Hueristics: The Superstition Machine

Andrew Kenneth Ho
Dept. of Electrical and Comptuer Engineering
University of British Columbia
Vancouver, BC, Canada, V6T 1Z4
andrewkh@ece.ubc.ca

Yichen Tang
Dept. of Electrical and Comptuer Engineering
University of British Columbia
Vancouver, BC, Canada, V6T 1Z4
yichent@ece.ubc.ca

Negar Mohaghegh Harandi
Dept. of Electrical and Comptuer Engineering
University of British Columbia
Vancouver, BC, Canada, V6T 1Z4
negarm@ece.ubc.ca

Sidney Fels
Dept. of Electrical and Comptuer Engineering
University of British Columbia
Vancouver, BC, Canada, V6T 1Z4
ssfels@ece.ubc.ca

ABSTRACT
This work describes an attempt to create a new superstition and disseminate it through an interactive web interface, named Hueristics. It was created to explore the relationship, if any, between daily interaction with a website and and belief in a superstition. An initial user study involving seven participants has been performed. Although the results are inconclusive, the findings show that one participant strongly believed in the superstition by the end of the study, leading to the conclusion that further evaluation is warranted.

Categories and Subject Descriptors
J.4 [Computer Applications]: Social and Behavioral Science—Psychology

General Terms
Human Factors

Keywords
Superstition, Psychology, Interactive Web Interface

1. INTRODUCTION
Hueristics: The Superstition Machine is the name of a web interface designed to explore whether daily interaction with a web interface can create a commitment to a belief which may or may not be validated; in other words, a superstition. This paper describes the design of a superstition, a website which users interact with daily, and an evaluation to test if using the Hueristics website has created a superstition in the user. The evaluation described in this paper included seven participants.

Humans have exhibited superstitious behaviour for millenia. The most popular psychological explanation for this seemingly illogical behaviour was first proposed by Jahoda [2]. This perceived control theory observes that lack of control creates stress in people, and hypothesizes that superstitions create an illusion of control, thus reducing stress. More recent work by Case et al. [1] supports this hypothesis, and in addition, has shown that as user’s control over an event outcome decreases, they will be more willing to resort to superstitious behaviour, regardless of their reported belief in such behaviour.

Hueristics attempts to exploit the findings by Case et al. by claiming to analyze and relieve a user’s symptoms of fatigue. The decision to use a physical ailment was based on the idea that superstitions will be more powerful if they affect something in which the user has a vested interest. Claiming to correct a more serious ailment was ruled out since Hueristics should not interfere with professional medical treatment. Fatigue was chosen because most people experience fatigue fairly regularly, and feel little control over it. In addition, since feelings of fatigue may vary from person to person, the definition of “levels” of fatigue is indistinct for most people. The strategy of relying on ambiguity of symptoms, diagnosis, treatment, and improvement has been used successfully by a number of pseudo-sciences and alternative medicine, and has been described by Louhiala in [3]. This ambiguity leads to difficulty in measuring any improvements to fatigue, and thus makes it more difficult to disprove the superstition created by Hueristics.

To the best of the authors’ knowledge, this is the first explicit attempt to create a superstition and disseminate it through an interactive web interface.

2. METHODS
Hueristics requires daily interaction from users during a data input phase, and claims it will help users prevent symptoms of fatigue by analyzing the user’s data input and correlating it with previously analyzed findings. Following the data input phase, a summary page of Hueristics “findings” are displayed to the user. The randomly-generated suggestions made by the Hueristics website consist of 3 - 6 recommendations for each day of the week.

The user evaluation included seven users, all graduate students at the University of British Columbia, and consisted of a five day data input phase, and a three day feedback phase.

2.1 Superstition design
Observing popular superstitions throughout history reveals that most make vague claims with respect to cause, outcome, or both. For example “breaking a mirror will lead to 7 years bad luck” sounds ominous because 7 years is a long time to suffer for a small mistake, however, “bad luck” is very ill defined and leads to the superstition being easily reinforced whenever some misfortune occurs. Astrological horoscopes create a large number of vague predictions, and take advantage of human tendency towards confirmation bias; that is, whenever some significant event occurs during the day, one can easily make the situation “fit” into one of the many vague predictions made by the horoscope, thus reinforcing the superstition.

