Ethics and Information Technology (2023) 25:34
https://doi.org/10.1007/s10676-023-09708-8

ORIGINAL PAPER

To pay or not to pay? handling crowdsourced participants who drop out from a research study

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Abstract
This article examines whether a crowdsourced research participant who quits a study before its completion should receive any monetary compensation. The study is focused on participants recruited from Amazon Mechanical Turk, the most widely used crowdsourcing platform, and examines the tensions between participants' rights and research objectives when online labor markets are used to recruit research participants. The discussion is informed by the recent literature on online research with crowdsourced samples, evidence from human subjects' practices at top US universities, and an ethical analysis based on distributive justice and consequentialism. The results indicate that compensating crowdsourced research subjects who fail to complete their participation jeopardizes the benefits of many who dutifully participate and undermines the overall value of the research enterprise for advancing knowledge. By examining the issue of payment for crowdsourced participants who drop out, this article sheds light on modern ethical issues in online research and offers practical recommendations for researchers and ethics scholars.

Keywords Amazon Mechanical Turk · Ethics · IT Platforms · Crowdsourcing · Online Research

Introduction

Advances in Information Technology (IT) platforms and the emergence of crowdsourcing arrangements have made it possible to recruit research participants from online labor markets to perform small tasks, such as participating in research studies (Mason & Suri, 2012; Paolacci, 2010). In fact, current empirical academic research in many disciplines, including IT and related fields, increasingly relies on participants enlisted via crowdsourcing (Chandler & Shapiro, 2016; Jia et al., 2017). Their popularity is so widespread that in recent years crowdsourced samples from online labor markets have displaced student pools as the predominant source of research participants (Hauser et al., 2019). While Amazon Mechanical Turk (hereafter mTurk) is the most widely used source for this purpose, other platforms such as Prolific and CrowdFlower are quickly gaining ground (Gleibs, 2017; Peer et al., 2017). Unlike their college student counterparts, who are usually compensated with course credit and occasionally with monetary incentives, participants crowdsourced from online labor markets only receive monetary compensation.

In general, payment for participation seeks to compensate subjects for their time and effort even if their involvement is incomplete. In so doing, researchers help cover the costs subjects incur (such as traveling to the research location for in-person studies) or the time spent answering prescreening questions to determine their eligibility (Gelinas et al., 2018). Several conditions explain a subject's early exit from a research study, such as declining the terms of the consent form, failing to qualify, and experiencing technical problems during the study. Since participants have the right to leave the study while it is underway for any reason (Buchheit et al., 2018), the analysis herein focuses on voluntary withdrawals or *dropouts* for short. These are participants who consented to the terms of the study and successfully started it but decided to abandon it before reaching the end.

This article investigates whether a crowdsourced research participant (recruited from an online labor market) who quits the study before its completion (by exercising his right to withdraw) is owed payment. More broadly, at what point are crowdsourced participants entitled to earn compensation—when they consent to take part in the study, or

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Published online: 30 June 2023

when they stop their participation? The analysis assumes that researchers comply with ethical best practices regarding fair compensation and full information when recruiting crowdsourced participants (Fieseler et al., 2019). Fair compensation consists of paying participants crowdsourced from online platforms at least the equivalent of a minimum hourly wage using applicable benchmarks.[1] Full information refers to accurate and complete disclosure of the time and effort commitment required for the study.

Examining whether crowdsourced participants who voluntarily drop out should receive monetary compensation is important for at least two reasons. On the one hand, some studies report that the prevalence of dropouts in online studies with crowdsourced participants is higher than in other settings, such as in-lab studies, or online research with student subjects (Crump et al., 2013; Zhou & Fishbach, 2016). On the other hand, making payment contingent upon completion could be at odds with human subjects protection guidelines that ensure participants' autonomy and the right to withdraw (Edwards, 2005; McConnell, 2010). In addition to the tension between research objectives and participants' rights, this dilemma also illustrates how the dynamics between researchers and subjects are different when crowdsourcing platforms act as intermediaries and highlights ethical issues that are unique to contemporary online research (Gleibs, 2017; Kwek, 2020).

The rest of this article proceeds as follows. It first provides background about crowdsourcing platforms, and the benefits and drawbacks of using this source to recruit research participants. It then discusses the topic of participants' rights, including the right to withdraw, and the consequences for researchers who face attrition in their studies. The following sections elaborate on possible compensation approaches for dropouts (no payment, fixed partial payment, and progressive partial payment) and provide evidence from Institutional Review Boards (or Ethics Committees) at the top research universities in the U.S. These considerations lay the foundation for an ethical analysis from the perspectives of distribute justice and consequentialism. The article concludes with recommendations and guidelines for researchers and ethics scholars.

Crowdsourcing participants for research

A growing body of literature examines the use of crowdsourcing platforms to recruit research participants, in terms of efficiency of data collection (Mason & Suri, 2012), fairness considerations (Fieseler et al., 2019), and comparable data quality with respect to more traditional sources of subjects, such as college students or online panels (Buhrmester et al., 2011; Crump et al., 2013). In contrast, other studies discuss data quality concerns with crowdsourced samples (Ahler et al., 2021; Peer et al., 2022). Initially, quality was compromised because of inattentive participants (Goodman et al., 2013). More recently, the use of bots and other sophisticated mechanisms have allowed bad actors to subvert the participation process to earn money fraudulently (Dennis et al., 2020; Kennedy et al., 2020).

The mechanics of crowdsourcing labor markets, worker engagement, and compensation details give the backdrop needed to understand the merits and drawbacks of this source of research participants.

Crowdsourcing overview

A crowdsourcing platform is an online labor market where those in demand of labor (called requesters) offer non-traditional employment via a temporary work arrangement to a pre-registered pool of potential workers. This independent contracting arrangement is a form of outsourcing where available spots (or task requests) are filled with an open call. While there are several platforms to crowdsource research participants (e.g., Prolific, CrowdFlower), the most popular site for contracting digital labor is Amazon Mechanical Turk, or mTurk for short (Gleibs, 2017; Peer et al., 2017). The service was launched in 2005 and offered a solution to companies and individuals in need of human labor for Human Intelligence Tasks (or HITs). HITs are also called micro-tasks because they are short and simple, and do not require any specialized skills. Examples include image tagging, transcribing audio clips, and completing surveys (Paolacci, 2010). In the past few years, businesses and academic researchers have leveraged mTurk's low cost and high efficiency to engage an internationally dispersed group of workers in micro-tasks compensated with a small fee (Hara et al., 2018).

