Deception in Experiments: Towards Guidelines on use in Applied Economics Research

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Thanks to Jayson Lusk, Brian Roe, an anonymous review, and participants in a spirited session at the 2013 AAEA meetings in Washington DC for helpful comments and suggestions.
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Abstract
Many applied economics journals ban the use of deception in experiments, which contrasts with the policies in other academic disciplines. We examine the cases for and against deception and describe the ways deception can be employed in applied economics experiments. We create a general ranking of harms from deception in experiments and present evidence from a survey of agricultural and applied economists eliciting attitudes towards ten different deceptive practices. Finally, we provide recommendations for policies addressing deception in experiments.

Introduction

Deception (noun): An act or statement intended to make people believe something that is not true.

Merriam-Webster Dictionary

The use of deception has become one of the defining characteristics of psychology and sociology experiments. Subjects may be deceived about the purpose, design, or setting of experiments (Bortolotti and Mameli, 2006). For example, Hertwig and Ortmann’s (2008a) survey of experimental social psychology research shows that 54% of the studies published in the Journal of Experimental Social Psychology in 2002 involved deception of one kind or another. Remarkably, this number is down from 85% of studies published in that journal in 1965 (Gross and Fleming, 1982). The willingness to use deception among social psychologists is very different than the economists’ willingness.
Many economics journals will not publish articles reporting results of experiments that used deception (except for the explicit purpose of studying the effects of deception). The top-rated journal in agricultural economics, the *American Journal of Agricultural Economics (AJAE)*, joined this publication policy in 2011. This puts the *AJAE* in the company of general economics journals such as the *American Economic Review* and more discipline-specific journals such as the *Journal of Economic Behavior and Organization* and *Experimental Economics*. The new submission guidelines for the *AJAE* are simple and state that “articles employing deception in humans are not allowed.”

This dichotomy between the ban on deception in the economic literature and the pervasive use of deception in psychology research raises the important question of whether either discipline has the optimal academic policy towards deception. While there are clear and reasonable questions regarding the benefits and ultimate consequences of the extent to which social psychology research employs deception in experiments, the converse question can be asked of economic research.

Opinions and arguments supporting answers to these questions tend to fall under two competing ethical views: deontological ethics and consequentialism. Deontologists (also referred to as the prohibitionists by Bonetti, 1998) contend that the human rights of participants cannot be violated under any circumstances and stress that economists should be able to test any theory without being deceptive (Ortmann and Hertwig, 2002). In contrast, consequentialists follow the cost-benefit calculus of the American Psychological Association and contend that there are research topics of sufficient importance to society that the benefits of using deception outweigh the costs from violating participants’ rights.
We attempt to add to the literature by providing an overview of the arguments for banning deception along with the arguments for allowing deception. We provide a list of potential deceptive practices one may see in agricultural and applied economics research and rank these deceptive practices in terms of the potential harms they may cause. In addition to our general taxonomy, we present evidence from a survey of agricultural and applied economists eliciting attitudes towards ten different deceptive practices. Finally, we provide recommendations to researchers and journal editors regarding how to craft policies with regards to deception in economic experiments.

Defining Deception and Deceptive Practices

Krawczyk (2013) provides a definition of deception that differs based on whether the researchers are engaging in “explicit deception” or “deception by omission”. He indicates that an experiment is explicitly deceptive if the researcher intentionally provides explicitly false information. He claims an experiment is deceptive by omission if the researcher intentionally withholds information. Further, to be deceptive by omission, Krawczyk claims that this omission must either be likely to change participant behavior or might change the probability of the participant being willing to participate in the experiment. Hey (1998:397) makes a similar distinction, but believes it is only deception if the deception is explicit, saying “there is a world of difference between not telling subjects things and telling them the wrong things. The latter is deception, the former is not” (his emphasis).

Sieber, Iannuzzo, and Rodriquez (1995) divide deceptive practices into the following eight categories:
1) Providing subjects with false information about a study’s main purpose.

2) Exposing subjects to a “bogus device” that does not function the way subjects are led to believe it does.

3) Providing subjects with false feedback about their own performance in the study.

4) Providing subjects with false feedback about other subjects’ performance in the study.

5) The use of confederates who appear to be bystanders or other participants in a study but are actually following the experimenter’s instructions.

6) Subjects may be unaware that they are participating in a study. That is, they are being observed without their consent.

7) Subjects may be aware they are part of a study but are not aware of how and when they are being observed.

8) The experimenter invites the subject to participate in two related studies but tells the subjects that the studies are actually unrelated.

