

UNIVERSITY OF ILLINOIS  
AT URBANA-CHAMPAIGN

Office of the Vice Chancellor for Research

Office for the Protection of Research Subjects  
528 East Green Street  
Suite 203  
Champaign, IL 61820



February 24, 2015

Michael Bailey  
Electrical & Computer Eng  
442 CSL  
1308 W. Main  
Urbana, IL 61801

RE: *Testing the Malicious USB Anecdote*  
IRB Protocol Number: 15445

Dear Dr. Bailey:

Your response to stipulations for the project entitled *Testing the Malicious USB Anecdote* has satisfactorily addressed the concerns of the UIUC Institutional Review Board (IRB) and you are now free to proceed with the human subjects protocol. The UIUC IRB approved, by expedited review, the protocol as described in your IRB-1 application with stipulated changes. The expiration date for this protocol, IRB number 15445, is 02/22/2016. The risk designation applied to your project is *no more than minimal risk*. Certification of approval is available upon request.

Copies of the attached date-stamped consent form(s) must be used in obtaining informed consent. If there is a need to revise or alter the consent form(s), please submit the revised form(s) for IRB review, approval, and date-stamping prior to use.

Under applicable regulations, no changes to procedures involving human subjects may be made without prior IRB review and approval. The regulations also require that you promptly notify the IRB of any problems involving human subjects, including unanticipated side effects, adverse reactions, and any injuries or complications that arise during the project.

If you have any questions about the IRB process, or if you need assistance at any time, please feel free to contact me at the OPRS office, or visit our Web site at <http://www.irb.illinois.edu>.

Sincerely,

Anita Balgopal, PhD  
Director, Office for the Protection of Research Subjects

Attachment(s)

c: Matthew Tischer



**University of Illinois  
at Urbana-Champaign**

**RECEIVED**  
FEB 17 2015  
INST REVIEW BOARD

**Institutional Review Board Office**  
528 East Green Street, Suite 203, MC-419  
Champaign, IL 61820  
tel: 217-333-2670 fax: 217-333-0405  
E-mail: [irb@illinois.edu](mailto:irb@illinois.edu) Web: [www.irb.illinois.edu](http://www.irb.illinois.edu)

**WAIVER OF DOCUMENTATION OF INFORMED CONSENT (45CFR46.117(C))**

ALL APPLICATIONS MUST BE TYPEWRITTEN, SIGNED, AND SUBMITTED AS SINGLE-SIDED HARD COPY. PLEASE, NO STAPLES!

Responsible Project Investigator (RPI):

Last Name: Bailey		First Name: Michael	Dept. or Unit: ECE
Phone: 217-244-8830	Fax:		E-mail: <a href="mailto:mdbailey@illinois.edu">mdbailey@illinois.edu</a>

Project Title:

Testing the Malicious USB Anecdote

**To request a waiver of documentation (signature) of informed consent, please provide a response to EITHER of the following questions. Please be specific in explaining why either statement is true for this research.**

(1) That the only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality. Each subject will be asked whether the subject wants documentation linking the subject with the research, and the subject's wishes will govern. \*Note: A waiver of documentation of informed consent is **not permissible under this category if the research is subject to FDA regulation.**

(2) The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context. \*\*

The research described in this application involves two different surveys and a field portion of the study in which we collect data when subjects pick up our research instrument USB drives and place them in their computers.

While there are non-psychological risks associated with the surveys (such as criminal prosecution if a subject honestly answers a question about controlled substances), we intend to avoid collecting personal information about subjects by disabling IP address collection in SurveyMonkey and using SSL to transmit the survey responses securely to SurveyMonkey's servers. In addition, we will not attempt to de-anonymize Amazon Mechanical Turk (AMT) IDs. We believe that the anonymization of responses is sufficient to ensure that the survey activities are minimal risk.

In the field portion of the survey, subjects are selected to participate by picking up one of our USB flash drives and placing it into their computer. We will carefully prepare the drives so that no malicious software is installed on the drives by accident. In addition, we will only place HTML files on the drive and will only collect data using HTML requests and the "img" tag. We believe that these measures minimize the risk of computer system harm, so this portion of the study also qualifies as minimal risk.

For all activities, we will present subjects with an electronic consent page that will allow them to provide consent.