In mTurk, workers (called Turkers) are considered independent contractors or freelancers who receive compensation for completed tasks offered by requesters (Amazon Mechanical Turk, 2020). To recruit workers, requesters list the description of the task (or HIT) on the mTurk site using a pre-defined webpage. Requesters may include additional information, such as required worker qualifications (e.g., US-based, number of previously completed tasks, approval rate of prior tasks), a cap or quota for the number of workers needed, and payment amount (Fieseler et al., 2019). Workers who meet the required qualifications can view the task description and any additional payment conditions and

[1] While these benchmarks vary by jurisdiction, as of Spring 2023, the minimum hourly wages in the states of New Jersey, New York, and Pennsylvania are \$14.13, \$15, and \$7.25, respectively. For comparison, the United States federal minimum wage is \$7.25 per hour.

choose whether to accept or decline the task (Crump et al., 2013).

Once a worker accepts the task, the work is presented on the same platform or with a link to an external site, such a Qualtrics. When completed, the worker submits the work to the requester who then has the option to accept or reject the submission. If approved, the worker receives the promised compensation via direct payment from the requester, who in turns pays a percentage of the total amount to the platform as a service fee[2] (Mason & Suri, 2012). If completed work is rejected by the requester, the worker is not compensated. Finally, it is possible that a worker accepts a HIT but does not finish the assignment while it is open. In this case the task is said to be returned and the participant is considered a dropout (Crump et al., 2013; Fieseler et al., 2019; Hara et al., 2018).

Compensation mechanics

Subjects decide to participate in research studies for a variety of reasons, ranging from the need to obtain extrinsic rewards, such as money or academic credits, to intrinsic motives, such as the desire to gain experience or knowledge (Crump et al., 2013; Daly & Nataraajan, 2015). While the motives are mostly self-centered and involve some form of personal gain, some individuals are truly altruistic and partake in research to benefit society. For example, healthy individuals may sign up for early drug or vaccine trials to contribute to research on potential side effects (Edwards, 2005). Prior research shows that in crowdsourcing platforms, workers engage in micro-tasks not only for the monetary rewards but also for other motives such as personal growth via skill development, and the need to connect with others (Moussawi & Koufaris, 2015).

In social sciences, participants may choose to serve as experimental subjects or take surveys to contribute to knowledge generation and progress in a research field. Nevertheless, in most cases, some inducement is necessary to obtain an adequate sample size. Gelinas and colleagues propose three justifications for paying research subjects: reimbursement, compensation, and incentive (Gelinas et al., 2018). *Reimbursement* consists of covering out-of-pockets expenses related to participation (e.g., parking, transportation). *Compensation* refers to rewarding time and burdens of participation by considering the opportunity cost of participants' time, thereby equating participation with a form of temporary unskilled employment. *Incentive* is a payment beyond what is needed to reimburse participants, and its objective is to improve recruitment and retention rates (Gelinas et al., 2018). Incentives are necessary to entice participants to show up for follow-up sessions in multi-part studies (Daly & Nataraajan, 2015). In crowdsourcing platforms, participant payment serves the purposes of compensation and incentive because there is no need for reimbursement, as the cost of taking online studies does not entail any out-of-pocket expenses.

Crowdsourcing platforms have different rules regarding minimum payment. For example, in mTurk, requesters can determine payment rates at their discretion, and structure them as fixed or variable (base pay plus bonus). In contrast, Prolific sets a minimum fixed payment rate per hour[3] (Palan & Schitter, 2018). Since mTurk does not set a minimum amount, payment rates appear to be lower than comparable remuneration on other platforms. An analysis of 2,676 mTurk workers performing 3.8 million tasks from September 2014 to January 2017 found that Turkers earn a median wage of approximately \$3.18 per hour and the mean is \$6.19 per hour[4] (Hara et al., 2018). These estimates exclude time spent on three kinds of uncompensated work: (a) searching for tasks, (b) working on tasks that are rejected due to poor quality, and (c) working on tasks that are not submitted (i.e., incomplete). Comparing payment rates with subjects recruited from commercial online panels is more difficult because these companies do not report the breakdown between participant payment and administrative overhead (Keith et al., 2017).

In mTurk, compensation is awarded to workers based on their mTurkID, which is a unique identifier that can be linked to an individual's Amazon profile. For research surveys hosted on external survey platforms (e.g., Qualtrics, SurveyMonkey), payment for completed work is typically authorized when the participant obtains a unique completion code at the end of the survey and submits it to the researcher to request payment. The researcher reviews the worker's task and approves or declines payment depending on the case. The approval-before-payment process is an important check-and-balance to ensure that workers submit acceptable work, such as reliable survey responses (Daly & Nataraajan, 2015; Keith et al., 2017; Peer et al., 2022). In mTurk, the platform keeps track of the number of tasks performed by each worker and the approval rate. For the first 100 tasks, the approval rate is maintained at 100% but

[2] Currently, the service fee charged by Amazon to requesters is 20%, and the minimum fee is \$0.01 per assignment or unit or work. The fee increases if requesters need workers with premium qualifications. Details about pricing are available at: https://www.mturk.com/pricing.

[3] According to Prolific, at the time of this writing, the minimum payment allowed is £6.00/\$8.00 per hour, and the recommended payment is at least £8.00/\$10.50 per hour. In addition, the platform charges a service fee of 25% for academic researchers and 30% for companies, excluding taxes. See current rates at: https://www.prolific.co/pricing.

[4] This sample includes research tasks (e.g., survey completion) and non-research tasks such as audio transcription, image description, rating objects, and categorizing images.

thereafter, any rejection of submitted work is factored in and adversely affects this reputation metric[5] (Peer et al., 2014). Incomplete work does not affect the reputation score, but it does count towards the rate of return (which is computed as the percentage of tasks abandoned with respect to the number of tasks accepted by the worker).

