Automated Debriefing: Interface for Large-Scale Research Ethics

Jonathan Zong
Princeton University
Princeton, NJ 08544, USA
jz7@cs.princeton.edu

J. Nathan Matias
Princeton University
Princeton, NJ 08544, USA
jmatias@princeton.edu

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Abstract
Debriefing is an essential research ethics procedure in non-consented research where participants are informed about their participation in research and provided with controls over their data privacy. This demonstration presents a novel system for conducting and studying debriefing in large-scale behavioral experiments online. We designed a debriefing system, with an accompanying evaluation study, which are both delivered as a web application. Participants engage with this system once data collection for an experiment has concluded. The key contributions of this project are 1) the design and implementation of the debriefing system for field experiments, and 2) an approach to empirically evaluating public perception of research procedures.

Author Keywords
Research ethics; debriefing; interface design; social media; field experiments.

Introduction
As behavioral experimentation becomes more widespread in society through online platforms, we need new ways to manage the ethics and accountability of that research. Since this research is delivered digitally, we can develop novel technologies for managing large-scale research ethics. Because models of consent and accountability in research ethics involve communicating complex ideas to the public, advances in user interfaces for managing participation in research can contribute to novel approaches in research ethics.

For example, in large-scale academic experiments online, due to practical concerns obtaining informed consent from the entire population is not always possible. Under the Common Rule, a university IRB can waive the requirement for a signed consent form by the following criteria: the study must have minimal risk, obtaining informed consent must be impractical, and there must be a post-experiment debriefing [3].

Debriefing and the user experience of research ethics procedures

Debriefing is a procedure in experiments involving human subjects where, after the experiment has concluded, participants are provided with information about the experiment and the data that was collected in the process. The procedure serves an important ethical purpose by giving the participants an opportunity to clarify their involvement, ask questions, or opt out; this is especially important in experiments where there was any form of deception or where informed consent was not obtained beforehand.

Research ethics procedures like debriefing can be understood from a design standpoint as an essential part of the user experience of being included in a study. Because successful debriefing requires people to understand the experiment and in some cases make important decisions, novel user interface approaches may improve the debriefing process.

Approach

Most literature on debriefing online research is in the context of online surveys—participants are on a web page specifically designed for an experiment, and are debriefed at the end of the web page's user flow [4].

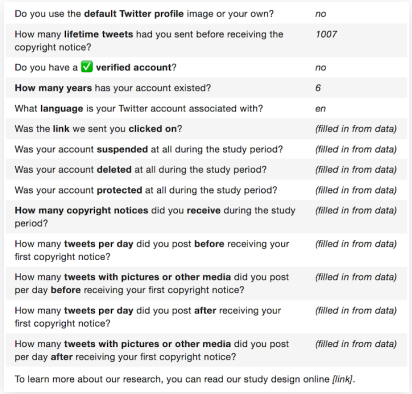
Our system differs from online survey debriefing systems because it debriefs research that does not necessarily occur on a study web page, but instead is a field experiment situated on a social media platform (e.g. Twitter), coinciding with everyday use. Prior work by Fiesler and Proferes has shown that most users are not aware that public tweets could be used by researchers, nor do they feel positively about this use [2]. Our approach centers on informing users about risks and benefits of research and providing the ability to opt out of data collection.

Informing users

Any debriefing system will need to communicate the details of an experiment. It will also need to communicate how the experiment affected a participant personally, through intervention or through data collection. When presenting information about the experiment and data collection, this project considers the following choices:

- Text-based and/or visual. Different types of information are clearest as text, or in a table, or as an image, or even a combination of these. In this project, we include the presence or absence of tables and visualizations as condition variables in the evaluation to see if they have a measurable effect on user understanding.
- Personal and/or collective. Is it most straightforward to only show participants their own data and nothing more, or might showing analysis about how they stand in relation to others in the study prompt them to contextualize their participation as a contribution to a collective research question? In this project, we choose to show two graphs, one showing the effect for the participant and one showing the effect for all participants on average.

These decisions have to do with way information is delivered, which is inextricable from participants' ability to understand it. It is important to consider—and possibly even empirically test—what approaches are



Do you use the **default Twitter profile** image or your own?	*no*
How many **lifetime tweets** had you sent before receiving the copyright notice?	*1007*
Do you have a ✅ **verified account**?	*no*
How many years has your account existed?	*6*
What **language** is your Twitter account associated with?	*en*
Was the **link** we sent you **clicked on**?	*(filled in from data)*
Was your account **suspended** at all during the study period?	*(filled in from data)*
Was your account **deleted** at all during the study period?	*(filled in from data)*
Was your account **protected** at all during the study period?	*(filled in from data)*
How many copyright notices did you **receive** during the study period?	*(filled in from data)*
How many **tweets per day** did you post **before** receiving your first copyright notice?	*(filled in from data)*
How many **tweets with pictures or other media** did you post per day **before** receiving your first copyright notice?	*(filled in from data)*
How many **tweets per day** did you post **after** receiving your first copyright notice?	*(filled in from data)*
How many **tweets with pictures or other media** did you post per day **after** receiving your first copyright notice?	*(filled in from data)*

To learn more about our research, you can read our study design online *[link]*.