These separate definitions and lists of potentially deceptive practices are useful. However, given the many ways deception can be implemented, we have created a general ranking of what we think are more-severe and less-severe forms of deception based upon the degree of harm to individuals, future research, and the profession (see Table 1). The most severe form of deception is any deception that could cause actual physical, emotional, or other injuries or harm to participants. Bortolotti and Mameli (2006:264) discuss harm by saying:

A sensible view is that, if the psychological harm inflicted to the research participant goes beyond a certain threshold, then the experiment is not permissible, independently of how great its potential benefits to society are. When the threshold is surpassed, the experiment becomes an act of injustice against the research participant. On this proposal, one can decide
whether to conduct an experiment involving deception by using the following procedure. The first step is to ask whether the experiment is likely to cause significant psychological harm to the participant. If it is, then the experiment is not morally permissible. If it is not, then one should ask whether the harm to the participant (if any) is outweighed by the potential benefits of the research. Only if it is, then the experiment can be justified.

This leaves open the question of how participants could be harmed by deception. In psychology experiments, there are many examples. The best known example of a study that potentially caused significant psychological harm is Milgram’s (1963) study on obedience. Milgram’s forty subjects believed they were participating in a study on memory and learning. Each subject was paired with a confederate. As a first example of a bogus device, the subject and the confederate drew slips of paper to determine who would play the role of teacher and who would play the role of learner in the experiment. This drawing was rigged so that the subject would always be assigned the role of teacher. The experimenter then strapped the confederate into what appeared to be an electrified chair—another bogus device—under the pretense that the confederate would be shocked each time he failed to remember the second word in a series of word-pair memory tasks. The experimenter seated the subject at an instrument panel with thirty levers marked with voltages ranging from 15 to 450 volts. The levers also included text descriptions of the shock they purportedly delivered to the confederate, such as “Slight Shock”, “Strong Shock”, “Danger: Severe Shock”, and finally “XXX”. This instrument panel was a third bogus device. The panel delivered no current, but the confederate was trained to act as if he was suffering as a result of electrical shocks. All forty subjects administered at least twenty shocks to the confederate. After the twentieth shock the confederate kicked the walls and refused to answer
further word-pair questions. Twenty-six subjects delivered all thirty increasingly powerful shocks, continuing to the final 450-volt lever marked “XXX”.

This is obviously an extreme example. The potential for significant psychological harm would generally be much lower in the agricultural and applied economics literature.

*What types of deception would we see in agricultural economics?*

Reviewing the articles employing experimental methods in the agricultural and applied economics literature, three primary categories of experiments emerge: (1) consumer willingness-to-pay (WTP) studies (e.g., auctions, choice experiments, and natural experiments for food products), (2) computer-based environmental studies (e.g., resource management experiments, public good contribution games), and (3) tests of experimental methods (e.g., auctions vs. choice experiments, hypothetical bias, posted-price bias). For each of these categories, it is possible that deception could harm experimental participants. In WTP studies where actual products are sold to research participants, there is the potential for harm if participants are deceived about the true nature of a product. For example, consider an auction exploring consumers’ WTP for genetically modified (GM) foods. If the researcher mislabels products such that participants think they are purchasing a non-GM food when the food is in fact genetically modified, there is the potential for harm even if the participant is unaware of the deception. With credence quality attributes (Nelson, 1970) where participants cannot know whether the non-GM claims are authentic even after consumption, it is not possible for participants to uncover whether they were deceived (unless revealed by the researcher). Because participants are purchasing and consuming a product counter to the claims of the researcher, we would consider the participant as being harmed—even if they never discover the deception.
In computer-based environmental behavior studies and tests of experimental methods, researchers might expose subjects to a "bogus device", provide false feedback about a subject’s own performance or others subjects’ performance, or use confederates. For example, in order to study willingness to contribute to a public good (e.g., environmental quality) in a dynamic framework where subjects observe the past behavior of other potential contributors, a researcher could provide false information about others’ contributions. In this situation there is clear potential for harm if participants earn monetary rewards based on their behavior in the experiment. Even in the absence of potential monetary losses, this practice could harm other researchers if it creates a perception that economists routinely use deception. This is especially true on university campuses where students might take part in multiple experiments with different researchers over time as part of experimental laboratories.

When testing the relative effectiveness of different experimental methods, a researcher might provide false feedback about others’ performance. For example, a researcher might post artificially high winning prices after early auction rounds in order to test whether this causes an increase in the bids auction participants submit in later auction rounds. If these artificially high prices do indeed lead to increased bids, the winners in later rounds would suffer financially in that they would pay higher prices for the goods they purchase.

