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ORIGINAL ARTICLE—ETHICS

At What Price? The Current State of Subject Payment in Adolescent Research

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Purpose: **To examine how subject payment was associated with study features, such as investigator characteristics and project specifics, among randomly selected studies using adolescent subjects.**

Methods: **Using Psychinfo we gathered a list of original research studies published in 1999 that used adolescent subjects. We randomly selected corresponding authors and mailed confidential questionnaires on subject payment. We gathered complete data from 127 authors of adolescent research. While our main outcome was subject payment, we also examined the monetary value and form of the payment. Predictor variables included the principal investigator's demographics and professional information and the project's design and sample. Data were analyzed using Student's *t*-tests, Pearson correlations, and logistic regression.**

Results: **Of the studies using adolescent subjects, 55% (n = 61) involved payment. Total payment varied (range $1 to $600, mean = $82.35) and the mean value per session was $26.61. Investigator characteristics associated with payment were a principal investigator's current discipline area and the decade, level and area of highest educational degree obtained. Funding and protocol complexity were related to payment, as was the sample's size, gender composition, ethnic makeup, SES distribution, and at-risk status. Logistic regression analyses found that researchers using payment were 7.2 times more likely to have funding, 2.8 times more likely to work with at-risk youth, and for every unit increase in positive attitude toward compensation, there was a 1.1-fold increase in the likelihood of using payment.**

Conclusions: **Of those who responded to our questionnaire, slightly more than one-half the 1999 published studies done with adolescents used payment; however, the amount paid varied tremendously. © *Society for Adolescent Medicine, 2003***

KEY WORDS:
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In health research, participants often receive payments when they enroll in and complete research protocols. Researchers can use these payments as either incentives to entice individuals to participate or compensation to reimburse individuals for the time and effort that is involved in study participation. The purpose of such payments is often vague and construed differently by investigators as well as study participants. Regardless, even small financial payments can significantly increase sample sizes, response rates, and protocol compliance [1–4]. In fact, money may be the primary reason healthy subjects volunteer [5,6].

The literature on subject payment largely concentrates on ethical issues [6]. One ethical concern is whether payment disproportionately draws disadvantaged persons to take on the burden of participating in research [7–9]. Does payment offer an undue or coercive influence on the poor? It is easy to

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imagine that those who have limited or irregular income may be more susceptible to research participation when cash payments are being offered [10–13]. Offering money may alter why one agrees to be a subject and the nature of his or her participation [14]. If an economic reward convinces a subject to participate, whereas he or she would not if the reward were not offered, such payment may be compromising the integrity of the voluntary and altruistic act [6,13,15].

Addressing ethical issues is valuable but problematic when little is known on the current state of subject payment. A recent issue of the *American Journal of Bioethics* focused on the ethics of subject payment; however, only one piece contained actual data on how much research subjects are paid [6,10–13,15,16].

We have identified no published information on general trends regarding the prevalence, value, and preferred format of payments in adolescent research. How often and in what contexts are adolescents paid to participate in research protocols? Is there an expectation that one provides an incentive or compensates adolescent subjects? How much is appropriate and should it be in the form of cash, check, coupon, or gift?

The specific aim of this study was to gather benchmark information on the payment of adolescent subjects. We examined the association between payment and investigator characteristics and project specifics, including funding information, sample qualities, and research design and content. Although this work is descriptive, we did hypothesize that studies receiving funding would be more likely to pay adolescent subjects than those studies not receiving funding. Additionally, we hypothesized that simple and less invasive study protocols would offer no or less money than more complex and invasive study protocols. Studies using more elaborate designs, where participants had to exert more time and effort, might offer greater payment to ensure appropriate sample sizes and compliance.

Methods

Sampling

To assemble a representative sample of adolescent researchers and studies, we compiled a list of 1999 research abstracts that involved original research work with adolescent samples from the United States. We used the PsychInfo online computer database because it catalogues over 1600 journals and it represents the fields of psychology and related disciplines, such as medicine, psychiatry, nursing, sociology, education, pharmacology, physiology, linguistics, anthropology, business, and law. An additional feature of the PsychInfo database is that it provides the name and affiliation of the corresponding author.

