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Usability of User Agents for Privacy-Preference Specification

Robert W. Proctor · M. Athar Ali · Kim-Phuong L. Vu · Dongbin Cho

Dept. of Psychological Sciences   Dept. of Computer Technology   CSU Long Beach   Dept. of Psychological Sciences

Goals

To determine:
- Users' privacy concerns
- Whether these privacy concerns can be checked against privacy policies by an existing Web-based privacy agent
- Whether users are able to easily specify their privacy preferences using this agent

Introduction

- Many E-commerce Web sites post privacy policies.
  - These policies do not necessarily address consumers' privacy concerns.
  - They are typically written at a reading level that is too difficult for the general user population.

- One solution: Employ a user agent that checks each site's privacy against the user's privacy preferences
  - Success depends on the users being able to configure the agent so that it accurately reflects their privacy preferences.

Study 1

Users rated on a scale of 1-5 whether they disagreed or agreed with each of 98 statements relating to privacy practices (or preferences).

Results

- Six of the nine highest rated concerns involved credit card and financial information.
- The remaining three concerns involved personally identifiable information and health information.
- Participants were relatively unconcerned about
  - Cookies or non-personally identifiable information being used to customize their browsing experience
 - Buying patterns being recorded or stored when their personal information is not identified

Rank	Privacy Preference	Mean Rating
1*	I want the option of refusing to allow a company to share my CCI/FI with 3rd parties and affiliates.	4.66
2*	I mind when my CCI/FI is shared with a third party for promotions.	4.48
3*	I want the option of refusing to allow a company to share my PII with 3rd parties and affiliates.	4.38
4*	I mind when my email address is rented or sold.	4.34
5	I am concerned that hackers may be able access my PII.	4.24
6*	I mind when my PII is shared with a third party for promotions.	4.17
7	I want to see privacy logos on the privacy policy Web pages.	4.17
8*	I mind when my cookies/non-PI are rented or sold.	4.10
9*	I mind when my HI/PHI is shared with a third party for promotions.	4.10
10	I want the option to receive electronic/print privacy policy	4.07
11	I want the option of having a manual way of editing privacy preferences and a machine readable option.	4.07
12	I mind when my email address is provided to an acquiring company.	4.03
13	I mind when my login/password is transferred to an acquiring company.	4.00
14	I mind that my CCI/FI is aggregated from third parties.	4.00
15	I want the option to restrict the company's employees from viewing my HI/PHI.	4.00
16	I want the option of refusing to allow a company to use cookies/non-PI for promotional purposes.	3.97
17	I mind that my HI/PHI is aggregated from third parties.	3.93
18	I am concerned that hackers can access my email messages.	3.93
19*	I mind that I am not allowed to update my CCI/FI.	3.83
20	I mind when my email account is used to monitor my purchase patterns.	3.79
21	I mind when my cookies/non-PI are transferred to an acquiring company.	3.72
22*	I mind when my CCI/FI is used to customize my browsing experience.	3.69
23*	I mind when my HI/PHI is used to contact me for health or drug promotions.	3.69
24	I mind that I cannot see my cookies/non-PI to verify their accuracy.	3.62
25	I want the option to share my privacy preferences with other Web sites.	3.62

Study 2

The privacy concerns identified in Study 1 were used to develop tasks for setting privacy preferences in Study 2. This study was an experiment in which participants were instructed to try to set specific privacy preferences on Privacy Bird™, Beta 1.3.