**University of Illinois  
at Urbana-Champaign**

**Institutional Review Board Office**

528 East Green Street, Suite 203, MC-419

Champaign, IL 61820

tel: 217-333-2670

fax: 217-333-0405

E-mail: [irb@illinois.edu](mailto:irb@illinois.edu)

Web: [www.irb.illinois.edu](http://www.irb.illinois.edu)

As picking up a USB flash drive and inserting it into a computer is a common activity, we believe that it is not necessary to request written consent in this process.

In addition, waiver of documentation in this process is important because it helps us to preserve the anonymity of subjects by not creating a signed link between them and the study, which is otherwise anonymous.

For more information about our assessment of the risks of this research and our work to minimize them, please see our IRB-1 application.

\*\* In cases in which the documentation requirement is waived, the IRB may require the investigator to provide subjects with a written statement regarding the research.

RPI Signature: \_\_\_\_\_

**APPROVED**

Date: \_\_\_\_\_

1/9/15

IRB Member Approval: \_\_\_\_\_

**FEB 23 2015**

Date: \_\_\_\_\_

**UIUC INST REVIEW BOARD**

You are invited to participate in a study entitled "Testing the Malicious USB Anecdote". This study is being conducted by Matthew Tischer and Dr. Michael Bailey in the Electrical and Computer Engineering Department of the University of Illinois, Urbana-Champaign.

Coordinated Science Laboratory  
1308 West Main St.  
Urbana, IL 61801

The purpose of this study is to determine why people pick up unknown USB flash drives and insert them into their computers. Your participation in this study will help us to determine why this is the case.

We estimate that it will take you about 25 minutes to complete the following survey. You are free to contact the investigators at the above address to discuss the survey.

Risks to the participants are considered minimal. There are no costs for participating. We will compensate you by sending you a \$5 electronic Amazon gift card if you complete the entire survey. We will not track the IP address that you have used to connect to this survey, and we have enabled SSL encryption in this survey, so your survey responses should be securely transmitted to SurveyMonkey. A limited number of research team members will have access to the data during data collection.

In this survey, you will be asked questions about how likely you would be to engage in various hypothetical activities. Some of these items include activities that may be considered illegal in your jurisdiction, such as "purchasing illegal drugs online using a marketplace (such as Silk Road)". You will also be asked, hypothetically speaking, how often you perform certain activities online; some of these activities may describe sensitive content, such as "viewing adult content". You may choose to omit your answer to any individual question without penalty or reduced compensation by choosing the option "Prefer not to answer".

You must complete the entire survey in order to receive the \$5 Amazon electronic gift card. In order for us to send you the gift card, we collect your email address at the end of the survey. While this email address will be securely transmitted to SurveyMonkey's servers, it is also linked to your survey responses. As such, we advise that you use an email address that cannot be linked to any of your personal information (such as social network profiles). You can create a new email address using websites such as

<https://www.outlook.com>  
<https://overview.mail.yahoo.com>

We will not attempt to de-anonymize your email address at any point during the study.

Your participation in this study is voluntary. You have the right to withdraw from participation at any time without any penalty. If you wish to withdraw from the study or have any questions, you may contact the investigators. You may choose not to take the survey by closing this window; however, you will not be compensated if you do so.

This study is designed for participants of at least 18 years of age. If you are not at least 18 years of age, please close this window.

If you have any questions, please contact Matt Tischer at [tischer1@illinois.edu](mailto:tischer1@illinois.edu) or Dr. Michael Bailey at [mdbailey@illinois.edu](mailto:mdbailey@illinois.edu) or (217) 244-8830.

If you have any questions about your rights as a research participant or if you have a concern or complaint about this study, you may contact the University of Illinois Institutional Review Board by emailing [irb@illinois.edu](mailto:irb@illinois.edu) or calling (217) 333-2670. You may call the phone number collect if you identify yourself as a research participant.

I have read and understood this consent letter and voluntarily agree to participate (click on 'next' to provide consent and proceed to the questionnaire):

<next>

[1] See <http://crowdresearch.org/blog/?p=5177>

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APPROVED CONSENT  
VALID UNTIL

FEB 22 2016

Coordinated Science Laboratory  
1308 West Main St.  
Urbana, IL 61801

The USB drive that you have picked up is a device that is being used in a research study. This study is entitled "Testing the Malicious USB Anecdote" and is being conducted by Matthew Tischer and Dr. Michael Bailey in the Electrical and Computer Engineering Department of the University of Illinois, Urbana-Champaign. This page is designed to explain the purpose of the study and provide you with an opportunity to complete a survey for additional compensation. In addition, we provide this page to allow you to withdraw yourself from the study if you do not wish to participate or contact information if you wish to provide feedback about the study.

