Effect of Reminders of Personal Sacrifice and Suggested Rationalizations on Residents' Self-Reported Willingness to Accept Gifts
A Randomized Trial

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WHY DO MANY PHYSICIANS feel comfortable accepting gifts from pharmaceutical and medical device manufacturers that raise ethical concerns about conflicts of interest (COIs)? Studies have examined the extent of physician-industry relationships,[1,2] identified strategies used in pharmaceutical sales and marketing,[3,4] explored the potential effect of gifts on physician prescribing behavior,[1,5] and advocated policies to reduce the influence of COIs.[6] However, little work has examined how physicians rationalize acceptance of questionable ties to industry. One of the few studies to do so found that although physicians interviewed in focus groups appreciated the hazards posed by COIs, they used a variety of strategies to rationalize placing themselves in conflicted situations, including not thinking about the COI, denying an effect on their prescribing behavior, rejecting responsibility for the problem, and using diverse techniques intended to resist or undo bias.[7]

One specific rationalization uncovered in a study of third-year medical students justifies acceptance of gifts on the basis of the hardships associated with medical training and practice.[8] Eighty percent of respondents in that study endorsed the view that they were entitled to gifts from industry because of hardship, described as "considerable debt and minimal income."[8] Adams' equity theory postulates that individuals who believe they are underpaid will respond by lowering their input (ie, their work contributions) or by attempting to raise their rewards.[9] The pharmaceutical industry may recognize the value of treating physicians well, and physicians in return may

Context Despite expanding research on the prevalence and consequences of conflicts of interest in medicine, little attention has been given to the psychological processes that enable physicians to rationalize the acceptance of gifts.

Objective To determine whether reminding resident physicians of the sacrifices made to obtain training, as well as suggesting this as a potential rationalization, increases self-stated willingness to accept gifts from industry.

Design, Setting, and Participants Three hundred one US resident physicians from 2 sample populations (pediatrics and family medicine) who were recruited during March-July 2009 participated in a survey presented as evaluating quality of life and values.

Intervention Physicians were randomly assigned to receive 1 of 3 different online surveys. The sacrifice reminders survey (n=120) asked questions about sacrifices made in medical training, followed by questions regarding the acceptability of receiving gifts from industry. The suggested rationalization survey (n=121) presented the same sacrifice questions, followed by a suggested possible rationalization (based on sacrifices made in medical training) for acceptance of gifts, before the questions regarding the acceptability of gifts. The control survey (n=60) asked about the acceptability of gifts before asking questions about sacrifices or suggesting a rationalization.

Main Outcome Measures Physician self-stated acceptability of receiving gifts from industry.

Results Reminding physicians of sacrifices made in obtaining their education resulted in gifts being evaluated as more acceptable: 21.7% (13/60) in the control group vs 47.5% (57/120) in the sacrifice reminders group (odds ratio, 1.81; 95% confidence interval, 1.27-2.58; P=.001). Although most residents disagreed with the suggested rationalization, exposure to it further increased the perceived acceptability of gifts to 60.3% (73/121) in that group (odds ratio relative to sacrifice reminders group, 1.45; 95% confidence interval, 1.22-1.72; P<.001).

Conclusions Providing resident physicians with reminders of sacrifices increased the perceived acceptability of industry-sponsored gifts. Including a rationalization statement further increased gift acceptability.

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think that they are worthy of that treatment. These justifications could override reservations about the inappropriateness of accepting gifts.

