

PRO- AND ANTI-SOCIAL BEHAVIOR AS A FUNCTION OF COST ESTIMATES AND PERSONALITY AND SITUATIONAL VARIABLES

L. A. Penner, D. E. Michael and D. A. Brookmire
University of South Florida

ABSTRACT

It was hypothesized that people who indicated that they would act anti-socially would make significantly lower estimates of the costs associated with their behavior than people who indicated they would act pro-socially. The study also investigated the effects of selected personality and situational variables on the cost estimates. It was hypothesized that the characteristics of the victim of the anti-social act, Sociopathy, Locus of Control, and the importance assigned certain values would influence subjects' estimates of the costs associated with their behavior. Questionnaires which measured Sociopathy, Locus of Control orientation, and value importance were given to 107 undergraduates twice. Two weeks after the second administration, subjects indicated if they would return or take money that had been lost by an individual, an institution, or an unidentified owner; in addition they made estimates of the costs associated with their actions. The hypothesis regarding cost estimates and anti-social actions was confirmed. Also, it was found that owner characteristics, Sociopathy, and Locus of Control were significantly related to the cost estimates. The viability of a reward/cost model of pro- anti-social behavior and the influence of personality and situational variables on the costs specified by the model were discussed.

INTRODUCTION

This study had two purposes. First, it was designed to test a model concerned with why people act pro- or anti-socially. Second, it was concerned with the effect of certain personality and situational variables on elements specified by the model. The specific behavior of interest was people's decision to return or keep (for themselves) a lost item of value which they had found.

The model to be tested proposed that the commission of a pro- or anti-social act is largely determined by people's estimates of the rewards and costs associated with their actions. Conceptually, this approach is quite similar to Piliavin et al's explanation of transgressions by juveniles (Brian and Piliavin, 1965; Piliavin, Hardyck and Vadum, 1968) and Banfield's (1974) general theory of anti-social behavior. According to Piliavin, a person engages in an anti-social act because the estimated rewards for doing so exceed the estimated costs. Recently, Piliavin, Piliavin, and Rodin (1975) proposed that bystanders will act pro-socially (i.e., will intervene to help someone) when they determine that the rewards for helping are greater than the costs. The present model is most applicable in situations where immediate material rewards would result from not helping.

When a person confronts a lost item of value, the most rewarding act would be to keep the item. However, the model proposes that this potential reward is mitigated by three types of costs which accompany the taking of the item. These are: (1) the harm done to the owner of the item; (2) the punishment that the owner of the item might extract if the taker were caught; and (3) the negative self-evaluation which might accompany the taking of the item. The final cost estimate will depend on the explanations a person offers for his/her anti-social actions. If the taker attributes the behavior to a personality characteristic (e.g., there was no way I could return the money), then the costs of his/her actions in terms of a negative self-evaluation are low.

To test this model, a paper and pencil simulation of the paradigm employed by Penner, Summers, Brookmire and Dertke (1976) was used. Subjects read a description wherein money belonging to an individual, an institution, or and unidentifiable owner is found in an empty elevator. The subjects answered a series of questions concerned with the cost estimates described above. Finally, the subjects indicated what they would do if they found the lost money.

It was hypothesized that takers would estimate the three costs specified to be lower than would returners.

The second aspect of this study concerned the relationship between certain personality and situational variables and the commission of the pro- or anti-social behavior. The variables were selected on the basis of two criteria. First, they had been found in prior studies to be related to the behavior of interest. Second, there was some reason to believe that these previous, positive findings were due to these variables' effect on the cost estimates identified by the model.

Owner Characteristics. Several studies have investigated bystanders' reactions to thefts. The data from these studies indicate that observers are more likely to aid an individual than an institutional theft victim (Dertke, Penner and Ulrich, 1974; Gelfand, Hartmann, Walder and Page, 1973; Latane and Darley, 1970.) Similarly, Penner *et al.* (1976) and Brookmire (Note 1) found that money identified as belonging to an individual was significantly more likely to be returned to its owner than was money owned by an institution. Furthermore, institutionally owned money was returned more often than money without an identifiable owner.

It seems reasonable to propose that the findings of the last two studies could be explained, at least in part, by the cost model. Subjects may have assumed that failure to return the money would cause more harm to an individual than an institutional owner; and thus the individual owner would demand more punishment for the taker than would an institution. Money with no identifiable owner belongs to someone else only in the strictest sense of the word. Thus, taking would result in less harm and punishment than either of the other two owner conditions. If this reasoning is valid, subjects who find individually owned money should make higher estimates of the harm done to the owner and the punishment the owner would demand than individuals who find institutionally owned money. The lowest estimates of these costs should be made by subjects who found money without an identifiable owner. This hypothesis was tested in the present study.