Scholars have noted that crowdsourcing platforms are premised on a power differential due to the participants' economic vulnerability (Gleibs, 2017; Kwek, 2020). They indicate that in the tripartite relation among requesters, workers, and platform service providers, requesters hold comparatively more power because workers depend on the remuneration offered to supplement their income (Fieseler et al., 2019; Gleibs, 2017), and requesters are free to set payment rates and have the right to refuse sub-par work (Kwek, 2020). This power is counterbalanced by the worker's freedom to decide which tasks to pursue, and the availability of requester ratings tools (e.g., Turkopticon) that help workers choose better requesters. Moreover, a worker's compensation dependency would influence task choice and motivate the selection of tasks that offer better compensation. In fact, prior studies have shown that tasks with higher pay (per unit of time) increase the rate of signups and reduce participant attrition (Crump et al., 2013).

When participants are well informed of the requirements of their participation, they are likely to make rational choices about tasks that offer the best return for their time investment. Among tasks that offer comparable compensation levels, workers are likely to choose those they find more appealing or easier to complete, or those offered by higher rated requesters. In the absence of precise details about what the tasks entail (in terms of effort and time requirements), workers' choices might be misguided. While it is possible that unscrupulous requesters mislead potential participants with their task descriptions, online communities (e.g., TurkerView, TurkNation) and rating tools enable workers to share information and make the task selection process more efficient (Kwek, 2020).

Pros and cons of crowdsourced samples

Many scholars discuss the three main advantages of crowdsourcing research participants in terms of efficiency, validity, and representativeness (Buhrmester et al., 2018; Crump et al., 2013; Farrell & Sweeney, 2021; Jia et al., 2017; Keith et al., 2017; Mason & Suri, 2012; Paolacci, 2010). First, *efficiency* gains occur because large samples can be recruited at a relatively low cost and in a short amount of time (usually a few days). Second, increased *validity* results from the anonymity of researchers and participants, and the decreased chance of experimenters influencing participants or findings. Third, better *representativeness* is due to the mix of individuals who join the pool of workers on crowdsourcing platforms, which is more demographically diverse than typical student populations (Steelman et al., 2014).

Earlier studies suggested that quality of research data was comparable between traditional sources and crowdsourced participants, for surveys (Buhrmester et al., 2011; Mason & Suri, 2012), and for experimental behavioral research (Berinsky et al., 2012; Crump et al., 2013; Peer et al., 2017). However, recent studies report some serious data quality issues with samples recruited from mTurk (Dennis et al., 2020), and describe the current situation as a crisis (Kennedy et al., 2020). The main threat to data quality comes from the presence of bots or automated scripts that attempt to complete tasks to obtain payment (Crump et al., 2013). To address this problem, researchers include captcha verifications and attention checks in their studies to identify and filter out bots. Other mechanisms to circumvent the research design and obtain payment, such as a single participant with multiple accounts, are less obvious but also important to detect.

Another threat to data quality relates to the large, and often unreported, number of dropouts. Zhou and Fishbach used three complementary sources—researchers' mTurk datasets, analysis of published research, and their own studies with mTurk samples—to report that dropout rates in mTurk studies are higher than in typical lab-based studies conducted in university settings. In their own mTurk studies, the dropout rate ranges from 20 to 30%, despite following fair payment practices (Zhou & Fishbach, 2016). The lower dropout rate of 20% was found in a study that included a set of remedies originally proposed by Reips (Reips, 2000) to mitigate the tendency of participants to drop out. The remedies include prewarning (giving details to participants about the effort required), personalization (tailoring the communication to the participant), and appealing to conscience (by explaining the negative effects of dropouts on data quality).

Since the prevalence of dropouts is a significant threat to data quality, the next section contrasts participants' and researchers' interests with respect to participant rights and attrition consequences.

[5] Amazon's mTurk qualifications document contains the following excerpt: "*Note that a Worker's approval rate is statistically meaningless for small numbers of assignments, since a single rejection can reduce the approval rate by many percentage points. So to ensure that a new Worker's approval rate is unaffected by these statistically meaningless changes, if a Worker has submitted less than 100 assignments, the Worker's approval rate in the system is 100%.*"Source: https://docs.aws.amazon.com/AWSMechTurk/latest/AWSMturkAPI/ApiReference_QualificationRequirementDataStructureArticle.html.

Two perspectives on dropouts: participants' rights and research attrition

Participants' rights

When a prospective crowdsourced participant – recruited from mTurk or another source – decides to partake in a research study, he or she must first accept the task on the platform. This acceptance defines the requester-worker relationship in terms of an economic transaction based on work completion and monetary compensation, with the requester as an employer, and the worker as an independent contractor (or freelancer). After the task acceptance, the worker must indicate intent to participate in the research study by accepting the terms outlined in the consent form. The research protocol and all communications to participants must be approved by the researchers' Institutional Review Board (IRB). The goal of the consent procedure is transparency (Kim & Werbach, 2016)—that is, to inform eventual participants of the nature of the research study, and to give them the chance to explicitly accept the offer to partake in the study (Benbunan-Fich, 2017). By providing affirmative consent, the person acknowledges that he or she is informed of the risks and benefits of participation and acquires new rights and responsibilities as a research participant. For crowdsourced participants, the consent form agreement adds another layer to the baseline employer-contractor relationship that is different from the typical incentivized and voluntary engagement relationship between participants and investigators outside crowdsourcing platforms (Gleibs, 2017).

Since accepting the terms of the consent form is a different action than simply accepting the micro-task posted on the platform, requesters/researchers describe the task twice (on the platform where the task request is posted and in the consent form). It should be noted that only tasks associated with academic research projects are required to present crowdsourced participants with a consent form at the start of the study (or task). Therefore, compared to non-research work prospects, academic research tasks posted in crowdsourcing platforms offer more information to potential participants. Since crowdsourced participants are exposed to the task description twice—once on the platform dashboard, and again after acceptance when they are presented with the consent form—they have two opportunities to obtain information about the task and make an informed decision on whether to accept or decline the assignment.