Whereas research has shown that medical students endorse the idea that hardships can justify acceptance of gifts, it has not documented a causal connection (or even correlation) between the perception of hardship and attitudes toward the acceptance of gifts. To test for a causal connection, we conducted a randomized study to examine whether early-career physicians who are reminded of personal sacrifices and, hence, provided with implicit justifications for ethically questionable behavior would evaluate that behavior as more acceptable. We also tested whether providing a suggested potential rationalization (that inadequate compensation and poor working conditions might justify accepting gifts) further increases the reported acceptability of gifts.
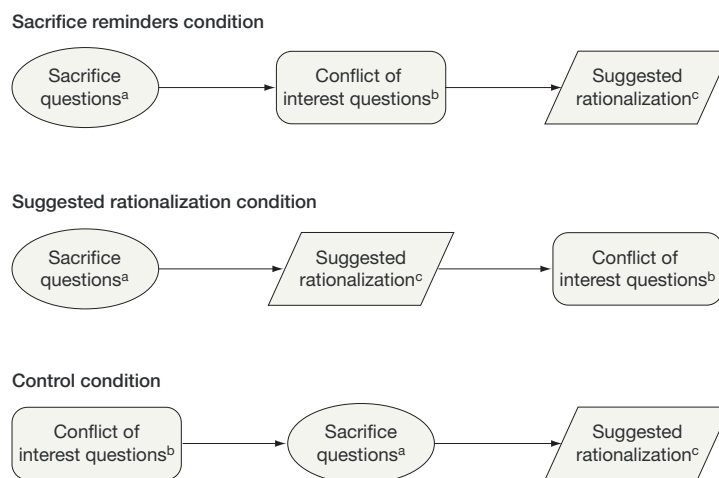
METHODS
Participants

We recruited from 2 resident populations to achieve a minimum target of 300 residents, consistent with power calculations (presented herein). The first sample was pediatrics residents from the Children's Hospital of Pittsburgh, Pittsburgh, Pennsylvania, collected during March 2009. All 100 residents received 3 e-mail requests from the chief pediatric resident encouraging them to complete a 3-minute survey and offering each a $20 online shopping voucher if more than 80% responded.

The second sample consisted of family medicine residents. Pediatricians are less likely than family physicians to receive samples, reimbursements, and payments for professional services from industry[10]; therefore, inclusion of family medicine residents increases the generalizability of the results. Six e-mail requests containing a link to the surveys were sent to family medicine residency directors via the program director of the Forbes Family Medicine Residency, West Penn Allegheny Health System, Pittsburgh: the first 3 in April

2009 to 30 Pennsylvania family medicine residency directors (representing potential access to 600 family medicine residents) and the next 3 in July 2009 to approximately 420 family medicine residency directors in the rest of the United States. The e-mails requested that residency directors forward the information to their residents. For this sample, the incentive for responding was a portable media player for every 1 in 100 respondents. Because we had no direct contact with the family medicine directors, we could not establish how many residents ultimately received the solicitation.

Study Design

The introduction to the survey described its purpose as collecting information on quality of life, expectations, and values and did not mention COIs. The study protocol was approved by the institutional review board of Carnegie Mellon University, Pittsburgh, and included a waiver for written consent.

The 3 main conditions were sacrifice reminders, suggested rationalization, and control (FIGURE 1). In the sacrifice reminders group, physicians were

asked about the sacrifices they had made to obtain their medical education (eFigure 1; available at http://www.jama.com). In the suggested rationalization group, physicians first answered the same sacrifice questions, then were asked whether they agreed or disagreed (on a 5-point Likert scale) with the following statement: "Some physicians believe that the stagnant salaries and rising debt levels prevalent in the medical profession justifies accepting gifts and other forms of compensation and incentives from the pharmaceutical industry." Next, both groups were asked a series of questions, mainly about the acceptability of receiving gifts from industry (eFigure 2). In the control group, physicians were asked these questions before the sacrifice questions. In the sacrifice reminders and control groups, agreement with the rationalization was elicited at the end of the questionnaire. Agreement with the rationalization was defined to include "neither agree nor disagree," "agree," and "strongly agree."

Sacrifice Reminder Questions. Six questions were intended to remind physicians of sacrifices they made to obtain

Figure 1. The 3 Main Conditions

Each group was presented with the same 3 sets of questions but in different order, as shown.
[a] Questions on the number of hours worked, hours of sleep, salary, and education-related debt.
[b] Questions on the acceptability of receiving gifts.
[c] "Some physicians believe that the stagnant salaries and rising debt levels prevalent in the medical profession justifies accepting gifts and other forms of compensation and incentives from the pharmaceutical industry. To what extent do you agree or disagree that this is a good justification?"

their medical training, including hours worked, hours of sleep, salary, and education-related debt (eFigure 1). Those in the sacrifice reminders and suggested rationalization groups were further randomly assigned to "feel-rich" and "feel-poor" subgroups designed to manipulate the degree of perceived sacrifice. Because the mean annual salary for residents was estimated at about $42 000 and the mean hours of sleep while on call at approximately 2.5 (based on the pilot described herein), the response categories for salary and sleep were varied to give high- or low-category mean responses. The differing response options ensure that more physicians in the high categories answer in lower response options than those in the low categories; eg, for the feel-poor subgroups, the lowest category for salary is $0 to $100 000 and the highest category is $350 000 or higher vs $0 to $20 000 and $50 000 or higher, respectively, for the feel-rich subgroups. To enable comparison of responses between the groups, the control group was also randomized to feel-rich and feel-poor subgroups, but the related questions were asked after the dependent variable (gift acceptability) was collected, so this randomization did not constitute an experimental manipulation.

