Invisible Participants: Recommendations for Researchers Using Crowdsourcing Platforms for Human Subjects Research

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Abstract

Increasingly, behavioral scientists rely on crowdsourcing platforms (e.g., Amazon’s MTurk) to collect large datasets rapidly and inexpensively. However, by heightening the distance between participants and researchers, these platforms render the participants “invisible,” and thereby raise ethical concerns related to participant autonomy. Moreover, because many participants use these platforms to earn a living, researchers must consider issues of fair compensation, and the relationship between employment and research participation. We present an overview of ethical considerations raised by the invisibility of crowdsourced research participants, including recommendations for researchers to consider in deciding whether and how to utilize these platforms. Specifically, we recommend that researchers: explore alternatives that distinguish research from employment; strengthen participant-research communication, including by recognizing and utilizing participant expertise in study design; and, explore alternatives that do not require “payment,” or, barring that, determine and pay appropriate compensation. We conclude by locating these ethical considerations in the context of broader calls for more thoughtful data collection.

Authors Note

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Introduction

For many academic researchers, crowdsourcing has been adopted as an almost magical research accelerant. Studies that would have taken weeks or months to complete in person can now be placed online and completed in hours, with the benefit of drawing from a wider swath of the population than the typical undergraduate participant pool, and at significantly lower cost. Thus, it is unsurprising that many academics have adopted this approach. The number of papers listed by Google Scholar containing the term “crowdsourcing” has risen rapidly, from fewer than 1,000 papers per year pre-2008, to more than 5,000 papers per year in 2011, and more than 20,000 papers in 2016 (Silberman, Tomlinson, LaPlante, Ross, Irani, & Zaldivar, 2018). Despite this significant change to practice, explicit focus on the ethical issues raised by the use of crowdsourcing platforms for conducting human subjects research is not widespread. Specifically, discussions of the ethical use of crowdsourcing do not distinguish concerns relevant to workers as laborers, from those relevant to the workers as research participants.

In this paper, we explicitly adopt the vantage point of concern for appropriate treatment of *research participants*, and the ways in which the crowdworking platforms confuse the relationship of employer-employee with that of researcher-participant. Throughout our discussion, we include recommendations for researchers, and have summarized them in Table 1 under three headings: (1) explore and use alternatives to MTurk that make clear individuals are participating in research, rather than employed by the researcher; (2) strengthen participant-research communication, including by recognizing and utilizing participant expertise in study design; (3) explore and use alternatives that do not require “payment”, or determine appropriate compensation consistent with the participants’ right to end participation at any point without penalty.

Given the shifting and differing regulatory contexts in which researchers work, here we address our recommendations to individual researchers, rather than bodies like Institutional Review Boards. Because our recommendations aim to encourage discussion of important moral considerations, rather than

prescribe specific actions, they are not presented as a list of rules or regulations, but instead, as considerations for individuals and research communities to reflect on to inform their practices. However, our arguments are also relevant to regulatory and governing bodies as well as to the organizations that provide crowdsourcing platforms, and should researchers find them valuable, we hope that they would encourage professional societies to consider them as well.

Background

Crowdsourcing data has been on the rise in behavioral and social scientific research because it promises access to a large sample at relatively low cost and recruitment effort. The most well-known crowdsourcing service in the industry, Amazon's Mechanical Turk (MTurk), was launched in 2005. Workers (often referred to as Turkers), provide labor for jobs (referred to as Human Intelligence Tasks, or HITs) that are currently too complex for computers. Referred to as HITs (Human Intelligence Tasks), Turkers earn \$.01 to a few dollars per individual HIT, and most HITs provide a few minutes to an hour to complete. Common HITs include tagging images, transcribing text, and data entry (Kuek et. al, 2015). Once completed tasks are deemed satisfactory by the requesters, the Turkers are paid in Amazon credit through MTurk's online user interface; US and some Indian workers have the option of disbursing the funds into a bank account. According to a study from the Pew Research Center (Hitlin, 2016), the Turkers reside, primarily, in the United States (74%), and India (14%). Nearly 25% of American Turkers, and 30% of Indian Turkers rely on MTurk as a primary source of income, and another 21% of American Turkers rely on it to supplement their income (Pew Research Center, 2016). The Pew study also found that 52% of Turkers make less than \$5/hr (Pew Research Center, 2016), strikingly low compared to the US federal minimum wage of \$7.25/hr.