Sociopathy. The Diagnostic and Statistical Manual for Mental Disorders (II) (1968) has described sociopathic (or anti-social) individuals as "grossly

selfish, callous, irresponsible, impulsive, and unable to feel guilt . . . they tend to offer rationalizations for their (anti-social) behavior." (p. 48).

Subsequent experimental investigations of sociopathy indicate that, among normal individuals, high levels of sociopathy are associated with a reluctance to act pro-socially and a willingness to act anti-socially. For example, Penner *et al.* (1976) and Brookmire¹ found that people who took lost money were significantly more sociopathic (as measured by Spielberger, O'Hagen and Kling's (1978) Sociopathy Scale) than people who returned it. Stone and Penner (1978) found that people who were willing to help another person avoid painful electric shock (at cost to themselves) were significantly less sociopathic than were people who let the other person be shocked.

The traditional explanation of these differences has been based on the impulsive, hedonistic characteristics of the sociopathic individual. We would suggest that sociopathic characteristics may influence pro-social behavior because of their effect on the cost estimates proposed by the model. For example, individuals with high sociopathy scores show significantly less vicarious anxiety in response to another person's distress than do individuals without sociopathic tendencies (House and Milligan, 1976; Stone and Penner, 1978). This suggests that sociopathic individuals may see an anti-social act as causing less harm to its victim and deserving of less punishment than would nonsociopathic individuals. Further, if sociopaths deny responsibility for their actions, they should estimate the final cost specified by the model (negative self-evaluation) as less than nonsociopaths. Thus, it was hypothesized that subjects who estimate the three costs as low will be more sociopathic than subjects who estimate these costs as high.

Values. Rokeach (1973) has proposed that a person's values (beliefs about end states of existence and modes of conduct) are important determinants of his/her attitudes and behavior. Several studies have used the importance assigned values in Rokeach's (1967) Value Survey to predict pro- and anti-social behavior.

Staub (1974) confronted subjects with a supposedly ill confederate and measured their willingness to help him. Helping was positively associated with high rankings of the values, Equality and Helpful, and negatively associated with high rankings of the values, A Comfortable Life, Ambitious, and Clean.

Penner *et al.* and Brookmire found that returners of lost money considered the value Equality more important and the values A Comfortable Life, Ambitious, and Clean less important than did takers; a pattern which was in accord with Staub's findings. These two studies also found that returners considered the value, Honest, to be more important than did takers. This difference has also been obtained in other similar studies (Homant and Rokeach, 1970; Shotland and Berger, 1970.)

One possible explanation of these findings is based on Rokeach's view of the function of values. According to him, we use values as standards "to evaluate and judge, to heap praise and fix blame on ourselves and others" (1973, p. 13). Actions which violate these standards will be judged negatively. For example, a person who placed great importance on the value Honest would be much more critical of a dishonest act than would a person who was less concerned with this value.

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This description of the function of values led us to predict that people who estimate the harm of taking money and (thus) the punishment to be meted out to the taker as high, should consider the values Equality, Helpful, and Honest to be more important than would people who estimated these costs as low. Conversely, people who evaluate these costs as low should consider the values A Comfortable Life, Ambitious, and Clean more important than would people who estimate these costs as high.

Locus of Control. A number of studies have found that people with an internal locus of control orientation (Rotter, 1966) act more pro-socially and less anti-socially than do people with an external orientation (Brookmire, Note 1; Johnson and Gormly, 1971; Midlarsky and Midlarsky, 1973.)

It is possible that these differences might be due to how internals and externals explain their behavior. Internals tend toward a personal explanation. If this speculation is valid, then people who estimate the third cost as low (i.e., avoid a negative self-evaluation by attributing their behavior to the situation) should be more external than those who estimate this third cost as high.

In summary, we hypothesized the following process. The situational and personality variables discussed are related to the pro- and anti-social behavior because of their influence on the cost estimates identified by the model. Specifically, owner characteristics, Sociopathy, and the six values would influence estimates of harm to the owner and expected punishment. Sociopathy and Locus of Control would influence the attribution of the behavior to a personal or situational cause.

