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# ABOVE WATER: Extending the Play Space for Health

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**Abstract**

ABOVE WATER is a game that disseminates information about Clinical Anxiety Disorders, particularly Generalized Anxiety Disorder and Panic Disorder. This game focuses on teaching players about treatments as well as providing a safe space for discussion of personal experiences. This game focuses on using the physical world (physical space, physical and tangible cards) and the digital world (accessible by any phone or tablet with a modern web browser) as part of its gameplay.

**Author Keywords**

Games for Health, Mobile Games, Psychology

**ACM Classification Keywords**

J.3 [Computer Applications]: Health; K.8 [Personal Computing]: Games.

**Introduction**

Clinical anxiety is characterized as an anxiety experienced by an individual that becomes pervasive and affects their day-to-day behavioural functioning. The physical, mental, and social symptoms of anxiety disorders may include sweating, increased heart rate, and feelings of fear [1, 2]. Symptoms of anxiety are different for each subcategory of the disorder, and may be experienced differently by each individual. For someone that may be suffering from problems

with anxiety, gathering information about anxiety disorders, possible treatments, and places to seek help is the first step on the road to recovery. However, lack of support internalized by stigma surrounding mental health can often be a barrier. The game ABOVE WATER [3] was designed to help disseminate information about clinical anxiety disorders, particularly generalized anxiety disorder, and panic disorder.

### The Game

The game<sup>1</sup> is designed to be simple. Four players gather around the deck and take turns drawing cards. There are four types of cards: treatment cards, which provide information on specific treatments for further inquiry; anxiety cards, which symbolize the challenge presented by anxiety disorder; goal cards, which present different life goals players may be inspired to collect; and share cards, which encourage community and conversation. To win the game, players must collect the four life goal cards they choose to target at the beginning of the game and have no anxiety cards in their hand.

The digital component extends gameplay and encourages conversation, sharing, and collaboration by asking questions, thus allowing the discussion of experiences, presenting useful information, and 'myth busting'. The application also helps regulate the game by tracking players' in game collection goals. Additionally, the online digital component points to trusted sources of information and places where one can seek help from professionals.

ABOVE WATER presents information, but it is not a treatment itself. Instead, the possibilities for treatment are presented as puzzle pieces to health. Seeking professional help is emphasized.

<sup>1</sup> See the video of the project by accessing the ACM reference [3]

### Gameplay

The game is a mixture of both a physical card game, as well as digital component which can be accessed from any personal device with a modern web browser.<sup>2</sup> The application extends the space of the gameplay beyond the scope of the tabletop by adding mini-games that use the physical space. For example, the exercise mini-game Yoga is designed to demonstrate how changes to life style, including increase in physical activities, may be part of a full treatment plan.

*Yoga Mini-game:* Players do yoga poses for a short period of time. This is meant to stress the benefits of exercise.

*Deep Breathing Mini-game:* Players are lead through a collective meditative experience focusing on breathing patterns. This is to stress the benefits of mindfulness and relaxation.

Information is provided about treatments requiring the help of professionals, but are not represented in an active mini-game. To provide further information and allow for discussion of these treatments, as well as, other information such as reducing stigma, there is also games that focus on discussion. This includes myth busting and sharing.

*Sharing Mini-game:* Players either collectively answer a question from a list, each provide a question and have one be chosen randomly, or each one answer the same question and have the answer be selected for discussion. Collection of the content is done on the device, while discussion is done face to face. For example, players might be asked to provide a 'tip for a friend' about how to manage a panic attack in a public location, and a random 'tip' will be picked and discussed. This personalizes each play experience and allows players to share their own experiences.

<sup>2</sup>The online game is available at: <http://play.hcigames.com/abovewater/>



**Figure 1:** Here an anxiety card is directing players to the digital component to play the mini-game myth busting.

*Myth Busting Mini-game:* Players must discuss a 'mental health myth' and decide whether it is true or false. Feedback is provided to their answer such that the player can learn why a myth is true or false. Often these myths are true in some situations, or based on a false premise and it is important to provide this information.

### Combining Physical and Digital Spaces

The main innovation of ABOVE WATER is the combination of both physical cards, physical space, and digital content to expand the play space beyond the regular scope of a card game.

*Yoga Device Interaction:* Players hold their device in their hand as they do yoga and it vibrates if they move to much while in the pose. This uses the physical space in the room. While the mini-game is in effect, the players are doing more than a simple card game and this may make them consider the reality of the content provided in game.

*Deep Breathing Gameplay:* The deep breathing mini-game has players breath in and out in response to instructions on the screen. A meditative ocean sound is played. As players are doing the activity at the same time, this stresses collaboration.

*Sharing Card Digital Enablement:* Personal content is collected on their personal device. Using a personal device makes players more likely to enter personalized information (rather than saying it out-loud) and also allows the game to choose a random entered response to discuss, allowing for some privacy (the players will not know who's content is being discussed unless the player self-identifies).

*Myth Busting:* Players read a myth on their own device, then vote 'True' or 'False'. Players can discuss as a group, or simple enter their own responses. Having a digital device



**Figure 2:** A gameplay session with four players.



**Figure 3:** The digital component can be accessed on any device with a modern browser.

means we can have a very large library of myths to be discussed (as opposed to only being able to print one myth per physical card).

### Conclusion

ABOVE WATER is a game that seeks to help by providing information about clinical anxiety. The innovations of this game go beyond health by expanding the play space of this tangible card game using digital devices.

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### REFERENCES

1. Gavin Andrews, Megan J. Hobbs, Thomas D. Borkovec, Katja Beesdo, Michelle G. Craske, Richard G. Heimberg, Ronald M. Rapee, Ayelet Meron Ruscio, and Melinda A. Stanley. 2010. Generalized worry disorder: a review of DSM-IV generalized anxiety disorder and options for DSM-V. *Depression and Anxiety* 27, 2 (2010), 134–147. DOI : <http://dx.doi.org/10.1002/da.20658>
2. R. Parekh. 2015. What are Anxiety Disorders? American Psychiatric Association. (2015). <http://www.psychiatry.org/patients-families/anxiety-disorders/what-are-anxiety-disorders>
3. Rina R. Wehbe, Diane K. Watson, Gustavo F. Tondello, Marim Ganaba, Melissa Stocco, Alvin Lee, and Lennart E. Nacke. 2016. ABOVE WATER: An Educational Game for Anxiety.. In *CHI PLAY'16 Extended Abstracts*. Austin, TX, USA. DOI : <http://dx.doi.org/10.1145/2968120.2971804>