Factors Associated With Payments to Research Participants: A Review of Sociobehavioral Studies at a Large Southern California Research University

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Abstract

Along with a dearth of regulatory guidance, little empirical research has examined factors related to participant payment in research. We conducted a cross-sectional study of 100 institutional review board (IRB)-approved sociobehavioral human subjects research protocols at a large research university in Southern California. The proportion of studies that paid participants differed significantly by type of research ($p < .001$) and study population ($p = .009$). The average payment amount also differed significantly by study population ($p < .001$) and type of participation (in-person vs. remote; $p < .001$). In addition, studies that required more visits ($p < .001$) and more time ($p = .011$) paid significantly more than studies with fewer and shorter visits, respectively. These findings provide data to help inform future ethical payment practices.

Keywords

paying research participants, research ethics, institutional review boards

Introduction

Research participants often receive payment (e.g., cash, gift cards) and/or nonmonetary goods (e.g., course credit, small gifts) in return for their participation (Grady, 2005; Phillips, 2011). Researchers may choose to pay participants for various reasons (Gelinis et al., 2018), such as to bolster recruitment efforts (Bentley & Thacker, 2004; Ripley, Macrina, Markowitz, & Gennings, 2010b), compensate for study-related costs, time, and inconvenience (Fry et al., 2005; Mweemba, Ali, & Hyder, 2018), and as a way to show appreciation for participants' contributions (Resnik, 2015). Research shows that amounts and forms of payment for research participation vary widely (Fry et al., 2005; Latterman & Merz, 2001; Marathe et al., 2018). Some research also shows that payment amounts depend on the research setting, the amount of time that research participation requires, the procedures that participants will experience, and the type of research (e.g., early phase clinical experiments vs. late-phase clinical trials or biomedical vs. sociobehavioral research) (Fry et al., 2005; Marathe et al., 2018; Mweemba et al., 2018).

Despite the widespread practice of paying research participants, doing so remains ethically controversial; how much, when, and what to pay participants has been much debated (Beckford & Broome, 2007; Phillips, 2011; Ripley,

2006; Wong & Bernstein, 2011). Various models/approaches toward payment have also been described to explain and guide payment decisions (i.e., market, wage payment, reimbursement, appreciation) (Dickert & Grady, 1999; Resnik, 2015; Ripley, 2006), yet determining appropriate payments for research participants remains a difficult endeavor.

The ethical issues of research participant payment mainly cluster around two major arguments. First, payments could result in undue inducement, whereby participants' assessment of the risks associated with research is altered by the payments (Resnik, 2015). In such cases, individuals' decisions to participate in research could be considered neither completely voluntary nor fully informed (Beckford & Broome, 2007; Emanuel, Currie, Herman, & Project, 2005; Macklin, 1981). Second, payments to research participants could result in biased recruitment by

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encouraging higher enrollments of individuals with a lower socioeconomic status (SES) than individuals with a higher SES (Resnik, 2015). In these cases, payments to research participants could lead to an uneven distribution of the benefits and burdens of research, whereby research-related burdens mainly fall upon people of lower SES while people of higher SES are conferred the benefits (Denny & Grady, 2007; Viens, 2001). Thus, payments to research participants could be exploitative, especially if participants are offered too little money in return for their contribution and efforts (Elliott & Abadie, 2008). In addition, participants may conceal information to qualify for studies with payment, and in some cases even inflict self-harm to meet eligibility requirements (Devine et al, 2013; Lynch, Joffe, Thirumurthy, Xie & Largent, 2019).

Despite the ubiquity of payments to research participants and their ethical complications, national and international research regulations and ethics guidelines require only that payments should neither be undue or exploitative, but provide little substantive guidance on how researchers and institutional review boards (IRBs) should determine appropriate payments (Council for International Organizations of Medical Sciences [CIOMS], 2016; Department of Health, Education, and Welfare & National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 2014). As a consequence, research institutions have needed to develop their own guidance for advising researchers on payment types and amounts, largely in the absence of empirical research to inform their policies. In particular, little is known about the practices of paying research participants, such as study factors that influence payment amounts and whether payments are offered (Brown et al., 2018). Data that could describe and characterize incentive types and amounts in actual studies could inform IRBs and similar regulatory bodies in their decision-making processes. The present study seeks to address this research gap by identifying the study factors associated with payments to research participants.

