

Serious Game Design Concept

Assignment 2
ARIN6904 Games and Mixed Realities
The University of Sydney



**Sheepy
Sleepy**



Yue Xiu
yxiu9995 | 510404406



Yancheng Zhang
yzha7774 | 520100756



Sheepy Sleepy is a Match 3 healthcare mobile game helping players fall asleep and improving their mental health.

In Sheepy Sleepy, **players take on the role of shepherds herding scattered flocks of sheep before nightfall every day**. In this dreamy world, each flock is composed of five sheep in several different colours across natural and magical maps like meadows, lakesides, deserts, and even underwater and in space. Selected sheep will follow the player to meet their scattered friends.

When **three sheep of the same colour come together**, they are safely returned to the sheep pen and leave vacant space for the player to collect other sheep. What players need to do is simply run across the expansive open-world maps, enjoying the charming scenery while collecting and herding the sheep before darkness falls.

With relaxing music and calming visuals, as identical sheep are gradually sent back, players unconsciously **let go of the unpleasantness and anxious thoughts** during the daytime, **relaxing into a gentle slumber** after the game.

Part 1

Game Design Foundations

Strategic Rationale

Background

Industry & Competitors

Target Audience

Potential Client

Significance & Innovation

Game Elements

Background

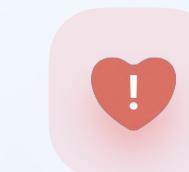
Sleep Issues: A Worldwide Wake-Up Call

Sleep is reported for its great benefits on physical health, cognitive function, and **mental well-being** (SleepMaker, 2022). However, more than 80% of people claim to suffer from disturbance symptoms attributed to **poor sleep quality** (ResMed, 2023).



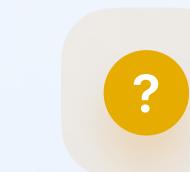
80%

of people suffer from symptoms of disruption due to **bad sleep**.



53%

More than half of sleep deprivation is related to **psychological distress**.



**Want to improve
Don't know how to**

Most troubled sleepers want to improve their sleep quality and relieve daytime pressure but have no idea where to begin.

Anxiety, depression, and study- and work-related concerns (33%) have become more and more prominent among the causes of sleep deprivation, marking an increase of approximately 10% compared to 2022. The majority of people report experiencing frequent mood changes, concentration issues, and daytime sleepiness after a bad night's sleep. In Australia, for instance, 80% of people **check their phones before bedtime**, and nearly one-third believe their mobile phones contribute to their poor sleep (Reynolds, 2022). Most of the individuals troubled by sleep issues are eager to change this situation but are **uncertain about where to begin** (SleepMaker, 2022).

In light of the advantages of getting good sleep and the rising trend of sleep disturbances in our modern lives, there is a growing need to **address sleep-related issues**, which will also **contribute to mental health improvement**.

Industry & Competitors

Sleep Aid via Phone: Underperforming Apps, Insufficient Games

How to address the problem of falling asleep has long been a challenge, with existing solutions often **falling short of delivering meaningful results**. While most of the sleep aid apps utilise meditation to help users fall asleep, recent studies have shown that doing it right before bedtime does not necessarily increase sleep quality, which raises **doubts about the effectiveness** of sleep apps in supporting sleep (Huberty et al., 2021; Al Mahmud et al., 2022). Users have also reported **a lack of consistent engagement** while using these apps (Kopka et al., 2023).

Troubled sleepers are also turning to sleep games as their alternative resort to fix sleep problems, however, there is **a scarcity of games that assist sleep**. Moreover, many of those few sleep games mostly rely on music and meditation techniques to aid in falling asleep, which have been proven to be not really helpful in sleep aid for the **ignorance of the affordance of video games** like visual effects and interactivity (Huberty et al., 2021). The current state of mobile phone sleep aid industry is **unsatisfactory**, leaving those distressed sleepers to suffer from the problems associated with poor sleep quality, affecting their mental well-being.

Top Sleep Apps / Games

Noteworthy Reviews

We investigated the mobile phone sleep aid industry through a review of scientific findings and existing apps and games. Even though popular sleep aid apps and games have a good number of downloads, many negative user reviews are worth paying attention to in order to find out their real needs and pain points that we need to address.