Table 2 presents a non-comprehensive list of studies that have used some form of deception and were published by agricultural and applied economists. Most of the deceptive techniques would fall into the least severe category of deception from Table 1. These techniques pose no personal risk for subjects. And in most cases there were no negative-spillover concerns because the studies from Table 2 used subjects coming from the general population, not from a university student body.
Costs and Benefits of Deception in Experiments

The case for allowing deception is quite simple. Proponents of deception argue that there are certain research questions that can only feasibly be answered using deception. Further, proponents argue, that under certain circumstances, there is little to no cost to participants, society, or other researchers from deception in experiments or that the benefits outweigh these costs.

There are several reasons cited by economists to defend a prohibition on deception in experiments. The first is that deception is ethically wrong. Methodological deception might entail the risk of psychological harm to study participants and could violate their human rights (Bortolotti and Mameli, 2006). Deception, therefore, should be avoided under all circumstances.

The second potential cost of deception is the possibility that participants previously exposed to deception become suspicious or will even expect deception in future experiments. In this case, non-deception is a public good, and those who deceive are contaminating participants for other researchers (Bonetti 1998, Cooper 2014). This line of argument is most relevant for research conducted with student subjects who might participate in multiple experiments.

It does seem plausible that if subjects are deceived once, they may behave differently in future experiments. The evidence is mixed, however. Jamison, Karlan, and Schechter (2008) find that participants altered their behavior after repeated exposure to deception. The authors do qualify their findings by noting a selection bias. Barrera and Simpson (2012) replicate the experiments by Jamison, Karlan, and Schechter (2008) while correcting for selection bias and find no statistically significant effects of deception.
According to Hertwig and Ortmann (2008b), conformity experiments are the only area where social psychologists have systematically studied the impact of deception on subjects’ behavior. Hertwig and Ortmann (2008a) found fourteen studies where experimenters tried to identify suspicious subjects with post-experiment questions like “Do you feel this experiment was deceptive (involved lying) in any way?” (Geller and Endler 1973:49). In ten of these fourteen studies, suspicious subjects displayed significantly less conformity than unsuspicious subjects.

Potential spillover effects are not the only problem caused by repeated draws for research pools. Matthey and Regner (2013) find that subjects’ decisions in laboratory experiments are not independent of previous experiment participation even in the absence of deception.

Deception also raises questions of legal liability (Hey, 1998). If legal risks are a concern, one could argue this should not affect the profession’s or a journal’s decision to ban deception, since it is a private risk. This is especially true if the journal requires IRB approval of experimental research, as the risk would more clearly fall on the researcher and/or the IRB regulating body.

**Perceptions of Deception by Academic Researchers**

*The Case of Social Psychologists*

According to Korn (1997), the first psychological study to use deception was likely Solomons’s 1897 study on sensory perception. Solomons was interested in subjects’ ability to distinguish a single touch from a dull compass point from two simultaneous touches. The author originally found that untrained subjects could reliably distinguish one touch from two only when the two simultaneous touches were at least 1.5 inches apart. In a second experiment, he told
subjects whether they were about to be touched in one or two places. Naturally, this information improved subjects’ accuracy. In a third experiment, Solomons again told subjects whether they were about to be touched in one or two places but warned them that they might be deceived (e.g., told they would receive one touch when they would actually receive two). According to Solomons, “the influence of the expectation predominated, so that when touched by one point he would perceive two if he had been led to expect two; and when touched by two, set farther apart than was necessary for perceiving them as two ordinarily, he would perceive them as one if told to expect one” (p. 248).

In the more than a century since Solomons’s study, the use of deception has become one of the defining characteristics of experimental social psychology. Figure 1 tracks the frequency of deception in articles published in the *Journal of Experimental Social Psychology* and the more frequently cited *Journal of Personality and Social Psychology* from 1965 to 2002. Though remarkably common, the use of deception in social psychology experiments receives surprisingly little attention. For example, a bestselling social psychology textbook (Aronson, Wilson, and Akert 2010) devotes just two sentences to deception:

Deception in social psychological research involves misleading participants about the true purpose of a study or the events that transpire. (Note that not all research in social psychology involves deception.) [p. 44]

And the American Psychological Association’s code of conduct devotes only three sentences to the issue:

(a) Psychologists do not conduct a study involving deception unless they have determined that the use of deceptive techniques is justified by the study’s significant prospective
scientific, educational or applied value and that effective nondeceptive alternative procedures are not feasible.

(b) Psychologists do not deceive prospective participants about research that is reasonably expected to cause physical pain or severe emotional distress.

