BARRIERS TO LEARNING ABOUT MENTAL ILLNESS THROUGH EMPATHY GAMES – RESULTS OF A USER STUDY ON PERFECTION

Barbara Harris, PhD, RN
DePaul University
School of Nursing
990 West Fullerton Avenue
Chicago, IL 60614
bharri14@depaul.edu

Mona Shattell, PhD, RN, FAAN
DePaul University
College of Science and Health
School of Nursing
1110 West Belden Avenue
Chicago, IL 60614
mshattel@depaul.edu

Doris C. Rusch, PhD
DePaul University
College of Computing and Digital Media
243 South Wabash Avenue
Chicago, IL 60604
drusch1@cdm.depaul.edu

Mary J. Zefeldt, JD
DePaul University

College of Computing and Digital Media
243 South Wabash Avenue
Chicago, IL 60604
mzefeldt@cdm.depaul.edu

Abstract

Video games are an expressive art form which potentially allows players to explore someone else's inner world through first hand, embodied experiences. This paper describes the results of an exploratory study on the game *Perfection,* which models the experience of anorexia nervosa. *Perfection's* first and foremost design goal was to capture "what it's like" to struggle with the disorder. We were hoping that exploring this struggle in gameplay would have educational and therapeutic potential, increase understanding of anorexia and help to fight stigma.

Fifteen therapists were observed playing *Perfection* and then interviewed about their gameplay experience. Analysis showed that although game's design did not negatively impact the game's educational potential, several barriers to therapists' understandings and positive valuations of the game as a therapeutic or educational tool were identified. Discussing these barriers along with suggestions for use and further study aims to help other designers to create successful educational therapy games and to avoid the pitfalls we encountered when making *Perfection*.

Introduction

Many social problems that co-exist with or arise from mental health issues are not well understood. Full understanding goes beyond cognitive understanding of symptoms or physio-psychological mechanisms and includes fullness of experience. Lack of experiential understanding often burdens relationships between people with mental health issues and their social environment, including friends, family and even therapists,

which can intensify mental health issues and create barriers to recovery.

Art – be it in the form of painting, poetry, literature, theatre or film – has always been considered a powerful window into the human condition. Art can help us better understand our own and other people's experiences. It stimulates the senses, providing access to our emotions. Thus, using the potential of art as a tool for insight, self-exploration and learning about ourselves has a long tradition in therapy (Miller, n.d.).

Videogames are a new expressive art form and the experiences they provide, compared to other forms of representational media, are as close to real life in terms of vividness as one can get. Building on the "continuum of vividness" by Charles Hills, game scholar Ian Bogost argues for the inclusion of videogames above "moving images with sound" and right underneath "actual experience" (Bogost 2007, pp.34). Along those lines, Jim Gee claims that games enable embodied, first hand experiences (Gee 2003). In games, we can step into someone else's shoes; experience the world from someone else's perspective. Gee calls this "projective identities." By modeling realities through rules and mechanics – e.g. someone's *inner* world – and allowing players to explore this inner world with all of its potentials and constraints through embodied, firsthand experience, games are powerful tools to increase understanding of mental health issues.

It is thus no surprise that there is a growing body of games (and other interactive technology) that leverage this medium-specific ability to foster embodied learning in the service of mental health education and communication. By modeling salient aspects of the lived experience of various disorders (e.g. depression, ADHD, Alzheimer's disease) and allowing players to explore "what it feels like" through the interaction with the rules and mechanics, these games aim to raise awareness for, increase understanding of, improve dialogue and alleviate stigma of various issues and

create empathy for those afflicted by them (*Drawn to Distraction*: ADHD, *Elude*: Depression, *Depression Quest:* Depression).

The big question, however, is: does it work? Does the theory that games are uniquely and ideally suited to stimulate experiential learning about mental health issues translate into practice? What are the factors – apart from the design itself– that facilitate or hinder an increased understanding of the modeled experiences?

To explore this question, we conducted a user study with 15 mental health professionals on the game *Perfection* – a game modeling the experience of anorexia nervosa. *Perfection* was designed in collaboration between one of the authors (Rusch) and a subject matter expert with anorexia (to ensure authenticity of the modeled experience). The game can be considered a subjective, artistic expression of what it's like to struggle with anorexia. In this article, we give a brief description of the game design and the experiences it intended to model. We describe the study design and we present the most relevant findings with a special focus on the barriers to understanding that we identified from our target audience (therapists). We also explore potential reasons for barriers and then we provide suggestions on how to decrease these barriers in future projects.