The final question in this section, "How do you feel about your working conditions?" served as a manipulation check for the feel-rich and feel-poor subgroups. Having poor working conditions was defined as those who responded "okay," "bad," and "very bad." It was expected that those in the feel-poor subgroups would have a more negative perception of their working conditions.

COI Questions. The scale eliciting attitudes toward COIs consisted of 10 items querying the acceptability of different practices (eFigure 2), with responses ranging from 1 (strongly agree) to 5 (strongly disagree). To disguise the survey's true focus, the COI questions were interspersed with 4 questions addressing quality of life and ethical issues arising in medicine.

The remaining survey questions consisted of characteristics such as postgraduate year and the hospital and state the respondent practiced in (eFigure 3). The survey was pretested on a sample of 5 physicians. Protocol analysis was used to refine question wording and examine appropriateness of response categories. A pilot, without incentives for participation, was then conducted among 73 internal medicine residents in 3 Pittsburgh hospitals (Shadyside, Montefiore, and Veterans Affairs) to assess the appropriateness of the sacrifice manipulation and the reliability of the scale.

Sample Size. On clicking the link to participate, each physician was randomly assigned by a computerized random number generator (using a uniform distribution) to 1 of 5 conditions (**FIGURE 2**). Using variance estimates from the pilot group, a target sample size of 300 residents (n=60 in each of 5 conditions) provided 90% power to detect a difference of 0.25 between population means, $\frac{1}{20}$ of the range of the 5-point scale. With 93 pediatric resident responses from Children's Hospital of Pittsburgh, we set a target of 210 responses from family medicine residents and closed the family medicine survey after 230 responses.

Statistical Analysis
The main dependent measure was the acceptability of receiving gifts, as derived from responses to the 10 COI questions. Analysis of the pilot data revealed high scale reliability (Cronbach α=0.85). Responses to the 10 questions were summed, with the scale reversed so that higher numbers correspond to greater acceptability. This resultant range of scores, from 10 to 50, was then divided by the maximum possible score (50), resulting in a scale that could range from 0.2 to 1. We converted this scale, using the mean, to a dichotomous 1 (acceptable) vs 0 (unacceptable) variable. Any score at or above the mean was given an acceptable rating and scores below the mean were converted to unacceptable.

The main analysis consisted of logistic regression models to estimate odds ratios (ORs) of the main dependent variable (acceptability of gifts) across conditions. We used contrast-coding dummies for the main conditions, which provide estimates of the effect of the sacrifice reminders condition vs the control condition and of the suggested rationalization condition vs the sacrifice reminders condition. Although dummy variables commonly compare both conditions to a baseline, we were interested in whether the suggested rationalization condition (which includes sacrifice reminder questions) gives an additional effect over the sacrifice reminders condition.[11] Covariates for sample and postgraduate year were initially included in every model.

The first model included indicator variables for the sacrifice reminders condition (relative to the control condition) and for the suggested rationalization condition (relative to the sacrifice reminders condition). Analyses were conducted on the complete sample as well as separately for the 2 samples (pediatric residents and family medicine residents). The second model added further variables to gain a more specific picture of the factors that are associated with gift acceptability; this model added a dummy variable for agreement with the rationalization statement and interactions between conditions (sacrifice reminders and suggested rationalization) with this dummy variable.

To examine the effect of the rich-vs-poor manipulation, the sample was restricted to only those in the sacrifice reminders and suggested rationalization groups (since the rich-vs-poor questions came after measures of the dependent variable in the control group), and the final model included explanatory dummy variables for the suggested rationalization and feel-poor conditions.