Discussion of ethical issues raised by crowdsourcing, generally, focus primarily on: fair compensation (e.g., Williamson, 2016); privacy of worker information (Lease et al., 2013); asymmetrical

power relationship between Turkers and the requesters (Gleibs, 2017); insufficient mechanisms for Turkers to seek recourse in the event of requester wrongdoing, such as intentionally categorizing quality work as insufficient and thereby not paying the worker for it (Fort, Adda, & Cohen, 2011); the lack of legal protections for workers (Marinova, 2016). At the same time, there is considerable and ongoing attention paid to the quality of the data generated from using MTurk and the mechanical issues of how it can be effectively used by research scientists (e.g., Goodman & Paolacci, 2017; Buhrmester, Talaifar, & Gosling, 2018).

In part in recognition of both ethical and logistical problems, other platforms have built upon MTurk or offer alternatives to it. Some were developed or expanded in response to corporate decisions by Amazon; in particular, (1) MTurk's international availability (there was a period during which it was only open to US requesters, and additional countries have been added over time), and (2) a pricing change in 2015. Some platforms, such as [TurkPrime](#) and [OpenMTurk](#) (Feeney, Pennycook, & Van Boxtel, 2018) act as an overlay to recruit and manage MTurk participants to studies created and hosted by researchers, while other experimental platforms such as [Finding Five](#) provide tools for building studies that they supplement with options for integration with MTurk. [Daemo](#) is a platform that brands itself as “easier and more equitable crowdsourcing”, and was initially conceived in partnership between academics and workers, but as of this time, it does not seem to have been adopted more broadly. [Figure Eight](#), formerly known as Crowdfunder, has been used by some academics, but they seem to primarily deploy crowdsourcing to improve AI and machine learning, and advertise the companies they have worked with rather than academic partnerships. [Prolific](#), founded in 2014 as a crowdsourcing website focused specifically on scientific research, explicitly positions itself as a more [ethical alternative to MTurk](#), mandates a minimum wage of £5/hour and is considering the ramifications of different policies for requesters rejecting work. [Reviews](#) of several platforms from the perspective of the potential worker are available (Harmon & Silberman, 2018). Finally, there are non-paid options for crowdsourcing, such as

[Test My Brain](#), [Reddit's r/sample](#), and [Citizen Science Alliance](#), as well as recruitment via paid advertisements on social media.

Conflating Research Participation and Labor

One important and unique feature of the use of crowdsourcing platforms for most behavioral scientists, compared to the recruitment of participants by traditional means, is the explicit and direct co-option of a labor market for participant recruitment. Moreover, the MTurk platform exemplifies the deregulated markets characteristic of a neoliberal economy, and the service's success is driven by the legal ambiguity surrounding online labor and independent contractors (Aytes, 2012). By 'neoliberalism' we refer to a social and economic theoretical framework which stresses the market as the most important social agent, and advocates that governments and other regulatory bodies shift toward the use of markets to solve a range of social issues, and away from the direct promotion of and protection of public welfare (Lave, Mirowski, & Randalls 2010).

In the context of scientific practice, the more widespread political embrace of neoliberalism can be seen in the commercialization and commodification of science and of the university more broadly. A host of cross-institutional trends from the past fifty years reflect this shift, including: the rise of university-corporate partnership and private funding of research (and the contemporaneous withdrawal of direct state funding); the increased importance of understanding knowledge as a commodity and the related emphasis on ownership of it through intellectual property rights and patents; the shift toward conceptualizing the aims of higher education as job training rather than as preparation for democratic citizenship; and the change in research cultures to be more competitive and performance-based (Brownlee, 2015), including the increasing prevalence of a professional distinction between teaching and research (and replacement of tenured faculty with adjunct teaching faculty for the former), and the associated adverse effects on the conduct, direction, and integrity of research (Caulfield & Ogbogu,

2015). Given the “dysfunctional incentives” (Nosek, Spies, & Motek, 2012) for academics to publish voluminously, the rise of crowdsourcing is unsurprising.

Analysis and critique of the impact of this shift from the perspective of research ethics have been most widely discussed with respect to medicine and pharmaceutical research (Fisher, 2008). This focus makes sense, as in the medical context the risks to both research participants and members of the broader community are high, and both the material support for and potential benefit from the research is great. Although the risks and benefits associated with the kinds of studies frequently done through crowdsourcing platforms tend to be less extreme, we suggest that use of corporate platforms for participant recruitment is subject to related research ethics concerns. Most foundationally, the use of corporate platforms or crowdsourcing services that facilitate *both* employment and research participation raises the seldom discussed problem of conflating research participation with employment or labor. The neoliberal political-economic framework informing scientific research has led to new practices (e.g. - utilizing corporate labor platforms, the rise of a “professional” clinical trial participant community) and partnerships (e.g. - those with corporate financial support, or which utilize physical corporate research spaces) that confuse the nature of the relationship between researcher and participant.

