

A Game-Study of Persuasion Effect of Emotional Agents

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Abstract

The question if people can be influenced by emotions displayed by virtual agents is strongly debated in the CHI community. Many researchers claim that experience in the real world does not translate in the virtual world, and that if agent / avatar – based interfaces are shown to be successful with users; it is only for a short time, due to the novelty effect. Developing believable avatars with realistic emotions is a complex endeavour and a focus of a lot of work. Our goal is modest – to see if users use persuasive strategies based on inducing emotion in the other party when this party is an artificial agent and if users can be persuaded to act in a particular way by a display of emotion by an artificial agent. This is important question, since a positive result would suggest that it is possible to build persuasive interfaces with virtual agents and to influence users' behaviour to make it more cooperative, for example, in CSCW environments, peer-to-peer resource-sharing environments, or computer-based learning environments.

People respond emotionally to other people's behaviour. People often use the visual display of a person's emotion to predict the person's future behaviour using simple principle of reciprocation. For example, if A is rude to B, B will most likely become angry. The display of anger by B will be a cue for A that B will not treat A friendly in the future. If A observes that B is happy or pleased as a result of A's behaviour, A may expect that B will be friendly and cooperative to A in the future.

There has been a lot of research on displaying truthfully emotions, including models of emotion as result of events and achievement of a person's goals. However, relatively little attention has been paid so far on how emotional cues can be used to predict a person's future behaviour and how deliberate triggering of different emotions can create conditions for a certain type of behaviour, i.e. how emotions can be used as a tool of persuasion.

We have designed a game to study if and how people deploy such emotional persuasion. The user has to guess the result of virtual 2 dices - if it is smaller, equal or greater than 7. There are 2 to 6 agents (randomly chosen each time from a pool of agents) that try to help the user to guess correctly by offering predictions for the throw. They vary in their precision. After each throw, the user can distribute a fixed amount of reward to the agents who in response demonstrate emotions. For example, burst into tears when awarded a small amount and gleaming with happiness if awarded a relatively high amount. Also, some of the agents that were particularly happy may reciprocate by increasing their precision in future predictions, while some of those that were particularly unhappy will decrease their precision. The exact change of behaviour, just as in real life, is unknown to the user. Each user has to play 10 rounds of the game during which we observe their strategy in rewarding the agents. The results show that most users play strategically, rewarding most those agents who reciprocate and increase their precision, using rewards to trigger a strong positive emotion in the agent. This shows that people seem to translate their everyday experience to computer environments with artificial agents with simulated emotions, by acting (giving or taking away rewards) to induce emotions that will

influence the future behaviour of other agents. However, there were also users who play compassionately, trying not to make any agent unhappy, even though this is not a winning strategy in the game. This shows that some people themselves are influenced by emotions displayed by artificial agents and change their behaviour to reciprocate, for example, by giving rewards to undeserving agents, so that they are not unhappy. Generally, the results of this small study show that there is a promise in the use of artificial agents in human-computer interfaces, since people translate their experience and expectations from the world of real people to the virtual agents.