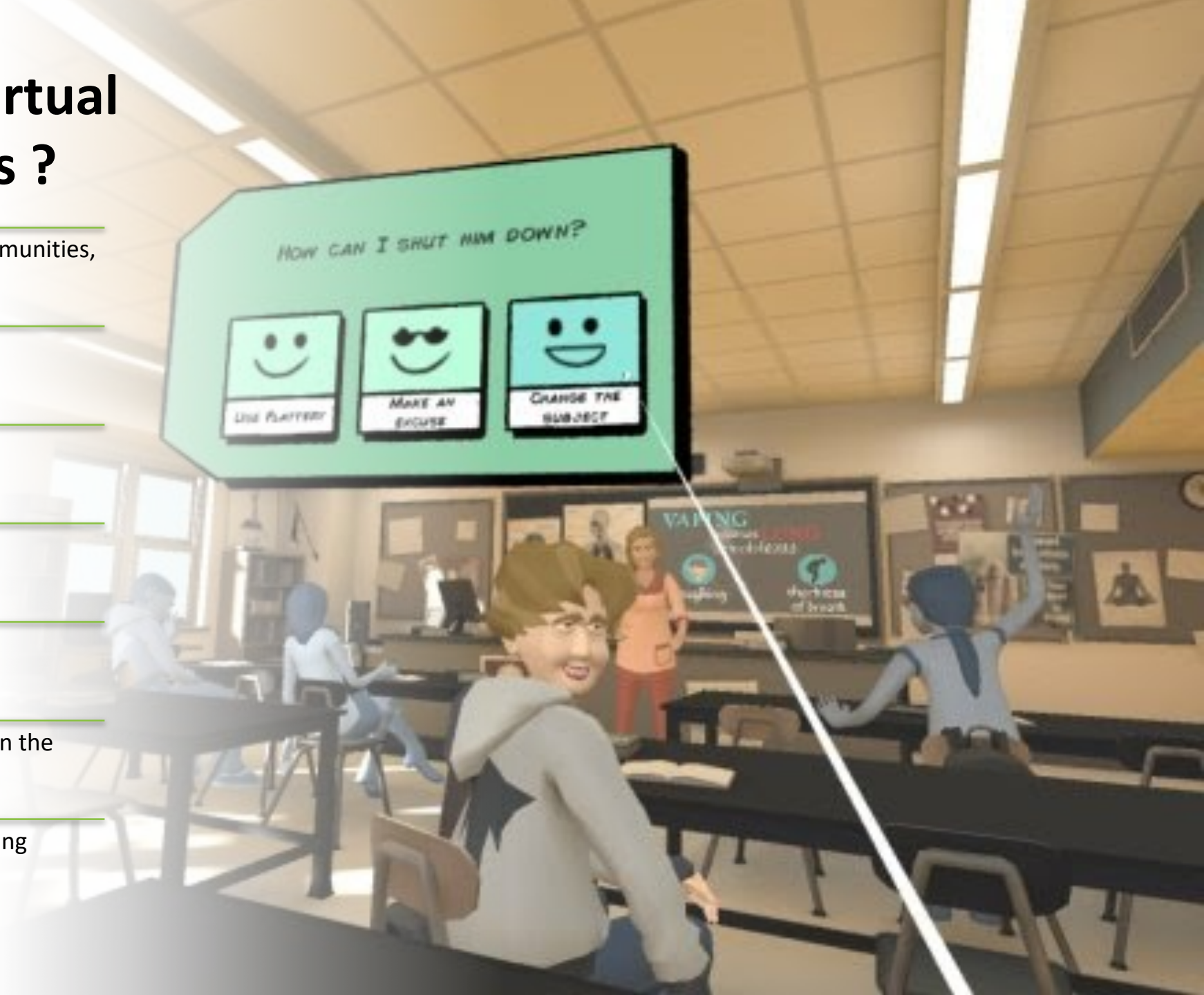
Experiential learning, skill practice

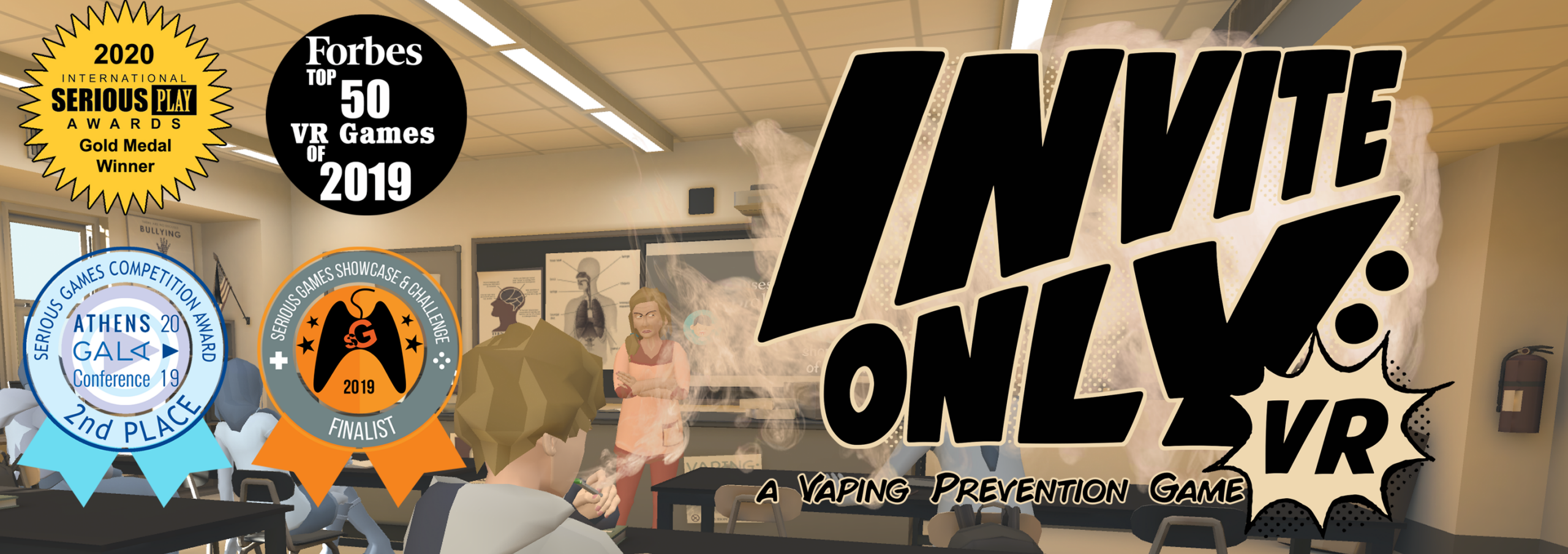
Embodiment (hand tracking, eye tracking)

High levels of immersion, sense of presence

Real-time connection to support services within the school and community

Promising evidence-based approach to delivering school-based health interventions





Invite Only VR is a virtual reality videogame intervention focused on **primary prevention of e-cigarette use** in adolescents

- Findings from our research study with 285 adolescents aged 11-14 found that Invite Only VR significantly increased and sustained students' knowledge, perceptions of harm, and social perceptions of e-cigarette use six months after playing the game
 - Adolescents reported the game as highly enjoyable
 - 97% of adolescents finished the full game intervention
- **Web-based version of the game is currently being distributed to schools and other programs through a licensing agreement with Convergence, Inc.**

Screening, Prevention, and Early Intervention for E-cigarette Use and Mental Health Concerns

- Screening, prevention and early intervention strategies have shown to produce the greatest long-term impact on a person's health and well-being
- Screening strategies and early detection interventions for e-cigarette use and mental health concerns among adolescents may allow for more effective healthcare pathways by taking action long before health problems worsen or by preventing their onset
- Given the obligatory nature of school attendance, schools have been the primary context for delivering health interventions targeting adolescents, although they rarely include screening or early intervention for adolescents most at risk for e-cigarette use and the development of mental health concerns
- There is a **dire need for a multi-tiered intervention** that offer universal primary e-cigarette prevention content, selective prevention content for those at highest risk of initiating e-cigarettes (those with mental health disorders), and an indicated intervention for students who are currently vaping or have mental health concerns (real-time connection to school- and community based mental health and vaping cessation services)
- Currently, no such program exists; ***Invite Only VR*** is an excellent product that can be readily adapted for this urgent need



Development of a New Product: *Invite Only VR: A Multi-tiered Vaping and Mental Health Intervention*