A cornerstone of research ethics has been the understanding that participants are not *employed* by the researcher. Reasons for this separation are many; not only concerns about scientific validity (e.g. - skewed samples and response bias), but the obligation to respect participant autonomy by refraining from exercising undue influence over whether individuals participate in a study and to what extent. At bottom, this reflects a distinction between how we understand the nature and aims of the practices of labor and of research, respectively, which is reflected in the distinct legal and regulatory frameworks governing the two domains of social life. This legal distinction, itself, adds a further element to the ethical problems of this conflation, as running together labor and research in this way risks confusing all involved about the kinds of recourse people who have been wronged or harmed can seek and from whom, and what norms or

regulations govern the interaction in the first place. For example, in professional discussion about norms of participant compensation, it is not uncommon for researchers to site Turkers legal status as “independent contractors” as a relevant consideration.

Recognizing this issue, some universities (e.g. - [University of California - Irvine](#)) include in their direct guidance to researchers using commercial crowdsourcing platforms that informed consent documents should emphasize that participants are engaged in “research” rather doing “a job.” However, as upwards of 30% of the workers use MTurk to earn their primary income (Pew Research Center, 2016), it is reasonable to believe that a large number of Turkers see themselves as laborers (Gleibs, 2017), and, although Turkers are (often) made aware that they are participating in academic research, it is likely that many view their participation in research HITs as “work.”

Beyond the issues raised by this kind of partnership or association, issues of compensation for participation are fraught. With no laws or regulations in place to determine things like minimum wages or labor protections for internet work, crowdsourcing platforms can become associated with extremely cheap, and potentially exploitative, “labor.” For example, Pew Research Center (2016) found that 52% of Turkers make less than \$5/hr, considerably below the federal minimum wage of \$7.25/hr; and many pay significantly less than this amount. Vanessa Williamson, for example, [reported](#) paying the equivalent of \$2/hr to her subjects during her graduate work at Harvard (see also Williamson, 2016).

Though some scholars may argue that “fair wages” should be defined differently in a research context than in a labor context, this is premised on a social context in which it is possible for participants to easily distinguish researchers from employers. Operating in this new unregulated labor market in which these roles are conflated and potentially confused, there are two potential courses of action. On the one hand, given the economic vulnerability of many of the crowdsourcing workers (contrary to the widely held misconception that Turkers are performing HITs for “pin money,” or just for fun, Pew found that 25% of Turkers report the platform as their primary source of income), we may argue that researchers

have an obligation to compensate participants at least at the minimum wage level. Though, this is itself complicated because the global nature of the workers, requesters, and platforms raises questions about which minimum wage to use as a benchmark (e.g., Milland, 2016). On the other hand, we may be concerned that paying a rate disproportionate to other requesters may be ethically problematic, as it may unduly pressure participation. If this is correct, we may, instead, recommend that researchers pay comparable rates to other requests, or even pay significantly less (including making participation truly voluntary by not paying anything, entering participants in a raffle, or donating to charity based on participant completion), so as not to put undue pressure on participants.

Given this confusion, use of platforms expressly designed for participation in research may be more appropriate than general labor platforms such as MTurk; all users are explicitly intended to participate in research, and the designers of such platforms are more likely to listen to the concerns of both academics and workers. Prolific, for instance, expressly sets a minimum wage and requires researchers to bonus participants if they underestimate the time a task will take. They also have allowed participants the option of donating their compensation to charity. In all cases, researchers must balance the nature of the compensation (or lack thereof) against the pool of participants that will be most likely to participate.

Invisible Participants

Conversations between academics about how to use MTurk often focus on issues such as ensuring data quality (e.g., by attention checks), recruiting appropriate participant pools (e.g., using screener surveys), and how worker behavior is impacted by compensation (e.g., compensation structures, payment of bonuses). Frequently absent from these discussions is the notion that the participants themselves are worthy of direct consideration. In discussing the ethical obligations owed to individuals as

workers, Martin, O'Neill, Gupta, and Hanrahan (2016) describe this distancing between requesters and Turkers:

"Turkers fitted the profile of invisible workers talked about by Star and Strauss (1998): by not thinking about them as 'real' human beings with needs, problems and troubles, it was easy to consider them as troublesome 'components', needing to be controlled, and not worthy of the usual design considerations extended to other stakeholders. It was also easy to make up stories on their behalf such as they do this for fun. Suddenly the ethics and payments relevant for experimentation on campus did not apply."

