

# “How You Play the Game”: Pedagogy Within Cancer-Based Video Games

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## INTRODUCTION

Due to a rising incidence of conditions that require expertise of trained professionals from both the social and medical sciences, clinical health psychologists have become valuable in helping persons with chronic illnesses and their families who provide care (Kasl-Godley et al., 2014; Kazak & Noll, 2015; Sun et al., 2015). Moreover, these studies suggest that professionals in the mental health field can improve the care of persons with chronic illnesses and the mentorship of persons who informally care for persons with these chronic illnesses. Economic challenges to those seeking medical care for chronic illnesses have increased over the past two decades, affecting families to the extent that they must also incorporate informal means of care (Hoefman et al., 2019; Langa et al., 2001). To alleviate such burdens for cancer-based scenarios, HopeLab Industries developed a video game, Re-Mission 1, that can be used as an educational tool for cancer patients and their caregivers (Tate et al., 2009). Those who played this game were found to have improved motivation and self-understanding of their illness (Kato et al., 2008). Since Re-Mission 1, a second game, Re-Mission 2, was developed (HopeLab, 2019), and our laboratory demonstrated the long-term benefits for retaining an understanding of cancer physiology and pedagogy (Bacharz et al., 2020; Smith, et al., 2019). We found that while text-based materials provide a better short- and long-term memory benefit, participants who received the Re-Mission 2 game (when substituted for text materials) showed a lower memory drop-off between the short- and long-term tests. While a more engaging format (i.e., a video game) may have its benefits, the difficulty of playing a game while associating the game with cancer-based information that is subsequently tested may be more complex when compared to simply reading a text-based version. Since it is uncertain as to whether memory benefits pertain more to the viewing of the game or the actual playing of the game, the purpose of the present study was to see if such a distinction can be made and if either condition compares to learning materials in that were presented in previously tested text- and game-based formats. It is hypothesized that while text-based learning will inevitably show the highest overall memory benefits (in short- and long-term testing), those who watch the game being played (while being able to link cancer-based content to the game) will show a marked recall of content when compared to those who are able to play the game (and have no real time to link the cancer-based content to the game).

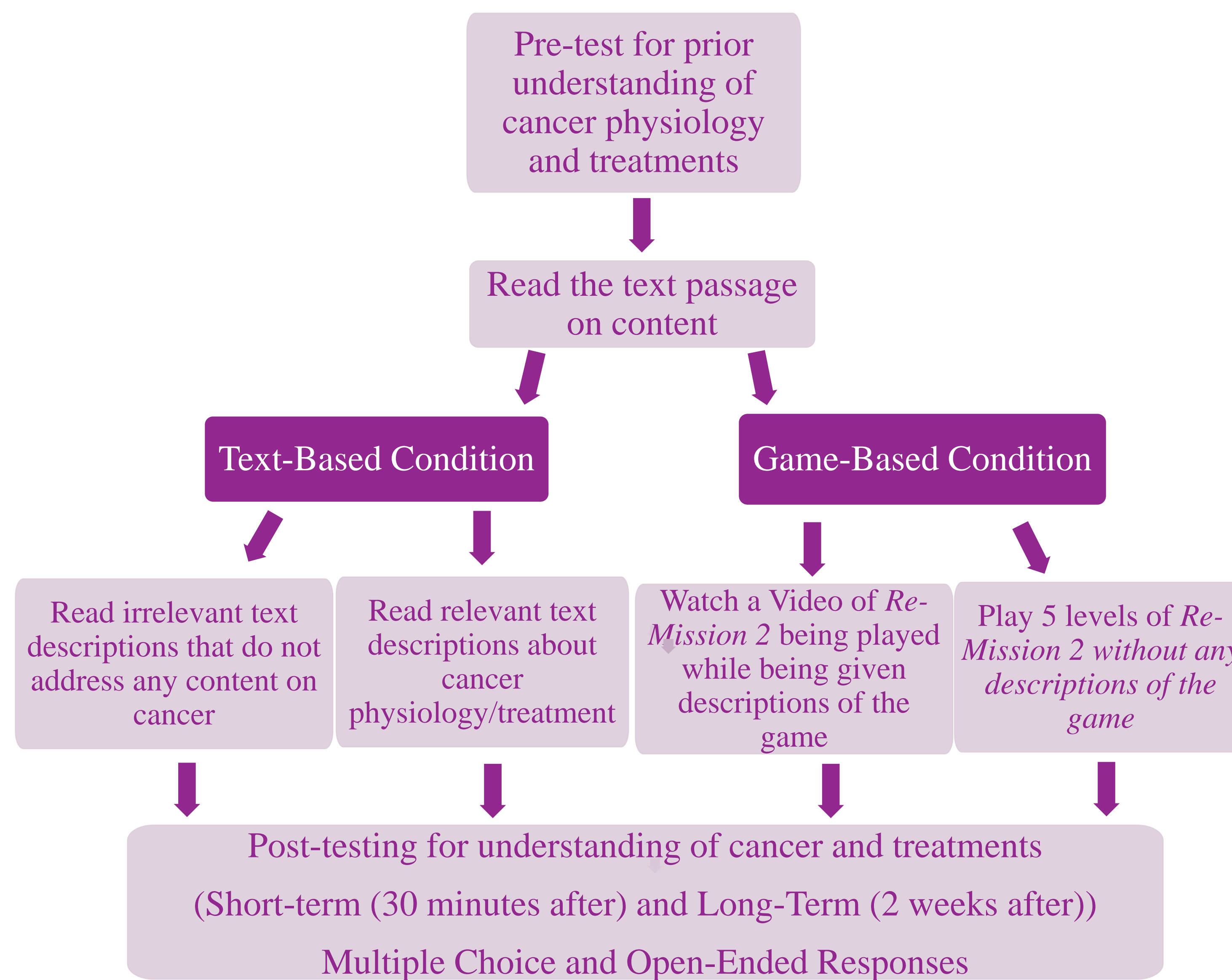
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## PARTICIPANTS