The PsychInfo search done in Fall 2000 included research published in 1999, although the data may have been obtained years earlier. This approach excluded research published in journals not catalogued by this database as well as unpublished research. Also, our inclusion criteria ruled out many clinical studies that were industry-sponsored, such as cancer chemotherapy, or antibiotic trials run by pharmaceutical companies. Therefore, our sample may be likely to consist of more conventional, homogenous, and typical academic research.

From this search and inclusion criteria, we had a resulting list of 624 abstracts. We selected, at random, a sample of 40% of the studies; this allowed us to have generalizable data on 1999 research conducted with adolescents without incurring high costs. Upon critical inspection of the 250 studies, we found that despite specifying the criteria of "original research" in our PsychInfo search, 16 selected abstracts represented review papers, 10 were secondary analyses, and 4 were letters to the editor. We removed these from the sample and contacted the authors of the remaining 220 studies.

Three attempts by mail were made to contact corresponding authors. The first attempt was in August 2000, the second in November 2000, and the third in February 2001. In addition to the third mailing, we sent electronic mail reminders to those authors for whom we could identify current e-mail addresses. Although we are unaware of the actual number of undeliverable envelopes, 37 surveys were returned to us by the postal service because of incorrect or unknown addresses.

Our final sample consisted of 127 returned surveys (77 from the first, 20 from the second, and 30 from the third mailing). We had 122 unique authors provide information, because 5 individuals had more than one study represented in our sample. However, 7 respondents did not provide information as to whether payment for research was provided and as a result, analyses were conducted with 120 cases. Each survey contained a cover letter explaining the nature of the research and assurances of confidentiality. The Mount Sinai School of Medicine Panel on Human Subjects in Medical Research approved this study's

protocol and survey instruments. We offered no payment to participants of this research.

Survey

Our four-page questionnaire (available from authors) asked corresponding authors to provide information on the principal investigator and the referred study. We gathered data about the principal investigator's gender, ethnicity, and current employment sector and title. We also asked about the principal investigator's highest degree received, including field, year, and institution where training occurred. Other than requesting subjects to write in the institution's name, all investigator questions offered close-ended categorical responses.

Referring to the selected 1999 study, we asked when the project and data collection happened and whether the project was funded (source, amount, and length of funding). Besides describing the study's design (i.e., chart review, interview, experiment, etc.), authors gave information on the subject recruitment site and consent procedures. Authors answered questions on the sample's demographics, including size, gender, age, ethnic, socioeconomic, and "risk" composition. Our survey also collected information on the health behavior being studied. Most questions were fill-in-the-blank responses; respondents were given space to describe information about their research project.

Information on subject payment included details on decisions to use payment and the type and monetary value of payment. A battery of six questions [using a 5-point Likert scale from "strongly disapprove" (0) to "strongly approve" (4)] were used to assess the corresponding author's feelings about subject payment, varying across different hypothetical study settings and types of research protocols (Cronbach alpha = 0.82). Individual items were summed to generate a total score for attitudes toward subject payment, with higher scores reflecting positive attitudes across settings for subject payment with adolescent subjects. The mean of this scale was 24.49 (SD = 4.51) with a range of scores from a low of 6 to a high of 30.0.

Statistical Analyses

Studies that did or did not pay adolescent subjects were compared to assess associations between payment and various study characteristics, such as data on the investigator, funding of the study, and the research design and content. Contingency table analyses were the primary analytic method. Differences in the average amount of payment (among studies providing payment) were compared by Student's *t*-tests and Pearson correlations. Lastly, we employed a forward stepwise logistic regression to examine those variables that added a significant and unique contribution to modeling whether payment was offered. Variables significant at the $p < .10$ level were included in the initial model and all analyses were conducted using SPSS 10.05 (Chicago, IL). As we proceeded with the multivariate analyses, those variables that were not significant were separately removed from resulting models to assess the relative contribution and effect on significant variables. In the final model, only six variables were included in the logistic regression, as they represented those variables that produced the best fit and the highest classification of cases without affecting the beta weights and standard deviations of the significant variables. When variables were not dichotomous, we used dummy variables in the model and specified the reference group in the results.

Results

Among the studies represented in our sample, we found that 55% involved subject payment. As observed in Table 1, a principal investigator's current discipline area and the decade, level, and area of his or her highest degree obtained was associated with subject payment. Table 2 shows characteristics of the study design and funding. Type of protocol used and funding status are significantly related to whether payment was used. Table 3 presents data on sample characteristics, including sample size, gender composition, ethnic makeup, SES distribution, and at-risk status, that are associated with subject payment. Of those studies where adolescent subjects received payment, 50% were given cash, 37.5% coupons, 7.8% gifts, and 4.7% checks.