METHOD

SUBJECTS

The study was initially conducted with 107 male and female undergraduates enrolled in an introductory psychology course. It was replicated one year later with 100 students in the same course. Students were given extra credit points for participation, afforded the opportunity to refuse to participate, and debriefed at the end of the academic term.

PROCEDURE

One week after the beginning of the academic term, the subjects filled out Rokeach's (1967) terminal and instrumental value surveys; Rotter's (1966) Locus of Control Scale; and Spielberger, O'Hagen and Kling's (1977) Sociopathy Scale. They filled these three scales out a second time approximately ten weeks later. In order to obtain maximally reliable estimates of their scores on these scales, the subjects' mean response for the two administrations was used to predict the dependent measures (i.e., response, cost estimates.)

The subjects' reactions to the lost money and their estimates of the costs described earlier were assessed by a questionnaire which was given a few weeks after the second administration of the personality scales. This questionnaire was presented as part of a study on "people's reactions in various situations." Because of the large number of questionnaires given in this course, it was considered unlikely that the subjects would associate this questionnaire with the personality scales (debriefing confirmed this expectation).

The questionnaire began with a description of a person finding a ten dollar bill on the floor of an empty elevator in a large office building. The money was either in a wallet (individual owner), an envelope bearing the name of a company with offices in the building (institutional owner), or without an identifiable owner.

Subjects were asked what most people would do in this situation (i.e., return, ignore, or take the money) and why. Following this, subjects were asked to assume that the money was taken and to use a seven-point rating scale to answer a number of questions. Embedded in these questions were the following items concerned with cost estimates: how much harm would be done to the owner, how much punishment would the owner demand if the taker were caught, how severely should a taker be punished, how likely is it that a taker would be caught, and how much blame for the taking should be placed on the owner. Then, subjects were asked what they would do in response to the money. The subjects were also asked to explain their behavior on a seven-point scale with "because of the situation" at one end and "because of personality characteristics" at the other. This question provided data on the final cost estimate proposed in the model. The questionnaire concluded with questions on honesty, and determination of people's behavior in general.

RESULTS

EFFECT OF OWNER CHARACTERISTICS

In order to assess the effects of owner characteristics a $3 \times 3 \times 2$ analysis (Winer, 1971) was performed on the data from the first group of subjects ($N=107$). The classification variables were owner characteristics (individual, institutional, unidentified) and response. There was a significant main effect for response ($X^2(2) = 81.10, p < .001$). Of the 107 subjects 61% indicated they would return the money, 5% indicated they would ignore it, and 34% indicated they would take it. (The percentages for the subjects in the second group ($N = 100$) were 62%, 4% and 33%; and X^2 was also significant).

There was a significant owner characteristic by response interaction ($X^2(4) = 30.81, p < .001$). The pattern of responses was in perfect accord with that obtained by Penner *et al.* (1976). The individually owned money elicited the most returning (78.7% of the 34 subjects in this condition) and the unidentified money the least (37.3% of 32 subjects in this condition). Institutionally owned money elicited the most ignoring (8.2% of the 41 subjects in this condition); and the individually owned money the least (19.2%). Figure 1 presents these data graphically.

The analysis of the data from the second group of subjects yielded the same significant interaction and a pattern of differences in responses, which was in perfect accord with that just described.