In addition to ORs, we report comparative percentages and χ^2 statistics. To explore differences between the samples and conditions and to check manipulations, we used analysis of variance, χ^2 tests, and logistic regression. Before conducting analyses of variance, we tested for equality of variances across groups using the Levine

test for homogeneity and checked for nonnormality. $P < .05$ was considered statistically significant. The absence of baseline measures precluded intention-to-treat analysis; however, only 10 participants were lost and were equally distributed across groups. All tests were 2-sided. Data were analyzed using SPSS software, version 16.0 (SPSS Inc, Chicago, Illinois). An alternative analysis using a ratio scale and linear regressions produced similar results and is shown in eTable 1.

RESULTS

The number of participants in each group and sample is shown in Figure 2. Excluding nonresidents and respondents with incomplete data, the final sample consisted of 301 residents, 90 pediatric residents (93% response rate before exclusions) and 211 family medicine residents. The family medicine resident sample included responses from 26 different states and 65 hospitals/medical centers (with 1-12 residents per hospital). Aggregated across both samples,

95% were in the first 3 years of residency. Similar to the pilot, reliability analysis yielded a Cronbach α of 0.90 for the 10 questions. The scale for acceptability of receiving gifts ranged from 0.24 to 1, with a mean and median of 0.64 before conversion to a dichotomous acceptable/unacceptable score. The binary cutoff for "acceptable" was the mean of the scale, 0.6401; scores at or above this cutoff were converted to acceptable and any score below it was converted to unacceptable.

Figure 2. Participant Flow
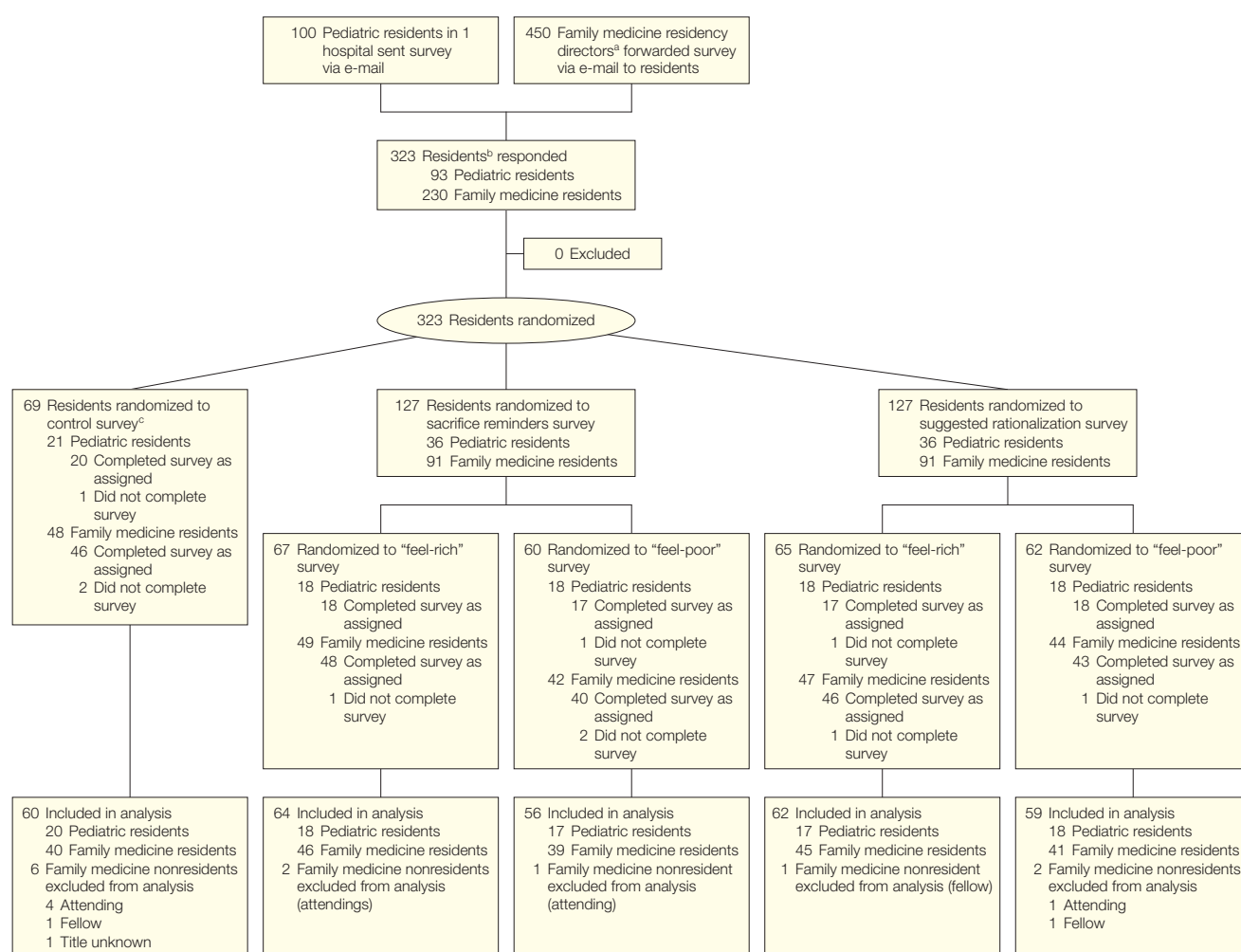
[a]The number of residency directors receiving requests is approximate.
[b]Some respondents were nonresidents and were excluded from the analysis as shown below.
[c]To enable comparison of responses between the groups, the control group was also randomized to feel-rich and feel-poor subgroups, but only after the dependent variable was measured, so this did not constitute an experimental manipulation. Within the control group, 27 were allocated to feel-rich and 33 to feel-poor subgroups.