The Game

Perfection (http://fortherecords.org/perfection.html) (see Figure 1) is a short, metaphorical game that has been designed as part of the interactive transmedia documentary project, *For the Records. For the Records* investigates the lived experiences of young adults and eating-, bipolar-, attention deficit- and obsessive-compulsive disorders. The project brings experimental film, animation, photo essays and games together on a web-platform to explore what having these disorders feels like. People with lived experience of the particular mental health issues have been strongly involved as subject matter experts and co-creators of all

media pieces (for a detailed description of the project and design process see Rana & Rusch, 2014).

Perfection is a game about the eating disorder anorexia nervosa, a disorder that is often highly incomprehensible to people without firsthand experience, and that is fraught with misconceptions (e.g. persons with anorexia do not eat because they want to look thinner). We arrived at the game's metaphors and mechanisms in collaboration with a subject matter expert with lived experience of anorexia. Key to the game's design was the subject matter expert's assertion that the eating disorder was not really about food or the body per se. The drive for what is perceived as the "perfect body" is actually a drive for a more fundamental control over one's emotional life. Emotions – both good and bad – are experienced as threatening, because they are uncontrollable. Starving oneself is a way of keeping those emotions in-check, of disengaging from a world of desires and protecting oneself from emotional harm. We chose this subjective approach to the game's design over an attempt at modeling a textbook description of anorexia because we believed that an authentic expression of someone's actual experience is more "real" and has more potential for resonance than a more objective checklist of symptoms.

The game's core metaphor is the body as garden. The game aims to align the player's mindset with that of a person with anorexia by suggesting a (false) win state (= perfection) whose pursuit has devastating side effects. The game suggests that a perfect garden is devoid of slugs and weeds. To achieve perfection, the player would need to eliminate these unwanted elements until only the pretty flower in the middle remains. The conflict of the game revolves around garden saturation. Watering the garden increases its saturation, the flower flourishes, but so do the weeds (=representations of unwanted body aspects), and the numbers of slugs (= representations of unwanted emotions). Eliminating slugs by moving the mouse over them in a scrubbing motion (=

a metaphor for exercising) decreases saturation, as does parching the garden. De-saturation further kills the weeds, enabling the player to rip them out, but it also damages the flower.

The game is structured in three stages in which an increasing number of weeds must be eradicated (= representing increasingly higher weight-loss goals). At the end of stage three, when no more weeds are left, the Perfection ending is reached. This ending, though, has come at the cost of a healthy flower and equals "starvation". Another (true win) ending – Imperfection – is hidden in the game, which encourages the player to challenge the previous assumptions and change behavior. To reach it, players have to consistently keep their garden within an ideal saturation range, learn to accept the slugs and weeds and to nurse the garden back to health. While the eating disorder may never fully be "forgotten", there are good chances to overcome it, which is why this game has a win state: "Imperfection".

Figure 1. Perfection

The game as a whole is systemic, meaning that players are not

forced down a linear path. While we aimed to seduce players to go initially towards the Perfection ending, the ending that players actually reach first is solely dependent on their actions; either path is available to them at any time. Players can also remain in perpetual limbo between Perfection and Imperfection if they try to balance watering the garden with ripping out weeds and killing slugs. This balancing act represents the struggle of a person recovering from anorexia to get healthy, while at the same time not being ready to let go of old patterns.

Description of the user study

Our main research question for this study was how playing the games impacted therapists' experiential understanding of the modeled disorder (and their empathy with and attitude towards persons with the disorder). This study was approved by our university IRB. We recruited sixteen therapists through email using a recruitment flyer. When providers contacted us to state their interest in the study, we set up a time to review the consent form. After the consent form was signed, the study began.

Therapists first completed a survey and a voice-recorded interview that touched upon demographical data, professional and gameplay experience as well as personal and professional experience with the disorders modeled in the games. Therapists were then asked to play the four *For the Records* games, including *Perfection.* Fifteen of the sixteen recruited therapists played *Perfection*. All games are web-based and were played on a computer with keyboard and mouse. Research personnel (typically working in teams of two) observed the participants as they played and took notes of their observations (e.g. where did therapists get stuck, what reactions to the game could be noted in terms of body language, facial expression and other verbal / non-verbal utterances). When therapists ran into usability problems, researchers provided only the prompts and hints needed to continue gameplay. Similarly, they trouble shot technical

problems when they arose. Researchers asked therapists to "think aloud" as they played the games. When players expressed feeling stuck as opposed to experiencing a usability issue, researchers would prompt therapists to reflect on their game behavior and what they might do differently. After playing the game, researchers debriefed the therapists about their experience, paying particular attention to the connection of their experience to their interpretation and understanding of all game elements. This debriefing interview was also voice recorded and took approximately 30 minutes.

