



Building a narrative therapy game based on real world evidence

Since its inception, the Shadow's Edge game was built on two principles: **design with young people for young people** and **build real world evidence** to understand the impact of gameplay on players' resilience through in-house and third-party research. We have engaged intensively with over 400 young people, including 172 patients with serious and chronic illness, between 13 and 34 years old and analyzed millions of public online conversations to understand the attitudes and needs, drivers and barriers of young people toward their emotional and mental wellbeing.

Research Types and Studies performed



Product design studies.

Since game inception we have worked with over 400 young people to co-create the Shadow's Edge game. Through in depth player interviews, surveys and focus groups to work to understand players' context, objectives, needs, emotions, frustrations, behaviors, preferences and strategies around taking care of their emotional and mental wellbeing and translate this into game design. We perform playtests and player observations with various kinds of prototypes to validate and adjust our design choices. We are seeing a high awareness and willingness to engage around their emotional and mental wellbeing and a high prevalence of stress, depression, anxiety, ADHD or ADD and identity questions that drive the young people to us. The positive change they report back is finding a voice to express their struggles and connect with others more easily around difficult topics, building a practice to use writing, art and breathing for dealing with mental turmoil and reflecting about themselves in a new way that opens fresh perspectives and makes them feel unstuck.



Psychological studies.

With our psychological impact studies we measure the impact of gameplay on our players. These studies typically engage players over a longer period of time and often combine quantitative and qualitative research techniques, such as self-assessments on scales for resilience and wellbeing, with player diaries or the thematic analysis of anonymized or player published game content. Using the anonymized gamedata pool, we also investigate the emotional and mental states reflected in the journals and art. Our first completed study investigates the impact of gameplay on Emotional Resilience with support of University Twente during our Beta phase from Aug – Oct 2017. Results showed a significant impact on seven factors contributing to emotional resilience, mainly optimism, positive self identity and emotional regulation. Currently we are performing a quantitative analysis on gameplay data combined with a thematic analysis of player interviews to understand the path that players take through the game to support their wellbeing and to deal with their mental and emotional struggles. .



Clinical Trials.

These studies are independent and are led by academic research partners to understand the impact of Shadow's Edge from a clinical perspective. The Digging Deep Project provides the game and sets-up the secure data exchange based on the study partners needs. Studies completed and in set-up:

- Lurie Children's Hospital Clinical Trial (Dec 2018 – Nov 2020) on identity formation, affect variability and emotional regulation.
- Multi-site follow-up study to clinical trial (in planning). Other studies in investigation.

Research regarding the science of wellbeing.



We commission big data studies to understand how young people communicate online about their mental and emotional wellbeing and what drivers and barriers they see to wellbeing. We see the majority of conversations taking place on message boards and topical sites and not on Social Media. Youth define wellness as physical, emotional and social wellbeing and express a need to speak unfiltered about their experience – and when feeling better to give back to support others. So far we commissioned three big data studies:

- Drivers, barriers, needs and attitudes towards Mental and emotional wellbeing in youths and young adults facing serious or chronic illness – (Culturintel, 2018)
- Youth perception of wellness/wellbeing, mental health and self-help and self care – (Culturintel, 2020)
- Drivers, barriers, needs and attitudes towards Mental and emotional wellbeing in youths and young adults in the cities of Soacha and Pereira in Colombia – (planned, Culturintel, 2021)



Product Design Research

Overview: More than 400 teen and young adult players were part of surveys, design sessions, playtests, player observations and interviews.

The majority of Shadow's Edge players has seen a therapist. About a third have been exposed to mindfulness, many are diagnosed with depression, anxiety disorders or ADHD. They display a high readiness to identify strategies and practices to support themselves.

We are seeing several commonalities in the young people who are attracted to our project and game: they are aged 16 – 24 years old, with a secondary group up to 34 years old, they enjoy writing or art already in their free time and are feeling overwhelmed or stressed and conscious about needing support for their emotional and mental wellbeing and search for support in the app stores directly or get the game recommended by their doctor or therapist. We get feedback on the importance of the guardian characters and the enjoyment in relating to characters that are open about their struggles. The game has supported our players in building a practice of reflection and journaling and adopting writing and art as a tool to deal with their challenges. Key requests for the future of the game are: new areas in the world, a customizable avatar, new ways to interact with each other and developing the mystery of the game with more quest elements and puzzles.

Objective: Understand player motivation, context and outcomes, validate design, story, mechanics and experience.

Method: Combination of surveys, speed interview and paid one hour think-aloud play sessions using game prototypes

Outcome: Players report gaining a new perspective and building a practice around using their writing and art to deal with difficult life situations and being able to communicate better about their situation. Some players reported gaining clarity on specific situations such as guilt and grief or gender identity related questions. The game has also helped players recognize their own potential even when others don't see it yet; Players report gameplay impacted their ability to express themselves and reach-out to others. They describe using the game often at night before falling asleep or in the morning as a positive alternative to social media. They also play during breaks when at work. We see a certain fatigue on the multitude of health apps out there and an unwillingness to pay for meditation apps. Players welcome the game approach, combination of therapeutic and relaxing elements and enjoy contributing to a project with a cause through the playtests.