(c) Psychologists explain any deception that is an integral feature of the design and conduct of an experiment to participants as early as is feasible, preferably at the conclusion of their participation, but no later than at the conclusion of the data collection, and permit participants to withdraw their data.

By comparison, the code of conduct devotes seven sentences to the care and use of animals in psychological research.

**The Case of Agricultural and Applied Economists**

While the field of social psychology has revealed a level of acceptance of deception in experiments through its long history and continued practice of publishing such research, there is no evidence explicitly for agricultural and applied economists. Given the oftentimes unique nature and focus of experiments conducted by agricultural economists and recent editorial policy shifts at the *AJAE*, better understanding how researchers in this field view different deceptive practices and the general taxonomy delineated in table 1 could help guide the development of more balanced guidelines on the use of deception. Towards this end, in the fall of 2014 we invited agricultural and applied economists known to conduct experimental research to participate in an online survey administered by Qualtrics. Forty-eight researchers completed the survey. The survey was approved by Arizona State University’s Institutional Review Board (IRB). As part of the online survey, respondents were asked to evaluate ten different deceptive
practices that have been or could be used in experiments commonly employed in agricultural economics and related fields, rank ordering them from least severe to most severe.

Table 3 presents summary statistics for the ranking of the ten different deceptive practices tested in this survey (1 being least severe, 10 being most severe). Figure 2 presents the same information as a box plot where the bars represent the interquartile range and the points represent the median ranking. In line with the suggested deception taxonomy presented in table 1, the three practices that respondents viewed as most severe are subjecting participants to physical or physiological trauma, promising participants a payment that is not fulfilled, and having participants purchase a product that is not as described. Also in line with table 1, respondents generally agreed that providing participants with some information about a product but not “complete information”, providing false information about a study’s purpose, and using confederates were among the least harmful forms of deception.

While our sample was non-random, there is a key insight we can gain from these results. There are some deceptive practices that agricultural and applied economists feel are more severe than others. We are unaware of previous studies involving physical trauma or unfulfilled payments in agricultural experiments, and cannot imagine a study like that being conducted, but the possibility of auctioning a product that is not as it is described is within the sphere of possibility. This is a practice that respondents viewed as a severe form of deception.

**Discussion and Recommendations**

If we as a profession want to limit deception, we must start by defining it, being careful to list which potentially deceptive practices are allowed and which are forbidden. If we do not, researchers cannot know which studies are publishable. For example, consider a case where
researchers are interested in the effects positive and negative information have on consumers’ WTP for GM foods. If researchers provide some experimental auction participants with only negative information and others with only positive information, is this an example of deception? It is not according to Hey’s (1998) definition of deception, but it is according to Krawczyk’s (2013) definition of deception by omission. The profession is not well served by this kind of ambiguity. There are obvious costs and benefits associated with the use of deception in economic experiments, and a great deal of work must be done to identify the circumstances, if any, where the benefits exceed the costs. Until more evidence is available, the most prudent step the profession can take is to carefully define deception and to detail which potentially deceptive practices are allowed and which are prohibited. The taxonomies of deception we provide in this paper could serve as starting point for a careful and unambiguous definition of prohibited deceptive practices.
References


Figure 1. Percentage of studies using deception in the *Journal of Personality and Social Psychology* and the *Journal of Experimental Social Psychology*

Sources: Gross and Fleming (1982); Nicks, Korn, and Mainieri (1997); Epley and Huff (1998); Hertwig and Ortmann (2008a).
Figure 2. Box plot showing the interquartile range and median rankings from a survey ranking the severity of deceptive practices.
Table 1. Suggested Deception Taxonomy for Agricultural and Applied Economics Journals

<table>
<thead>
<tr>
<th>General category</th>
<th>Some specific examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. (Most Severe) Potential harm to subjects</td>
<td>Psychological trauma, financial consequences, selling a product that is not as described, not making payments that were promised</td>
</tr>
<tr>
<td>2. Potential spillover effects</td>
<td>Future subjects from a university subject pool know that there has been deception in a previous experiment and act differently</td>
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<tr>
<td>3. (Least Severe) Neither harm to subjects</td>
<td>Misleading subjects about the purpose of study, misleading subjects about products available (as long as subjects do not consume or purchase the product), use of confederates</td>
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</tbody>
</table>
Table 2: A Sampling of Published Papers by Agricultural Economists that have used some Form of Deception.