We inductively anlayzed the voice recordings and gameplay observation notes for the therapists' responses to and understandings of *Perfection* as well as their gameplay strategy (e.g. what did therapists try to do in the game and why?). In our initial analysis, we searched for common themes about the therapists' game play experiences and attitude changes, as well as themes surrounding their understanding of anorexia, challenge of previous assumptions, their empathy and acceptance.

Well Designed? The Experience of Playing *Perfection*

The question of whether games as artistic expressions of mental disorders can promote learning and increase understanding of those disorders hinges first and foremost on the quality of the design itself. Our gameplay observations of the therapists revealed that they mostly played the game as designed and they enacted the intended modeled behavior. Some therapists (5 of 15) did choose to primarily water the garden and reached the Imperfection ending directly. However, most therapists (7 of 15) were in fact seduced into scrubbing away slugs and pulling weeds to initially reach the Perfection ending. During the post-game play interview, all of the therapists reported feeling overwhelmed, anxious, frustrated or even sad while playing *Perfection*, emotions anticipated by the game's designers. They generally connected this aspect of the game with the idea that

trying to be perfect is exhausting for individuals with anorexia. One therapist emphasized that initially it felt good to try to get rid of imperfections but then increasingly it felt hopeless.

We were surprised to observe that five therapists initially resisted letting go of scrubbing the slugs despite recognizing the importance of watering the garden after reaching the Perfection ending and even commenting that they should let go of the scrubbing and pulling behavior. Instead of letting go, these therapists tried to balance watering the garden with scrubbing away the slugs. When this occurred, they became visibly agitated and reported that they were feeling annoyed and frustrated that the game did not seem to be progressing or that they didn't know what to do next. This seemed like a type of recovery behavior, accepting that they must eat to live but not totally willing to let go of the anorexic-like behavior to eradicate and control imperfections. This may parallel an addiction-like process within the experience of anorexia where people struggle with letting go of the concrete and immediate gratification and need to adjust to living with and accepting a less controlled, less seemingly perfect way of being.

Toward the end of the debriefing interview, we asked each therapist whether *Perfection* corresponded with their idea of anorexia by requested that they select one of four options: close correspondence, mostly accurate, somewhat accurate, or missing the point completely. The therapists overall did not give *Perfection* a high correspondence level rating with anorexia — a majority (7 of 15) reported it was "somewhat accurate," the second lowest rating (see Table 1). There was no distinction in ratings between therapists that reached the imperfection ending directly and therapists that reached the perfection ending first. We found this surprising as the group generally enacted the intended game behavior or recovery behavior that was of the anorexic mindset, experienced the intended emotional reactions

and connected aspects of the modeled disorder and experienced emotions with the possible experience of anorexia.

Table 1. Therapist Correspondence Rating for *Perfection*

Correspondence to anorexia nervosa	Close Correspondence	Mostly Accurate	Somewhat Accurate	Missing the Point Completely	No response
Number of therapists	3	1	7	0	4

However, we did not anticipate how loaded games are as media and how that influences processes of understanding and interpretation of the portrayed content. Using games successfully to increase empathy hinges not only on the successful modeling of the disorder with rules and mechanics. It also depends to a large degree on a players' relationship with the medium itself. Our observations suggest that the design of *Perfection* successfully captured the salient aspects of anorexia. But, we identified several barriers to understanding the relevant mental health disorder when using games as the vehicle of communication that go beyond the design itself including therapists relationships to games and the credibility of games as artist media. Knowing about potential barriers to understanding can influence which design direction we choose for which target audience, how we determine the game's purpose and the context we envision in which a game should be played.