By choosing a vaguely defined negative outcome, “increased levels of fatigue,” and numerous possible causes, Hueristics hopes to create a superstition which is difficult to disprove, and yet easily reinforced. Six possible causes were created, of which four are in the user’s control (amount of sleep, having enough to eat, having too much caffeina, and the colour of clothing), and two that are out of the user’s control (a number of weather factors, and commute time). Including some causes which are out of the user’s control makes the superstition more difficult to disprove. Making predictions based on factors which are within the user’s control allows measurement of the effects, if any, the Hueristics interface can create. Some of the causes within the users control, such as amount of sleep and cafeine consumption may be readily believed by users, but the choice of clothing colour is not. If a user becomes convinced that following the choice of clothing colour will affect their fatigue, then Hueristics has accomplished its task of creating a new superstition.

2.2 Website design
The Hueristics website is run on a LAMP (Linux, Apache, MySQL, PHP) server. The URL directs users immediately to a login page. Once logged in, users have access to different web pages depending on which phase of the protocol they are in: data entry or feedback. During the data entry phase, the user will see a daily questionnaire page. During the feedback phase, Hueristics’ recommendations for the day are displayed.

The questionnaire portions of the Hueristics interface are comprised of standard HTML elements such as check boxes, radio buttons, and drop-down menus. The resulting appearance should feel familiar to any user who has ever filled in a web-based form.

When the user logs in for the first time, they are asked to fill out a preliminary questionnaire that includes questions on basic information such as age, location information, and lifestyle information. Users were also asked to report the three colours of clothing they wear most often, and any patterns of fatigue they might already recognize. The reported colours of clothing are used during the feedback phase, described later in this section.

The data input phase begins immediately after the initial questionnaire is completed. During this phase, users are asked to login daily and fill out a questionnaire. The daily questionnaire asks the user whether they felt fatigued at any point during the day, as well as the severity of their fatigue. Also asked are questions covering daily routine, such as amount of sleep, length of commute time, number of meals and caffeine consumed, as well as clothing colour.

The data input phase lasts for a pre-determined number of days; in the case of this initial study, the duration of the data input phase was five days. At the termination of this phase, the user is presented with Hueristics’ complete report of their data input, which includes a false description of its “methods” and daily suggestions. The suggestions are randomly generated and consist of between 3 - 6 “correlations” between clothing choice, weather, having enough sleep, commute hours, caffeine, and whether the user feels hungry during the day. All seven days of data are presented to the user at once, in an attempt to overwhelm the user with information and encourage them to login daily for the next phase, the feedback phase.

During the feedback phase, users are shown a webpage with Hueristics’ recommendations for that day. An example of daily feedback is presented below:

Today is Tuesday, wearing black or white may help you feel less fatigued, especially in combination with the following weather patterns and daily behaviours:

- high barometric pressure, higher temperature, sunny weather,
- having a longer commute than usual,
- don’t find yourself hungry,
- consume more caffeine than usual.

The suggestions for each user are generated randomly. The following variables are randomized in order to create a different suggestion for each day of the week:

- One or two colours are chosen.
  - Each colour is one of the three specified by the user in the initial questionnaire.
- Either wearing or avoiding the above colours will be said to help with the user’s symptoms of fatigue for this particular day of the week.
- One to four weather-related variables are selected from the following list:
High barometric pressure,
- Hot,
- Cloudy,
- Precipitation.

- One to four lifestyle related suggestions are chosen for the user from the following list:
  - Longer commute than usual,
  - Getting enough sleep,
  - Number of meals,
  - Amount of caffeine.

- Each of the above lifestyle related suggestions has an associated negative, which is also randomized. For example, negating the statement, “longer commute than usual,” results in, “shorter commute than usual.”

Daily reminders were sent to the participants each day for the duration of the study. During the data input phase, reminders were sent in the evening so users could enter data about the course of their day. During the feedback phase, reminders were sent in the early morning so users would have a chance to change their clothing choice and amount of caffeine intake.