These two complementary notification mechanisms (on the posted task description and through the consent form) allow ethical researchers to meet the goal of transparency by providing full information to prospective participants beyond the information workers receive for non-research tasks. For participants, this two-step process also affords them the opportunity to decline participation (after accepting the task on the platform), if the time or effort required for the study is too onerous. After the dual acceptance, the researcher-participant relationship is guided by two agreements, a baseline employer-freelancer contract established according to the rules of the crowdsourcing platform and task specifications, and a supplemental researcher-participant arrangement, whose terms are outlined in the consent form.

Despite the inherent differences among research studies, some elements of the consent form are standard. One standard component is the emphasis on the voluntary nature of the subject's participation and his or her right to withdraw at any point. The typical disclaimer in standard consent forms templates is "You have a right to withdraw from this study at any time without penalty." (McConnell, 2010). This requirement stems from the guidelines stated in the federal Common Rule at 45 C.F.R. § 46.116, subsection (b) (8), indicating that informed consent forms shall include "[a] statement that participation is voluntary, refusal to participate will involve no penalty or loss of benefits to which the subject is otherwise entitled, and the subject may discontinue participation at any time without penalty or loss of benefits to which the subject is otherwise entitled." And under subsection (c)-(4), the following shall be provided when appropriate: "The consequences of a subject's decision to withdraw from the research and procedures for orderly termination of participation by the subject." (Office for Human Research, 2017).

The right to withdraw seeks to preserve the autonomy of individuals, which is codified in one of the three fundamental ethical principles outlined in the Belmont Report for conducting research with human subjects: respect for people (Edwards, 2005; U.S.A National Commission, 1979). Research related to the right to withdraw indicates that this right is stated without qualification and subjects can withdraw at any time for any reason (McConnell, 2010). While this right institutes the revocability of consent at any point, some authors examine the implications of this revocation for the data collected in the research project, and for the subjects themselves, in the case of medical interventions when subjects do not complete treatments or observation periods (Edwards, 2005). Other scholars address the issue from a moral perspective by questioning the moral principles that justify such a right and discussing what constitutes a penalty (or lack thereof) for withdrawal. By arguing that loss of payment is not a penalty, some authors posit that there is moral justification for not paying dropouts (Schaefer & Wertheimer, 2010).

From the participant's perspective, exercising the right to withdraw entails reneging on the agreement established at the point of consent. The issue of withdrawing "without penalty" is subject to some debate in the literature. Does it mean that a dropout should bear some monetary cost from quitting the study (i.e., pay a fine)? Or is the penalty just "the loss of the benefit" to which the individual was entitled had he or she completed participation in the study? When does the participant earn the right to receive compensation—at the point of consent, or at the point of completion? In the case of crowdsourced research participants, does the decision to quit a study before its completion entail forfeiting all compensation offered in the consent agreement? These issues will be analyzed in the context of research attrition.

Attrition in Research

One of the side effects of the unrestricted right to withdraw is that participants can abandon or quit ongoing research studies at any point without notifying researchers. Figure 1 shows different exit conditions and when withdrawals happen in a study with prescreening qualifications. Withdrawals have implications for sample size and data quality in experiments and surveys. For researchers, understanding the reasons for withdrawals helps them recognize the limitations of studies underway and design better studies moving forward. Moreover, tracking participant withdrawals is important because incomplete participation may have serious consequences for research findings, particularly when the abandonment rate is correlated with a specific experimental treatment or condition. In multi-part experimental trials with waves of measurement, withdrawals also present some ethical dilemmas with respect to the right to use data already collected from the participant who drops out. In contrast, for cross-sectional survey studies administered at one point in time, incomplete data collected from dropouts is typically unusable, and routinely discarded.

Science and society benefit from complete participation in research studies. This is especially true in randomized controlled trials where the internal validity of the results relies on full adherence to procedures after recruitment and randomization (Edwards, 2005). When the participant dropout rate is condition-dependent, research findings might be inconclusive or at worst invalid. In two studies conducted by Zhou and Fishbach to test the impact of systematic attrition, the results were completely illogical or led to false conclusions (Zhou & Fishbach, 2016). Even if attrition is not tied to experimental conditions, a high dropout rate reduces the effective sample size and the power to detect significant differences.

The prevalence of dropouts is difficult to ascertain because researchers do not typically report this number. One possible explanation is that researchers do not know the actual dropout rate. For mTurk samples, Zhou and Fishbach explain that the inner workings of the platform in conjunction with the survey hosting site may in fact hide the number of withdrawals, making it difficult for researchers to estimate the withdrawal rate unless special procedures are applied. Not surprisingly, their analysis of published articles confirmed that authors do not report the number of mTurk participants who withdraw (Zhou & Fishbach, 2016). Another possible explanation for not reporting the dropout rate is to avoid arousing suspicions or doubts about data quality among reviewers and readers.

A balanced evaluation of attrition via dropouts involves analyzing the causes from the participants' side, and the consequences of such decisions for the research program. A participant's decision to withdraw might be motivated by loss of interest in the task; confusing instructions (Buchheit et al., 2018); realization that the promised compensation is not aligned with the time and effort required for the task; unforeseen interruptions; or technical problems with the task itself (Crump et al., 2013). For researchers,