Impact Study supported by University Twente and EGGZ

Aug 2017 – Oct 2017

Overview: During our beta phase we ran an impact study with 55 players, between 13 and 22 years old. 50% of the players were dealing with a physical illness (i.e. cancer, chronic lyme disease), 20% with mental illness (i.e. depression, ADHD) and 30% chose not to disclose.

Objective: Understand the impact of gameplay on the resilience of players. We investigated seven factors that contribute to emotional resilience. See box for details

Method: Player self-assessment before and after four weeks of gameplay; player diary for seven consecutive days; in depth player interviews. Players received USD 75 for study participation.

Results: A positive trend in the satisfaction for every resilience factor category among the respondents. For three categories Optimism, Emotional regulation and positive self-identity respondents answered significantly more positive in the follow-up survey. Many answers to open ended questions show a shift in how players relate to their situation:

Seven factors of emotional resilience positively impacted

1. Proactive Coping
2. Mindfulness & Acceptance
3. Optimism
4. Emotional Regulation
5. Derived Meaning
6. Positive Self Identity
7. Connectedness

"The game does make you expose your feelings if you are honest and challenges you to continue to believe healing does come." – David (14)

"The game helped me relieve stress, cope with new challenges, and makes me feel less alone in my struggles. I loved being able to process ideas directly related to my situation. I felt like the journal prompts were written just for me!" – Katrina, 23

Limitations: This was a study without randomized sample or control group.



Clinical Trial at Lurie Children's Hospital

Dec 2018 – Mar 2020

Overview: The Northwestern University Feinberg School of Medicine / Lurie Children's Hospital Chicago under the lead of Dr. Bonnie Essner conducted a clinical trial using the Shadow's Edge game as an intervention. The majority of adolescent and young adult cancer survivors (AYACS) report at least one chronic health condition secondary to their disease history, which negatively impacts their quality of life and limits social, educational, and career roles, as compared to peers. As research, clinical care, and supportive services are particularly inadequate for AYACS as compared to those for older adults with cancer histories, innovative, digital programming to advance the reach and scope of services. The research team hypothesized that AYACS who played Shadow's Edge would report a significantly greater adaptive change in resilience factors as compared to comparison group participants. Study participants were 177 adolescents and young adults who have completed their cancer directed treatments at Lurie Children's hospital and are in remission and between 13 and 24 years of age during the study year.

Key impact of gameplay is identity exploration and flexibility in identity. Further analysis and publication of the study data and results in 2021 by the research team. This is one of the largest Mobile game studies of AYAs.

Method: This is a two-group, randomized wait-list control trial, in which Game-Play participants (N=95) played Shadow's Edge daily for six consecutive weeks while the Wait-list Comparison group (N=82) had no study procedures. Participants completed standardized, self-report measures of identity formation, life meaning and purpose, positive affect, and benefit-finding. ANCOVA was used to assess group differences at the post-intervention, controlling for baseline levels of each outcome.

Outcome: Data analysis is complete and will be published at conferences and in papers in 2021.

Publication: Various conference and paper submissions are in progress by the research team.



Big Data Research

Overview: We commission big data studies of public online conversations to understand the unfiltered voice of young people online. An initial study in 2018 focused on what teens and young adults dealing with chronic or serious illnesses are looking for online. A second study in 2020 focused on how teens and young adults define wellbeing and their stance on mental health and self-help. A next study is planned for spring / summer 2021 and will focus on definitions and mental health needs of youth in Colombia.

Objective: Understand the needs, drivers, barriers around mental and emotional wellbeing young people express in public online conversations.

Method: Qualitative studies using machine learning for thematic analysis mining over 30 million public posts on message boards, topical sites and social media. Research done by CIEN+/ Culturintel.

Results: The 2018 and 2020 studies reveal that teens and young adults gravitate more towards topical sites, message boards and forums in addition to social media when they are looking for around mental health with a ratio of about 2 : 1. The thematic analysis of the online conversations show that these are a means to vent, gather information and to get social support. For teens and young adults facing serious and chronic illness there is a trajectory from using online conversations to gather facts and information about the situation they are facing, to learning from the experience of others and to then use online as a key channels for giving back when they are feeling better or have come to term with their situation. Teens and young adults overall define wellbeing as having four key components: physical, emotional, social and positive circumstances. Attaining and maintaining physical wellbeing seems less challenging for youth than emotional, social and circumstantial wellness. Needs and struggles youth express is learning to deal with strong emotions and the fear to be a toll on others – this even when they already practice self-care. Also there are many more asks than answers about health and wellbeing. This is an unmet online need.

Teens and young adults across all three studies express a need and desire for straight facts, advice from others in the same situation and giving back to the community once better. Emotional and circumstantial discussions have the largest gap between asks and answers.

Publication: The results of the 2018 study on online asks of teens and young adults facing serious or chronic illness was presented at the American Child Life Conference in April 2019.