Slumber

"Not for me. The voices were mostly high-pitched. I just couldn't relax."
Jxck-in-the-box nimble



Relax & Sleep Well Hypnosis

"Didn't want to just use the meditation to get to sleep."
dave clark



Loóna

"Must go through things in a specific order and pace, which bothers me."
El Bridge



SleepTown

"It's very strict, I really tried hard to follow all the rules, and still failed."
Yuria Ramírez

Target Audience

Troubled Sleepers



Demographic Segmentation

Age: Primarily aimed at adults aged **18+** for a better ability to utilise this game to assist with falling asleep. We also appeal to a younger audience aged **4+** (Following the age ratings of the App Store and Google Play).

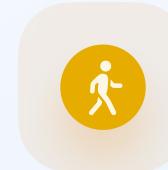
All genders

Occupation: Office workers, students, and **anyone with a busy and stressful schedule.**



Geographic Segmentation

Initially targeting users in **English- and Mandarin-speaking countries** for initial development but with potential for global reach.



Behaviouristic Segmentation

Live a **busy** lifestyle

Frequently **checking their phone before sleep**

Have trouble falling asleep or getting a good sleep



Psychographic Segmentation

Struggle with **sleep problems** or want to maintain a **restful sleep pattern**

Seek relaxation, stress relief, and improved **mental health** through gaming

Have an interest in **mobile gaming** and look for an engaging way to address sleep issues



Potential Client

Healthcare institutions

Mental health & sleep-related clinics

Sleep and healthcare researchers

Sleep product manufacturers for corporate branding

Game companies like Tencent and NetEase for commercial and **corporate social responsibility** reason

Significance & Innovation

A Game Changer that Transforms Player Habit

As mentioned in the preview section, more than half of people suffer from poor sleep due to **psychological stressors** (Sleep-Maker, 2022), and most of the existing sleep aid apps lack the incentive to engage people consistently. Simultaneously, current sleep-related games are scarce, despite **serious games being considered a viable option in healthcare settings** (Dewhirst et al., 2022). Consequently, current products struggle to effectively help individuals alleviate stress and improve sleep quality. Our game aims to fill this gap by focusing on mental health and sleep issues.

Furthermore, considering that most of people check their phones before sleep (Reynolds, 2022), our mobile game strives to **transform this potentially negative habit into a more positive one** by changing phone-scrolling behaviour, particularly for people who feel overwhelmed by endless scrolling, which can exacerbate mental stress and poor sleep. Our game can also **link to smart home systems** to remind players to sleep after their gameplay session and creates a dark, soothing environment by aligning the smart light in the player's room in the same pace of the change of game environment.