Table. Participant Characteristics

Characteristics	No. (%) of Participants			P Value for Differences Between Groups[a]
	Control (n = 60)	Sacrifice Reminders (n = 120)	Suggested Rationalization (n = 121)	
Postgraduate year				
1	26 (43.3)	50 (41.7)	45 (37.2)	.85
2	17 (28.3)	30 (25.0)	36 (29.8)	
3	13 (21.7)	34 (28.3)	35 (28.8)	
≥4 and chief residents	4 (6.7)	6 (5.0)	5 (4.1)	
Working h/wk				
≤50	8 (13.3)	8 (6.7)	11 (9.1)	.20
51-60	10 (16.7)	22 (18.3)	23 (19.0)	
61-70	18 (30.0)	31 (25.8)	41 (33.9)	
71-80	19 (31.7)	41 (34.2)	38 (31.4)	
≥81	5 (8.3)	18 (15.0)	8 (6.6)	
Annual salary, $[b]				
Feel poor				
0-100 000	33 (100)	56 (100)	57 (96.6)	.22
100 000-150 000	0	0	2 (3.4)	
150 000-200 000	0	0	0	
200 000-250 000	0	0	0	
250 000-300 000	0	0	0	
300 000-350 000	0	0	0	
>350 000	0	0	0	
Feel rich				
0-20 000	1 (3.7)	1 (1.6)	0	.33
20 000-25 000	0	1 (1.6)	0	
25 000-30 000	0	1 (1.6)	0	
30 000-35 000	2 (7.4)	2 (3.1)	3 (4.8)	
35 000-40 000	3 (11.1)	6 (9.4)	1 (1.6)	
40 000-50 000	18 (66.7)	43 (67.2)	53 (85.5)	
>50 000	3 (11.1)	10 (15.6)	5 (8.1)	
On-call sleep per night, h[b]				
Feel poor				
0-5	31 (92.9)	55 (98.2)	54 (91.5)	.28
5-6	2 (6.1)	1 (1.8)	5 (8.5)	
6-7	0	0	0	
7-8	0	0	0	
8-9	0	0	0	
>9	0	0	0	
Feel rich				
0-0.5	6 (22.2)	13 (20.3)	8 (12.9)	.09
0.5-1	7 (25.9)	11 (17.2)	10 (16.1)	
1-1.5	2 (7.4)	6 (9.4)	9 (14.5)	
1.5-2	8 (29.6)	14 (21.9)	8 (12.9)	
2-3	4 (14.8)	11 (17.2)	18 (29.0)	
>3	0	9 (14.1)	9 (14.5)	
Non–on-call sleep per night, h				
Feel poor				
0-6	3 (9.1)	13 (23.2)	7 (11.9)	.07
6-7	13 (39.4)	28 (50.0)	39 (66.1)	
7-8	17 (51.5)	13 (23.2)	11 (18.6)	
8-9	0	2 (3.6)	2 (3.4)	
9-10	0	0	0	
>10	0	0	0	