Method

Participants were initially required to complete a survey with questions about their Internet usage and experience with privacy tools. For the main study, participants were asked to configure specified privacy preferences using Privacy Bird.
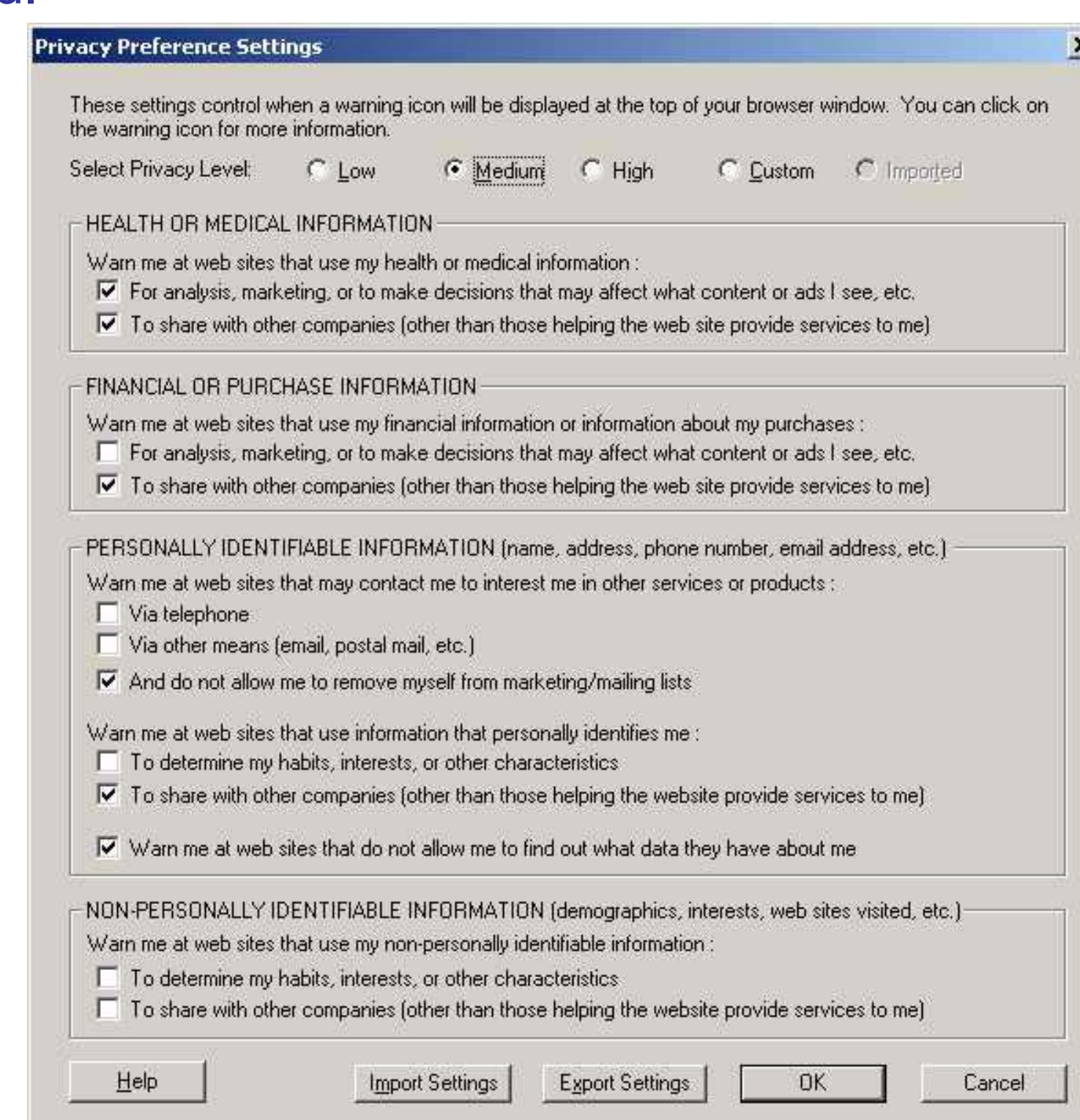
Results

Survey. The participants indicated being relatively experienced with computers and using the Internet, but not very knowledgeable about privacy policies and tools.

Performance with Privacy Bird. There was no difference in time to complete configurable ($M = 23.3$ s) and non-configurable ($M = 20.7$ s) tasks, $t(29) = 1.19$, $p > .24$. The percent correct was 66% for the 10 tasks that could be configured and 31% for the 14 tasks that could not be configured.