2.3 Study design
The evaluation of the Hueristics interface took place over eight days, and included five days in the data entry phase and three days in the feedback phase. Seven graduate students from the University of British Columbia participated in the study. Their ages ranged from 20 - 35. Of the seven participants, six were male and one was female.

The evaluation of the interface was performed by administering a questionnaire at the end of the entire study period. The follow-up questionnaire was broken up into two parts. The first included 12 questions, 10 of which were in the form of a five-point Likert scale with possible responses “Strongly Disagree, Disagree, Neutral, Agree, and Strongly Agree.” These questions asked users whether they agreed with the statements:

- I changed my behaviour based on the Hueristics interface’s suggestions,
- My symptoms of fatigue have improved since using the Hueristics interface,
- I believe the suggestions made by Hueristics will relieve my fatigue,
- I found email reminders helpful,
- I will continue to check the Hueristics website for suggestions.

Users were also asked to answer these questions:

- Did they attribute improvements to their symptoms of fatigue to clothing colour suggestion, number of meals eaten, amount of caffeine consumed, and/or adjusted sleeping patterns.
- how often did they check daily recommendations.

Part two of the questionnaire was administered after the user completed part one. It was included to get a measure of how users general superstitious belief compared to national averages, and the questions were based on the work by Torgler in [4]. The three questions asked users to rate how much they agreed with the following statements:

1. A person’s star sign at birth, or horoscope, can affect the course of their future.
2. Some fortune tellers really can foresee the future.
3. Good luck charms sometimes do bring good luck.

Possible answers were

- Definitely not true = 0.
- Probably not true = 1.
- Probably true = 2.
- Definitely true = 3.

A participant’s responses to the questions in part two may give an indication of whether they already believe in superstitious behaviour, and might show some correlation with their responses in part one. Torgler’s work finds that Canada ranks low in superstitious belief, with a national average score of 0.993.

3. RESULTS
Participants were given account names and passwords and began logging into the system immediately. The number of daily questionnaires completed by each user ranged from one to five, and the average was 3.143. During the three day feedback phase, most users logged in once or twice, with average 2. Interestingly, one user logged in 6 times during the three day feedback phase.

When analyzing the Likert scale questions, values were assigned to each possible answer:

- 1 - Strongly Disagree
- 2 - Disagree
- 3 - Neutral
- 4 - Agree
- 5 - Strongly Agree

The data is summarized in Figure 1.

Users response to question 6, which stated, “I believe that continuing to follow the suggestions made by Hueristics will relieve my symptoms of fatigue,” was close to neutral but slightly positive, which may be interpreted as users not being able to disprove the results, but still not being totally
convincing. One user answered "Strongly Agree", so at least one person in seven would appear to believe in the new superstition. Questions 1-4 asked users whether they changed their behaviour with respect to clothing, number of meals, amount of caffeine, and sleeping patterns, respectively. It can be seen that most users responses were negative in these areas.

Responses to questions 8 through 10 were largely positive, and these questions asked users if they felt the daily email reminders were helpful. In this regard, we have found that these daily communications were non-intrusive and, as expressed by some participants verbally to examiners, invaluable for increasing completion rate of questionnaires.

The Pearson correlation between the number of completed daily questionnaires and user responses yielded insignificantly results when considering the adjusted $r^2$ values. The average of the three questions in part two were computed to measure users' self-reported belief in superstition. Pearson's correlation between these averages and the user evaluation also yielded insignificant results.

Analyzing part two of the questionnaire, the mean response for the three questions related to belief in other superstitions were 0.713, much lower than the national average for Canada, 0.993.

5. CONCLUSIONS

Hueristics was implemented successfully, and experimented with a novel "superstition" which took inspiration from a variety of sources. An initial user evaluation lasting eight days and involving seven graduate students was performed. Hueristics was successful in convincing one out of the seven participants that the interface could relieve their symptoms of fatigue. However, the analysis of the data failed to have any statistical significance. Unfortunately, the study may have been seriously hampered by having such a short study time, and longer studies which include participants from more varied backgrounds should be performed before any stronger conclusions can be drawn.

6. REFERENCES