Method

We conducted a cross-sectional study of IRB-approved sociobehavioral research protocols and related materials (i.e., application forms, protocol amendments, informed consent forms, and correspondence between IRB officials and primary investigators) at a large research university in Southern California. The protocols were approved between January 2017 and January 2018. The university has a strong background in social sciences, humanities, engineering, and natural sciences. There were neither interactions nor discussions with investigators or participants of the reviewed studies. All study information unrelated to payment or other variables of interest were kept confidential. This study was exempt from IRB review as it did not involve interaction

with study participants and did not collect identifiable data. An institutional official at the university provided permission and granted access to the de-identified administrative data.

The following data were collected from the study protocols and corresponding documents: (a) risk level (minimal or more than minimal) determined by the IRB; (b) IRB review type (full board, expedited, exempt); (c) expedited review category (1-7) (Office for Human Research Protections, 2016); (d) college/school of primary investigator; (e) number of participant visits; (f) participants' time commitment to the study (in minutes); (g) research type (qualitative, quantitative, or mixed methods); (h) whether the study participation was remote, in-person, or both; (i) population type (college students, nonstudent adults, children, or multiple); (j) whether payment was offered (something or nothing); (k) monetary payment amount (USD); and (l) payment form (money, academic credit, or other). The study's payment form was classified as "monetary" if any money was offered, "academic credit" if only academic credit was offered, and "other" if the payment involved a small gift, service, or nothing. Raffles were classified as "nothing," because virtually all study participants do not win raffles.

The number of visits was operationalized as any researcher-participant contact to include types of research that do not involve face-to-face contact, such as online surveys. In addition, because most study protocols specified a range of possible payments, visits, and time commitments for study participants, each of these variables was operationalized as the maximum possible.

Statistical Analysis

Chi-square and Student's *t* tests were conducted to determine significant differences in the reported frequencies and means of variables between studies that offered payment and those that offered no payment. Univariate and multivariate linear regression models were used to examine the association between the amount of payment and other variables. The sandwich variance estimate was used to make inference in linear regression models without assuming normality or homoscedasticity. Analyses were conducted using Stata version 14.2 and R 3.5.2.

Results

Out of 117 available study protocols, 100 were included in our analysis. Of the 17 protocols excluded from the analysis, nine were unable to be located, which prevented data collection. The other eight protocols, most of which were secondary data analyses, were missing data on the variables of interest.

Out of the 100 included studies, all were sociobehavioral research: 73% of primary investigators were housed in the

Table 1. Factors Associated With Payments to Research Participants in 100 Social-Behavioral Studies.

Group of studies	Number of studies	Studies providing payment <i>n</i> (%)	Payment amount (USD) Mean median (range)	Hourly payment amount ^a (USD/hr) Mean median (range)
All	100	55 (55)	15.92 0.00 (0-225)	8.46 0.00 (0-120)
Visits ^a				
1	66	36 (54.5)	8.20 0.00 (0-100)	9.70 0.00 (0-120)
2	12	8 (66.7)	25.02 1.62 (0-120)	8.65 4.00 (0-34)
>2	20	11 (55.0)	37.50 0.00 (0-225)	4.33 0.00 (0-24)
Time commitment ^b				
30 min or less	22	16 (72.7)	4.67 0.75 (0-30)	15.99 3.88 (0-120)
>30 min to 60 min	35	16 (45.7)	2.97 0.00 (0-50)	3.61 0.00 (0-67)
>60 min	40	23 (57.5)	34.62 0.00 (0-225)	8.56 0.00 (0-50)
IRB review type				
Exempt	5	2 (40.0)	3.40 0.00 (0-15)	10.50 6.00 (0-30)
Expedited	93	52 (55.9)	16.66 0.00 (0-225)	8.43 0.00 (0-120)
Full review	2	1 (50.0)	12.50 12.50 (0-25)	5.77 5.77 (0-12)
Population type				
Nonstudent adults	58	25 (43.1)	15.29 0.00 (0-225)	5.83 0.00 (0-60)
College students	22	15 (68.2)	10.68 0.00 (0-60)	10.73 0.00 (0-120)
Multiple	13	12 (92.3)	25.00 5.00 (0-120)	19.18 10.00 (0-90)
Children	6	3 (50.0)	24.17 0.00 (0-120)	3.21 0.00 (0-17)
Organization	1	0 (.0)	0.00 0.00 (0-0)	0.00 0.00 (0-0)
In-person and/or remote participation				
In-person	55	26 (47.3)	19.54 0.00 (0-225)	7.62 0.00 (0-67)
Remote	27	19 (70.4)	3.95 0.25 (0-50)	10.82 1.00 (0-120)
Both	18	10 (55.6)	22.79 2.50 (0-120)	7.53 1.29 (0-50)
Research method category				
Quantitative	46	32 (69.6)	18.12 0.62 (0-225)	11.64 3.16 (0-120)
Qualitative	39	11 (28.2)	7.31 0.00 (0-120)	2.94 0.00 (0-34)
Mixed	15	12 (80.0)	33.43 6.00 (0-200)	13.34 4.88 (0-67)