Our goal is to extend and expand *Invite Only VR* to a NEW PRODUCT that includes components of a **multi-tiered** intervention: **universal** services for all adolescents, selective **prevention** services for those at higher risk, and **indicated intervention** services for adolescents who have started to engage in unhealthy behavior with specific focus on mental health.

Product features	Invite Only VR (current)	Invite Only VR: Multi-tiered (new)
Increased knowledge and correction of misperceptions around e-cigarettes and nicotine addiction (universal prevention)	X	X
Peer refusal skill practice using voice recognition software	X	X
Media literacy skill practice	X	X
Screening for adolescents at risk for e-cigarette initiation with a focus on mental health concerns (screening)		X
Mental health education and awareness		X
Adolescent health advocacy skill practice (practice talking with someone about health concerns)		X
Connection to services real-time within the game (email or alert sent to school or community contact)		X
Webpage linked to game that is updated and maintained by the school or community program that provides tailored content and connection to services		X

Proposed Use of Blavatnik Support

Year 1

Estimated budget:
\$100,000

Iteratively develop our second product: ***Invite Only: A Multi-Tiered Vaping Prevention and Mental Health Awareness Game*** with input from our multidisciplinary team and community stakeholders in partnership with PreviewLabs, Inc.

Year 2

Estimated budget:
\$100,000

Evaluate *Invite Only: A Multi-Tiered Vaping Prevention and Mental Health Awareness Game* for usability, acceptability and efficacy within schools and community programs working with adolescents

Year 3

Estimated budget:
\$30,000

Final iterations to intervention based on Year 2's findings; License our new game to Conversage, Inc, to distribute the game nationally



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With Blavatnik funding and support, we will be able to take an important step towards our long-term goal to build a platform based around *Invite Only VR* games, and to continue to create new evidence-based health interventions that can be easily distributed within schools and after school or community programs.

Future *Invite Only Games* topics include:

- Marijuana use prevention
- Vaping Cessation
- Alcohol Use Prevention and Harm Reduction
- Adaptation for American Indian and Alaskan Native Teens (AI/AN)
- Coping with Depression and Anxiety