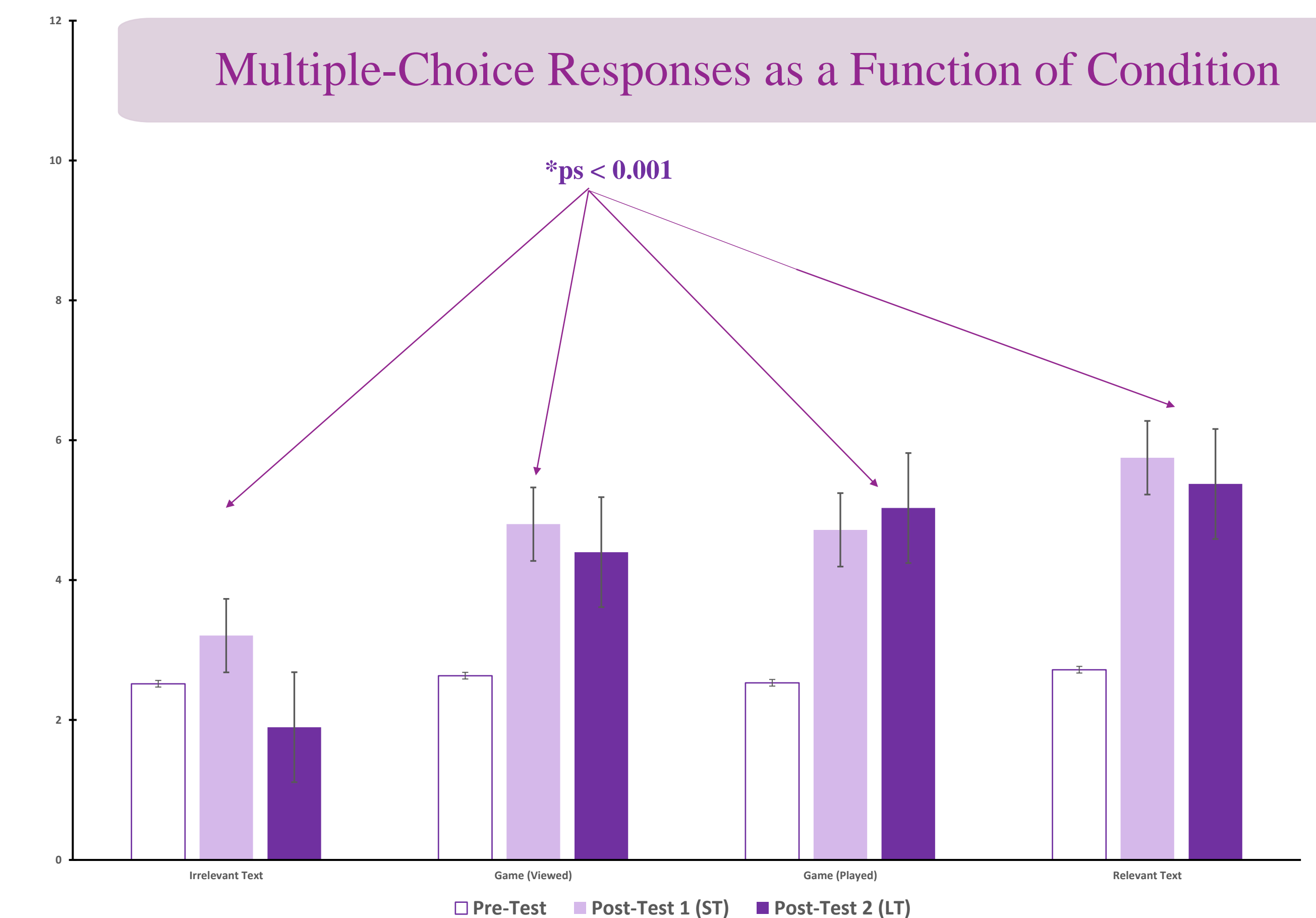
Text-Based	Males	Females	Total
Irrelevant Text (Control)	8	21	29
Relevant Text	9	21	32
Game (Watch)	10	22	32
Game (Play)	8	22	30

