

Computer security information in stories, news articles, and education documents

Katie Hoban, Emilee Rader, Rick Wash, Kami Vaniea
Michigan State University

Purpose

Inefficient or inconsistent communication about computer security between content providers and content consumers may result in knowledge gaps for consumers. To understand this, we examined news articles, education documents, and end-user stories on the topic of computer security.

Three Information Sources

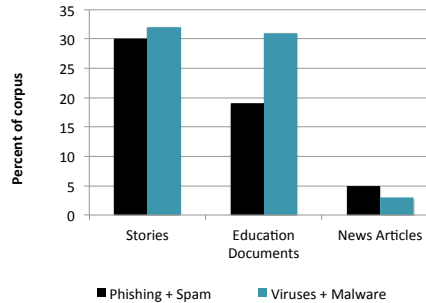
Story survey: We asked participants to relate a story they had heard about computer security, the moral they took away from it, and whether or not they changed their behavior as a result [3].

Newspaper articles: We collected and coded news articles about computer security that were published in 2011. These articles came from 16 regional, national, and international newspapers.

Education documents: We collected computer security education documents from universities, companies, and government institutions and coded them for format and education tactic.

Cross-topic analysis: We then coded these datasets and analyzed the trends present across them by condensing the topics present in each dataset into larger meta-topics.

Old News: Viruses, Malware, Phishing, and Spam



Little news representation
The Viruses + Malware and Phishing + Spam meta-topics received substantial attention in stories and education documents, but not in the news articles. Viruses + Malware covered 32% of stories and 31% of education documents, but only 3% of news articles. Similarly, Phishing + Spam covered 30% of stories and 19% of documents, but only 5% of articles.

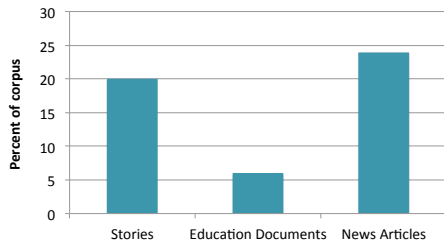
Topics considered mundane

We hypothesize that these two meta-topics have become mundane in the eyes of the mainstream media, and that newspapers subsequently do not publish many articles on them.

Low-profile targets

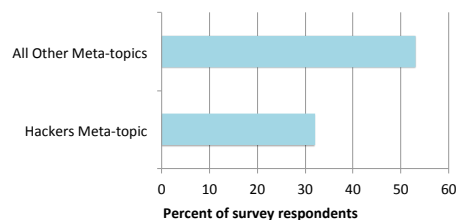
Another possibility is that, since the majority of these security breaches happen to average people, rather than high-profile organizations, the news may believe that they are not worth media attention.

Minimal Education About Hackers



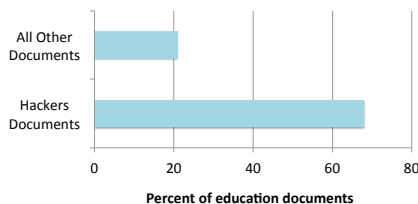
Interest in hackers

Hackers received substantial attention in the stories and news articles but did not receive much attention from the education documents. 20% and 24% of stories and news articles addressed hackers, respectively, but only 6% of education documents did the same.



Low behavior-change rate

As can be seen in Figure 2, those who had heard stories about hackers were not very likely to report a change in behavior [3]. In fact, they were less likely to do so than any other group. The relative scarcity of hackers education documents may play into the markedly low number of people who reported changing their behavior.



Descriptive, not prescriptive

68% of the hacker education documents are explanatory: they only describe the problem and did not provide any solutions. Participants in the story survey were concerned about "hacking," but the education materials do not specifically address hacking.

Wide range of impact

Events about hacking in the news tend to happen to either high-profile organizations, or organizations where a security breach would impact a large number of people. Since security breaches at high-profile companies impact so many people, this might explain the disproportionate prevalence of the Hackers meta-topic in the stories and news articles.

Making headlines

The high-profile nature of some targets lends itself to newspaper headlines. The discrepancy in popularity could be explained by the disproportionate amount of attention given to hacking events by the stories and news articles. For instance, part of this sample was from the time Sony/Nintendo was hacked into in 2011, and a subset of the stories and the news articles also addressed this occurrence.

Discussion

Mismatches between information sources

Our hackers finding is important because the education documents are not addressing a major point of end-user concern. End-users may be concerned about hacking because they hear about it often in the news and from other people, but few education documents address this meta-topic.

Lack of media visibility

The viruses + malware and phishing + spam findings are important because there is a mismatch between public concern, education, and news coverage. People often discuss these security breaches, and education documents cover these meta-topics to a commensurate degree, but newspapers tend to ignore them. This discrepancy results in a lack of media visibility for a meta-topic that concerns end-users.

Acknowledgments

Thank you to everyone at the BITLab for your support and input throughout this project, particularly Lauren McKown for collecting and coding the news articles, Nate Zemanek for collecting the education materials, and Zack Girouard for helping with coding the education documents.

References

- [1] Sasse, M., Brostoff, S. and Weirich, D. Transforming the 'weakest link' – a human/computer interaction approach to usable and effective security.
- [2] Cranor, L. 2008 A Framework for Reasoning About the Human in the Loop. In the UPSEC'08 Proceedings of the 1st Conference on Usability, Psychology, and Security.
- [3] Rader, E., Wash, R., and Brooks, B. 2012 Stories as Informal Lessons about Security. In the Proceedings of the Symposium on Usable Privacy and Security.
- [4] McCallum, A. 2002 MALLET: A Machine Learning for Language Toolkit. <http://mallet.cs.umass.edu>



This material is based upon work supported by the National Science Foundation under Grant Nos. CNS-1116544 and CNS-1115926.