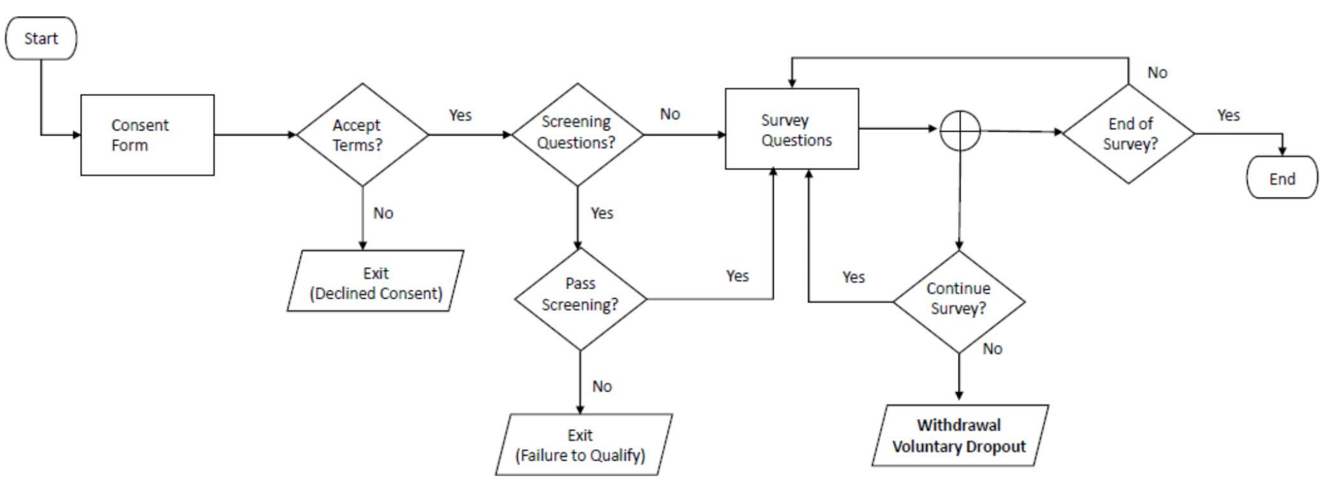

Fig. 1 Exit Conditions and Withdrawals

the consequences of dropouts range from mild (e.g., reduction in sample size and eventual power to detect significant effects) to severe (e.g., invalid or incorrect conclusions).

Compensation options for dropouts

Compensating incomplete participants requires answering the following question: are participants entitled to payment for their efforts or for their outcomes? In other words, is the value of their participation associated with the time or work they put in even if they quit, or with the data they provide for the study? In some instances, completing an online study is beyond the participants' control—for example, when subjects fail to qualify for the study after answering prescreening questions, or when they encounter technical problems with the survey site. Assuming that these cases are handled separately, paying only upon completion would rule out compensating dropouts because their incomplete participation does not yield complete data for the study. However, the practice of paying for completed work raises potential concerns of coercion or undue influence for research participants. Therefore, for voluntary withdrawals, the issue is how to fairly compensate their participation even if they do not provide data for the study.

Moreover, for crowdsourced participants, paying dropouts poses logistical challenges. Prorated compensation is not available within mTurk because this form of payment is inconsistent with the designation of mTurk workers as independent contractors who are paid upon concluding their assignments. The only built-in mechanisms to structure payments in mTurk are a fixed compensation amount per completed task, or a mixed scheme with a flat fee and a pre-established bonus amount paid upon completion (Crump et al., 2013; Mason & Suri, 2012). In mTurk, participants are typically compensated upon presenting a completion code (generated at the end of the survey) and if their work is accepted by requester. Since dropouts do not obtain a completion code, these participants would need to request compensation by emailing the researchers, who would handle these situations on a case-by-case basis.

Table 1 Partial Compensation Options for Dropouts

Payment	*Advantages*	*Disadvantages*
Flat fee plus bonus upon completion	Standardizes payment for incomplete participation but must be set at a low level to prevent abuse.	Incentivizes appearances (consenting to study but quitting) to collect flat fee. Fee might not be fair for late withdrawals.
Time-based partial compensation	Rewards time-on-task proportionally and equitably if participant is focused.	Requires time-tracking verification and is prone to run-the-clock abuses.
Progress-based partial compensation	Rewards incomplete participation proportionally depending on progress.	Surveys need to be structured with milestones mapped to payment tiers.

Contingencies for incomplete work can be structured within the payment offer. For example, if a study has specific eligibility criteria, participants can be paid after completing the prescreening portion, regardless of whether they qualify for the study (Hauser et al., 2019). The rest of the payment could be awarded upon completion. Accordingly, there is a continuum of possibilities for paying dropouts, ranging from full payment to no payment at all. The extremes are problematic for different reasons. Full payment for voluntary withdrawals is unfair given that participants who complete the study would also receive the full amount. No payment for dropouts could be perceived as coercive or as an instance of undue influence. Instead of an "all or nothing" payment, partial compensation is a feasible compromise, but its fairness depends on the implementation details. Partial payment could be structured as a flat fee or awarded proportionally for time spent or progress achieved before withdrawal. Each one of these approaches presents advantages and disadvantages.

Flat payment for dropouts is equivalent to offering an appearance fee to anybody who accepts the consent form. To incentivize completion and curb potential abuse, the flat fee must be for a small amount. A minimum level is consistent with the notion that most participants tend to realize soon after accepting the consent form that they do not wish to continue and decide to quit the study (Buchheit et al., 2018). Nevertheless, depending on when the participant withdraws, a low flat fee might not be fair. Therefore, a fixed payment amount, regardless of progress or time spent, might be insufficient to compensate the extent of participation for some dropouts and might be excessive for others.

While time-based partial compensation for incomplete participants seems more equitable, it requires tracking time-on-task, which varies from person to person according to reading skills and levels of attention. Moreover, unscrupulous participants may decide to drop out but stay long enough to "run the clock" and earn higher compensation without making a meaningful contribution. Alternatively, progress-based partial compensation for dropouts would reduce time-wasting abuses but requires establishing marked stopping points (or milestones) in the progression of the study and mapping these milestones to payment tiers (e.g., 25%, 50%, 75% of total payment). Table 1 compares the three payment options discussed above.

Partial compensation (in any of these schemes) implies that affirmative consent entitles participants to receive payment regardless of when they abandon the study. In the flat fee option, withdrawing immediately after accepting the consent form would entitle participants to collect payment akin to an appearance fee. While partial compensation for participants who withdraw is a sensible approach for multi-part longitudinal studies or for those with prescreening questions, it is not very practical for online research studies, whose duration is relatively short (e.g., under an hour). This practice could have unintended consequences by wasting research resources. Additionally, progressive remuneration for dropouts would make late withdrawals more costly than early withdrawals, without any tangible contribution to research if the participant quits. A flat fee (or appearance fee) would reduce this concern, but as discussed in detail later, its fairness is questionable.

Since these three partial compensation approaches are theoretical possibilities, the next section presents evidence from the Institutional Review Board (IRB) guidance at research-intensive universities in the US. The systematic analysis of their consent form language for mTurk samples shows if these boards recommend partial compensation for dropouts and which type of compensation they suggest.

