IGI PUBLISHING ITJ3945

701 E. Chocolate Avenue, Suite 200, Hershey PA 17033-1240, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.igi-pub.com

This paper appears in the publication, International Journal of Technology and Human Interaction □□
Volume 3, Issue 4
edited by **Bernd Carsten Stahl**□□ **© 2007, IGI Global**

Anthropomorphic Feedback in User Interfaces:

The Effect of Personality Traits, Context and Grice's Maxims on Effectiveness and Preferences [1]

Pietro Murano, University of Salford, UK

Patrik O'Brian Holt, The Robert Gordon University, Scotland

ABSTRACT

Experimental work on anthropomorphic feedback in user interfaces has shown inconsistent results and researchers offer differing opinions as to the potential usefulness of this style of user interaction. A review of the literature shows that experimental work can be improved and enhanced by taking into account issues that characterise human-human communications. Results from three experiments are reported that exhibit the previously observed inconsistencies but this is arguably a function of task context. An alternative explanation is that the results are a reflection of the cognitive nature of tasks. Overall, the results point the way to further and future results in terms of refining procedures but also in terms of theoretical focus.

Keywords: *anthropomorphic user interfaces; evaluation; user interface feedback*

INTRODUCTION

Human-computer interaction (HCI) focuses on the dialogue between users and computers through the user interface (UI). The past 20 years have seen UI developments that range from command line interfaces through to modern graphical user interfaces (GUIs) based on the now familiar desktop metaphor. Regardless of the type of UI, the feedback provided to users is an important area of concern and remains an active area of research. Feedback to users as part of human computer dialogue can take a number of forms such as text, graphics, animation, speech, and so forth. Anthropomorphic interfaces are a way of delivering feedback that in some way takes on the characteristics or role of a human. Typically, anthropomorphism involves a nonhuman entity, usually some element of the user interface, taking on some human quality (De Angeli, Johnson & Coventry, 2001), for example a talking dog or a cube with a face that can talk. A well known example is the Microsoft Office Paper Clip. It could also be the actual manifestation of a real human, such as a video of a human (Bengtsson, Burgoon, Cederberg, Bonito & Lundeberg, 1999).

It can be argued that from a common sense point of view anthropomorphic interfaces ought

to be of some benefit to users as these in some way or form mimic 'natural human communication or characteristics.' However, the usefulness (however defined) and desirability of anthropomorphic interfaces remains a moot issue. While some researchers provide evidence and argument in favour of using anthropomorphic interfaces (e.g., Agarwal, 1999; Cole, Massaro, Rundle, Shobaki, Wouters, Cohen, et al., 1999; Dertouzos, 1999; Guttag, 1999; Koda & Maes, 1996a, 1996b; Maes, 1994; Zue, 1999), others have cast doubt on this style of interaction (e.g., Shneiderman 1997; Shneiderman & Plaisant, 2005).

The work reported and discussed in this article aims to review previous work showing that results have been inconsistent and there is not agreement as to the potentially positive or negative influences of anthropomorphic UIs. It will be argued that experiments need to take into account context and Grice's maxims as outlined by Reeves and Nass (1996). Results from experiments will be presented that cast some light on effectiveness of anthropomorphic interfaces in relation to context and the potential role of Grice's maxims.

As part of developing user support and increased usability, Microsoft has experimented with anthropomorphic feedback using work by Nass, Steuer, and Tauber (1994) as a foundation. This work formed part of the Persona Project where an anthropomorphic character, a parrot called Peedy, is used to help a user find and play music tracks. A user can interact with the system using automatic speech recognition (ASR) (e.g., Bradshaw, 1997).

Support for the effectiveness of anthropomorphic feedback can, for example, be found in the work of Maes (1994) and coworkers who use the term 'personification' to characterise this type of feedback.

Maes (1994) has developed an agent for e-mail handling that is described in the context of agents as 'learning' in the sense of becoming an effective personal assistant. This agent takes the form of a drawn face where various facial expressions are used to convey a particular state of the agent, for example 'working' and so forth. This 'facial agent' can be applied in various other contexts (e.g., scheduling meetings). Experimentation with this type of agent showed that users produced positive comments and seemed to indicate that users judged the input of the agent to be helpful. This can be taken as an indication of positive approval of anthropomorphic feedback.

Further support for anthropomorphic feedback is provided by Koda and Maes (1996a, 1996b) who conducted experiments in which users played poker using the Web. The aims were to understand:

1. The effect of having a face and facial expressions in an interface, such as required attention, engagement, and distraction.
2. What kind of facial features (gender, humanity, and realism) make the agent look intelligent, likeable, and comfortable to work with.
3. Whether people's impression of an agent is determined by its representation, by its performance, or both.
4. Whether people's impression of the faces differs by their gender or opinion about personification.

The experimental results from this poker playing context showed that a face at the user interface is judged to be more likeable, engaging, and comfortable as compared to other feedback styles. It was also concluded that the impression individuals had of a face differed if the face was on its own or if the person interacted with the face to accomplish some task. It should be noted that the results are based on measures that relate to aesthetic issues but not on user approval concerning what helped them most. No results are provided as regards effectiveness.

While the results from the work presented above relates to specific contexts and tasks, then the results and their implications can be generalised to be relevant to issues of judging usefulness and preferences (or liking) for anthropomorphic feedback. Overall, the work of Maes can be regarded as providing support for