This characterization of invisibility of Turkers holds for researchers as well as for requesters who are employing Turkers as workers. MTurk's name, itself, celebrates this invisibility, explicitly referencing the 19th century "mechanical turk" meant to fool people into believing a machine was playing chess, by hiding the real chess-player, a person, within the contraption (Standage, 2003). Milland (2016) describes MTurk's representation of workers as "an image of cogs in a machine".

More recently, several researchers noted an MTurk "quality" crisis, reporting increases in responses that were seemingly random, irrelevant, incoherent, and/or highly unlikely to be accurate (Kennedy, Clifford, Burleigh, Jewell, & Waggoner, 2018). Interestingly, many researchers initially suggested that these responses were generated by "bots", or potentially by humans using automated scripts. However, [TurkPrime's investigation](#) suggests that the low-quality data stems from foreign workers with low English proficiency who are using server farms to access MTurk. The instinct to presume that responses are automated suggests a failure to view all workers as fully human.

Dictator games provide one source of evidence about the likely impact of the heightened distance between researcher and participant. In these games, one subject (the "dictator") is given a sum of money and told they can decide how much of it to share with a second subject. Researchers have shown that the amount of money that the dictator chooses to share declines with social distance (McCabe & Smith, 1996)

and when techniques are used to heighten dictators' feeling of anonymity (Franzen & Pointner, 2012); conversely, simply revealing the family name of the would-be recipient increases the sum that dictators opt to share. Crowdsourcing platforms create an extreme distance between workers and requesters, and requirements of confidentiality and anonymity run counter to known strategies for mitigating the effects of that distance.

More pointedly, the mode of relating to research participants created by crowdsourcing platforms is very different from the call by Gleibs (2017) for "commitment to participants as active agents and stakeholders in research." For example, in the crowdsourcing context, if participants interact at all with researchers, it is typically through email, and participants may have no direct recourse when ignored or mistreated by researchers. Moreover, there is a significant information asymmetry between requesters and Turkers. As pointed out by Silberman, Tomlinson, LaPlante, Ross, Irani, and Zaldivar (2018), requesters on MTurk can use approval rates to screen Turkers, but Turkers do not have access to information about how frequently requesters reject work, and cannot appeal rejections.

Gleibs (2017) describes how the power imbalance inherent in the participants' invisible status can lead to violation of the research ethics principle of respect for autonomy. Individuals participate in research for the remuneration - from their point of view, there is no meaningful difference between research and other tasks. Many Turkers are economically vulnerable and financially dependent on this work. At the same time, there is an asymmetrical power relationship between participant-researcher built into the platforms, especially MTurk. On MTurk, a researcher can refuse to accept work (and thereby refuse to compensate the worker) without objection or recourse. This eliminates a mechanism for participants to withdraw from the study without prejudice. Thus, these platforms run the risk of violating a well-entrenched principle of research ethics which holds that individuals should be free to withdraw from a study at any point, in order to ensure that their participation is freely chosen and informed.

Moreover, this distance between researcher and participant complicates the ability to execute an adequate informed consent procedure in a number of ways. Even setting aside concerns about the ability to verify whether the subject is capable of consent (i.e. - of adult age, competent, etc.), because the researcher and the participant are never in the same room, it difficult to verify whether a participant reads the consent document, and there is no opportunity for the participants to ask questions or for clarifications about the document or the study of the researcher. Nor would the participant be incentivized to ask such questions, as, in slowing down to do so, one potentially loses the opportunity for the HIT. Although it is unlikely that participants reading informed consent documents improves the quality of the data, it is highly likely that reading the instructions carefully would, as would having an opportunity to clarify any points of confusion about how to perform the tasks.

Idiosyncratic features of the various crowdsourcing platforms, themselves, also make achieving informed consent difficult. For example, on MTurk, consent documents are not saved in the program, and, thus, Turkers are not able to “go back” to reread them. Participants who have not saved the document in some way lose the contact information of the researcher in the event that they have any concerns. Researchers could encourage participants to read consent documents by using timers that force participants to stay on the page for a minimum duration of time or by adding tasks to confirm understanding of the consent form (and compensating participants for this time), and could host copies of consent documents and experimenter information on their own websites and including links to them in the headers of their studies and in end of study messages. Researchers should also regularly check email and plan to be responsive during the period that a study is active.