Barriers to Increased Understanding: Therapists' relationship to games

We observed that one barrier for increasing understanding of a modeled disorder such as anorexia is the gameplay experience of the group. Our therapist players were not gamers. Only two (2 of 15) therapists indicated they had any experience playing games beyond an occasional casual or social game or retro console during childhood. The therapists seemed to lack the gaming

language, UI conventions and control scheme knowledge to contextualize how to interpret usability issues (Hsieh, Lester, Moreno-Ger & Torrente 2012). Their lack of gaming experience may have made usability issues more severe. The version of the game that served as the basis for the user study (there exists now a final, more polished one in which the noted usability issues have been fixed) also contained a few usability issues, such as subtle or misleading interface feedback (i.e. it was hard to detect changes in the garden, the saturation meter did not draw player's attention and the weeds, which could only be pulled when turned brown returned with a brown color upon watering, suggesting they were dead, not newly sprouted). The combination of these may have contributed to frustration and anxiety during game play, which is difficult to disentangle from emotions modeled by game play (e.g. frustration).

Usability issues may also have shaped some of the game play experience. Two players who reached the imperfection ending directly appeared to pursue watering the garden to the optimal saturation level because they experienced usability issues with the weeds and slugs. One player could not operate the mouse controls to pull the weeds and then was unable to use the mouse to scrub the slugs. This person abandoned trying. Another player also could not pull the weeds, although the player was scrubbing the slugs properly. As this person didn't perceive that she was actually scrubbing away the slugs, she then also abandoned trying. Both players continued to click the watering can to reach imperfection because it was perceived as the only successful interaction. They reached Imperfection not because they failed to buy into the anorexia seduction, but because they were unable to interact with the game properly. Although frustration was an intended in-game emotion, the visually observed and reported frustration experienced by these players was due to their inability to interact with the weeds and the slugs.

Another player who reached neither game ending before the

game suddenly froze, experienced similar usability issues with operating mouse controls to pull the weeds. This player became very frustrated and confirmed that she was unsure if she was supposed to be frustrated with the game because it was the intended response or if the game just wasn't working. Those who were not seduced by the game due to usability issues do not really count here in regard to assessing the design's principle correctness. But it tells us a lot about the importance of usability and accessibility for this target audience.

The cumulative effect of usability issues was particularly problematic for our non-gamer group because it added to their pre-existing gameplay insecurities. Their insecurities seemed to get in the way of just observing what was going on in the game and being open to experience during game play. We were surprised to observe that twelve (12 of 15) therapists appeared self-conscious, insecure, without reference to whether they reached the Imperfection ending directly or the Perfection ending first. They commented that they felt insecure in their gameplay ability both while playing *Perfection* and during the post-gameplay interview. Twelve therapists repeatedly apologized and seemed anxious about "making a mistake"; if there were any game errors, they assumed it was due to an incorrect action on their part. Three players reported that the mere thought of playing a game, before they had even started, was stressful to them. Of importance, players who exhibited insecurities also doubted their initial understanding of the game's metaphor relationship to the experience of anorexia. Six therapists explicitly doubted and dismissed visceral reactions and first impressions elicited by the game, feeling that these could not be valid as they were non-gamers who could not correctly play the game.

Barriers to Increased Understanding: Credibility of Games as Artistic Media

Lack of therapists' game savvy seems related to their skepticism towards games' potential as insightful / educational artistic media. While they said in the pre-game interview they thought games could tackle serious themes, they revealed later on that they expected them to do so in an openly educational (and literal) way and that the target audience for such education was probably only children. Six out of fifteen therapist players who envisioned using games like *Perfection* with clients assumed the appropriate clients would be children or adolescents, reflective of a view of the medium as toy rather than as a therapeutic tool.

Therapists further critiqued the game's metaphorical nature (something that would no doubt be accepted about a poem or other, established art form used to express aspects of the human condition). They doubted the potential of a game about anorexia to increase understanding of the disorder, if it followed an artistic rather than a textbook approach where the body was not literally depicted. When we probed therapists to describe the reasons for their low correspondence ratings, four expressed concerns that the metaphor did not more explicitly reference the human body so they could make a more literal connection to failing health and distorted body image while playing the game. Additionally, five therapists expressed concerns that the complexity of the metaphor and overall gameplay caused them to hesitate using the game in practice. One therapist explained that they believed the game was too metaphorical to play and connect with anorexia without knowing more about anorexia; this therapist believed that they made the metaphorical leap due to their professional knowledge as a therapist. Another therapist player who gave *Perfection* the highest correspondence rating reported that she would not use the game in practice because the game and metaphor are too complicated for her to guide others through.

These comments may be reflections of the primacy of scientific method and objective ways of knowing in mental health and psychology. Professionals educated in this manner may favor traditional media over the experiential approach in games. Therapists want to *see* and *cognitively understand* the game elements, rather than interpret the game's dynamics and their emotional reactions to them as vehicles of understanding. This may be an important implication for future designs, including how to build expectations for players when using games.