#### Purpose of the Study

In the computer security community, it is commonly believed that an attacker can gain access to an organization by installing malicious software (like viruses) on USB flash drives and leaving the drives in a place such as a parking lot. People would then pick up the drives and insert them into their own computers, infecting the computers and allowing the attacker to gain access to the organization.

Our study seeks to determine whether people do place unknown flash drives into their computers, and, if so, why. We hope to use the results from this study to better inform organizations about how to protect against this attack vector. In addition, we hope to learn how people think about situations like this, so that we can take steps to keep their information safe.

#### Experiment

In order to effectively test this hypothesis, we have placed many USB flash drives like the one you plugged in in various public locations. When you click on one of the files on the USB drive, we send some information about the USB drive, the file that you clicked on, and the time that you clicked on it to our servers. We do not collect any other information about your computer, files or programs you are running, or any of your data. We also do not collect any information that could be used to identify you, such as your IP address.

#### Deception

This study involved deception; we hid the true purpose of the USB drives (to help us collect data for this study) when we left them in public. We believe that this deception was necessary in order to see how people react when they find an unknown USB drive in the real world.

#### Risks

Risks to you are considered minimal. If the USB flash drives (or this website) were infected by a third party, it would be possible for malicious software (such as viruses or keyloggers) to be installed on your system. However, we have taken multiple precautions to protect against this risk. When we were configuring the flash drives, we only plugged them into computers that would not infect them. In addition, the flash drives only contain HTML files that cannot execute any malicious code on your computer. We have also taken precautions to ensure that this website has not been hacked.

As such, these flash drives should contain no malicious software. However, it is possible (although very unlikely) that someone else could have picked up the flash drive and installed some sort of malware on it. If you believe this is the case, please use an antivirus program such as

- Malwarebytes on Windows XP [1]
- Microsoft Security Essentials on Windows Vista and 7 [2]
- Windows Defender (preinstalled) on Windows 8 and 8.1 [3]

to scan the drive for malicious software.

For more information on this attack, please see [4][5][6].

#### Follow-Up Survey

As understanding why people pick up known USB flash drives is a key part of the study, we would also like to invite you to participate in a follow-up survey. We intend to use the information from this survey to determine how you perceive risks about various technologies and to learn why you picked up the USB drive. If you would like to participate in this survey, please click the "Participate in Survey" button below. You will be sent to a page to allow you to participate in the survey.

#### Compensation

You may keep the USB drive that you have found, even if you choose to withdraw from the study. You may keep the drive regardless of whether you complete the survey or not.

If you fully complete the follow-up survey, we will compensate you by giving you a \$5 electronic gift card from Amazon.com. Further details are discussed in the introduction page to the survey.

#### Participation

Your participation in this study is voluntary. You have the right to withdraw from participation at any time without any penalty. If you wish to withdraw from the study, please click the ``Withdraw from Study'' button below. If you withdraw from the study, we will delete any information we have collected about the USB drive that you have picked up and will not use it in our analysis of the data.

If you do not consent to the study (by clicking the ``Consent to Study'' button or ``Participate in Survey'' buttons below) by <END DATE>, your data will automatically be deleted.

This study is designed for participants of at least 18 years of age. If you are not at least 18 years of age, please do not click on either the ``Consent to Study'' button or ``Participate in Survey'' buttons below; we will delete your data after <END DATE>.

#### Contact Information

If you have any questions or concerns about the study, you may contact Matt Tischer at [tischer1@illinois.edu](mailto:tischer1@illinois.edu) or Dr. Michael Bailey at [mdbailey@illinois.edu](mailto:mdbailey@illinois.edu) or (217) 244-8830. If you have any questions about your rights as a research participant or if you have a concern or complaint about this study, you may contact the University of Illinois Institutional Review Board by emailing [irb@illinois.edu](mailto:irb@illinois.edu) or calling (217) 333-2670. You may call the phone number collect if you identify yourself as a research participant.

If you find any portion of the study emotionally distressing, you may contact the researchers or the IRB using the contact information listed above.