## METHOD

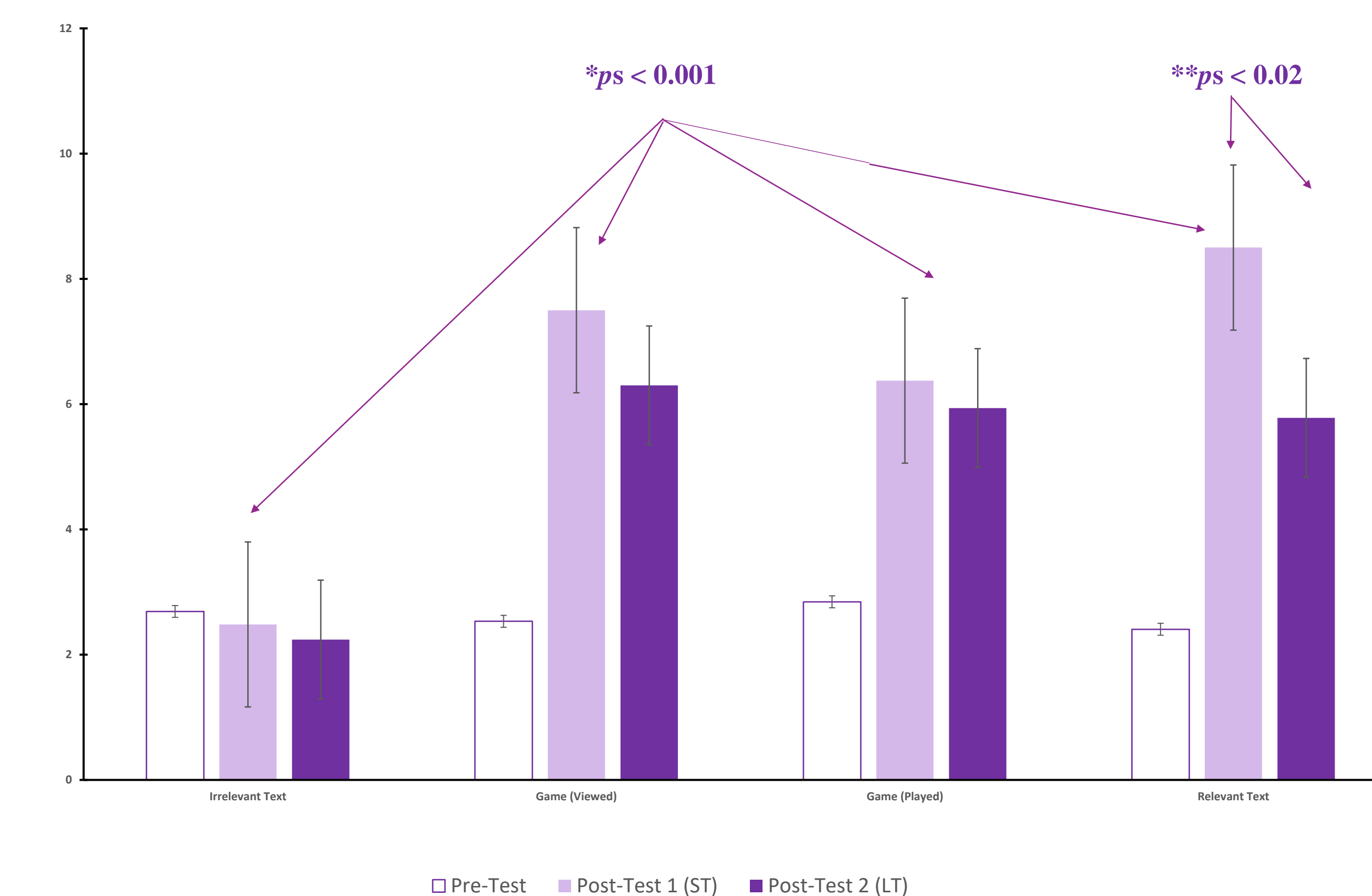


## RESULTS

### Multiple-Choice Responses as a Function of Condition



### Open-Ended Responses as a Function of Condition



## CONCLUSION

There were no significant differences in pre-test scores between any of the text-based or game-based conditions, regardless of the question type (multiple choice or open-ended answers,  $ps > 0.001$ ). Furthermore, the post-test scores were significantly higher than the pre-test scores, regardless of condition and for both types of questions. However, overall improvements in post-testing were significantly higher in all conditions when compared to the control condition (i.e., irrelevant text as an ancillary material,  $ps < 0.001$ ). Although all groups with relevant information (text- or game-based) benefitted with their respective ancillary material, there was a significant drop in correct open-ended responses in the relevant text condition when compared to both game conditions ( $ps < 0.02$ ). These data collectively suggest that while relevant ancillary content of cancer physiology was effective for retention of the material, (regardless of format), the incorporation of using video games (by viewing or by playing said games) may have engaged participants at a more sustained level when compared to standard text-based ancillary materials. Future studies will further explore the active/passive cognitive benefits of using games to better understand physiological mechanisms in the body.