^aExcluding two studies with missing visits.^bExcluding three studies with missing time.

College of Humanities, Arts, and Social Sciences (CHASS). Nearly all the studies (93%) were deemed by the IRB to be expedited, which means they were no more than minimal risk and all procedures fell within the list of seven categories of expedited research published by Health and Human Services. Out of all 100 studies, only two were deemed to be more than minimal risk by the IRB. Most of the studies (91%) fell under expedited review category 7. In general, research that falls under expedited category 7 has no greater than minimal risk to participants and involves research. This category usually involves research on individual or group characteristics or behaviors or research employing surveys, interviews, oral histories, focus groups, program evaluation, human factors evaluation, or quality-assurance methodologies (Office for Human Research Protections, 2016).

Most studies (55%) required in-person participation, 27% were conducted via the Internet, and 13% involved participants recruited via Amazon's Mechanical Turk marketplace (see Table 1). Study samples predominantly

consisted of nonstudent adults (58%) and college students (22%). The number of study visits ranged from 0 to 34 (median = 1), with an average of 2.8 visits. Time commitment for study participation ranged from 4 min to 300 hr, with an average of 5.6 hr and a median of 1 hr. Most of the studies (55%) offered some form of payment (e.g., cash, gift card, course credit, small gift, etc.). Among those, 41% of studies offered monetary payment, 53% offered something other than money (e.g., raffle or small gift) or nothing, and 6% offered academic credit. The average amount of monetary payment was USD 15.92 with a median amount of USD 0. The amount of payment per hour ranged from USD 0 to 120, with an average of USD 8.46 per hour and a median of USD 0 per hour.

The proportion of studies that paid participants differed significantly ($p < .001$) between qualitative (11/39 or 28%), quantitative (32/46 or 70%), and mixed-method (12/15 or 80%) studies. The proportion of studies that paid participants also differed significantly ($p = .009$) between different study populations: nonstudent adults (25/58 or 43%),

college students (15/22 or 68%), and others (15/20 or 75%). Number of study visits, time commitment, review type, and type of participation (i.e., in-person, remote, etc.) were not significantly related to whether studies offered payment.

The following findings were generated from univariate linear regressions, where each variable was considered separately in relation to the amount of payment. The average payment amount differed significantly ($p < .001$) between study populations: nonstudent adults (USD 15.29), college students (USD 10.68), children (USD 24.17), and others. Significant differences ($p = .008$) were also found between types of participation: remote (USD 3.95), in-person (USD 19.54), and both (USD 22.79). Studies that required more visits paid significantly more than studies that required fewer visits ($p < .001$), where each additional visit averaged an additional USD 4.29. Studies that required more time also paid significantly more than studies that required less time ($p = .011$), with an estimated increase of USD 10.28 for a doubling of study time. There was a significant difference between the colleges/schools in which the studies' primary investigators were housed ($p < .0001$); however, the small p -value is questionable given the small number of non-CHASS studies. Thus, we dichotomized studies into CHASS ($n = 73$) and non-CHASS ($n = 27$) and found no difference in amount of pay between those two groups. There also was not a significant relationship between amount of pay and study type (i.e., qualitative, quantitative, or mixed).

In a multivariate linear regression model, we used the dichotomized variable CHASS versus non-CHASS instead of each of the colleges/schools. In general, the covariates became less significant compared to univariate analyses. However, number of visits remained significant ($p = .003$), as did study population ($p = .033$).

The amount of payment per hour was analyzed using similar (univariate and multivariate) linear regression models, and was found to be significantly ($p < .0001$) associated with study population and research method category (quantitative, qualitative, or mixed) in univariate regression analyses. No significant associations were found in multivariate regression analyses of hourly payment.

