

Running Head: GAMES AND CHILD ONCOLOGY PATIENTS

Elves and fairies in the hospital: Virtual worlds to influence the quality of life among child oncology patients

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Abstract

This paper investigates the quality of life in young cancer patients and how Massively Multi-Player Online games (MMOs) might improve their quality of life. Treatment for cancer can be a huge emotional and physical burden for the patients and their loved ones. Recent psychological studies have expressed concern regarding the quality of life among patients during the time of hospital treatment. My research seeks to prove the relevance of MMOs as coping devices, and to prove that fantasy and make believe promote positive social interaction and provide a stimulus for a child to feel in control of his or her body and surroundings.

As a researcher, I felt compelled to explore this topic because of my own personal experience and the young lives that touched my heart. I worked at Christus Santa Rosa Hospital last year as a volunteer for Child Life, in which I played with young oncology patients and gained an understanding of the existing quality of life within cancer treatment, and the emotional and physical hardships they face on a daily basis.

Overview

Child oncology patients are faced with constant obstacles when they are in the hospital for treatment. The hospital becomes a depressing place for them, with excessive prodding and poking. The children lose confidence when they are repeatedly told that they cannot go to the playroom, and that they have to stay away from other children. This paper investigates the idea that MMOs might improve the quality of life in young cancer patients. In what ways might virtual worlds be beneficial to child oncology patients in interaction with others, escaping reality, and easing the pain? What physical and ethical barriers would be attached to the use of virtual worlds in easing the pain of the hospital experience for oncology patients, and how might these barriers be overcome? At what age level would the use of virtual worlds prove most effective? Which genre or specific game might be most effective? This research project is motivated by the belief that virtual worlds can help child oncology patients interact with other children, improving communication skills that are often lost in the dreary hospital wing. The patients become equals in every way within these virtual worlds, both physically and emotionally. Also, the characters created by the patients can provide an outlet for them to run and jump and have long hair – whatever their wish may be. A virtual world can cater to dreams and fantasies. It can be an environment for them to gain confidence and escape their reality for a little while. The hospital experience, and

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the lonely, self-conscious feelings might be diminished and patient confidence might increase, allowing for the hospital stay to become more pleasant and the fear to fade. If such a project is ultimately implemented, it would further the efforts of specialists to better the patients' quality of life.

Literature Review

Children with cancer

According to Christine Eiser's research (2004), 1 in 600 children in the United States develop cancer each year (p. 12). Amazingly, the survival rate has increased to 80% in recent years (p. 10). The lengthy treatment of cancer has both physical and psychological effects on a child. She suggests that a greater interest in the psychological effects has aided in increasing the survival rates. This includes "a heightened interest in child development, and awareness of the importance of early childhood experiences for subsequent psychological functioning" (p. 10). These psychological effects extend far longer than the initial treatment, causing cases of stress, a need for emotional adjustment, and even Post-Traumatic Stress Disorder (Wallace et al., 2004, p. 337).

Research on the psychological effects of cancer in children took a turn after the 1970s. Prior to that era, the field of research was dedicated to helping parents cope with death (Eiser, 2004). Different views of cancer and therapy span across the world's cultures, requiring different needs for individuals. For example, Japanese cancer patients have just recently felt comfortable about publicly declaring their medical status concerning cancer, which is considered shameful (Moore, 2004). The 1990s brought specialist nurses, psychologists, and volunteer organizations such as Child Life into the treatment process (Eiser, 2004).

This improved treatment process focuses in on the quality of life among the young patients, and how they cope with their illness. Weiner et al. (2003) defines quality of life as "an individual's perception of their position in life, in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (Eiser, 2004, p. 55). Contemporary research should provide beneficial tools to improve young patients' quality of life. Modern theory suggests that specialists should measure the quality of life throughout the recovery.

Palliative care is one suggestion in response to the psychological issues, taken by Hospice. Hospice is a concept of care in which the quality of life is the focus (palliative care) during times of chronic illness, rather than a curative, quantitative approach. Palliative care is defined as the total care of a patient, with the involvement of the entire family, and with the purpose of improving quality of life and perhaps lessening physical and emotional pain. (Hospice, 2003).