(continued)

Table. Participant Characteristics (continued)

	No. (%) of Participants			
Characteristics	Control (n = 60)	Sacrifice Reminders (n = 120)	Suggested Rationalization (n = 121)	P Value for Differences Between Groups[a]
Non–on-call sleep per night, h				
Feel rich				
0-2	0	0	0	
2-3	1 (3.7)	1 (1.6)	0	
3-4	0	2 (3.1)	0	.13
4-5	2 (7.4)	1 (1.6)	4 (6.5)	
5-6	12 (44.4)	19 (29.7)	16 (25.8)	
>6	12 (44.4)	41 (64.1)	42 (67.7)	
Perception of working conditions[c]				
≤2	5 (8.3)	8 (6.7)	6 (5.0)	
3	25 (41.7)	43 (35.8)	44 (36.4)	.96
4	16 (26.7)	48 (40.0)	55 (45.5)	
5	14 (23.3)	21 (17.5)	16 (13.2)	
Rationalization[d]				
1	21 (35.0)	29 (24.4)	19 (15.7)	
2	21 (35.0)	52 (43.7)	45 (37.2)	.005
3	11 (18.3)	26 (21.8)	35 (28.9)	
≥4	7 (11.7)	12 (10.1)	22 (18.1)	
Borrowed money for medical training	49 (81.7)	83 (69.2)	96 (79.3)	.09[e]
Receipt of gifts acceptable[f]	13 (21.7)	57 (47.5)	73 (60.3)	<.001[e]

[a] By analysis-of-variance test unless otherwise indicated.
[b] In the control group, participants were also randomized into subgroups of "feel rich" and "feel poor" after the dependent variable (acceptability of gifts) had been measured to enable testing for comparability of groups resulting from randomization.
[c] Working conditions were rated on a 5-point Likert scale (1 = very bad; 5 = very good).
[d] Rationalization was rated on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree).
[e] By χ^2 test.
[f] Acceptability was dichotomized as described in the "Methods" section of the text.

Differences Between Samples and Randomized Groups

Differences between the 2 samples are displayed in eTable 2. There were no significant differences between the pediatric and family medicine residents in working hours, salary, non–on-call sleep, whether they borrowed money to fund their education, agreement with the rationalization, and acceptability of gifts. However, relative to pediatrics residents, family medicine residents were more likely to be male ($P<.001$), to be in their first year ($P<.001$), to report sleeping more hours when on call ($P<.001$), and to have a more positive perception of their working conditions ($P=.001$).

There were no significant differences among the 3 randomized groups in reported postgraduate year, working hours, salary, sleeping hours, education-related debt, and perception of working conditions (TABLE). As intended, there were significant differences in the salary and sleep items be-

tween the feel-rich and feel-poor subgroups such that more responses were in the lower categories (1 or 2) in the feel-poor than in the feel-rich subgroups. In regard to salary, 100% (148/148) of those in feel-poor subgroups responded in the lower categories vs 2% (3/153) of those in feel-rich subgroups ($\chi^2=290$; $P<.001$), Similarly, for on-call sleep, 100% (148/148) of those in feel-poor subgroups responded in lower categories vs 35.9% (55/153) of those in feel-rich subgroups ($\chi^2=186$; $P<.001$); for non–on-call sleep, 69.6% (103/148) responded in lower categories in feel-poor subgroups vs 1.3% (2/153) in feel-rich subgroups ($\chi^2=275$; $P<.001$).

Of the physicians surveyed, 94% (282/301) thought that their working conditions were okay, good, or very good on a 5-point scale ranging from very bad to very good. Only 6% (19/301) reported bad or very bad working conditions. The results of the rich-vs-poor category manipulation on the

sacrifice questions were consistent with the intended influence on what physicians thought about their working conditions. Poor working conditions were reported by 50.0% (74/148) of those in the feel-poor subgroups compared with 37.3% (57/153) in the feel-rich subgroups ($\chi^2=4.97$; OR, 1.68; 95% confidence interval [CI], 1.06-2.67; $P=.03$).