A healthcare serious game
helping fall asleep & improving mental health



A habit building approach
improving bedtime phone-checking behaviour

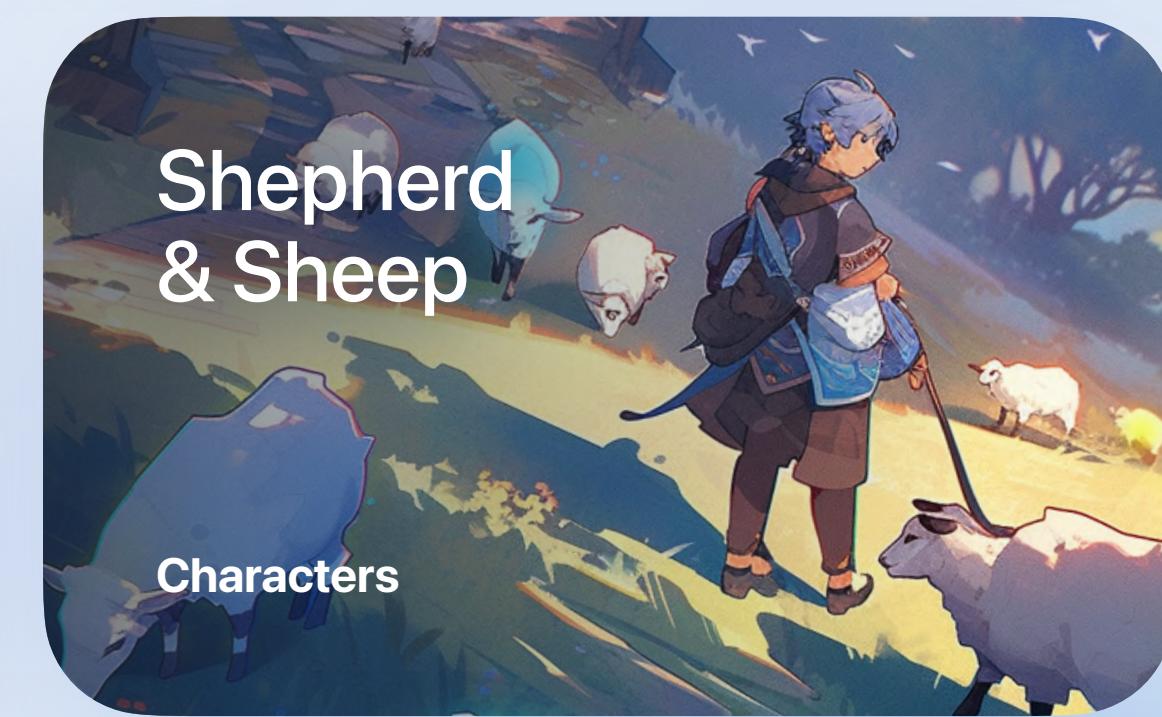


A linkage to real-life scenario
connecting game with smart home systems

Player as a shepherd to herd scattered flocks of sheep before nightfall every day.

Narrative Premise and Goals

Image source: (thatskygame, n.d.)



Leveraging the affordance of mobile phones

Mobile phone is easy to use in bed. Its flexibility and wide adaptation to Unity engine make Sheepy Sleepy an excellent choice to support sleep.

Platforms

iOS
Android

Device

Mobile Phone

Engine

Unity

Simple and Beautiful Interface

Limited and simple on-screen UI elements provide a more immersive gameplay experience, which can make players more focus on collecting sheep and ultimately create the visual-overwriting effects.

Interface

Mechanism and Actions

Easy-control movement

Players can control the movement of the shepherd using a virtual joystick located on the left side of the screen for intuitive and responsive navigation. Players can adjust their perspective by dragging the screen, similar to most 3D mobile games.

Explore and collect

Explore the game map and collect identical sheep to match with a simple tap.

Tap to gather

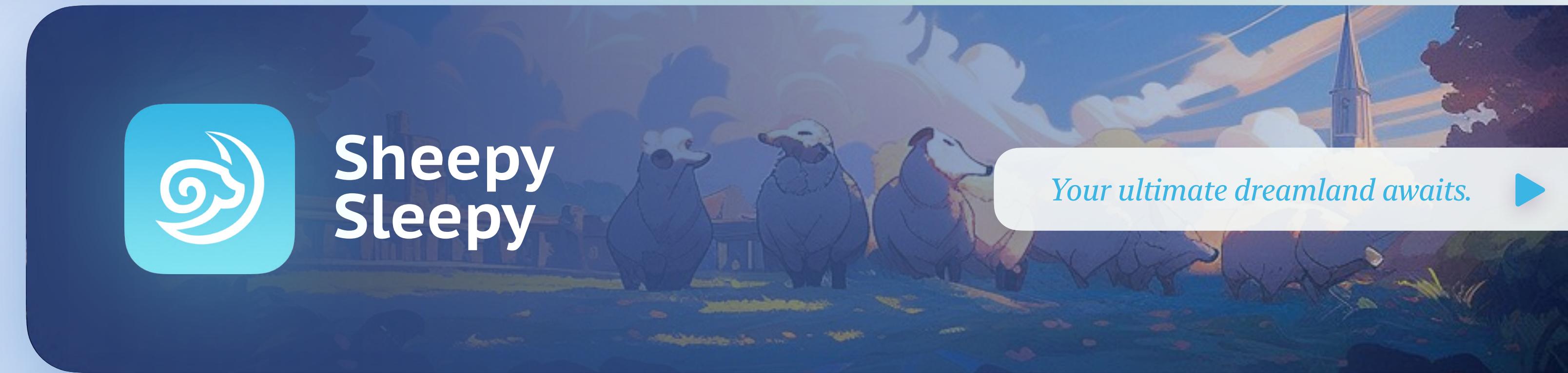
The game utilises a simple and engaging mechanic where players tap on sheep to make them follow.