Discussion

This study examined factors related to offers of payment and the amount of those payments in social-behavioral studies. There was a wide variation of payments across the studies, though the total amounts of monetary payments were modest (average USD 15.92). Quantitative studies were more likely to offer payment than qualitative studies, and mixed-method studies were more likely to offer payment than both qualitative and quantitative studies. The likelihood of offering payment also depended on study population, with nonstudent adults less likely to be paid

than college students and other populations. Studies that required both in-person and remote participation paid more than studies that only required in-person or remote participation, and in-person participation paid more than remote participation. On average, studies involving children paid more than studies with college students and nonstudent adults, and nonstudent adults were paid more than college students. In addition, studies that required more visits and more time generally paid more than studies that required fewer visits and less time. However, when calculating the hourly payment rate (dollars per hour), studies with one visit and studies with the lowest time commitment generally paid a higher hourly rate. This may be due to limited budgets allotted to payment regardless of visits or time commitment.

The present study supports previous research which shows that payment levels in sociobehavioral research studies are relatively low, vary widely, and depend on the type of research, the amount of participation time required, the frequency of interactions between researchers and participants, and sample characteristics (Fry et al., 2005; Grady, Dickert, Jawetz, Gensler, & Emanuel, 2005; Latterman & Merz, 2001; Ripley, Macrina, Markowitz, & Gennings, 2010a). Given that payment amounts tended to increase with more time required for participation and interactions between researchers and participants, our results are also consistent with previous research demonstrating that researchers tend to provide payments to participants to compensate them for their time and efforts (Fry et al., 2005; Mweemba et al., 2018).

The relatively low amounts of payment may be related to the university context in which the studies were conducted, where research is typically initiated by the primary investigator rather than other entities. For example, Marathe et al. (2018) found that studies initiated by investigators paid less than studies initiated by pharmaceutical companies or governments and suggested that budgetary constraints and investigator's perception of risks were likely the reasons for low payments in those studies. Therefore, budgetary constraints and investigators' perceptions of relatively low risk may have also contributed to low payment amounts. However, risks are usually not mentioned by regulatory guidelines as factors that should guide compensation amounts. The relatively low payments may also be due to the fact that all of the studies were sociobehavioral, which typically pay less than biomedical studies (Grady et al., 2005).

Our findings suggest mixed use of the practice of basing payment amounts on the hourly wage of an unskilled laborer, an approach recommended by numerous scholars (Dickert & Grady, 1999; Grady, 2001; Shamoo & Resnik, 2006). On one hand, the finding that more time and interactions with researchers were associated with higher payment is consistent with labor rules, which generally mandate that

more work should equate to more pay (Ripley et al., 2010a). In addition, the finding that nonstudent adults were paid more than college students may indicate that researchers considered the value of respective participants' wage potential, where nonstudent adults generally earn more than college students and were therefore paid more (Dickert & Grady, 1999). Conversely, the relatively high average time of participation (5.6 hr) and low average payment (USD 15.92) across the studies is inconsistent with the wage-payment model, as is the fact that payment for studies with children was higher than that with adults of either type. Thus, our findings are indicative of the functionality of the wage-payment model "on the ground," where certain elements of the model (e.g., paying more for more work) appear more feasible than others (e.g., paying a standard hourly wage) (Ripley et al., 2010a). Moreover, the relatively low levels of payment and risk suggest that payments were not undue, which is consistent with previous research (Latterman & Merz, 2001; Ripley et al., 2010a).

The finding that studies involving children paid more than studies involving nonstudent adults and college students is interesting, particularly in light of the ethical debate surrounding research payments to children (Bagley, Reynolds, & Nelson, 2007; Iltis, Matsuo, & DeVader, 2008; Ross, 2005; Wendler, Rackoff, Emanuel, & Grady, 2002). Specifically, there are concerns that children are more susceptible to undue influence from payment, and have limited capacity to understand the requirements of participation and the potential risks of participation (Taplin et al., 2019). However, considering that nearly all of our data came from minimal risk studies and the relatively low payment levels (the highest being USD 120 for a 46.5-hr study across 14 weeks), it is unlikely that child research participants were unduly influenced (Taplin et al., 2019; Wendler et al., 2002). In addition, research suggests that children are not at greater risk for undue inducement than other populations and that payments can be utilized to increase children's participation in research without concerns of undue inducement as long as they are age-appropriate (Bagley et al., 2007; Bentley & Thacker, 2004; Taplin et al., 2019). Higher payments in studies involving children in the present study may have been due to increased difficulty accessing and recruiting those populations, as well as the additional requirement of parent involvement for transportation, waiting time, and other potential assistance for their child to complete the study.