An artistic, metaphorical approach can stimulate an instant emotional reaction that is in line with what the game is intended to model and it does not matter if players understand upfront what the game is about and what each element means. It is still possible to leverage the *experience* of playing the game and then dive into an interpretation of the game and connect what has been emotionally felt to a cognitive understanding. The post-reflective mind does not always need to come first. Pre-reflective, embodied experience can just as well be a gateway to understanding. However, for players not attuned to this communicative power of games (which is unique to games as media!), it may initially be a barrier to understanding. No other medium asks us to decode its meaning through its experiential structure, through the interpretation of the emotions the moment-to-moment gameplay gives rise to.

Countering Barriers to Understanding

Obviously, having a highly accessible, rigorously usability tested and bug-free game is key component to increasing the ability of players to not only play but also understand the game's content. Apart from this rather obvious lesson, we found that due to its metaphorical nature and its heavy reliance on its experiential structure as the gateway to understanding, *Perfection* requires explanation and prompting to increase players' intellectual understanding of the modeled disorder. Since it seduces players

to enact "bad" behavior, this behavior needs to be pointed out to players to reach reflection level. Just like a person with anorexia might not be aware of her or his destructive behavior, players of *Perfection* aren't either. For the game to be effective as a teaching tool, though, people need to be able to note the parallels between what they do in the game, and to how this is "typical" behavior of a person with anorexia. If the players neither notice nor reflect upon it, they cannot learn. Critical reflection is a pre-condition for true learning (Gee, 2003, 39-40; Klopfer, Osterweil & Salen, 2009).

Paras and Bizzocchi suggest the inclusion of "reflection mechanics" into the gameplay. They point out that the educational opportunities afforded by videogames are similar to 'active learning,' which emphasizes the process of reflection. (see Paras & Bizzocchi 2005). They observe that during the flow state players enter into when playing, reflection gets pushed into the background: "Though the act of gaining knowledge or skill may take place, learning is not fully realized unless the player reflects on the events that took place during the experience." By incorporating reflection into the mechanics themselves, this issue could be alleviated. Their example is a hockey game aimed at teaching players how to play safer hockey:

Players that engage in concussive activities are forced to sit for a while and consider the seriousness and the implications of concussion effects, just a [sic!] player would be forced to sit in a live hockey game. The act of reflection is incorporated into both the core mechanics of the game, and the fantasy experience of the game world. During the reflection period, it is likely that the player will not exit the magic circle, and the reflection period will encourage the player to learn how to play better, safer hockey. (see Paras & Bizzocchi 2005).

We tried to prompt reflection in *Perfection* through the ambiguous "win" state – the Perfection ending itself that was

actually a "game over". We further used messages between the different stages of the game to reinforce the theme and make players wonder about the game's deeper meaning. Only two participants in our user study actually got to play the game version that used an actual voice over in addition to the text messages text. But for those two, reflection was increased by the voice over as they wondered aloud about what it meant. For some therapists, the connection between their experience and the modeled disorder occurred during gameplay through reflective prompting, researchers encouraging "thinking aloud" – asking therapists for their interpretation of game elements as they played the game. However, the therapists mostly appeared confused when they ultimately reached the Imperfection ending. Yet, their reported ability to connect the game with the experience of anorexia later appeared to increase as they read the "what it's about" screen at the end of the game. They also began to connect game elements and their experienced emotions with the modeled disorder as our post-game play interview progressed and they were given time to reflect.

Obviously, *Perfection* does not come with a researcher that prompts reflection during or after gameplay. But taking inspiration from Gee's concept of Big G games which leverage media convergence to convey content across multiple platforms and form affinity groups (see Gee Games 4 Change keynote, 2012) – it was designed as part of a bigger project – the interactive documentary *For the Records*, which includes short films that correspond thematically to the games and aims to provide context to the individual game experiences. For time reasons, we did not specifically incorporate these other contextual components of *the For the Records* project in our user study the participants did not see the films or other materials.[1] The effect of directing players towards such contextual materials either before or after gameplay to prompt them to reflect on their playing experience should be explored. But, the issue may be best

framed as how we can best design the overall experience so to help the player develop game comprehension skills needed to be both immersed in the game and reflect on what it means/feels like for them.