Match-three collecting

When players gather groups of three sheep in the same colour, they will automatically return to the sheep pen. The continuous visual pattern-matching will serve as a visual-overwriting mechanism to help players fall asleep.

Strategic matching

Players need to strategically (but with low effort) match sheep to maximize their game score and rewards.



Rewards

When players achieve the quests:

- Collecting a predetermined number of sheep before nightfall
- Collecting all the sheep of one map
- Playing the game for consecutive days
- Milestone achievement for sheep quantity and variety
- Sheep Catalog Collection

They will get rewards like:

- Playability Rewards**
- Virtual medals
- Character / sheep outfits
- Decoration of house and sheep pen
- Unlock new types of sheep & maps
- Emotional Reward**
- Getting a pop-up notification of positive affirmation after a game round

Ghibli &
Genshin Impact
Anime Style

Visual Style

Concept Art Gallery

Concept

Strategic Rationale

Game Elements

Theoretical Analysis

Strengths & Weaknesses

Game Outcomes





All unattributed images were generated by
Midjourney and edited in Photoshop.

Part 2

Theoretical Framework and Outcomes

Theoretical Analysis

Visual Overwriting & Visual Pattern-Matching Games

Creating Dramatic Game Dynamics

Nielsen's Heuristic Principles in Game Design

Strengths & Weaknesses

Serious Game Outcomes

Theoretical Analysis

Visual Overwriting & Visual Pattern-Matching Games

According to our initial research, **sleep has a strong correlation with one's mental and emotional well-being**, and vice versa (SleepMaker, 2022). To address these issues, our game draws upon the visual overwriting concept to guide the overall gameplay design.



" Visual pattern-matching games prevent your brain from concentrating on what you saw during the daytime. You are less likely to suffer unwanted flashbacks. You'll sleep better."

Dr. Jane McGonigal

Play, don't replay! Based on a study by Oxford University published on PLoS ONE (Holmes et al., 2009)

Photo Credit (Verizon, 2020)

The concept centres around **visuospatial cognitive tasks** and has been applied in visual pattern-matching games such as Tetris and many match 3 games. These games can assist in **reshaping negative visualisations**, essentially redirecting the brain's focus away from distressing images, thus decreasing the probability of unwelcome flashbacks (McGonigal, 2014; Holmes et al., 2009). Additionally, the recent study has further shown that playing those visual pattern-matching games like Tetris for ten minutes can positively assist in **replacing negative visualisations**, potentially reducing the onset of insomnia thus contribute to overall mental well-beings (Ferriss, 2016).

Consequently, the task of Sheepy Sleepy shares the similar logic of visual pattern-matching games—to collect and match three of the same sheep based on matching criteria, aiming to **unwind the main sleep obstacles of mental stress for people through gaming**.

Theoretical Analysis

Creating Dramatic Game Dynamics

Building upon the game logic, we developed our game based on a **dynamic and aesthetic model** from LeBlanc to enhance playability. The model utilises dynamic tools such as illusions to create uncertainty and the ticking clock to imply inevitability, generating dramatic tension and conveying emotional content (LeBlanc, 2005).

We have set the game in an open-world map for players to explore and interact with the environment while collecting and matching the flocks of sheep. However, there is a conflict between our game's aim to help people unwind and fall asleep and the dramatic tensions that may stimulate excitement in players.

To **balance the dramatic tensions and create an overall tranquil environment** in our game, we have taken two approaches. Firstly, we use the sheep's bleating mixed with calming background sounds to create uncertainty. These sounds provide an ambiguous hint to guide players evaluate the distance to the sheep. Meanwhile, the sounds also serve as white noise to immerse players in a relaxing and sleepy environment. Secondly, we employ the gradual onset of nightfall as the ticking clock of inevitability, signaling the end of a game round and indicating bedtime.