In the absence of any tools within MTurk for Turkers to discuss these and related issues with the platform, they have self-organized (El Maarry, Milland, & Balke, 2018), sometimes in partnership with academics. In addition to organizing [a letter-writing campaign to Amazon CEO Jeff Bezos](#) calling for the creation of policies and practices that recognize their personhood and value their labor, they have created

[forums](#) for discussing requesters and hits (Zyskowski & Milland, 2018), [tools for rating requesters and HITs](#), and [a set of guidelines for academic requesters](#). These recommendations ask that requesters clearly identify themselves, provide appropriate estimates of the duration of a task, pay fairly, approve work for payment promptly, ensure conditions for rejecting work are clear and fair, only block workers for bad-faith work, maintain worker privacy, follow MTurk guidelines, and refrain from experimentation with forum relationships. MTurk alludes to these guidelines [in a blogpost](#), but the advice in the post is presented only as suggestions; workers are not given a way to communicate when these guidelines are not being followed.

Bridging the gap between researcher and participants can actually serve to improve research. Turkers, for instance, [have suggested](#) that researchers use [Turker Nation](#) to receive feedback on potential studies. Researchers could thus consult with a small population of expert Turkers; these experienced participants could not only give valuable feedback on appropriate compensation, but even on the nature of the tasks themselves (e.g., unclear instructions, question types that are unnecessarily tedious for users). Researchers might then “compensate” the Turker community by donating funding for their server. Minimally, we recommend that researchers include an open-ended optional question asking for feedback at the end of their studies, and pilot their studies with a small number of participants before launching.

Conclusion

Reflecting on the concerns raised here, researchers may find themselves ethically committed to collecting data in a way that it is more expensive or more time-consuming, and therefore, find that they are able to run fewer studies. This calls us to reflect more generally on the scientific value of large quantities of low cost data. As is often noted, the overuse of MTurk is leading to a tragedy of a commons as participants become less naive (e.g., Stewart, Chandler, & Paolacci, 2017). Thus, even if one could be convinced that the ethical problems raised by the invisibility of the participants, and by the conflation of

research with labor, could be adequately addressed, it may be that Turkers are quickly becoming an un-usable population. More broadly, in the race to publish as many high-impact studies as possible, researchers are incentivized to prioritize data collection, potentially influencing the types of research and theories that get conducted (e.g., Anderson, Allen, Plante, Quigley-McBride, Lovett, & Rokkum, 2018). Focusing on data collection in this way, it may be that we are generating, and journals are publishing, a great deal of noise. Making data more expensive may have the positive consequence of incentivizing scientists to be more careful in experimental design, and in what data we collect.

Consistent with other emerging discussions and trends in psychological sciences, more thoughtful data collection could be a positive development for the field. Currently, there is intense interest in improving psychology via mechanisms such as sharing of data (Levenstein & Lyle, 2018), materials, and code, via use of registered reports, and by expecting researchers to conduct power analyses prior to running a study. All of these calls, together with ours and others to take seriously the ethical concerns with many crowdsourcing platforms, argue for an approach where scientists refrain from iteratively running multitudes of quick experiments to see what “works”, and instead run a more select set of well-motivated and carefully designed studies.

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Table 1: Recommendations for Researchers Using Crowd-Sourcing to Recruit Participants

1. Explore and use alternatives to MTurk that make clear individuals are participating in research, rather than employed by the researcher.
2. Strengthen participant-research communication, including by recognizing and utilizing participant expertise in study design.
 - a. Provide mechanisms for participants to be in contact about their participation and be proactive about participants having ready access to informed consent documents.
 - i. Encourage participants to read consent documents by using timers that force participants to stay on the page for a minimum duration of time (and compensate participants for this time), or by incorporating understanding verification tasks.
 - ii. Host copies of consent documents and experimenter information on one's own website and include links to them in the headers of studies and in end-of-study messages.
 - iii. Regularly check email and plan to be responsive during the period that a study is active.
 - iv. Provide a progress bar for studies so that participants can make informed decisions about their continued participation.
 - b. Understand the experiences and perspectives of participants and find mechanisms for incorporating their expertise into study design.
 - i. Read and stay in contact with [forums](#) for discussing requesters and hits, and [tools for rating requesters and HITs](#).
 - ii. Familiarize oneself with the [set of guidelines for academic requesters](#) created by Turkers.
 - iii. Include an open-ended optional question asking for feedback at the end of studies.
 - iv. Pilot studies with a small number of participants before launching, or use [Turker Nation](#) to receive feedback on potential studies.
3. Explore and use alternatives that do not require "payment", or determine appropriate compensation consistent with the participants' right to end participation at any point without penalty.