Content analysis of mTurk consent forms

For academic research, Institutional Review Boards (also called Research Ethics Committees) play a significant role in the approval of all participant-related procedures. In February 2022, the Carnegie Classification of Institutions of Higher Education designated 146 US universities (the top 4% of all universities) as R1 or very high research activity institutions[6] (*The Carnegie Classification of Institutions of Higher Education*, 2022). I compiled all the relevant consent forms and guidance for mTurk samples found at the Human Subjects Protection or IRB websites of all R1 universities. Only 16% (24) of the universities' websites contained material mentioning special considerations for crowdsourced samples (21 had specific language in their socio-behavioral consent forms, and 3 had separate guidance for crowdsourced samples). About half of the relevant documents found (13 out of 24) explicitly indicated conditions for payment. With respect to the total sample, less than 10% provide specific payment instructions for crowdsourced participants. See Table 2.

Table 2 IRB Guidance at US R1 Universities regarding crowdsourced samples

	N	%
R1 US Universities (Carnegie Classification 2022 List)	146	100%
IRB Guidance for crowdsourced samples	24	16%
Conditions for payment	13	9%

Table 3 Excerpts from IRB Instructions at US R1 Universities

Recommendation	*Excerpts (with emphasis added)*	*Source*
No Compensation (Implied)	*[I]n accordance with MTurk policies, payment may be rejected if the HIT was not completed correctly or the instructions were not followed.*	Arizona State University
Optional Partial Payment	*MTurk does not allow for pro-rated compensation. In the event of an* ***incomplete HIT****, [select one of the following:] you will not receive any compensation. or you may receive partial compensation [describe plan to provide partial compensation.]*	University of Notre Dame
Completion Code Needed	*You may* ***withdraw at any time*** *any you may choose not to answer any question but you must proceed to the final screen of the study in order to receive your* ***completion code, which you must submit in order to be paid***	University of North Texas
Rejection of poor- quality work	*Amazon.com's guidelines for the Mechanical Turk explicitly state to Providers that HITs may be controlled for quality, and that it is up to a Requester to accept or reject a HIT, and that* ***if a HIT is rejected, the Provider will not be compensated***	Massachusetts Institute of Technology (MIT)
Payment at the Researchers' Discretion	*MTurk does not allow for pro-rated compensation. In the event of an* ***incomplete HIT****, you must contact the research team and compensation will be determined based on what was completed and at the researchers' discretion*	University of Chicago

Regarding incomplete participation, the templates and guidelines varied, with a few mentioning explicitly how to handle payments for dropouts. In general, the language was nuanced and made payment contingent on the presentation of a completion code (which is not possible when the participant stops before the end of the survey). Notably, most of these documents (11 out of 13) indicated that submissions of poor quality (i.e., failure to pass attention checks) would result in being denied payment. The implication is that incomplete participation could also be deemed as a subpar submission and not be compensated. Table 3 presents excerpts illustrating these cases.

According to this evidence, researchers at most US R1 Institutions have discretion to determine whether payment is owed to incomplete participants. This is likely the case for other US institutions in the Carnegie classification, and possibly for universities located in other countries. To help researchers determine the best course of action, the following section discusses ethical considerations from the perspective of distributive justice to shed light on the different compensation possibilities for dropouts.

[6] R1 designates doctoral-granting institutions with very high levels of research activity.

Distributive justice and ethical considerations on compensating dropouts

The theory of distributive justice addresses the fair distribution of resources among individuals with competing needs (Adams, 1963). According to Deutsch, there are three basic allocation principles that could be considered fair depending on the goals of the social context: equality, equity, and need (Deutsch, 1975). Equality allocates the same amount of resources to everyone regardless of their contribution. Equity calls for a proportional distribution of resources such that the ratio of an individual's inputs to outcomes is equivalent to the ratio of their counterparts. Need also calls for an unequal distribution of resources to ensure that those who are most in need receive the largest share. The need principle is applicable in contexts where social welfare is the primary goal (Deutsch, 1975). In research settings, the two potentially applicable principles are only equality and equity.

Partial compensation issue: justice vs. exploitation

The two relevant principles of distributive justice (equity and equality) would advise against granting full compensation for those who fail to produce the expected outputs (Adams, 1963; Deutsch, 1975). In fact, equality (or equal payment regardless of contribution) would be unfair for complete participants and detrimental for the research project, as it would dictate to grant the same level of compensation (i.e., full payment) to both types of participants, those who complete and those who fail to complete the research task. In terms of contribution, those who finish the study provide a complete data record for researchers, while those who drop out before completion provide incomplete data at best, or no data at all.

In contrast to the same payment advocated by the equality principle, equity considerations shift the focus to the ratio of participant's inputs to outputs to determine compensation. If the input is measured in time or effort and output is data contribution, those who fail to provide data for the research study should not receive any compensation, when compared to those who do. Along these lines, it is possible that participants could provide partial but usable data for the study even if they withdraw, and in this case, their compensation should be adjusted accordingly. Assuming that incomplete participants are owed some form of partial compensation,[7] an equity-based ratio calculation would dictate to compensate participant's contributions proportionally with respect to their value.

If research participation is viewed as an exchange of data for monetary compensation, a participant making a partial contribution by virtue of his withdrawal could be entitled to partial compensation. However, depending on the terms of the partial compensation scheme, researchers could become the target of *exploitation*. As defined in previous studies about mTurk, exploitation occurs when one party does not provide sufficient or fair benefit to the other party (Fieseler et al., 2019), or gains unfairly from the other party (Kim & Werbach, 2016; Kwek, 2020). While previous studies focus on participant exploitation, the concern is not applicable in this study.[8] Instead, granting partial compensation to dropouts opens the possibility of participants exploiting researchers. As outlined in the disadvantages column of Table 1, research resources might be manipulated for personal gain by unscrupulous participants who abuse the partial compensation scheme (e.g., consent and withdraw, run the clock, or make meaningless progress) with total disregard for the objectives of the study.

There are two possible interpretations of what constitutes meeting participation objectives to be eligible for compensation. At a basic level, the goal of participating is to provide data for the study. Since failure to complete a study yields no data, incomplete participation fails to meet the objective. An alternative interpretation to the baseline requirement of producing a *complete* data record, is to consider that participants must contribute *usable* data that meets quality specifications. To avoid exploitation of research resources, the former view supports withholding payment to dropouts, while the latter justifies denying payment to dropouts and to those who submit complete but low-quality contributions.