Eiser suggests that "children with any kind of chronic illness are more likely to experience social, emotional, or behavioral problems compared with healthy children of the same age" (p. 31). Children are asked to deal with issues that are not necessarily "G-rated", including the idea of mortality, or severe loss, for example a prosthetic eye in a case of retinoblastoma. According to Eiser, teachers report that children returning to school after surviving cancer are more "socially withdrawn and isolated compared with others" (p. 80). Long-term absence from school can cause a decrease in educational progress as well (Wiener et al., 2003, p. 129).

Christine Eiser (2004) notes five approaches to measuring quality of life. The first is psychological, and pertains to the patients' subjective view of their condition. Second, the utility approach describes trade offs. This means that some want to live at all costs, while others would rather die than live with certain disabilities. Third is the community approach, or impact of illness on social interaction. Fourth, Eiser suggests finding "opportunities for reintegration into community living". The fifth approach defines the "gap between what the patient can do and would like to do" (p. 248). MMOs might assist in the advancement of quality of life among patients according to all five dimensions. Perhaps integrating MMOs as both educational and social tools would help in this emotional adjustment and social development. This area of research should be fundable because psychological aspects of cancer treatment are currently at the forefront of medical research.

Massively multiplayer online games and virtual worlds

A virtual world can best be described as an environment that is created and not physically tangible, although it has the "form or effect" of being real (Bartle, 2004). These environments are simulated and controlled by people through networks of computers. These online worlds can be shared with many users at a time. The environment in these worlds is said to be persistent, meaning it "continues to exist and develop internally when there are no people interacting with it (p. 1). Massively multiplayer online games (MMOs) are virtual worlds in which the user develops a character (or avatar) and lives as that character within the virtual environment.

In many of these games, the user pays a monthly fee, and multiple servers allow virtual worlds to remain persistent (Yee p. 3). Some virtual worlds are heavily structured games such as *Everquest II* in which there are specific missions assigned to each player. There are also more open-ended environments such as *Second Life* in which an avatar can exist and roam freely doing whatever he or she desires.

These virtual worlds began in the 1970s with text based multi-user domains (MUDs) in which characters were based on templated attributes. Yee describes MMOs as "interactive storytelling and logistical optimizations under the guise of slaying monsters and attaining higher levels and skills" (p.3) Graphics were not present until the early 1990s with the first *Neverwinter Nights* (Bartle, 2004). The idea continues to gain popularity, and this is for many reasons depending upon the personality of the user.

In one of the well-regarded studies of MMO players, Nick Yee (2004) interviewed more than 40,000 users to learn more about their motivations for playing on-line games. Some enjoy the competitive aspect, while others appreciate the interaction with other users. One woman in her 20s explained that "I like that I can be someone else for a couple hours" (p.12). These different motivations are what make MMOs so interesting for academic researchers. In all cases, the games allow people an escape from their life and prove to be a form of entertainment, even to the point of being addictive.

Yee discovered five factors in motivation to play these games. These include: The "Relationship" factor in which the users is searching for meaningful bonds and trust in-game, the "Manipulation" factor in which the goal is to manipulate the other players for personal gain, the "Escapism" factor in which users seek relief from real world stress and problems, the "Immersion" factor, in which the enjoyment is in becoming someone else

in a fantasy world, and finally the “Achievement” factor, in which the desire is to gain power and accumulate status in the game (Yee, 2004, p. 12-13).

The differing appeals to the game allow for different playing styles, which Bartle describes as having different motivations behind playing the game. An Achiever is interested in gaining levels and winning. A Killer enjoys defeating the enemy. A Socializer is interested in the relationships gained in game. An Explorer enjoys exploring the environment with out desire for advancement. Regardless of the style, individuals interact with differing styles within the game and co-exist. (p. 145)

An understanding of the different playing motivations could be helpful in finding the right game for young patients, most likely aimed at exploring, achieving and socializing and staying away from death or violence. Most games call for collaboration among the players. For example, in *Everquest II*, some quests simply cannot be completed without the help of others (Yee p. 6). The games attract a wide audience because the users are allowed to achieve, or not achieve, whatever he or she wants, and can interact within a fantasy world directly from the computer screen.