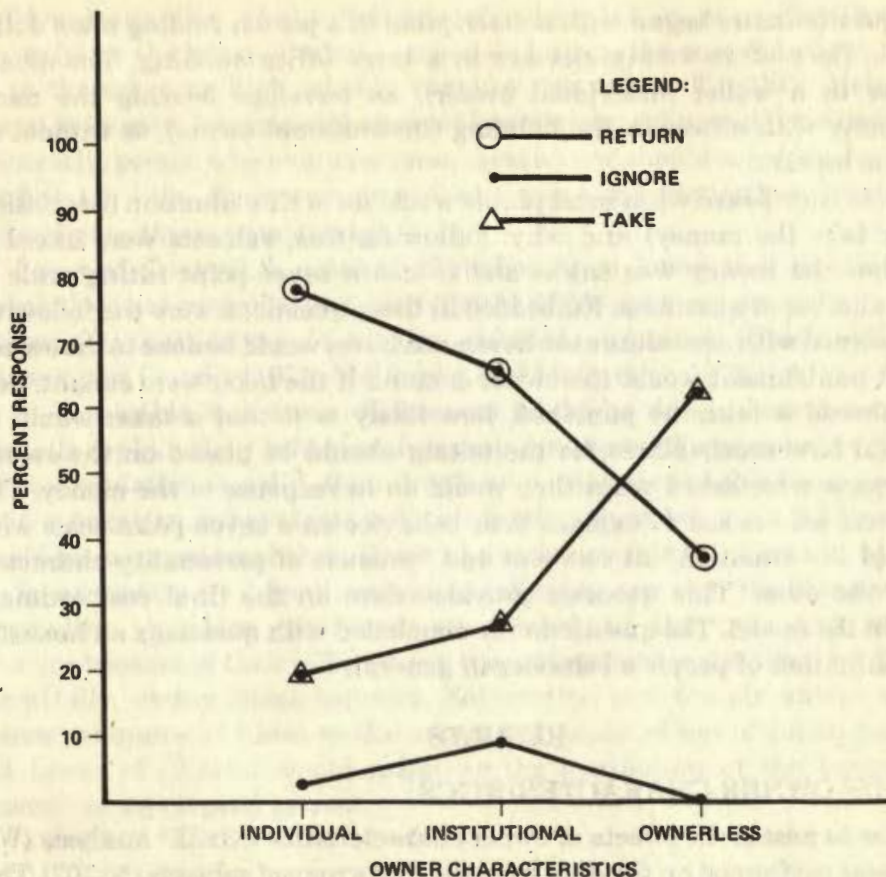


FIGURE 1

Subject responses to the lost money as a function of owner characteristics.

THE RELATIONSHIP BETWEEN THE PREDICTOR VARIABLES AND RESPONSES TO THE MONEY

A stepwise discriminant analysis (S.P.S.S. Manual, 1975) was conducted using owner characteristics, Sociopathy, the six values (A Comfortable Life, Ambitious, Clean, Equality, Helpful and Honest), and Locus of Control as the predictor variables and returning or taking as the dependent measure. Because only five subjects indicated they would ignore the money, the ignore response was eliminated from the analysis.

The alpha level for all results obtained from the discriminant analysis was set at .05. The discriminant analysis was terminated at the "step" where the predictor variables which had not yet entered the equation had a covariate F ratio of less than one. Table 1 presents the univariate F ratios, the covariate F ratios, and Rao's V's for each of the predictor variables.²

As Table 1 shows, the univariate F ratios for Owner Characteristics, Ambitious, Honest, and Sociopathy were all significant. The direction of the differences between returners and takers on these variables was exactly the same as that found by Penner *et al.*

The linear combination of seven variables (Owner Characteristics, Sociopathy, Clean, Equality, Helpful, Honest, and Locus of Control) signifi-

Table 1

Differences Between Returners and Takers
on Personality and Situational Variables

Predictor Variables	Response				
	Return	Take	F _{univ}	F _{cov} ^d	1- Λ ^e
	M (N=55)	M (N=45)	(df= 1/100)	(df= 1/94)	
Owner Characteristics ^a	2.19	1.64	12.37**	14.02**	11.1%**
Sociopathy	9.86	11.57	10.32**	5.83*	7.6%**
Locus of Control ^b	10.51	11.32	1.15	3.43	1.7%
A Comfortable Life ^c	10.60	9.15	2.81	<1	-
Ambitious	10.81	8.91	4.79*	<1	-
Clean	13.32	12.77	<1	2.55	1.5%
Equality	10.30	11.51	2.25	1.25	1.0%
Helpful	9.29	9.19	<1	1.75	1.3%
Honest	4.23	6.10	4.82*	3.65	2.3%

* $p < .05$ ** $p < .01$

a) Owner Characteristics was coded as follows:

1=Unidentified, 2=Institutional, 3=Individual

b) The lower the mean the more internal the locus of control orientation.

c) The lower the mean the more important the value.

d) This is the covariate F ratio at the "step" where those variables which had not entered the discriminant function had a covariate F ratio of less than one.

e) The percentages in this column indicate the variance accounted for by this variable when it entered the discriminant function. Asterisked percentages indicate that the variable added significantly to the separation of the two groups (by Rao's V).

cantly discriminated between returners and takers ($F_{mult}(7,94) = 4.83; p < .001$, amount of variance accounted for ($1-\Lambda = 16.5\%$). The direction of the differences on all these variables was in accord with that found by Penner *et al.* The covariate F ratios and Rao's V's for Owner Characteristics, Sociopathy and Honest were significant.