A crowdsourced participant who completes the research task may miss some survey questions, while still providing data that is usable, to a certain extent. In contrast, another completely inattentive participant (operating via an automatic script or through a bot) may complete the research task and yield that is not usable and needs to be discarded. If researchers have the discretion to award compensation only when crowdsourced participants provide high-quality data (i.e., complete, and usable) for the study, data quality considerations must be included as a contingency for awarding payment upon completion. In this case, an incomplete participation record is representative of low-quality data and therefore ineligible for compensation.

[7] Amazon's guidance to pay for incomplete tasks is found at: https://blog.mturk.com/paying-for-non-submitted-hits-245c6c3323bb.

[8] Recall that given the assumptions for this study (stated in the introduction), researchers are adopting ethical best practices to treat participants. The ethical assumptions about fair payment (appropriate compensation) and transparency (full information) rule out the possibility of exploiting participants.

No compensation issues: coercion and undue influence

Withholding payment for dropouts could raise concerns of coercion or undue influence. Coercion refers to one party (coercer) persuading another (target) to do something by using threats to produce harm (Gelinas et al., 2018). By diminishing the targeted agent's freedom to decide what to do, coercion violates the target's right to autonomy, thereby producing harm (Anderson, 2021). Since payment for research participation involves an offer of money, rather than a threat, it cannot be considered coercive (Gelinas et al., 2018).

Consider the following adaptation of a coercion case (Berman, 2002) to a research context. A research study *offers* the following two conditionals to a potential participant: (a) if the participant completes the study, he will receive full payment; (b) if the participant abandons the study at any point before completion, he will not receive any payment. Alternative (b) presents the less preferred course of action if the participant prefers receiving the payment to not to receiving it. Additionally, receiving no compensation for services not completely rendered (i.e., for a research study not completed) is typical, and the participant is not worse off than in normal circumstances[9] even if he or she wasted some time. Therefore, when the second conditional is applied (i.e., no completion implies no payment) the target is not materially worse off.

Dropouts are merely foregoing the *right* to earn a *future* gain, rather than sustaining a loss of already-accrued benefits, and they are not "worse off" when they withdraw from research, particularly for online studies that are only a click away. Thus, the researcher is making an offer and not a threat. Arguably, the no-compensation alternative is not ideal, but the participant is not less free because this choice is less appealing. The view of payments as future gains is consistent with the principle that participants are entitled to compensation when they complete the study, not when they consent. In contrast, partial compensation could make withdrawals as appealing as completing participation, and incentivize more participants to withdraw, regardless of the negative implications for the study.

In contrast to the definition of coercion, undue influence refers to situations in which an offer of something enticing, such as monetary payment, affects the target's decision-making ability. Scholars who study undue influence in connection with research payments propose that this only occurs in specific circumstances—for example, when payments are unusually high compared to similar opportunities.[10] In general, an offer of payment is problematic if it causes participants to overlook the risks associated with their participation (Gelinas et al., 2018). Participating in socio-behavioral online research is typically considered a minimum risk activity and is comparable to other instances of Internet-based work.

Concerns of undue influence forcing completion of accepted tasks could arise from the mistaken belief that voluntary withdrawals lower the worker's approval rate in crowdsourcing platforms, where workers rely on their reputation metrics to be eligible for future work. However, this is not the case, approval rates are only computed based on submitted (i.e., completed) work that is rejected by the requester. In mTurk, the only metric affected by incomplete work is the percentage of tasks completed or its corresponding abandonment rate. Based on my own research codifying the selection criteria in published mTurk studies at various journals, few researchers rely on the abandon rate qualification to select workers. Therefore, withdrawing from research (i.e., leaving an accepted research task before its completion), does not affect the worker's approval rate, which is the principal measure of reputation. In Prolific, participants can return a task (i.e., quit before completion) without any adverse effect on their reputation (Palan & Schitter, 2018). As a result of these procedures, the ability of crowdsourced participants to make autonomous decisions regarding their withdrawal is not compromised and the concerns about undue influence are unfounded. Additionally, crowdsourced participants can choose from a variety of tasks and withdrawing from a study does not prevent the participant from choosing any other task advertised on the platform.

In short, denying compensation to dropouts is neither coercive, nor unduly influential in encouraging completion, if payment conditions are clearly communicated to prospective participants. In contrast, as discussed in the next section, there are some additional ethical considerations when comparing payment with no payment to dropouts.

Consequences-based analysis of partial vs. no compensation

Consistent with other ethical analyses related to research dilemmas (Benbunan-Fich, 2017; Kimmel, 2012), I evaluate the issue of (partial vs. no) monetary compensation for participants who withdraw using the lens of consequentialism. Although there are various interpretations associated with this perspective, their common approach is to focus

[9] Note that withdrawing from a task does not adversely affect a worker's reputation score because the approval rate is computed based on submitted work that is approved by the requester.

[10] Existing regulations for human-subjects research in the US do not include explicit provisions regarding payment amounts. However, the guidelines suggest minimizing the risks of coercion and undue influence in the consent process.

on the consequences of an action to guide decision-making. Depending on how the consequences are outlined, the two major consequentialist theories can be classified into objective and subjective. The consequentialist analysis presented next is focused on objectively probable and reasonably foreseeable consequences, and thus belongs in the stream of objective consequentialism (Sinnott-Armstrong, 2022).

Consequentialist ethics proposes that the right or wrong decision is dictated by an evaluation of the consequences and the morally right action is the one that produces the best overall consequences. Different versions of consequentialists theories elaborate on the types of outcomes (Haines, 2006). For example, utilitarianism, one the most distinctive versions of consequence-based ethics, proposes that the morally right action is the one that maximizes the net expected utility for all affected parties. The application of this principle suggests that certain individuals could be disadvantaged if the benefits for the majority increase (Dietrich & Weisswange, 2019). In contexts where monetary compensation is involved, utility considerations involve economic and non-economic ones (such as individual satisfaction). Additionally, when research activities are at the center of ethical dilemmas, the overall research outcomes (i.e., societal benefits) should be noted.