Benefits of fantasy and games

Imaginative games, both real and virtual, have recently gained attention in the social and behavioral sciences. Goldstein (1989) argues that fantasy in the preschool classroom provides “a focus for social interaction, and outlet for emotional expression, a context to exercise autonomy, and a handle on the real world of grownups that they are increasingly required to face” (p. 11). Popular instances of this type of fantasy includes playing “house” in which the children creatively set up a pretend social situation and in turn gain control over their new make believe environment. Young cancer patients are forced to deal with very grown up issues, both emotionally and physically. These virtual worlds allow the patient to enter fantasy worlds and allow freedom from the impending issues at hand. As Gruneau (1983) explains :

Play allows us to be totally frivolous about important things in our work-centered lives or to be completely serious about things that are trivial. In either case, because we so deeply enjoy such apparent freedom, we are prone to celebrate play’s expressive qualities and creative autonomy. (p. 20)

Goldstein’s studies suggest that disciplinary problems are less likely to occur in children who participate in imaginative behavior. The mental escape that one undergoes can often be attributed to external problems and mundane lives.. In this special case, pain can also be included. Goldstein’s studies on aggression coincide with this idea, suggesting that skills of imagination “serve as coping devices in the same way that infants use gaze aversion to avoid a stimulus that is either too novel or to which they have habituated” (p. 14). A coping device is precisely what achieving a better quality of life during the hospital treatment is aimed toward.

Virtual worlds are built on fantasy and make believe, just like the role-playing discussed in Goldstein’s (1989) study in which it is argued that “imaginative symbolism enriches realistic thought and allows the child to work out methods for coping with conflicts, anxieties, and problems with real life” (p. 16). Developing these skills is

important in the quality of life and might prove to be an important part of palliative care (Hospice, 2003). In Eiser's framework for measuring the quality of life, the first dimension is based on the patient's subjective view of his or her condition. Goldstein's research on imaginative play similarly focuses on improving the ability to cope with problems, and therefore improving the patient's individual view of his or her condition.

Obviously, variation exists among individuals in imaginary game play (Goldstein, 1989, p. 16), and the make believe can "vary along both quantitative and qualitative dimensions of imaginativeness", with some being more elaborate than others (17). In role-playing MMOs a player can develop an avatar that is personal to the individual player, with custom looks and abilities, which might be very important to the young patients. Different genres also exist within the virtual worlds to appeal to the different dimensions of imagination. This will be important when adapting to the differing ages of oncology patients.

Social and psychological effects of pain during cancer treatment

In many cases of cancer, chronic pain comes "from attack on normal tissues by the developing, invading tumor" (Swerdlow, 1981, p. 191). In children, this pain can be debilitating. An escape into a fantasy virtual world might help them forget about the pain, at least for a while. In such cases of serious chronic pain, the emotions are affected, which in turn affects behavior and social interaction (191).

Trigg (1970) suggests that there is a distinct difference between the literal pain and the significance of that particular pain (p. 47), meaning that an understanding of the cause of pain (cancer, for example) implies the emotional effects. "It is obvious that an emotion such as fear at the significance of the pain, will only serve to aggravate the patient's experience of pain-and an emotion like joy does serve to sugar the pill. (Trigg, 1970, p. 47)"

According to Burney (1973), the intermediate stage of treatment (the months of hospital treatment after the operation) adds greater pressure to the patient, even beyond the initial and emotional physical pain. Family may put unnecessary pressure on the patient for fast recovery or rehabilitation (p. 21). This might lead to an increased lack of confidence and social interaction.

When emotional pain is the result of a terminal illness, it is extended beyond the patient and into the family and is referred to as social pain (Swerdlow, 1981, p. 236). Although there is an increasingly high survival rate among young cancer patients, 80% with a disease-free survival after 5 years of certain cancers, reaching the terminal stage or chronic pain is a possibility. At the terminal stage, maintaining a good quality of life becomes more difficult, and games might prove to be even more useful at this stage. "The dominance of mind over matter has been recognized for many years and is reinforced by the recent discovery of the internal opiates, encephalins and endorphins, released by the brain in the control of brain behavior" (Swerdlow, 1989, p. 171). This might suggest that an escape (as with the virtual worlds) might reinforce the idea that the brain can lessen the pain by deterring the focus.