Study 3

Study 3 was designed to determine whether performance could be improved using alternative presentations for specifying privacy preferences on the Privacy Bird interface that used simple organizational or wording changes.

Method

- Participants were randomly assigned to receive one of five paper mock-ups of the Privacy Bird interface:
  - The original
  - Interface A: The word "my" was added before the health, financial and personal information categories
  - Interface B, the words "warn me" were replaced with the words "DO NOT"

- Interface C: The options were grouped into different categories that used different action verbs (USE, SHARE, CONTACT, and COLLECT) depicting how the information will be used.
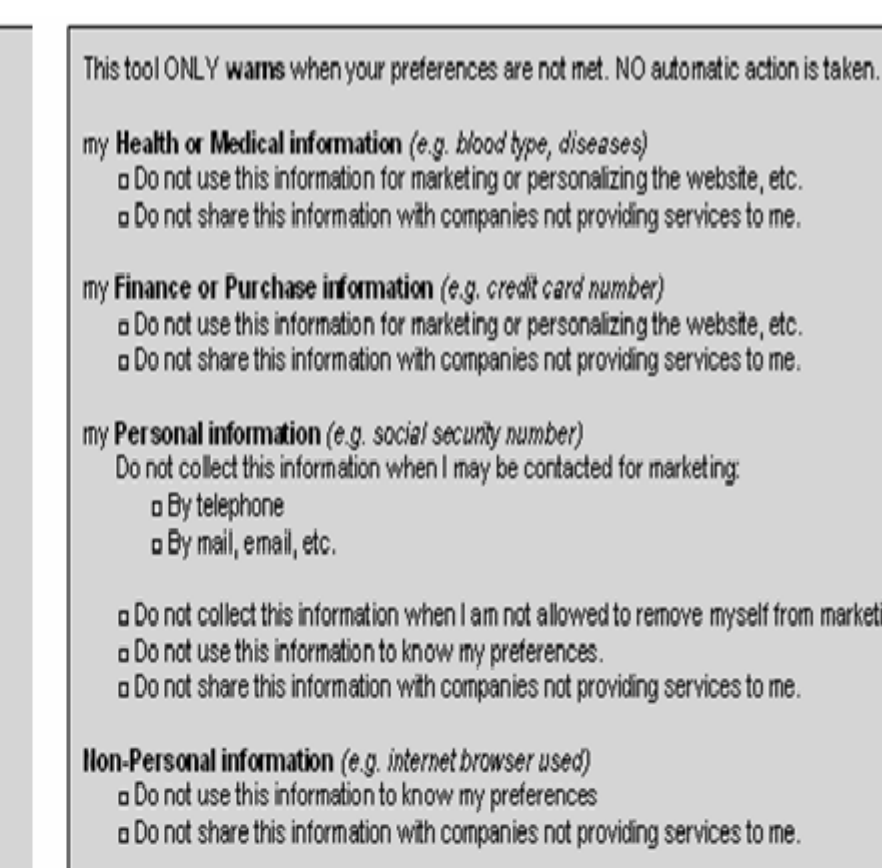
- Interface D: The options in Privacy Bird's interface were subdivided to make the categories more obvious. Under each category, the sentence began with the words "warn me when…"

