

Avatar Training for Female Heart Disease Awareness
Michael Christian, Youxuan (Lucy) Jiang, Isabella Vannucchi
Human-Center Computing Lab, Clemson University Advisor: Dr. Juan Gilbert

ABSTRACT

The purpose of this research is to develop an online interactive training system with conversational avatars to promote female heart disease awareness among women without heart disease experience. Information will be shown through visual, hearing, and language representations, which simulates a human one-on-one learning environment. Users will be able to communicate with the avatar by natural speaking or typing, and learn about their relationships with their hearts based on their race, family roles, and physical conditions. This project will dispel the misconception of heart disease as

a man's disease, and develop users' empathy with women with a heart attack experience in order to drive their actions to fight female heart disease in real life.

BACKGROUND

Heart disease is the leading killer of women in the United States, responsible for one out of three female deaths each year (Heart Disease and Stroke 2012 Statistical Update). Since 1984, more women than men die of heart disease, but the awareness that heart disease is women's most serious health threat still remains low among American women. Over the last 10 years there have been great strives by different organizations to educate women about their heart disease risk, but most women still believe they are more likely to die of breast cancer; the reason is that heart disease is mistakenly considered as a man's disease (Twelve-Year Follow-Up of American Women's Awareness of Cardiovascular Disease Risk and Barriers to Heart Health, 2010).

SYSTEM DESIGN

The avatar training project (also called Avatar HD) is built as a web-based intervention that contains a male and a female avatar who have ability to communicate with users using natural language and guide them through the entire training session. The avatars play roles of tutors, and are able to engage users' attention, explain complex materials related to heart disease, ask and answer users' questions, and guide users through corresponding learning materials based on users' races, family roles and physical conditions.

The training session contains eight modules in total, including seven training modules and one assessment module. Each module is between 5 to 10 minutes. In each module, the avatar is placed on the right side of the browser (See Figure 1). By default, the system will show the female avatar to users; if users such as old ladies cannot hear the female avatar's voice, they will be able to switch to a male avatar. While the avatar is talking, the system will show corresponding images, graphs, and video clips on the left side of the browser to help users learn the materials. At the end of each module, users are able to decide if they want to review the current module or go to the next module. After finishing all seven training modules, the system will show all those modules for users to review and prepare for the final assessment module.

Below the avatar, there are a text area and an input box with an icon of a microphone, which allow users to communicate with the avatar by either natural language or typing. During the training session, each module is divided into multiple chunks based on users' learning progress. Between two chunks, users are able to ask the avatar any question for better understanding of the material by either pressing the icon of microphone and speaking or typing in the input box. The avatar is able to provide immediate answers by natural speaking, and the content of the questions and answers will

be recorded in the text area above the input box for users to review. If the avatar is not able to answer users' questions, the system will save that question. Researchers will be able to add new questions and answers into the system based on the history.

Figure 1. Avatar HD interface developed by Jiang's team to promote female heart disease awareness

EMPATHY DEVELOPMENT


The word "empathy" is defined as a capacity to recognize and project others' emotions into observation (Daily, 2010). Our empathy development session is built within the learning environment called the trajectories of awareness, which encourages users' exploration of identity and emotion (Daily, 2010).

The empathy development session starts from a self-identity session in module 4 (See figure 2). The system will show users a list of words, and ask them to pick three of them to identify themselves (such as African American, mother, healthy). Based on their identity, the system will show users stories of patients who have similar background with them, and ask users self-related questions to develop

self-related feelings. In module 5 and 6, the system will develop users' empathy by showing them how the patients who have similar background with them coped with heart disease, and introduce specific strategies of treatment and prevention instead of providing general suggestions. In module 7, the system will develop users' responsibility by linking them to online communities, donation programs, webpage with social activities and other online resources. Users will be able to save and print the pages if they want to take the information with them.

Module 1. Introduction

**Female
Heart
Disease**



Male Female

Module 1. Introduction

Module 2. What is heart disease

Module 3. Misconception

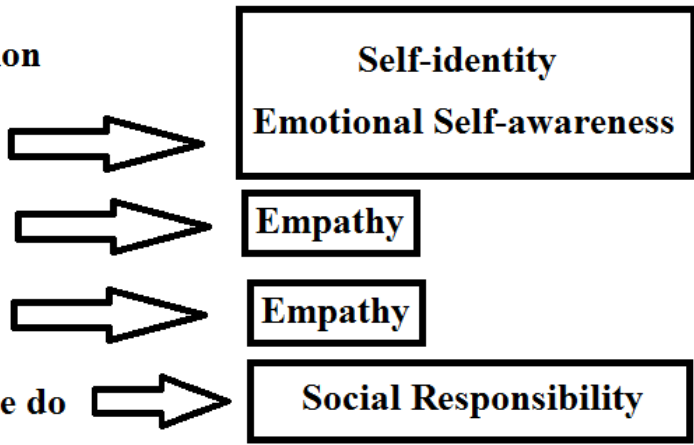
Module 4. Symptoms

Module 5. Treatment

Module 6. Prevention

Module 7. What can we do

Module 8. Assessment



Trajectories of Awareness

Figure 2. Empathy development through training modules in Avatar HD project

TEST

The module 1 “Introduction” has been finished. A male avatar plays a role of tutor to introduce the general fact of heart disease with images, and to explain the way users interact with this training project. Users are able to communicate with a male avatar, ask questions and receive corresponding answers. Our next step is to design specific training content for remaining modules based on all the resources we have got.

REFERENCES

Daily, S. (2010). More Than a Feeling: Technology-Infused Learning Environments to Support the Development of Empathy. Massachusetts Institute of Technology

Mosca, L. Mochari-Greenberger, H. Dolor, R. Newby, K. Robb, K. (2009). Twelve-Year Follow-Up of American Women's Awareness of Cardiovascular Disease Risk and Barriers to Heart Health. American Heart Association.

Roger, V. Go, A. Lloyd-Jones, D. Benjamin, E. Berry, J. Borden, W. Bravata, D ... Turner, M. (2012). Heart Disease and Stroke 2012 Statistical Update. American Heart Association.