Rationalization Statement

Of the residents, 37.5% (113/301) agreed with the rationalization. More agreed with the rationalization statement in the suggested rationalization group (in which the statement came immediately after the sacrifice questions but before the COI questions) (47.1% [57/121]) compared with those who received it at the end of the survey in the control or sacrifice reminders groups (30.0% [18/60] and 31.7% [38/120], respectively; $\chi^2=7.94$; $P=.02$) (comparing the suggested rationalization group with control and sacrifice reminder groups combined, OR, 1.97; 95% CI,

Figure 3. Acceptability of Receiving Gifts by Condition and Agreement With Rationalization
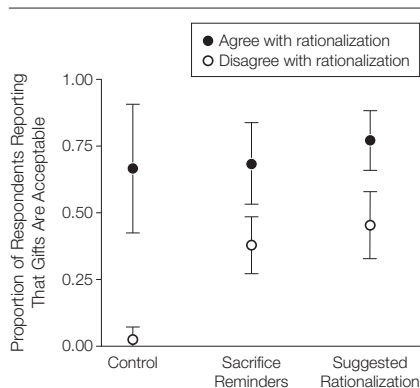
Those who agreed with the rationalization were more likely to accept gifts. Those who disagreed with the rationalization were more likely to change their response about the acceptability of receiving gifts when they received sacrifice reminders or a suggested rationalization. Error bars indicate 95% confidence intervals.

1.23-3.18; $P = .005$). Respondents who reported poor working conditions were more likely to agree with the rationalization (45.0% [59/131]) than those who reported favorable working conditions (31.8% [54/170]; $\chi^2 = 5.56$; OR, 1.76; 95% CI, 1.10-2.82; $P = .02$).

Acceptability of Receiving Gifts

All 10 of the COI items shifted in the predicted direction across groups; for all 10 items, mean gift acceptability was highest in the suggested rationalization group and lowest in the control group.

The first logistic regression model, containing only variables for the main conditions (suggested rationalization and sacrifice reminders), found that reminding physicians of sacrifices made in obtaining their education resulted in gifts being evaluated as more acceptable: 21.7% (13/60) in the control group vs 47.5% (57/120) in the sacrifice reminders group (OR, 1.81; 95% CI, 1.27-2.58; $P = .001$). Although most residents disagreed with the suggested rationalization, exposure to it further increased the perceived acceptability of gifts to 60.3% (73/121) of residents in the suggested rationalization group (OR, 1.45; 95% CI, 1.22-1.72; $P < .001$ for difference from sacrifice remind-

ers group). Covariates for sample (when relevant) and postgraduate year were initially included in every model but were in no case significant; thus, they were not included in these or subsequent regressions.

Results were similar when analyses were conducted in each resident subgroup. Among pediatric residents, sacrifice reminders increased gift acceptability from 15.0% (3/20) in the control group to 42.9% (15/35) (OR, 2.06; 95% CI, 1.03-4.15; $P = .04$), and the rationalization statement further increased gift acceptability to 48.6% (17/35) (OR, 1.37; 95% CI, 1.00-1.90; $P = .05$ for difference from sacrifice reminders group). Among family medicine residents, sacrifice reminders increased gift acceptability from 25% (10/40) in the control group to 49.4% (42/85) (OR, 1.71; 95% CI, 1.23-2.60; $P = .01$), and the rationalization statement further increased gift acceptability to 65.1% (56/86) (OR, 1.48; 95% CI, 1.21-1.82; $P < .001$ for difference from sacrifice reminders group).

In a more detailed model that included covariates for agreement with the rationalization and interactions between agreement with the rationalization and the sacrifice reminders and suggested rationalization conditions, gift acceptability was positively and significantly related to agreement with the rationalization (OR, 10.61; 95% CI, 4.63-24.31; $P < .001$). The interactions between agreement and the sacrifice reminders (OR, 0.21; 95% CI, 0.06-0.68; $P = .009$) and agreement and the suggested rationalization (OR, 0.62; 95% CI, 0.39-0.996; $P = .048$) were also significant. The pattern of main effects and the interaction is depicted in **FIGURE 3**. For those who accepted the rationalization, gift acceptability was uniformly high in all 3 experimental groups. In contrast, for those who rejected the rationalization, the experimental manipulations for sacrifice reminders and suggested rationalization had a substantial effect on gift acceptability.