Anxiety is another issue that comes with young patients experiencing extreme pain (Kelley, 1987). They do not understand what is happening, and this causes severe anxiety. According to Kelley's studies, hospitalized children were significantly more

likely to choose pain descriptors closely associated with tension and fear than non-hospitalized children (p. 16). Kelley also states:

One can see that anxiety is an integral part of the pain experience, especially in children. In examining acute pediatric pain, one must surely allow for effects of anxiety. Yet, the key to relieving pain in some children appears to involve relieving some of the anxiety; therefore, it seems sensible to try to find ways of divorcing the experience of one from the experience of the other. (p. 18)

In association with the dominance of mind over matter, becoming completely immersed in a game of fantasy (an MMO) can eliminate the possibility of anxiety in the hospital. The young patients might find themselves looking forward to their MMO rather than feeling lonely and anxious about being stuck in a bed for hours on end in an empty room.

Study Design

The aim of the project is to determine the effectiveness of virtual worlds in the improvement in the quality of life among young oncology patients. Specifically: In what ways might virtual worlds be beneficial to child oncology patients in interaction with others, escaping reality, and easing the pain? What physical and ethical barriers would be attached to the use of virtual worlds in easing the pain of the hospital experience for oncology patients, and how might these barriers be overcome? At what age level would the use of virtual worlds prove most effective? Which genre, or specific game might be most effective?

Participants. I recruited participants by posting a descriptive message (See Appendix A) that explained the study's purpose. The message was posted in forums for parents who have children with cancer as well as general gaming forums (see Figure 1 on next page). Both in-depth interviews and surveys were utilized to gather opinions and experiences and to forward the research project. Both methods utilized open-ended question and yielded qualitative answers. With the initial opinions of Betsy Book, the Director of Product Management at *There*, I was able to narrow down my literature research as well as my questions.

Procedure. After setting up a new email account to communicate with respondents (megsproject@hotmail.com), conducting an intensive literature review, and fielding responses from the forum posts, interviews were conducted via email, which is what everyone preferred. Although the in-depth interviews are limited, the responses, thus far, are generally well written and lengthy. Participants were asked to elaborate on any subject that they felt relevant to the topic. It is obvious that time and consideration were put into the responses, which I greatly appreciated.

The in-depth interviews and questionnaires were conducted with seven parents of patients and the remainder of results coming from beginning to advanced gamers. One was physically disabled and many were parents as well. Beyond the in-depth interviews, I received many emails suggesting MMOs that might be relevant for this purpose from gamers as well as from the administrators of sites where I posted. From all

of the posts and my survey (See Appendix B), I was able to successfully include 15 people in my study. Pseudonyms were used to protect the confidentiality of the participants, with the exception of expert sources such as Betsy Book. The names were generated by a site entitled *The Elvish Name Generator*, which seems to fit perfectly with this project and fantasy (Wetherall, 2002).

Figure 1. Recruitment Sites

<u>Parents of young patients</u>	<u>Gaming forums</u>
National Children's Cancer Society	RPG Dot. Com
Yahoo: Childhood Cancer Causation	Going Nova
Yahoo: Fear of Doctors	Everquest II
Yahoo: KidsEyeCancerFriends	Game Replay
Yahoo: Project Sunshine	Gamer Dad
	OGaming

Results and Discussion

The most evident result gained from the research is the consensus that an open ended RPG (role-playing game) would best benefit the younger patients in which they are allowed to run around freely and accomplish what they wish in fantasy worlds. For example, readers of my posted message recommended *Minions of Mirth* and *Kingdom of Loathing*. Betsy Book agrees that the older patients (teens) would benefit from three dimensional, more structured games such as *Second Life* and *There*.

There are times when one is handicapped that this interaction is the only outside interaction they have with others. This genre could be a valuable asset to both an older community with limited mobility and to younger folks that allow them to experience a fantasy setting, which in their current physical limitations they cannot do. - **Maedhros of Nargothrond (gamer with disabilities)**

MMORPGS are the next generation of videogames and entertainment as a whole, offering a completely new genre of storytelling that has yet to be fully developed.- **Maedhros Coamenel (gamer)**

Older kids may get the most out of a 3D environment, as these environments allow members to fully customize their 3D avatars and provide lots of opportunities for

creative expression through avatar customization. The issue of hair is really poignant. We are actually launching a new "long hair" hairstyle for female avatars at *There* very soon and I keep thinking about how your patients might enjoy that on a whole different level. - **Betsy Book**

The idea of customization would be relevant to young cancer patients because many of them are forced to deal with loss of hair and altered features that possibly diminish their self-confidence. In creating an avatar with long beautiful hair that can run and jump (or whatever the individual fantasy may be), perhaps that confidence level and their general quality of life can be improved.