One way of addressing the problem of game comprehension, particularly in regard to metaphorical, experiential games, is to include games more in media literacy education in schools. School children do not know how to interpret poems on their own, either. We cannot expect people to know how to "read" games, if they have never been taught how to do so. Admittedly, waiting for game literacy to catch up and for a new generation of game-savvy therapists to grow up might not be very practical for designers who want to leverage the expressive and educational power of the medium today.

One way to guide player expectations and to help players' make the connection between their gameplay experiences and the game's deeper meaning is to be more obvious about what the game is about. The title alone can be an important interpretative clue. We can further take inspiration from *Minority Media*, a Canadian game company who has made incredibly powerful metaphorical games about personal issues: *Papo & Yo*, a game about a boy and his experiences living with an alcoholic rather, and *Spirits of Spring*, which tackles the concept of bullying. *Minority* uses metaphor as a "magic door" to stimulate interest in serious topics. Its gameplay trailers mix metaphorical in-game action with literal live-action footage that contextualizes the metaphorical content and makes its meaning explicit. The games themselves also contain clues that connect the metaphor with its literal meaning, facilitating interpretation. *Papo & Yo* intersperses gameplay set in the metaphorical realm with cut-scenes that provide glimpses into the game's underlying, literal meaning: e.g. a little boy in a car, the drunken father who was driving and a body lying in the streets in front of the car. *Spirits of Spring* has a

narrator who speaks more and more openly about bullying as the game progresses, making it very clear what this game is about.

Conclusions

Games are usually not shipped with researchers to provide reflective prompting. Thus, a lesson to take away from this user study is that empathy games aimed at aligning the player's mindset with the inner state of another individual as modeled in the game should not solely focus on accurately modeling this inner state. Consideration should also be given to how we can elevate the immediate embodied experience of players' to the level of cognition. We added the "what it's about" page to the *Perfection* game website. Not everyone reads this page, though. It would have been more effective to prompt reflection during the course of the actual game, e.g. by way of more obvious interface feedback. The final version of *Perfection* also features voice over in addition to text inserts, drawing attention to the two competing voices of the disorder and the voice of health. When designing metaphorical empathy games, one apparently cannot be too heavy-handed in giving interpretative cues to players. Reflection is also promoted when the assumed "win state" is more openly called into question. *Perfection* is framed by the Perfection and the Imperfection ending, and while we thought that our "back to life" button on the Perfection end screen is a very direct hint that one has actually died, our therapist players usually did not understand that.

However, our observation that games are still frequently perceived as "kid's stuff" or not on par with other artistic, expressive media and thus suspect when it comes to successfully tackling serious topics such as mental health, is hard to address through an individual game's design. It requires many such games to be made and to be played by a new generation who is growing up with the medium and is thus not biased against it. Let's get to work!

References

Bogost, I. (2007). *Persuasive Games*. Cambridge, MA: MIT Press.

Gee, J. (2003). *What Video Games Have to Teach Us About Learning and Literacy*. New York,

NY: Palgrave Macmillan.

Gee, J. (2012). *Big G Games*. Games for Change keynote presentation. New York, NY: Games 4 Change Festival. https://www.youtube.com/watch?v=lwQgAkHC7NE (URL consulted July 13th 2015).

Hsieh Y. G., Lester W. T., Moreno-Ger, P., & Torrente, J. (2012). Usability Testing for Serious Games: Making Informed Design Decisions with User Data. *Advances in Human-Computer Interaction, 2012.* doi:10.1155/2012/369637

Klopfer, E., Osterweil, S. & Salen, K. (2009). *Moving learning games forward. Obstacles,*

opportunities and openness. An Education Arcade paper. http://education.mit.edu/papers/ MovingLearningGamesForward_EdArcade.pdf (URL consulted Jan 29th 2015)

Miller, C. (n.d.) *Poetic Existence: Words That Help Us Feel Alive*. Retrieved from

https://www.saybrook.edu/newexistentialists/media/poetic-existence-words-that-help-us-feel-alive

Paras, B. & Bizzocchi, J. (2005). *Game, Motivation, and Effective Learning: An Integrated Model For Educational Game Design.*

Rana, A. & Rusch, D. (2014). *For the Records – Learning about Mental Illness*. In *GLS10*

Conference Proceedings (pp. 360-369).

http://press.etc.cmu.edu/files/
GLS10-Proceedings-2014-web.pdf

[1] The user study investigated therapists' responses to four games, not only *Perfetion* and took about 1 ½ hrs each. It would have taken over two hours to also incorporate other materials, which we found to be too much time commitment for our participants.