In-Game Dynamic & Aesthetic Example: Sound Design

**Sheep bleat**

Indicating distance & location

**Ambient sound**

Serving as natural white noise

**Background music**

Creating relaxing vibe

Theoretical Analysis

Nielsen's Heuristic Principles in Game Design

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition over recall
- Flexibility & efficiency of use
- Aesthetic and minimal design
- Help users recognize, diagnose, and recover from errors
- Help and documentation

Furthermore, we draw inspiration from the usability heuristics outlined in Jakob Nielsen's 10 general principles, intending to elicit **satisfaction and emotional relaxation** from players as they explore the sheep-themed map. We use three principles as examples to illustrate our design philosophy.

Firstly, considering the focus of our game on smoothing psychological stressors and improving poor sleep quality, we strive to create a delicate visual style to establish a tranquil environment for players. We draw upon the **aesthetic and minimalist design concept** (Nielsen, 1994) to assist us in achieving this goal, as the concept indicates the necessity to keep visual design supportive of the desired **player's gaming**

experience. From the players' perspective, we have chosen the Ghibli style as our core visual theme due to its emphasis on nature and its ability to create an immersive sense of realism in a world that blends fantasy and reality (Cafolla, 2016). This choice aligns with our objective of crafting a serene and immersive open world, designed to evoke gentle emotions.

Secondly, since our visual pattern-matching game revolves around various maps, we employ the concept of **consistency and standards** to ensure uniformity in map design (Nielsen, 1994). This concept involves maintaining an overall art style consistency and the reuse of materials to enhance players' ability to recognise

different maps, ultimately reducing the resources required for game production (Nielsen, 1994). Furthermore, we strategically introduce unique elements corresponding to the various map themes to stimulate players' exploration desires, thereby **preventing potential aesthetic fatigue** resulting from repetitive materials.

Thirdly, our game can connect with smart home systems, allowing the sync of the fading sky with the lights in the player's room. When night falls in the game, the lights will also go out automatically. This **match between system and real world** seamlessly helps player fall asleep and calm down.



Strengths

Our game, through visual matching-pattern game logic, serves as a form of intervention that **subconsciously eases stress**, thereby positively impacting sleep quality.

Our game incorporates auditory and visual elements, such as white noise and expansive open-world maps, to enhance playability. This feature allows it to **engage players for extended periods** compared to existing sleep aid apps, **addressing a gap** in the market for sleep-focused games.

Our game is compatible with mobile phones, ensuring **broad accessibility**. Most of people check their phones before bedtime, which is reckoned to be negative to sleep quality—but we change it to be positive. Additionally, it can seamlessly integrate with smart home systems, **making stress reduction and sleep aid more convenient for players** in their daily lives.



Weaknesses

While we strive to create a universally applicable solution by incorporating logic from visual pattern-matching games to aid sleep, the effectiveness of our game in alleviating stress may **vary among individuals**. It largely depends on each player's personal perception of this gaming style.

One method to help players relax and enhance playability involves **constant map updates**. However, this necessitates high requirements in terms of game development and cost considerations.

We aim to establish a tranquil environment, utilising elements such as nightfall and sheep-themed cues to promote sleep. However, as a game, there is still a concern that **players may become addicted** to it and delay their bedtime.

Game Outcomes

Sheepy Sleepy as A Serious Game

Our game is designed for the purpose of promoting **mental well-beings**, specifically to help people **sleep better** by providing a de-stress gaming experience. Psychological stressors are a common issue that affects sleep quality, as evident from our research and daily observation. It can be seen as a chronic mental health issue that is difficult to catch, and people often become accustomed to it in their day-to-day lives.

Therefore, **the teaching and meditation process of Sheepy Sleepy focuses on psychological therapy**. The visual-matching pattern game style, combined with soothing sounds and visual elements, provides a way to intervene in negative stress, at the same time, promoting mental well-being and creating a healthier sleep environment through our accessible and affordable mobile game.

In the future development, we would like to collaborate with events like World Sleep Day or organisations like the Sleep Health Foundation to encourage more people to take the correlation between stress and sleep issues seriously and offer further resources for sleep aid.