The best part is the ability to escape and forget about pain for a while. -**Maedhros of Nargothrond (gamer with disabilities)**

Perhaps the largest consensus gained from the research is that of positive social interaction and an escape from reality. 14 of 15 respondents suggested in some form that MMOs would be beneficial to childrens' social interaction. Parents had specific examples of how their children were positively affected during treatment, and gamers cited their experience with groups.

I had a son who spent 13 years or more in children's outpatient. His room was right next to the cancer ward. I watched and saw parents too worn out to come up daily, or even weekly. I had brought Mike's game system up to children's ward and within a short time, and we had every kid that could get out of bed in the room taking turns, learning how to play, laughing, eating popcorn talking up a storm. Nurses joined in around midnight but we couldn't tell anyone because we were out of bed after hours. We would put all the kids in wheel chair, have them hold their IV or get the nurses to, and march around the hallway banging on anything we could find, singing songs, and go back and play games. If they were too sick to get out of bed we went to them for a few minutes a day. Not only did this help give the kids a smile, many of them went into remission, when they would come back for there check ups I would get a request to come sit with them when they were going through their test. We talked about their new games and how they were doing. One mom still calls me to tell me Jonathan's 5 years now in remission. - **Idril Ringëril (Parent)**

I have a son who wouldn't be able to do a lot if it wasn't for video games, I have spent a lot of his life in a children's hospital, working and helping kids with cancer. The games are great. Not only does it give them a outlet for pain and what they are going

through, it also gives them a avatar to pretend that it is their body and that they fighting the cancer. By seeing the creatures die, so are the bad ones inside them, if that makes sense. All children are the same. They want to have fun and they don't want their parents to cry. Bringing games into Mike's room was the best medicine for a lot of kids in his ward. Shhhh! Don't tell anyone, but the nurses like games too! -**Larien Telperiën (Parent)**

One interesting addition to my research that I had not previously considered was that games would allow for more interaction among patients within the ward, along with the online interaction. As the two parents previously discussed, the thrill of the games became a group event that everyone looked forward to. The majority of the gamers did, however, have a few cautions in using MMOs as a coping device for young cancer patients.

I would also stress that it is just as important for the patients to get at least as much live interaction with real people as game time. There's just no replacement for personal human interaction--seeing someone's facial reactions, hearing the different inflections of their voice, feeling their touch. I think there have even been studies showing that people who've received caring touches heal faster/better/feel better than people with limited human physical interaction. - **Caranthir Séregon (gamer)**

In any case, loved ones cannot be around every second of the day. I worked on a pediatric oncology floor last year where I would play games with the patients and provide movies for them. Sometimes, there would be a child standing at the door, all alone, waiting for someone to come or something to do. The parents quickly became emotionally drained, as anyone would, and they needed to escape every once in a while. MMOs can extend the palliative care one step further, beyond the existing human interaction.

The stress of cancer weighs on more than just the patient. It wears down the loved ones as well. MMOs can serve to occupy the child and provide a happy escape, even if it is for a little while, relieving the strain on the parents and allowing for a short time of relief. Parents will be happy to see the look of enjoyment on their child's face. A few of the mothers acknowledged this strain and how they have dealt with it.

I buy them a cup of coffee, share horror stories of what our kids are going through, and tell them I'm here. I have the watch. You need a break. Go catch a movie with your hubby or wife, have dinner or go grab a good night's rest. It is amazing when they get their batteries recharged you can see it in their child too. - **Idril Ringëril (Parent)**

In searching for a specific game to put forth, I was given a wide range of

suggestions. Several respondents agreed that violent games might not work best for chronically ill patients. Suggestions included: *ToonTown* and the *Sims*, *World of Warcraft*, *the Dark Age of Camelot*, *Kingdom of Loathing*, *Star Wars Galaxies*, *Rollercoaster Tycoon*, *City of Heroes*, *Minions of Mirth*, and *Eve Online*, after taking into account the need for social interaction, community, the user-friendliness, and the appeal of the fantasy. Four respondents suggested *World of Warcraft*, and three suggested Disney's *Toon Town*, making these two the most popular suggestions among gamers.