Ranging from $1 to $100, the mean value of payment given per session to an adolescent subject was $26.61 (SD = 28.19). Across multiple sessions, the total amount of payment ranged from $1 to $600 with a mean of $82.35 (SD = $111.88). There was a strong and positive correlation between number of sessions and total amount values ($r = 0.81$, $p < 0.01$). Considering payment given per session, significant differences were observed for sample size [$F = 5.8$; df = 2, 53; $p = .005$], with mid-sized samples receiving the greatest average payment ($36.10 for samples

Table 1. Demographic Information About Principal Investigators[a]

	Total (n = 120) N (%)	Payment Provided (n = 66) %	p value
Gender			
Male	61 (48.0)	48.2	
Female	66 (52.0)	60.9	.112
Ethnicity			
White	110 (86.6)	52.9	
Asian	8 (6.3)	85.7	
Latino	5 (3.9)	60.0	
Black	4 (3.1)	50.0	.400
Current discipline area			
Psychology	54 (42.5)	68.6	
Medicine/health	30 (23.6)	39.3	
Sociology	17 (13.4)	73.3	
Education	9 (7.1)	11.1	
Human/family development	9 (7.1)	66.7	
Other	8 (6.3)	25.0	.003
Current title			
Professor	45 (35.4)	62.8	
Associate professor	25 (19.7)	52.2	
Assistant professor/ instructor	23 (18.1)	47.8	
Researcher	11 (8.7)	70.0	
Student/postdoctoral fellow	17 (13.4)	50.0	
Other	6 (4.7)	20.0	.398
Decade highest degree obtained			
≥ 1990	31 (25.8)	55.2	
1980–1989	45 (37.5)	54.8	
1970–1979	37 (30.8)	71.4	
< 1970	7 (5.8)	14.3	.040
Highest degree obtained			
Ph.D.	96 (75.6)	62.0	
M.D./D.P.H.	18 (14.2)	41.2	
Ed.D.	8 (6.3)	25.0	
Masters/bachelors	3 (2.4)	0.0	
Other	1 (0.8)	0.0	.046
Discipline of highest degree obtained			
Psychology	45 (38.5)	66.7	
Sociology	17 (14.5)	70.6	
Medicine	13 (11.1)	46.2	
Education	12 (10.3)	25.0	
Child development/ family studies	12 (10.3)	50.0	
Public health/nursing	5 (4.3)	0.0	
Biology	3 (2.6)	66.7	
Other (anthr., econ., Comm, etc.)	10 (8.5)	40.0	.024

[a] Denominator term varies across variables owing to missing data. Percentages may not total 100 because of rounding.

Table 2. Characteristics of the Study[a]

	Total (n = 120) N (%)	Payment Provided (n = 66) (%)	p value
Protocol or design type			
Observational	2 (1.6)	50.0	
Survey/questionnaire	49 (40.2)	35.4	
Chart review/Standard medical test	7 (5.7)	16.7	
Focus group	3 (2.5)	66.7	
Interview	16 (13.1)	81.3	
Intervention/experimental	11 (9.0)	63.6	
Multiple methods/longitudinal	34 (27.9)	75.0	.002
Recruitment site			
Home	12 (10.6)	66.7	
School or camp	45 (39.8)	40.0	
Clinic, hospital or medical setting	34 (30.1)	61.8	
Community center	5 (4.4)	20.0	
Street/shelter	7 (6.2)	100.0	
Residential or correctional facility	8 (7.1)	57.1	
College or university	2 (1.8)	100.0	.019
Project funded			
Yes	86 (70.5)	71.1	< 0.001
Among funded projects, funding type			
Internal	68 (82.9)	74.6	
External	14 (17.1)	50.0	.068

[a] Denominator term varies across variables due to missing data. Percentages may not total 100 because of rounding.

with 101–2000 subjects, compared with $12.06 for samples with fewer than 100 subjects, and $8.67 for samples with more than 2000 subjects). Where samples were comprised of mostly or all white adolescents, the average value per session was $58.33 and this was significantly greater than research using subjects from several ethnic groups ($26.57) or mostly or all minority adolescents ($16.95) [$F = 4.3$; $df = 2, 47$; $p = .019$]. Those projects where coupons were given had the highest dollar value (avg. = $44.31) compared with those giving cash (avg. = $19.14), gifts (avg. = $5.80), or checks (avg. = 8.33) [$F = 6.2$; $df = 3, 51$; $p = .001$]. Interestingly, the average value of payment given per session was not associated with the total amount of funding a project received. Finally, researchers who provide payment to adolescent subjects were found to have significantly more positive attitudes toward payment (avg. = 25.9) as compared with those who did not provide payment (avg. = 22.5)[$t = -4.35$; $df = 118$, $p = .001$].

