

Extended Abstract:

**Impacts of Narrative, Nurturing, and Game-Play on Health-Related
Outcomes in an Action-Adventure Health Game**

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Action-adventure video games often provide very engaging, dramatic story lines that draw players in, and attractive characters that players care about deeply. Players are compelled by the story, eager to see what will happen next, either as spectators or as interactive participants. Media audiences often identify with certain characters (Cohen, 2001) and empathize with them in their struggles. It is not surprising, then, to see how hard some video game players try to help them prevail. Dramatic narratives give players a reason to strive and a strong feeling of satisfaction when they succeed.

Some studies of video game stories (e.g., Ricci & Beal, 2002; Schneider, Lang, Shin, & Bradley, 2004) find that they significantly contribute to players' enjoyment and identification, and can increase aggressive behavior and learning.

Narrative creates emotion and context, and provides a framework to help people remember events and the information conveyed by those events. This study investigates the role of video game narrative in the formation and strengthening of health-related attitudes. It hypothesizes that the attitudes most affected by narrative devices in a game will be those that involve emotion and empathy for characters. In addition to participating in a great story, some games give players opportunities to nurture a character who needs their help. Character nurturing may heighten players' feelings of

caring and compassion and, with a character's well-being at stake, the nurturing aspect of video game narrative may increase players' motivation to pay attention, learn, and win.

The study also looks at the other extreme – pure game-play. What happens when the narrative is reduced significantly, so that the player is mainly focusing on game mechanics, which are the physical actions needed to win the game? This study hypothesizes that health-related mechanics that are aligned with the game mechanics will be learned and remembered the most, if the player is enacting those mechanics repeatedly, with no characters or story lines to distract their attention from the task at hand. Cognitive Load Theory is relevant here, because the player is able to employ their full cognitive capacity on game-play without allocating any of it to following a story line or thinking about, or having feelings for, the characters. It has been noted by expert game players that they have learned to ignore and “see through” the story line of a video game in order to allocate all their attention to the game-play mechanics, focusing instead on the essence of the game: its strategies and game challenges.

The study was conducted with the cancer education game, *Re-Mission*, produced by nonprofit organization Hopelab for teens and young adults who have cancer. It was designed to improve their cancer knowledge, adherence to cancer treatment plan, self-efficacy for cancer self-care, and quality of life related to cancer. A randomized trial found that *Re-Mission* significantly improved these outcomes with cancer patients (Beale et al., 2006). A subsequent study found that the game changed and strengthened attitudes that predict prevention and adherence behaviors. It found that, compared to a control game that had no health content, playing *Re-Mission* led to significantly higher cancer

knowledge, perceived susceptibility, perceived severity, and self-efficacy for adherence to a cancer treatment plan if ever needed (Lieberman, 2006).

For the current study, *Re-Mission* was modified into five versions with varying levels of narrative and nurturing. One version of the game was the original version, and there was also a High narrative/High nurturing version containing more dramatic action and more images and backstory for the cancer patients in the story whose cancer the player was going to fight, and voice-overs of the characters, thanking the player for their help; a High narrative/Low nurturing version with the identify of the cancer patients removed and instead the player was asked to fight cancer in the human body; a Low narrative/High nurturing version, with all the dramatic elements and almost all character interactions removed; and a Low narrative/Low nurturing version. A randomized study of 488 young adults compared the impacts of the five game versions on the same health outcomes that were known to be influenced by *Re-Mission*, from the previous study. It also looked at related outcomes involving players' cancer-related knowledge, attitudes, emotions, self-concepts, self-efficacy, information seeking, and intentions to prevent and treat cancer.

The study compared the Low narrative/Low nurturing version, the original *Re-Mission* game, and the High narrative/High nurturing version. As expected, the study found that the outcomes most affected by emotions, empathy, and nurturing were most strongly affected by the High narrative/High nurturing version. These included perceived susceptibility for getting cancer ($p < .05$) and self-efficacy for cancer prevention behavior ($p < .01$). Participants in this group agreed the most highly with statements such as, “I

wanted the patients to get well” ($p < .05$). Also as expected, the outcomes related to health mechanics involving chemotherapy, which was used as a weapon to kill cancer cells constantly throughout the game in all five versions of the game, were strongest among participants who played the Low narrative/Low nurturing game version, which focused entirely on shooting chemotherapy and did not have a story line to distract attention or characters to care about and nurture. For example, participants in this group agreed significantly more strongly with the statement, “Chemotherapy would help cure me if I ever got cancer” ($p < .05$). Also, this group scored the highest in perceived self-efficacy for adherence to a chemotherapy treatment plan if ever needed ($p < .05$).

This study provides evidence supporting several principles of health game design to use in future health games. It identifies health outcomes associated with emotions, empathy, and nurturing, and if those outcomes are the goal of the game then it would be useful to create a game that engages the players’ emotions through narrative and nurturing. The study also identifies health outcomes associated with health mechanics, such as administration of chemotherapy and trust in the response efficacy of chemotherapy. Future health games aimed at instilling these attitudes would be better designed if they focused on pure game-play as a way to teach and rehearse the health mechanics used in the game, with no distracting story line to interfere with learning and attitude change.

More research in this area is needed, to help us better understand these processes of health-related learning, skill development, and behavior change. However, this study is an intriguing beginning.

References

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