Our findings are supportive of the contention that concerns about undue influence have been overemphasized and that considering whether payments are too high should be secondary to considering whether payments are so low that they are exploitative (Emanuel, 2005; Largent & Lynch, 2017). In fact, due to unfounded concerns about undue influence, payment can conceivably be higher in low-risk

research such as in the cross-sectional study, depending on individual study budgets. That said, eliminating unnecessary risks, especially excessive risks of harm, and mitigating those that persist are fundamental responsibilities among researchers, ethics committees, and related entities independent of any payment. By exercising those responsibilities, concerns about undue influence are largely eliminated (Emanuel, 2005; Largent & Lynch, 2017; Singer & Couper, 2008).

Best Practices

The wide variation of payment practices across studies in the same region and populations suggests that decision-making for payment in research is haphazard. As such, we recommend that study authors describe their reasoning behind the payments they provided in their peer-reviewed manuscripts. Doing so would provide a starting point for gathering more data on how payment decisions are made. Currently, rationales behind payments are seldom, if ever, reported, and few institutions may have formal and standard payment policies based on study type and contextual factors of the research setting. Understanding how payment decisions are made is important for generating practical guidance.

This study's findings are limited in several ways. First, no statistical adjustments were made for multiple testing; therefore, the statistical significance of the reported associations may have been overly interpreted. However, all associations in research should be interpreted with attention to statistical adjustments. Second, the sample size was relatively small. The study protocols were all submitted in the same year and conducted at the same university. Thus, the findings may not generalize to other institutions or contexts. However, this was one of the first reviews of payment paired with study-related data which can give us a sense of how payment decisions are made. Third, all the studies were sociobehavioral, so the findings may not generalize to biomedical research, which is usually higher risk. However, as we were able to identify differences in lower risk studies, differences may also exist among higher risk studies. Finally, no studies differentiated between reimbursement for costs, compensation for time and burdens, and incentives for participation, which is inconsistent with a recent framework for providing ethical payments to research participants (Gelinas et al., 2018). Indeed, the words "incentive" and "compensation" were often used interchangeably in study protocols and the rationale behind payments was seldom articulated. As such, we were unable to identify the rationales behind decisions to pay research participants in these studies. However, the current study provides rationale for specifying the exact payment type in future research to overcome this challenge.

Table 2. Key Findings and Considerations.

- Our findings suggest that payment decisions are made by study type, participation type, participant type, time, and number of visits.
 - More time and more visits resulted in more monetary payments.
- Budgetary constraints and investigators' perceptions of relatively low risk may have contributed to low payment amounts.
 - Risks are usually not mentioned by regulatory guidelines as factors that should guide payment amounts.
- Certain elements of the wage-payment model, such as paying more for more work, appear more feasible than others, such as paying a standard hourly wage.
- The relatively low levels of payment and risk suggest that payments were neither undue nor coercive.
- Our findings support the idea that concerns about undue influence have been overemphasized and that considering whether payments are too high should be secondary to considering whether payments are so low that they are exploitative.
- Fewer than half of the studies provided monetary payment, so underpayment may be a concern for participants' time.
- Quantitative studies tended to provide higher payment compared to qualitative or mixed-methods studies.

Research Agenda

Future research should compare payment amounts in minimal risk and above minimal risk studies to investigate the influence of study risk on payments to research participants. In addition, future research should compare payment for similar studies in different locations to examine the role of institutional and geographic context on payment practices. Any research agenda should have the goal to develop guidance for payment in research.

Educational Implications

Guidance for payment in research should be provided as part of IRB applications. Doing so would enable key stakeholders in the research process—including funders, policy makers, study participants, ethics committee members, and researchers—to critically assess how payment decisions are made, how they report payment data, and how data can be used to develop payment policy. Our data alone are a sample of mostly minimal risk sociobehavioral studies at a single institution, and not meant to create standards of payment. More data from multiple institutions with studies of varying risk are needed.

Conclusion

Despite its limitations, this study is one of few that have analyzed study factors related to payments to research participants. Even fewer studies have examined payments in sociobehavioral research. We hope the findings will inform scholarly debate about the ethics of payments to research participants as well as guidelines for payment practices (see Table 2 for a summary of key findings and considerations).

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