Figure 1a. Debrief interface: table of data collected in the study

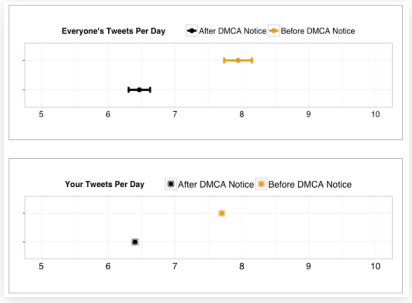


Figure 1b. Debrief interface: visualization of study results

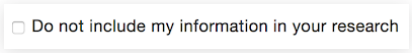


Figure 1c. Debrief interface: opt out controls

most helpful toward the goal of informing users and advancing their understanding of the research.

Providing users the ability to opt out
Including users in online research that necessitates debriefing usually involves potentially making an intervention in their online experience without their knowledge, and collecting data on them before and after to measure a possible effect. At the point in time when they receive debriefing, any intervention would already have been made; therefore, we are asking them to make a decision on how we treat the data that we have collected. In this project, we give users the choice to have their data completely deleted from the research dataset.

System Description

The debriefing system we demonstrate is a web application that was deployed to dmca.cs.princeton.edu for the duration of an evaluation study conducted in Spring 2018. In the evaluation study, the interface was populated with a hypothetical research project about automated copyright enforcement on Twitter; users were asked to use the interface as if they were participants in this research and give feedback by answering a survey.

The debrief system source code is hosted on Github at github.com/jonathanzong/dmca. It has three main parts: 1) the debriefing interface, 2) the evaluation survey interface, and 3) survey infrastructure including scripts for automated recruitment and compensation.

Debriefing interface
The goal of the debriefing interface is to inform users and give them control over their data privacy. In addition to text explanations, two main features support the goal of informing users about their participation in the study. The first feature is a table in the debriefing interface which displays all of the data collected on the participant (Figure 1a). The intent is to be transparent and precise about data collection so that the participant can decide whether the data is within acceptable bounds of their privacy expectations, interesting, or potentially useful. The second feature is a visualization illustrating some results from the study (Figure 1b). In addition to what, the participant also needs to know why the data was collected. Contextualizing their data as a contribution to the results of the overall study helps communicate the potential relevance and value of the results to them personally and to society in general.

The main feature in the debriefing interface that supports the second goal of providing users control over their own participation is an opt out checkbox (Figure 1c). Because the decision to opt out is presented below the parts of the interface designed to inform, ideally the participant will gain an understanding of their relationship to the research to make accurate assessments of their own potential risks and benefits. The better a participant understands these factors in their decision-making, the more successful we as researchers have been at fulfilling our ethical obligations to them.

Evaluation survey interface
The web application that delivers the debriefing interface also includes software for a study that evaluates the debriefing interface. To evaluate this interface, we are asking consented participants to answer questions about hypothetical studies that we debrief them on. After reading about the debriefing research, participants from a specific sample of Twitter users consent by authenticating to Twitter. Once they consent, our software requests read-only permissions from the user to confirm their online identity. This is the minimal permission Twitter allows us to request, and lets us observe only publicly available details about the account.

Once the user has authenticated with Twitter, they are redirected into the survey. The survey software randomly assigns each user to different conditions in the hypothetical studies and to variations of the debriefing interface design.

Survey infrastructure
The debriefing software includes additional non-interface features related to the evaluation study. This includes a recruitment script that samples from a list of Twitter user IDs and sends recruitment tweets to accounts eligible for the study.

The debriefing system also includes features for automated compensation. Upon completing a survey, authenticated participants are shown a final page with the option to submit their email address. The system will send a PayPal API request which delivers a link to their email where they can claim their compensation, even if they do not have a pre-existing PayPal account.

Relevance to CSCW

While large-scale behavioral research on social media is common in CSCW, researchers tend to keep participants uninformed about the research. This debriefing system is relevant to the CSCW audience because it offers a process for researchers to do work that respects user autonomy and empowers participants to make informed decisions whether or not to participate in non-consented research. Desposato argues that "as a discipline we should engage [research ethics] issues directly and work toward shared norms" in order to ensure subjects' protection and the viability of field experiments as a method [1]. By establishing norms and software infrastructure toward ethical experimentation, researchers can do meaningful work while remaining accountable to the communities they serve.

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