End of report



2432 words
Main text word count

Excluding navigation bar,
table of contents, and references



Reference List
on the next page

- Al Mahmud, A., Wu, J., & Mubin, O. (2022). A scoping review of mobile apps for sleep management: User needs and design considerations. *Frontiers in Psychiatry*, 13, 1037927.
- Apple Developer. (n.d.). *Age ratings*. Apple. Retrieved September 10, 2023, from <https://developer.apple.com/help/app-store-connect/reference/age-ratings/>
- Cafolla, A. (2016, November 29). *What makes Studio Ghibli so magically immersive?*. Dazed. <https://www.dazedsdigital.com/artsandculture/article/33864/1/what-makes-studio-ghibli-so-magically-immersive>
- Dewhirst, A., Laugharne, R., & Shankar, R. (2022). Therapeutic use of serious games in mental health: scoping review. *BJPsych open*, 8(2), e37.
- Ferriss, T. (2017). *Tools of Titans: The Tactics, Routines, and Habits of Billionaires, Icons, and World-Class Performers*. Houghton Mifflin.
- Google Play Help. (n.d.). *Apps & Games content ratings on Google Play*. Google. Retrieved September 10, 2023, from <https://support.google.com/googleplay/answer/6209544>
- Holmes, E. A., James, E. L., Coode-Bate, T., & Deeprose, C. (2009). Can playing the computer game "Tetris" reduce the build-up of flashbacks for trauma? A proposal from cognitive science. *PLoS one*, 4(1), e4153.
- Huberty, J., Puzia, M. E., Larkey, L., Vranceanu, A. M., & Irwin, M. R. (2021). Can a meditation app help my sleep? A cross-sectional survey of Calm users. *PLoS one*, 16(10), e0257518.
- Kopka, M., Camacho, E., Kwon, S., & Torous, J. (2023). Exploring how informed mental health app selection may impact user engagement and satisfaction. *PLOS Digital Health*, 2(3), e0000219.
- LeBlanc, M. (2005). Tools for Creating Dramatic Game Dynamics. In T. K. Salen & E. Zimmerman (Eds). *The Game Design Reader: A Rules of Play Anthology* (pp. 335-371). MIT Press.
- McGonigal, J. (2014, March 27). *Play, don't replay! HELP PREVENT PTSD*. JANEMCGONIGAL. <https://janemcgonigal.com/2014/03/27/help-prevent-ptsd/>
- Nielsen, J. (1994). *10 Usability Heuristics for User Interface Design*. Nielsen Norman Group. <https://www.nngroup.com/articles/ten-usability-heuristics/>
- ResMed. (2023). *ResMed's Annual Global Sleep Survey Finds 8 in 10 Adults Experience Signs of Disruption Related to Their Quality of Sleep*. <https://investors.resmed.com/investor-relations/events-and-presentations/press-releases/press-release-details/2023/ResMeds-Annual-Global-Sleep-Survey-Finds-8-in-10-AdultsExperience-Signs-of-Disruption-Related-to-Their-Quality-of-Sleep/default.aspx>
- Reynolds, K. (2022). *2022 Mobile Phone Usage Statistics: How addicted are we?* Reviews.org. <https://www.reviews.org/au/mobile/2022-mobile-phone-usage-statistics/>
- SleepMaker. (2022). *2022 Australian Sleep Awareness Week Survey Results*. <https://www.sleepmaker.com.au/sleep-guide/sleep-better-tips/2022australiantsleepawarenessweeksurveystatus/>
- thatskygame.. (n.d.). *Sky Media*. Retrieved on 2023, September 2, from <https://www.thatskygame.com/#media>
- Verizon. (2020). *TED Talk SuperBetter Presentation Jane McGonigal*. https://www.verizon.com/about/sites/default/files/styles/hero_tablet/public/2020-07/TED%20talk-SuperBetter-Presentation-Jane-McGonigal.jpg
- Wang, Y., Wang, Z., Liu, G., Wang, Z., Wang, Q., Yan, Y., ... & Pang, X. (2022). Application of serious games in health care: scoping review and bibliometric analysis. *Frontiers in Public Health*, 10, 896974.
- Wattanasoontorn, V., Boada, I., García, R., & Sbert, M. (2013). Serious games for health. *Entertainment Computing*, 4(4), 231-247.


**Sheepy
Sleepy**
MADE
WITH
*
 Download on the App Store

GET IT ON Google Play


Yue Xiu
yxiu9995 | 510404406

Yancheng Zhang
yzha7774 | 520100756

Assignment 2
ARIN6904 Games and Mixed Realities
The University of Sydney

Not for commercial use.
* Not really going to be released.