The results of the logistic regression analyses found three variables significantly associated with subject payment when controlling for researcher discipline, sample size, and socioeconomic status of the sample. As might be anticipated, researchers using payment were 7.2 times more likely to report that the research project had internal or external funding (95% CI = 2.4–22.2) compared to those with

Table 3. Study Sample Chracteristics[a]

	Total (n = 120) N (%)	Payment Provided (n = 66) (%)	*p* value
Size			
1–100	32 (26.9)	61.3	
101–2000	72 (60.5)	60.0	
≥ 2000	15 (12.6)	26.7	.049
Gender composition			
All female	18 (15.3)	70.6	
Mostly female	23 (19.5)	34.8	
50/50	63 (53.4)	56.5	
Mostly male	9 (7.6)	88.9	
All male	5 (4.2)	25.0	.025
Mean age (years)			
≤ 13	20 (17.9)	38.9	
14	17 (15.2)	64.7	
15	30 (23.6)	66.7	
16	25 (19.7)	41.7	
≥ 17 r	20 (15.7)	60.0	.191
Ethnicity composition			
All or mostly minority	13 (12.3)	92.3	
Mixed	82 (64.6)	51.3	
All or mostly white	11 (10.4)	70.0	.015
Socioeconomic status composition			
Low income	33 (40.7)	75.0	
Working class	15 (18.5)	73.3	
Middle and upper class	15 (18.5)	26.7	
Mixed/all classes	18 (22.2)	38.9	.003
Type			
From the general population	62 (50.0)	45.8	
From "at-risk" populations	62 (50.0)	63.9	.034
Health risk behavior examined			
None	50 (40.3)	63.3	
Substance use (Cigarettes, alcohol, drugs)	22 (17.3)	60.0	
Sexual behaviors	21 (16.9)	55.0	
Violent or antisocial behaviors	16 (12.9)	50.0	
Eating disorders	10 (8.1)	10.0	
General health risks	5 (4.0)	60.0	.077

[a] Denominator term varies across variables due to missing data. Percentages may not total 100 because of rounding.

no funding. In addition, researchers who provided payment were 2.8 times more likely to report that the sample was comprised of at-risk rather than not -at-risk youth (95% CI = 1.1–7.1) and for every unit increase in positive attitude there was a 1.1-fold increase in likelihood of using payment (95% CI = 1.0–1.3).

Discussion

We found that 1 in 2 respondents provided some form of payment to adolescents for their participation in research. Moreover, bivariate and multivariate analyses revealed that several factors were significantly correlated and increased the likelihood of subject payment.

We found a wide range of payment remuneration, ranging from $1 to $600, with larger amounts correlated with increased number of research sessions. Although cash was the most common form of payment, we found that those who used coupons provided the highest monetary value of payment. Although funding status related to whether adolescent subjects were paid, no association was found between the amount of study funding and the value of payment given per session.

Of note, we found associations between payment and several investigator characteristics, such as area and decade highest degree was obtained. It is possible that certain trends are established among cohorts so that payment becomes the norm.

Socioeconomic and risk status of the sample were also statistically associated with payment. Low income and working class adolescents were more likely to be paid than middle and upper class adolescents. Samples consisting mainly of at-risk adolescents were more likely to be paid. Interestingly, the association of SES disappeared in multivariable analysis, whereas risk status remained; this may represent subtle and complex interactions of SES and risk behaviors.

Considering our first hypothesis, we were not surprised to find in our multivariate analysis the strong and significant association between having funding and offering subject payment. Researchers who obtain external money to conduct research often "budget in" subject payment, so paying subjects is not an extra financial burden. Those who do research using their own resources are often on tight budgets and may not have extra money to give to participating subjects.