Indeed, MMOs in particular offer a new breed of entertainment that allows the user to craft a life completely unique from their own. In the case of cancer patients I could see a vast positive potential for interaction and entertainment that would otherwise be impossible.- **Maedhros Coamenel (gamer)**

I have only played both *Dark Age of Camelot* and *World of Warcraft*, both being sort of fantasy-realm battle-heavy wizards/warriors type games that cater to not only solo play, but also banding with other players. I like this type of play because it's open-ended and lets you do what you want, but it also gives you the option to overcome to pretty fierce creatures and "save the day" even on your own. You are also able to roam and explore as far as you want, and you can run, jump, swim, even fly on the backs of griffins or ride on giant tigers and such. Want to make things? You can gather things from the environments and create potions, weapons, armor, etc. - **Finrod Culnámó (gamer)**

Although a few respondents cited a problem with harsh words in the chat log or a fear of bad people, many gamers will be quick to defend MMOs and this area of concern. This is the reason that some recommended *Toon Town*, a Disney game. There are bad people in this world, and yes, 7 year olds should most likely not play *World of Warcraft* due to adult themes, but the game choice is interchangeable among ages. Obviously, the child cannot be completely shielded from the bad, either in reality or the virtual worlds.

You can make friends. But it is a lot like the real world with social clicks and a lack of respect for people if they are not good at the game. You have to be careful whom you try and make friends with. - **Valandil Eledhwen (gamer)**

I've had both good and bad experiences, but just as in real life, you can just walk around and strike up a conversation with just anyone. Some people don't want to talk, some people do, some people are good people, some are bad. I've made great friends and just sat online and talked until dawn, and there have been times nobody would listen to me. It just comes down to whom you befriend or run into, just as I said, in real

life. There is a huge amount of talk going on in general chat channels, and a lot of it is pretty stupid, but you can turn this on or off at will. - **Findecáno Oronar (Gamer)**

The younger patients can be allowed to play *Toon Town*, while the older patients would probably enjoy *World of Warcraft* or *Second Life*. Betsy Book feels that *City of Heroes* would be of particular interest to the patients. Perhaps the super-human abilities and powers would be enticing to the patients, as well as the general feeling of being strong enough to save the world. In any case, there will never be any game that can satisfy all individual tastes in one particular game or the genre of a game.

In reference to any other obstacles, respondents discussed the need for a game that would work for disabilities including hindered movement and vision, and protect privacy as well. A few gamers worried that the cost might also present an issue.

Many of the newer MMOs that are being released are released in less than decent shape, as design decisions are made they are becoming less friendly for the handicapped folks. There is no way a handicapped person or someone in constant or intermittent pain could compete in a group setting within a MMO, but if it were turn based (play a bit, sit a bit) such as old Everquest style and Dark Age of Camelot style, then it is possible those with difficulties can do very well. So many of the games are color based, from levels of monsters to levels of players. There are so many folks that cannot see colors. There are all kinds of vision situations that make it hard for them but in most cases they have found ways around that if the designers allowed for that. The flashing lights can cause some headaches and seizures. There should be in every online game a way to turn down effect settings without the design of the game getting in the way of the ability to be able to play. Today's gamer wants choices in their game play. If the game play is too restrictive by design, then they happily or vocally move on to something else they can do. - **Maedhros of Nargothrond (gamer with disabilities)**

Protecting the anonymity/privacy of the patient would be important, as it would be for anyone involved in online interactions. Further, it would be important to mitigate the cost of this program to the patient as much as possible, since they will already be burdened with substantial costs relating to their medical treatment. Also, when starting this program up, it may take some time to demonstrate the benefits of something like this to hospitals and get them on-board and willing to invest in the technology and time it

would take to setting it up at their facility. -
Caranthir Séregon (gamer)

These issues would, of course, have to be taken into consideration in order to forward this project. In particular cases, perhaps brain or eye related cancers, MMOs may not be the best answer. However, the largest number of child patients deal with leukemia, which is cancer of the blood or blood-forming organs. From my experience in the hospital, all patients have good days and bad days. Wouldn't it be great to make those good days a little bit better, improving their confidence and emotions even if it is for a short while?