Plain Scalar Consequentialism is helpful to compare two possible courses of action (Haines, 2006). According to this view, the morally correct choice is the one that provides better overall consequences when compared to the other. In this framework, the action that produces a good ratio of positive consequences is morally right, when compared to other options, including inaction or not carrying out the action at all (Kimmel, 2012). Applying this perspective to the moral dilemma of to pay vs. not to pay dropouts, denying payment for dropouts is not only acceptable but a better choice because the benefits of compensating dropouts (i.e., rewarding their incomplete efforts) carry larger costs (i.e., making research more expensive due to a waste of research resources). Put differently, the benefits for research participants and for society are greater if incomplete participation is not compensated.

Table 4 Cost-Benefit Analysis

Possible Actions	*Positive Consequences*	*Negative Consequences*
Partial Compensation	• Rewards incomplete participants for time or effort spent • Fair payment depends on compensation scheme and participant behavior • In progressive schemes, participants who spend more time or progress further receive more compensation than others	• Rewards bad actors / fraudulent participants • Risks incentivizing additional withdrawals and further reductions in sample size • Makes research more expensive (with fixed budgets, lower pay rates per participant make studies less attractive)
No Compensation	• Ties participant payment to providing data for the study • Encourages participants to drop out as soon as they decide not to work on the task • Better use of monetary research resources	• Does not recognize efforts of incomplete participants • Incentivizes completion to reach the end of the study (and possibly receive payment) but increases risk of low-quality data

A cost-benefit analysis supplements this theoretical evaluation with a more nuanced and practical perspective and offers specific insights regarding compensating vs. not-compensating dropouts. Table 4 lists the positive and negative consequences of an action (partial compensation) vis-a-vis inaction (no compensation) for participants and researchers. The core issues for partial compensation relate to fairness in the implementation of partial compensation schemes, the risk of incentivizing undesirable participant behavior (e.g., additional withdrawals, rewarding bad actors), and the less efficient use of research resources. The key considerations for no compensation are unrecognized time invested by participants, the tendency to complete participation by sacrificing quality, and alternative or better uses of research resources.

A balanced analysis in terms of overall utility—comparing the welfare of the fraction of participants who withdraw against the overall impact on the resources allocated to academic research projects—yields similar conclusions to those suggested by distributive justice considerations. Partial compensation for dropouts *benefits a few individuals and harms many who stand to gain from completely participating in the research study*. When a fixed research budget is used to compensate dropouts, fewer full participants can be recruited, those who are recruited receive lower pay rates, and the research project is at risk of inconclusive results due to small sample sizes. In contrast, the no-compensation option recognizes that participants who drop out fail to meet the objectives of their participation (i.e., to provide data for the study) and therefore should not be compensated. The no-compensation solution for dropouts is fair given that their right to withdraw is not compromised, but their withdrawal undermines the overall value of the research enterprise for knowledge advancement. When researchers employ ethical practices regarding fair compensation and transparent information about their studies, withholding compensation is morally permissible from the perspective of consequence-based ethics.

Recommendations

The discussion of whether crowdsourced research participants who drop out are entitled to payment relates to issues of justice, participants' rights, and ethics in online research. These concerns result from tensions raised by the often-conflicting goals among researchers and participants, which are intensified when participants are crowdsourced from online labor markets. Some of the operating principles of crowdsourcing platforms, such as the definition of workers as independent contractors, and payment upon completion, may need reconciliation with traditional protections afforded to research participants. Crowdsourcing platforms encourage payment upon completion, with optional quality contingencies, but do not easily allow prorated compensation. Therefore, the implementation of partial payment requires additional considerations for structuring compensation, as discussed earlier.

When partial payment is offered, the three available options (flat fee, time-based, and progress-based) raise concerns about distributive justice and fair treatment of participants. Similarly, from the researchers' standpoint, substantial compensation for dropouts might be counterproductive, as it would increase the number of withdrawals and waste scarce research resources. The balance of these considerations viewed through an ethical analysis using consequentialism shows that partial monetary compensation for crowdsourced participants who drop out is detrimental for other participants and for researchers. Furthermore, the possibility of rejecting low-quality work, which is a widely accepted practice in crowdsourcing platforms, seems to be incompatible with the premise of compensating incomplete participants who do not submit any work at all.

Although the research-participant relationship is framed by the rules established by the platform, these matters are applicable to participants recruited from other sources who are monetarily compensated. Concerns about coercion or undue influence (if partial compensation for dropouts is not offered) are unfounded when crowdsourced participants can freely choose which tasks to pursue from those offered in the platform and the consequences of withdrawing are similar regardless of the task (no payment and no reputational consequences). When researchers have discretion to determine how to proceed with incomplete and low-quality work, it is advisable to fully describe the conditions under which full payment will be granted, and if there are any provisions for partial compensation.

Overall, the nature of crowdsourced research participation is consistent with a pay-for-contribution approach where participants are rewarded upon completion, instead of at the point of consent, or any other intermediate step where participation may cease. For complete participation, researchers should explicitly disclose whether complete participation should meet any additional conditions to receive payment (i.e., quality contingent compensation). More generally, future studies should discuss in more depth the point at which crowdsourced participants are entitled to collect compensation, and whether this critical point changes based on the type of study (cross-sectional, longitudinal, in-lab, online), or the source from which participants are recruited (subject pools, commercial panels, direct recruitment).

Conclusion

The question at the center of this article (whether crowdsourced participants who drop out should receive payment) illustrates an ethical dilemma associated with using crowdsourced samples. Conducting online research in crowdsourcing platforms presents many advantages such as convenience and efficiency but opens new questions regarding participants' responsibilities and researchers' expectations. The question of compensating participants who drop out is discussed from the perspective of distributive justice, participants' rights, and ethical frameworks, and illustrated with evidence from Institutional Review Board guidelines from top research institutions in the US. Taken together, these complementary perspectives provide consistent recommendations. In pragmatic terms, dividing a fixed research budget among more participants regardless of whether they complete their task, lowers participants' per capita compensation, and jeopardizes the potential benefits of a research project for all the parties involved (researchers, participants, and society). In this case, it is better not to pay those who withdraw because offering payment for incomplete participation is bound to have detrimental effects for online research.

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