# What Can Your Avatar Tell the Doctor?

Jacquelyn Ford Morie and Sin-Hwa Kang

Institute for Creative Technologies
University of Southern California
12015 Waterfront Drive
Playa Vista, CA 90094-2536
{morie, kang}@ict.usc.edu

**Abstract.** The goal of our study is to explore a functioning virtual self that can present salient information about our health. We investigate several types of connectivity between a user and his/her animated character representation (also referred to as an avatar). We aim to find various forms of avatar connection with its user to address the value of avatars in health care applications. We propose an additional variation on an existing categorization of avatar-self associations. We specifically examine the potential of the biologically instrumented end of the avatar connectivity continuum.

**Keywords.** Avatars, Virtual Worlds, identity, attachment, investment

## Introduction

Persistent, socially connected Virtual Worlds (VWs) allow what was formerly a complex, stand-a-lone costly system required to implement a Virtual Reality Environment (VRE) to now be much more widely accessible. Virtual Worlds grant us the capability to connect to and access a potentially limitless audience over the Internet. The value of VWs is greatly enhanced by the embodiment of the user in the form of a personalized avatar. Recent research is beginning to substantiate a deep connection that forms between the user and his or her avatar with repeated use [1; 2]. In the domain of health care, Fox [3] argues that avatars can deliver the customized and precise needs of each patient to a doctor by displaying his/her symptoms visually over time. We have been exploring other affordances of avatars to determine what can be leveraged to create more effective health applications delivered via VW platforms. We are especially interested in what avatars offer as a personal expression of self in health care applications by providing visible, potentially useful cues about a person's *psychological* state. These cues could be revealed by an avatar's physical similarity (given how well the program allows one to accomplish this), or by an avatar designed to represent an internal state that the person perceives is a more truthful representation of self.

## 1. Method and Results: Forms of Avatar Connection

We explore several types of connectivity between a person and his/her avatar. Schultze enumerates avatar-self relationships along eight clearly defined and potentially useful dimensions [4]. We also propose an additional variation on these dimensions that takes into account the amount of agency and control the person behind the avatar actually has. At one end of this continuum is where the person has maximum control of both the appearance and actions of their avatar. In this category, a person can not only form any appearance allowed by the program, one's movements can also be customized via uploaded animations or even mimicked via a movement sensor, such as the Kinect. A second category along the continuum is minimal control, when the options for avatar appearance are restrained to a set of pre-designed choices where, for example, only height and hair color might be able to be changed. Third we define a segment of connection based on specific inputs collected either from questions the person answers, or devices that can measure board appearance parameters. An example of this would be the Wii Fit program, which alters one's Mii character based on inputs of height, age and gender, along with weight determined from stepping on the WiiFit balance board. At the far end of the continuum we are currently implementing a more biologically complete connection wherein the person's physiological and neurological signals are unobtrusively incorporated into the look and behavior of the avatar.



Figure 1. Mii Changes from ideal (on left) to actual (with BMI chart) in WiiFit

## 2. Conclusions and Implications

Kang and Gratch have shown that a person is much more likely to disclose more about themselves to a virtual "other" [5]. The protections afforded by the use of an avatar within a VW add a personal dimension to this that may be extremely powerful and that we must explore if we are to truly understand how avatars represent us in these brave new worlds. When we are able to fully implement the biologically instrumented end of the avatar connection continuum, we will be closer to achieving a functioning self that can provide salient information about our physical and psychological health, perhaps equal to what we reveal in face-to-face encounters today.

## References

[1] Jensen, S. S. (2009). Actors and their Use of Avatars as Personal Mediators. MedieKuture, 25(47), 29- 44.

[2] Vasalou, A., & Joinson, A. N. (2009). Me, myself and I: The role of interactional context on self-presentation through avatars. Computers in Human Behavior, 25(2), 510-520.

[3] Fox, J. (2012). Avatars for Health Behavior Change. In Noar, S.M., & Harrington, N.G. (eds.) *eHealth Applications*. Routledge.

[4] Schultze, U. and Leahy, M. M. (2009). The Avatar-Self Relationship: Enacting Presence in Second Life. In Proceedings of Thirtieth International Conference on Information Systems, Phoenix, Arizona 2009

[5] Kang, S. H., & Gratch, J. (2009). Interactants' Most Intimate Self-disclosure in Interactions with Virtual Humans. In Intelligent Virtual Agents (pp. 508-510). Springer Berlin/Heidelberg