Conclusion

In the end, all respondents agreed with the general idea of using virtual worlds as a coping device for young oncology patients. They also agree that social interaction is a large part of the MMO experience and would serve the patients well to join in, although there were certain reservations about the content being age-appropriate. The younger children (perhaps under the age of 12) would need a censored version of an MMO (such as *Toon Town*), while the older children (13 and up) would be able to use a game such as *World of Warcraft*, or one with similar content.

In order to further this project, more research needs to be executed concerning what games would work, and for what age. The issues of content, as well as that of in-game violence, are sensitive topics and should be more of a concern with hospitalized oncology patients because they are in a more traumatic environment than most children undergo in an entire lifetime. I really believe that in order to make the project most effective, a choice of games would be necessary, although all respondents at this point agree that an open-ended RPG would be best suited for this situation.

Having multiple games available would be more costly, and this will need to be another area in which research is extended. I will need to find out exactly what is needed for this project to be implemented, and how much it will cost. Tentatively, there will need to be an Internet connection either within the playroom or a wireless connection. This connection should obviously not hinder any medical devices.

Most pediatric wards have playrooms where the computers could be placed, although a wireless connection would work for those having bad days or who are on chemotherapy that cannot leave their room. Some hospitals, as one mother described, distributed chemotherapy to the younger patients within the playroom. Also, one last detail from my experience is the issue of germs. Every night, the toys in the playroom have to be disinfected, and so the keyboards and mice would need to have covers that could easily be washed.

In either case, I will need to determine an approximate cost of implementing MMOs into the hospitals. One respondent suggested appealing to the game developers about mitigating the monthly fee. The patients should definitely not be charged. The hospital, if anyone, would need to put forth the funds if this were to become popular.

In my experience, chemotherapy seems to be one of the true low points that the young patients undergo. The process generally wears on them physically and emotionally, and they are not able to participate in activities that they can on other days,

such as playing “house” or another interactive game requiring full body movement. For days when the patients cannot move, MMOs would be perfect, especially if the computer could be brought to their bed.

The current study, although limited, has brought forth many important issues that will forward my idea, with the gracious assistance of respondents. In closing, I believe both the literature reviewed and the majority of responses lead to support of the idea of MMOs as coping devices for young oncology patients. I acknowledge that further research into the obstacles and finances of implementing such a project is necessary for a completed proposal, and I feel that it is worth the effort. Working with these children truly changed my view of life. Their strength is amazing and, if I cannot simply come up with a cure for cancer, I would love to be able to make a contribution to their quality of life in any way possible.

Appendix A. Sample Recruitment Message

Hello,

My name is Megan Loving. I am an undergraduate communication major enrolled in a course on virtual worlds at Trinity University (<http://www.trinity.edu> <<http://www.trinity.edu/>>). Trinity is an independent liberal arts college based in San Antonio, Texas.

In this class, we have the opportunity to conduct a major research project on the topic of our choice. I am exploring ways that social virtual worlds could be used to improve the quality of life of children who are being treated for cancer. I have worked on a pediatric oncology floor as a volunteer for Child Life and I understand the importance of interaction among children during treatment.

Social virtual worlds are on-line spaces in which thousands of people interact with one another by assuming the identity of a highly customized game character. Players work alone or with others to explore new territories and solve on-line puzzles.

My hope is that virtual worlds such as these can make it possible for these children to interact with others and improve their communication skills that can be lost in the dreary hospital wing. The characters created by the patients could provide an outlet for them to run and jump and have long hair – whatever their individual wish may be. They could gain confidence and escape lonely, self-conscious feelings for a little while.

Some of you might have heard of *Everquest* or *World of Warcraft*. Other examples include *There*, *Second Life* and Walt Disney's *Toon Town*. These virtual worlds can be confusing at first, and I would be happy to explain them in greater detail.

I am hoping to speak with parents (over the age of 18) about their concerns and recommendations related to this proposal. When it comes to understanding the needs of children undergoing cancer treatments, you are clearly the most well informed adults with whom I could speak.

These interviews could take place via e-mail or over an anonymous instant messaging connection. If it is more comfortable for you, we can also talk over the telephone at my expense. I will preserve the anonymity and confidentiality of all participants.