#### Confidentiality

As mentioned in the "Experiment" section, we only collect data about the USB drive, the file that you clicked on, and the time that you clicked on it. We do not collect any other information about your computer, files or programs you are running, or any of your data. We also do not collect any information that could be used to identify you, such as your IP address. We will keep any data that we collect on our secure servers, and a limited number of research team members will have access to the data during data collection.

Please do not share any information about this study with others for a period of seven (7) days, as it may otherwise affect the results of the study.

- Withdraw from Study
- Consent to Study
- Participate in Survey

- [1] <https://www.malwarebytes.org/>
- [2] <http://windows.microsoft.com/en-us/windows/security-essentials-download>
- [3] <http://windows.microsoft.com/en-us/windows/using-defender#1TC=windows-8>
- [4] [http://en.wikipedia.org/wiki/USB\\_flash\\_drive\\_security](http://en.wikipedia.org/wiki/USB_flash_drive_security)
- [5] <http://www.computerworld.com/article/2510014/security0/government-tests-show-security-s-people-problem.html>
- [6] <http://arstechnica.com/security/2014/07/this-thumbdrive-hacks-computers-badusb-exploit-makes-devices-turn-evil/>

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VALID UNTIL

**FEB 22 2016**

You are invited to participate in a study entitled "A Scale to Predict Technology Risk". This study is being conducted by Matthew Tischer and Dr. Michael Bailey in the Electrical and Computer Engineering Department of the University of Illinois, Urbana-Champaign.

Coordinated Science Laboratory  
1308 West Main St.  
Urbana, IL 61801

The purpose of this study is to develop a set of questions that can help to predict whether someone is likely to fall victim to some form of cybercrime. Some example forms of cybercrime include viruses and online identity theft. Your participation in this study will help us to determine which questions are effective at accomplishing this goal. We estimate that it will take you about 15 minutes to complete the following survey. You are free to contact the investigators at the above address to discuss the survey.

Risks to the participants are considered minimal. There are no costs for participating. You will be paid \$1 for completing this HIT, but will not otherwise benefit from participating. An anonymized version of your Mechanical Turk account information will be kept while we collect data for tracking purposes only. We will not track the IP address that you have used to connect to this survey, and we have enabled SSL encryption in this survey, so your survey responses should be securely transmitted to SurveyMonkey. A limited number of research team members will have access to the data during data collection. The anonymized Mechanical Turk account information will be stripped from the final dataset and will not be published in any form.

Previous work [1] has shown that Mechanical Turk's design can be exploited to reveal personally identifying information about you. In particular, the authors showed that Amazon wish lists, book reviews and tagged Amazon products can be found by querying your Turker ID on the web. More surprisingly, some Turkers even have a public Amazon profile page, containing their real names and sometimes even a photo. We will not attempt to de-anonymize your Turker ID at any point in our study.

In this survey, you will be asked questions about how likely you would be to engage in various hypothetical activities. Some of these items include activities that may be considered illegal in your jurisdiction, such as "purchasing illegal drugs online using a marketplace (such as Silk Road)". You will also be asked, hypothetically speaking, how often you perform certain activities online; some of these activities may describe sensitive content, such as "viewing adult content". You may choose to omit your answer to any individual question without penalty or reduced compensation by choosing the option "Prefer not to answer".

Some of the items in this instrument are designed to assess whether you are fully reading all of the questions. If you come across one of these items, please follow what it says. There is only one correct answer to each of these items. If you select the wrong answer to any item, you may not be compensated for your participation.

Your participation in this study is voluntary. You have the right to withdraw from participation at any time without any penalty. If you wish to withdraw from the study or have any questions, you may contact the investigators listed below. You may choose not to take the survey by closing this window; however, you will not be compensated if you do so.

If you have any questions, please contact Matt Tischer at [tischer1@illinois.edu](mailto:tischer1@illinois.edu) or Dr. Michael Bailey at [mdbailey@illinois.edu](mailto:mdbailey@illinois.edu) or (217) 244-8830.

If you have any questions about your rights as a research participant or if you have a concern or complaint about this study, you may contact the University of Illinois Institutional Review Board by emailing [irb@illinois.edu](mailto:irb@illinois.edu) or calling (217) 333-2670. You may call the phone number collect if you identify yourself as a research participant.

I have read and understood this consent letter, and I consent to this survey by clicking "next" below.

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FEB 22 2016