<table>
<thead>
<tr>
<th>Article source and year of publication</th>
<th>Deception used</th>
<th>Number of citations according to Google Scholar on Feb. 4, 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>American Journal of Agricultural Economics, 1995.</em></td>
<td>Different participants were given different probabilities of being harmed by the product for sale in an experimental auction.</td>
<td>298</td>
</tr>
<tr>
<td><em>American Journal of Agricultural Economics, 2006.</em></td>
<td>Confederates placed unusually high bids in experimental auctions.</td>
<td>56</td>
</tr>
<tr>
<td><em>Economic Inquiry, 2007.</em></td>
<td>Deception by omission. Participants received different information treatments: positive, negative, both positive and negative, with and without third-party information. Only a subsample received all information.</td>
<td>81</td>
</tr>
<tr>
<td><em>Journal of Risk and Uncertainty 2002.</em></td>
<td>Deception by omission. Participants got positive or negative information about the product, depending on the random treatment to which they were assigned. Only a subsample got both positive and negative information.</td>
<td>165</td>
</tr>
<tr>
<td><em>Journal of Agricultural and Resource Economics, 2011.</em></td>
<td>Participants were told they were bidding on transgenic and non-transgenic products, though all products were actually non-transgenic. The experiment was designed so the binding round was for a non-transgenic product.</td>
<td>10</td>
</tr>
<tr>
<td><em>European Review of Agricultural Economics, 2006.</em></td>
<td>Deception by omission. Participants bid on animal products. Only a subset of participants received information on humane animal care practices.</td>
<td>53</td>
</tr>
<tr>
<td><em>European Review of Agricultural Economics, 2004.</em></td>
<td>Deception by omission. Participants bid on a genetically modified food product. Participants in different treatments received different information about the benefits of genetic modification. Only a subset of participants received all types of information.</td>
<td>188</td>
</tr>
<tr>
<td><em>Review of Economics and Statistics, 2010.</em></td>
<td>Participants were not aware of their participation in an experiment.</td>
<td>21</td>
</tr>
<tr>
<td><em>Land Economics, 2003.</em></td>
<td>Participants were not aware of their participation in an experiment.</td>
<td>60</td>
</tr>
<tr>
<td><em>Journal of Nutrition Education and Behavior, 2005.</em></td>
<td>Participants were aware of their participation in a survey, although they were not aware of the full details of the experiment.</td>
<td>189</td>
</tr>
<tr>
<td>Deceptive Practice</td>
<td>Severity Ranking</td>
<td>25th Percentile</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>------------------</td>
<td>----------------</td>
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<tr>
<td><strong>Subjecting participants to physical or physiological trauma.</strong> For example, researchers might tell a participant that a relative is in the hospital to test their reaction.</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td><strong>Promises of payment not fulfilled</strong> - The experimenter promises payments during the session, but then does not make the promised payments after the session is over.</td>
<td></td>
<td>7.75</td>
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<td><strong>Having participants purchase a product that is not as it is described.</strong> For example, participants think they are purchasing an organic product, but the product is actually not organic.</td>
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<td>6</td>
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<tr>
<td><strong>Providing subjects with false feedback about their own performance in the study.</strong> For example, subjects participate in a knowledge test and then receive feedback that their score is below or above the score of the other subjects. Afterwards, they participate in another knowledge test to measure the influence of positive and negative feedback.</td>
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<td>5</td>
</tr>
<tr>
<td><strong>Providing subjects with false feedback about other subjects’ performance in the study.</strong> For example, subjects participate in a knowledge test and then receive feedback that the other subjects’ score is below or above the score of their own score when it was not.</td>
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<td>4</td>
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<tr>
<td><strong>Having participants bid on a product that is mislabeled, while setting up the auction in a way so the participant will not purchase that item.</strong> For example, in an auction where some products are correctly labeled and some mislabeled, the researcher uses a non-random device to ensure that only one of the correctly labeled products is selected and sold to the auction winner.</td>
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<td>3</td>
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<td><strong>The use of confederates.</strong> For example, researchers may employ people who appear to be normal participants but are actually following the experimenter’s instructions.</td>
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<td>3</td>
</tr>
<tr>
<td><strong>Subjects may be unaware they are part of a study,</strong> or may be aware they are part of a study but not aware of how and when they are being observed. For example, participants in a field auction experiment conducted at a grocery store may be observed after the auction ends to see how their purchases in the grocery store compare to those of other shoppers.</td>
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<td>2</td>
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<tr>
<td><strong>Providing subjects with false information about a study’s main purpose.</strong> For example, researchers may not want to “prime” participants or get them thinking about a particular topic prior to participating in the experiment.</td>
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<td>2</td>
</tr>
<tr>
<td><strong>Providing participants with some information about a product, but not “complete information”</strong>. For example, suppose there are positive and negative perspectives about a product or process, but participants in some treatments receive only the positive perspective, while participants in another treatment receive the negative treatment.</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>