If you are willing to be interviewed about your thoughts on this topic, please contact me at:

megsproject@hotmail.com <<mailto:megsproject@hotmail.com>>

If you have questions about the academic legitimacy of this project, you can also contact my professor (Dr. Aaron Delwiche) at adelwich@trinity.edu or (210) 999-8153.

Sincerely,
Megan Loving

p.s. Our class is committed to sharing its research findings. At the end of the semester, all student papers and presentations will be linked to the course web site and made available to anyone with an Internet connection.

For more details about our course and the research project, visit:

<http://www.trinity.edu/adelwich/worlds/faq.html>

Appendix B. Survey

Games to Improve the Quality of Life in Young Cancer Patients

1. Quality of Life

Hello,

My name is Megan Loving. I am an undergraduate communication major enrolled in a course on virtual worlds at Trinity University <http://www.trinity.edu/adelwich/worlds/students.html>. Trinity is an independent liberal arts college based in San Antonio, Texas.

In this class, we have the opportunity to conduct a major research project on the topic of our choice. I am exploring ways that social virtual worlds could be used to improve the quality of life of children who are being treated for cancer. I have worked on a pediatric oncology floor as a volunteer for Child Life and I understand the importance of interaction among children during treatment.

Social virtual worlds are on-line spaces in which thousands of people interact with one another by assuming the identity of a highly customized game character. Players work alone or with others to explore new territories and solve on-line puzzles.

My hope is that virtual worlds such as these can make it possible for these children to interact with others and improve their communication skills that can be lost in the dreary hospital wing. The characters created by the patients could provide an outlet for them to run and jump and have long hair – whatever their individual wish may be. They could gain confidence and escape lonely, self-conscious feelings for a little while.

I am interested in hearing your thoughts on ways that these virtual worlds might be used to improve the lives of these children. Thanks for taking time to participate in this project. I will protect the confidentiality and anonymity of your real-world identity as well as that of your game character's identity. If you are willing to be interviewed further about these issues, please e-mail me at megsproject@hotmail.com. My classmates and I will post the results of our research papers on the class web site after May 23rd. If you have any further questions about this project, please see the FAQ at <http://www.trinity.edu/adelwich/worlds/faq.html>

Thanks again for your help, Megan.

1. Player information (will remain confidential)

Age
Gender
Location
Occupation

2. Game Information (will remain confidential)

Which MMOs or games do you play?
How long have you played MMOs?
Which level is your highest character?
How often do you chat with other players?

Appendix B. Survey (cont.)

- 3. Do you feel that massively multiplayer games are potentially useful in the context described above? If so, why?**
- 4. Are there genre specific titles that you think would work best for young cancer patients?**
- 5. Have you encountered any examples of positive social interaction in these environments that might be useful for these children?**
- 6. Do you know of any other instances in which these games have helped people with disabilities?**
- 7. Can you think of any hurdles or obstacles that must be taken into account when pursuing this project?**
- 8. Please skip this question if it makes you uncomfortable in any way. Do you have personal experience with cancer, either as a patient, caretaker, physician, or loved one? If so, based on this experience can you think of anything else that I should know before undertaking this project?**
- 9. Do you have any additional experiences or opinions to share?**
- 10. Please provide an email address if you would like me to send the results of my research project when it is completed.**

Done >>

Appendix C. Interview Questions

Parents of Patients	Gamers	Disabled Volunteers
During treatment at the hospital, what did your child do for fun?	Are there any online games that you would recommend for this particular purpose?	What is your favorite genre of game?
How often would you estimate that he or she was not able to go to the playroom?	What genre do you think would work the best for young cancer patients?	What age do you feel would be best suited for online games?
Did your child have much interaction with other children?	What ages would online games help the most?	What games have you played?
How long was your child in the hospital (or out of school) for treatment?	Why is social interaction important in these games?	Did you have access to computers within the hospital?
Did your child have access to computers?	What is your personal experience with social interaction in games?	Any other general opinions or experiences that you wish to share?
If your child has had access to games, what is his/her favorite game character or genre?	Do you have any other general opinions or experiences to share?	
What age do you feel that games would be best suited for?		
Any other general opinions or experiences that you wish to share?		

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