With our second hypothesis, we found mixed results. In our bivariate analyses, there was evidence that protocol complexity was associated with subject payment. In our multivariate analysis, however, this variable was not significant. Although it seems reasonable that researchers would offer adolescents payment when protocols required multiple visits and/or a variety of time-intensive or invasive data collection methods, our study did not show this factor to remain significant when controlling for other investigator or study variables. It is possible that different factors obscured the effect of protocol complexity.

Our study was small and had a number of limitations. Regardless of efforts to have a representative

sample, it is possible that our sample was biased. Some surveys were never returned; we cannot tell whether this lack of response is owing to incorrect addresses or unwilling authors. It is possible that many of the "missing" authors were students or in fellowship programs at the time their studies were published. Our sample may have consisted of more established researchers, whose addresses remained the same or were available through Internet searches.

For this work, we relied on the completion of a mailed survey. Commonly, mail surveys of the general population have return rates around 40%, and those that include compensation (as small as $1.00) have rates between 55 and 65% [14,17]. Research requiring physicians to complete surveys showed return rates around 60% when prepaid incentives were given [2]. In comparison to other studies, our return rates, which at first glance seem low, are comparable to and even better than other mail surveys.

We made sincere efforts to consider the published papers of selected abstracts of nonresponders to have a more complete dataset and also to see how responders compared with nonresponders. For sampling, design, and content, the studies of the responders resembled those of the nonresponders; however, we found it difficult to compare on our primary question variable of subject payment. It became apparent that authors fail to report whether payment is used, making it impossible to consider the generalizability of our responders. We would strongly recommend that authors standardize the reporting of subject payment, indicating total and research session amounts, the format, and the underlying purposes of subject payment.

Limitations

This article describes a small-scale study to collect preliminary data on subject payment within adolescent research. We would like to see future efforts that continue to collect information on this topic. In this work, we used a simple self-report survey; future work ought to collect more detailed data to better understand which research work involves subject payment. For example, we neglected to collect geographic information on where data collection occurred. In reviewing our abstracts and surveys, we know that some studies were national studies with multiple data collection sites around the United States; other studies happened within a single clinical locale. Geographic information, or even knowing if most data collection occurred in urban, suburban, or rural sites could be related to the value of payment offered.

Subject payment supposedly does not affect data quality. Studies with general populations have shown no significant difference in the proportion of missing values or "can't choose" answers among participants who do or do not receive payment (18). Similarly, no significant differences in the age, sex, or education profiles have been found among those who have and have not been paid [13]. Increases in the value of monetary payments beyond a certain symbolic level seem to yield little additional improvement in response rates [14]. Certainly, this must be investigated in the field of adolescent research and we recommend that experimental designs be employed to examine hypotheses about the influence of payment. In doing such work, we suggest that researchers vary their descriptions on the purpose of subject payment. In some cases, researchers should indicate that payment is being used as an incentive; in others, researchers should tell subjects that the payment is there to compensate for subjects' time and effort. Such an experiment could provide information on whether payment purpose influences study results.

Paying subjects raises concerns among researchers, especially among those working with certain populations. One concern is that if cooperative subjects hear that reluctant subjects are being compensated for their participation, it will adversely affect the cooperative subjects' attitudes [14] and willingness to participate in the future [19]. To obtain uncoerced participation, some researchers recommend that offered money be equivalent to "the mean hourly salary of those in the demographic pool of potential participants multiplied by the anticipated actual research contribution time" [6,20]. This can be difficult to achieve with young samples because determining the value of an adolescents' time and effort is an imprecise art, as compared with determining compensation levels for adults who are considerably more of aware of their hourly or daily rates [6,10].

If subject payment becomes frequent, so will be the expectation of payment. This is another concern among researchers who must include subject payment as a substantial line item in proposal budgets. Although some universities have certain protocols and others call attention to the ethical issues that payments raise [6–8,15–17,20,21], many of our respondents reported that their academic institutions offered little guidance on this issue. We would recommend that institutional review boards develop

clear policies on subject payment, taking into account study populations, topics, and protocols. We hope that research studies such as ours can offer data contributing to the discussion on subject payment.

As a final note, we wish to advise that although the words "incentives" and "compensation" are often exchanged, they connote different things and ought to be used carefully.

Conclusion

In future work, researchers must be more precise in describing incentives as currency and gifts used to entice participation and compensation as monies offered to reimburse for a subject's effort and time.

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