



## Beautiful Mind: A Virtual Reality Game Prototype for Adults with ADHD

Amany Alkhatat<sup>1</sup>, Wendy Whitner<sup>2</sup>, Bret Peterson and Ephraim Becker

<sup>1</sup>Teachers College, Columbia University, NY, USA

<sup>2</sup>Towson University, Towson, USA  
aa4396@tc.columbia.edu

**Abstract.** ADHD is a neurodevelopmental condition that affects a person's capacity to control their attention, and levels of hyperactivity and impulsivity. Hence, numerous aspects of life, such as jobs, relationships, and daily activities, might be affected by these difficulties, which may result in low self-esteem and emotional and social challenges. In this session, participants will be introduced to Beautiful Mind, a VR game prototype designed for individuals with Attention Deficit Hyperactivity Disorder (ADHD). The VR game was developed to provide an engaging, stimulating, and rewarding immersive experience for adults with ADHD. It was also helpful to involve individuals with ADHD in the early design stages to get their input and feedback.

**Keywords:** Immersive Virtual Reality, Games, ADHD.

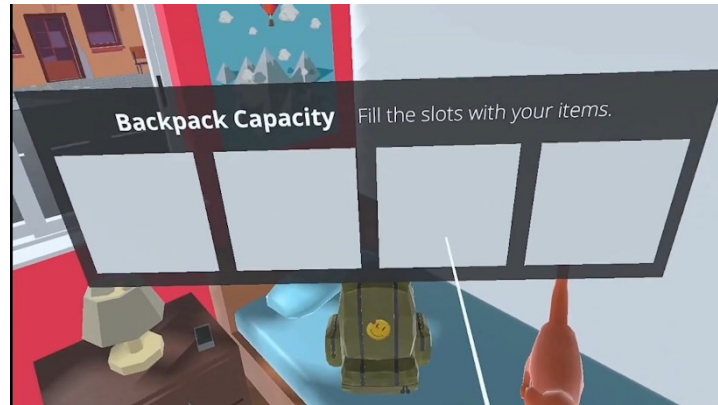
### 1 Introduction

Individuals with ADHD face many challenges daily, especially in terms of communicating with others and prioritizing tasks. There are a number of symptoms that hinder adults with ADHD from practicing their life normally. Two symptoms that the app focuses on are their inability to prioritize tasks and get on with others in social activities [1]. In order to design the game, user research and gathered prior research to determine the game narrative and game mechanics. User research included interviewing an adult who has ADHD besides attending neurodivergent events and meeting with event participants at AltspaceVR. User stories guided the design of the storyboard, game mechanics, and gameplay.

### 2 Game Design and Development

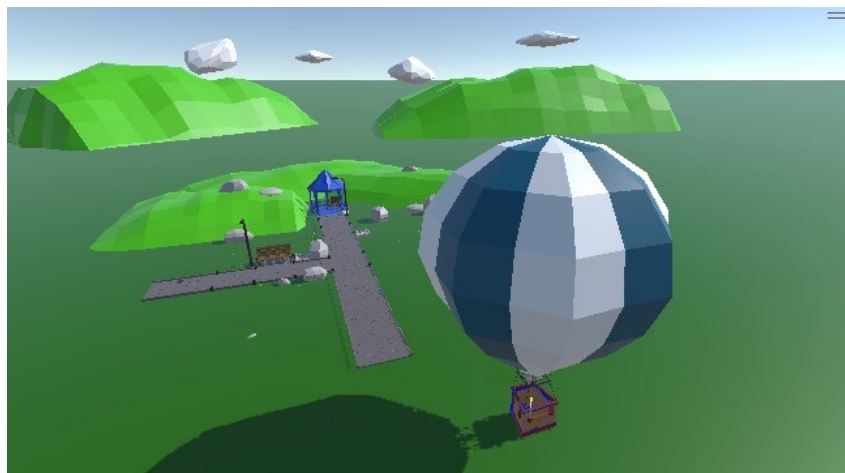
Individuals with ADHD, according to research, lack strong executive skills such as paying attention, time management, prioritizing, and organizing tasks, which prevent them from performing daily tasks effectively [2]. Therefore, such lack of cognitive abilities has adverse effects on ADHDers in terms of low productivity and emotional and social instability [3]. Therefore, Harpin et al. [4], in their systematic review, indicated that "Self-esteem and social function outcomes were often reported to be poorer for individuals with untreated ADHD compared with non-ADHD controls, reflecting the burden of illness associated with ADHD" (p. 302)

Therefore, the goal of the game prototype is to improve two main skills: prioritizing tasks and the social aspect [5]. User stories helped in framing the game mechanics and scenes. The storyboard involved having the player pack for a trip to his/her dreamland (Figure 1) and having to take only necessary needs for the trip.



**Fig. 1.** First scene where the player has to fill out the slots with the necessary items to backpack for the trip.

Therefore, the goal of the game prototype is to improve two main skills: prioritizing tasks and the social aspect [5]. User stories helped in framing the game mechanics and scenes. The storyboard involved having the player pack for a trip to his/her dreamland (Figure 1) and having to take only necessary needs for the trip. Next, the player should head to the train station to embark on the trip; however, he or she will face challenges in terms of working hard to provide for the cost of the trip. So, they will need to prioritize tasks and socialize with NPCs to continue finishing their quests and finally land at their dream destination. The player should accomplish the tasks first with an NPC that will give the player hints and help the player focus on tasks, then, once the player progresses through the game, another NPC will replace the first one and will act as a novice learner. The purpose of introducing the second NPC in later stages in the game is to address whether the player has progressed from the novice stage to the expert stage. Due to time constraints and development requirements, the initial prototype only had the basic interactions, such as organizing necessary elements in the backpack, prioritizing work responsibilities in the workplace, a reflection scene, and reaching their destination, the balloon scene (Figure 2)



**Fig. 2.** The balloon scene, the final destination for the player to go to as a reward.

## Conclusion

Mind is a virtual reality game prototype that was developed to train adults with ADHD to practice prioritizing tasks and putting things in order in real life and the workplace and help them overcome social challenges. The game is based on a fantasy story of a journey where the player has to go on quests to finish tasks that would teach him/her to prioritize tasks and communication skills.

## Acknowledgments

The authors acknowledge instructors and students at TryUniverse who provided feedback on this project designed as part of the VR Interactions and Publishing course.

## References

1. Barkley, R. A., Murphy, K. R., & Fischer, M.: ADHD in adults: What science says. Guilford press. (2010)..
2. Teta, A.: Increasing homework completion in children with ADHD using the Mystery Motivator intervention. Doctoral Thesis. Hofstra University, NY. (2008).
3. Pfiffner, L. J., Barkley, R. A., & DuPaul, G. J.: Treatment of ADHD in school settings. *Attention deficit hyperactivity disorder: A handbook for diagnosis and treatment*, 3, 547-589. (2006).
4. Harpin, V., Mazzone, L., Raynaud, J. P., Kahle, J., & Hodgkins, P.: Long-term outcomes of ADHD: a systematic review of self-esteem and social function. *Journal of attention disorders*, 20(4), 295-305. (2016).
5. Author, F.: Contribution title. In: 9th International Proceedings on Proceedings, pp. 1–2. Publisher, Location (2010).
6. Goleman, D.: *Social Intelligence: The new science of human relationships*. Bantam Books. (2007).