An additional model that included only the sacrifice reminders and suggested rationalization groups exam-

ined the effect of the rich-vs-poor manipulation while controlling for the effect of the suggested rationalization. It found that gift acceptability was greater in the feel-poor subgroups than in the feel-rich subgroups (60.9% [70/115] vs 47.6% [60/126]); $\chi^2 = 4.25$; OR, 1.71; 95% CI, 1.02-2.86; $P = .04$).

COMMENT

Our results support the view that the perception of hardships may contribute to physician acceptance of gifts from the pharmaceutical industry. Even though few residents reported that their working conditions were bad, reminding them about sacrifices to obtain their medical education significantly increased their readiness to receive gifts. Providing a suggested rationalization that low salaries and education-related debt could potentially justify accepting gifts increased the acceptability of industry-sponsored gifts beyond the effect of simple sacrifice reminders.

Furthermore, agreement with the rationalization statement was strongest when it immediately followed the sacrifice reminders, indicating that feelings of hardship can increase justifications for ethically questionable behavior. Although those who agreed more with the rationalization were more likely to view receiving gifts as acceptable, those who disagreed with the rationalization were most vulnerable to the influence of sacrifice reminders and the suggested rationalization. This suggests that "because you're worth it" primes, such as those provided by sacrifice reminders and suggested rationalizations, are especially effective for those who would, in their absence, be least likely to accept gifts.

The justifications may not occur on a conscious level, since most respondents denied that their working conditions were poor and explicitly rejected the suggested rationalization. Also, as demonstrated by the effect of the feel-poor manipulation, the quality of working conditions is itself a subjective judgment, one that can poten-

tially be used to support subconscious rationalizations to accept gifts. Residents' rate of agreement to the rationalization in our study (37.6%) was much lower than that previously found in medical students (80.3%).[8] However, the more deprived that physicians felt (as determined by reporting poor working conditions), the more likely they were to agree with the rationalization; and the more likely they were to agree with the rationalization, the more likely they were to report gifts as acceptable.

Research on self-serving bias suggests that individuals' views of what is fair is often biased in the direction of what benefits them personally.[12] Applied to COIs, the self-serving bias is likely to increase feelings of entitlement and disarm reservations that might otherwise arise about acceptance of gifts. Moreover, people are generally not aware that they are subject to a self-serving bias, which means that physicians are unlikely to recognize that they have been influenced by gifts.[13] Furthermore, individuals often engage in minor forms of unethical behavior, falling short of behaviors that are sufficiently extreme to negatively affect their self-concept of being an honest person,[14] and research on reciprocity suggests that favors given are likely to be paid back.[15,16] There appear to be important psychological factors operating to weaken physicians' compunctions about accepting, or altering their behavior in response to, gifts.

The limitations of this study were the self-reported nature of the data and the possible nonrepresentativeness of one of the samples. The 93% response rate in the Children's Hospital of Pittsburgh sample ensures an adequate representation of residents from 1 hospital. The family medicine sample was added to increase power and enhance the generalizability of the results by including residents from another specialty. However, we were unable to calculate the response rate of family medicine residents, and the mean responses to the COI items of the family medicine residents who chose to participate may not be representative of the overall population. Given that they responded to the chance of obtaining a portable media player, it is possible that family medicine respondents include a disproportion of physicians who are attracted to moderate-sized gifts. There are, however, several reasons to believe that this is not a major problem. First, since we were testing a causal mechanism via experimental design, the use of blind randomization should produce comparability between groups, thus reducing the effect of response bias even if the sample is not perfectly representative of the larger population. Second, separate analysis of the samples revealed similar results. It is also possible that the cultural backgrounds of the residents could affect attitudes toward accepting gifts as well as perceptions of personal sacrifice. Future studies could look at associations of culture as well as sex and other individual differences.

In summary, financial self-interest may not fully explain physicians' acceptance of gifts. Rather, such acceptance may be facilitated by rationalizations. Research has documented that gifts are widespread[10] and can influence physician prescribing behavior.[1,17] This study helps explain how well-intentioned physicians may use subjective perceptions of hardships to rationalize acceptance of such potentially biasing gifts.

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