- For each interface variant, participants completed the 10 tasks from Study 2 that could be accomplished with appropriate settings of the interface.
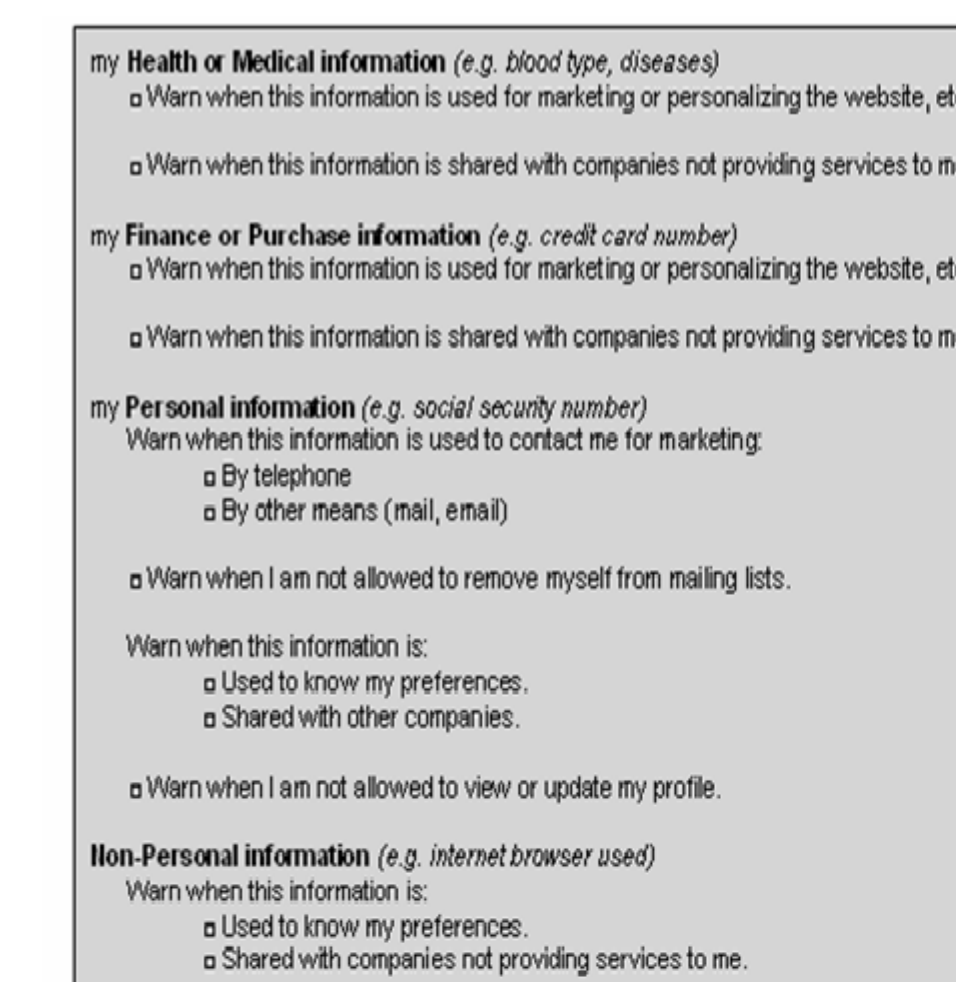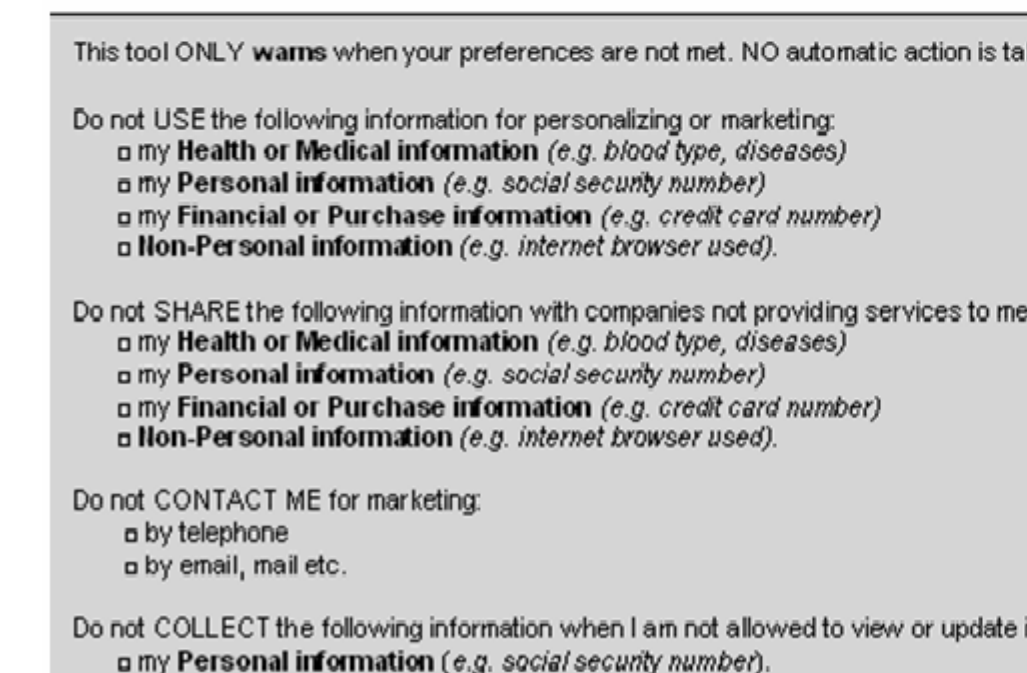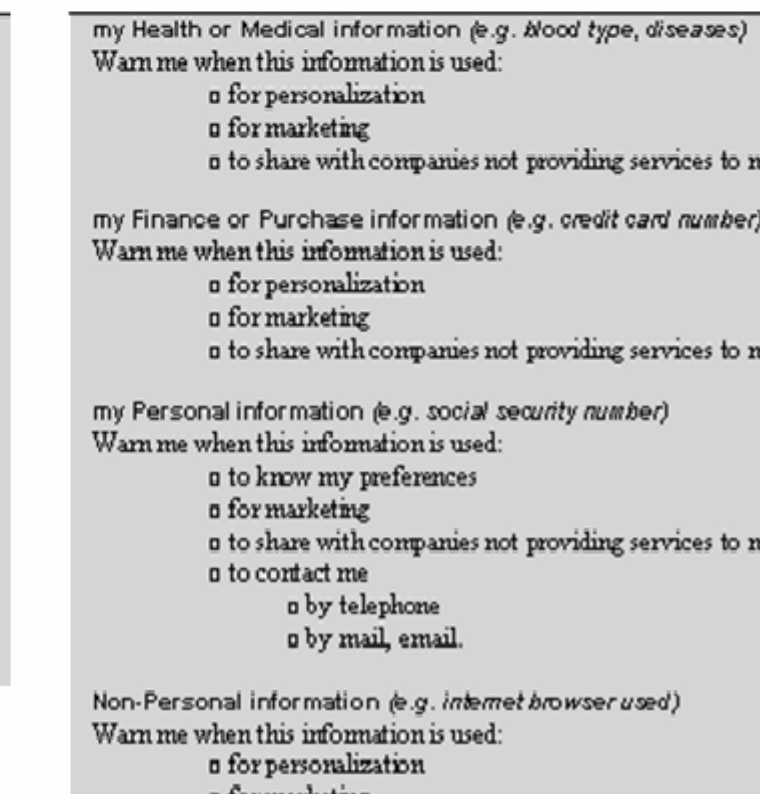

Interface A   Interface B

Interface C   Interface D

Results

There was no significant difference in performance across the different interfaces, $F < 1.0$. The correct option was selected 54% of the time, including configurations for which additional options were also selected.

Conclusion

- Users indicated that they were concerned with selling or sharing information with other parties.

- Privacy Bird allows users to check privacy policies for 7 of their top 10 privacy concerns, and provides a good start toward allowing users to determine whether Web sites adhere to their privacy preferences.

- However, experienced computer users with little knowledge of online privacy issues show confusion about what can be accomplished with particular settings.

- Therefore, it may be more effective for users to rely on the default values (low, medium, or high privacy) rather than on custom settings made by the users.

Acknowledgements

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