Kerlinger and Pedhazur (1973) and others strongly recommend the cross-validation of results from a stepwise discriminant analysis on an independent sample. The discriminant weights for those variables which loaded in the first discriminant analysis were used to classify subjects from the second group in a standard (rather than a stepwise) discriminant analysis. It was found that the discriminant weights which produced correct classifications for 72.5% of the subjects in the first group, produced correct classifications for 74.7% of the subjects in the second group.

THE RELATIONSHIP BETWEEN COST ESTIMATES AND SUBJECT'S RESPONSES

The first hypothesis to be tested was that returners and takers would differ in their estimates of the costs involved in the taking of the money. In accord

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with the predictions made by the model, returners estimated the harm done to the money's owner and the amount of punishment the money's owner would demand to be significantly greater than did the takers ($F(1,98) = 56.52, p < .001$; $F(1,98) = 6.08, p < .05$, respectively).³ Also returners were likely to attribute their behavior to a personality characteristic, while takers attributed their behavior to the situation they were in ($F(1,98) = 125.54, p < .001$). In addition to these predicted differences, returners estimated the severity of the punishment a taker would receive and the likelihood a taker would be caught as significantly greater than did takers ($F(1,98) = 47.08, p < .001$; $F(1,98) = 6.05, p < .05$).

The linear combination of these five variables was found to significantly discriminate between returners and takers ($F_{\text{mult}}(5,94) = 40.92, p < .001, (1-\Lambda) = 68.6\%$). Using the discriminant weights derived from this function, it was possible to correctly classify 93.0% of the subjects as returners or takers. When the discriminant weights were applied to the second (cross-validation) group of subjects, 92.6% of the returners and takers were correctly classified. The results of this analysis are presented in Table 2.

Table 2

Differences Between Returners and Takers in Cost Estimates

	Response		F_{univ}	F_{cov}^b	$1-\Lambda^c$
	Return	Take			
	M	M			
<u>Cost Estimates^a</u>	(N=55)	(N=45)	(df=1/98)	(df=1/94)	
Harm to Owner	3.35	5.24	56.52***	2.29	.8%***
Severity of Punishment	4.25	5.93	47.08***	5.06*	7.5%***
Punishment Demanded	3.13	3.96	6.08*	2.80	1.3%
Prob. of Being Caught	5.45	6.09	6.05*	7.55*	3.0%***
Self Attribution ^d	2.04	5.51	124.53***	70.51***	54.0%***

* $p < .05$

** $p < .01$

*** $p < .001$

FOOTNOTES

a) In all cases the lower the mean the higher the cost estimate.

b) This is the covariate F ratio at the "step" where those variables which had not entered the discriminant function had a covariate F ratio of less than one.

c) The percentages in this column indicated the variance accounted for by this variable when it entered the discriminant function. Asterisked percentages indicated that the variable added significantly to the separation of the two groups (by Rao's V).

d) The lower the mean the more the subjects tended toward a personality attribution of behavior.

THE RELATIONSHIP BETWEEN THE PREDICTOR VARIABLES AND THE COST ESTIMATES

To test this relationship, subjects who answered "1" or "2" to the "harm done to owner," "punishment demanded," "likely to get caught," and "per-

sonality-situation" questions were classified as estimating these costs high, while those who answered "6" or "7" were classified as estimating these costs as low. On the "severity of punishment" question, subjects who answered "1" or "2" were classified as estimating this cost as low, while subjects answering "6" or "7" were classified as estimating this cost as high. Only three subjects gave high cost estimates on the questions concerned with severity of punishment and the likelihood of being caught. Therefore, it was impossible to conduct discriminant analysis on these questions. For purposes of clarity, each of the remaining three cost estimates will be considered separately.

Harm done to the owner. Of the 107 subjects in the first group, 15 estimated this cost as high and 28 estimated it as low. As predicted, the subjects saw the greatest harm being done to the individual owner and the least harm being done to the unidentified owner ($F(1,41) = 17.26, p < .01$). Also in accord with the prediction made, subjects who estimated this cost as high scored significantly lower on the sociopathy scale ($F(1,41) = 4.65, p < .05$) than did the subjects who estimated this cost as low.

The linear combination of four variables (Owner Characteristics, Sociopathy, Clean, and Helpful) significantly discriminated between high and low cost estimates ($F \text{ mult}(4,38) = 6.26, p < .001; (1 - \Lambda) = 39.8\%$). Only the covariate F ratios and Rao's V 's for Owner Characteristics and Sociopathy were significant. This discriminant function correctly classified 79.1% of the subjects in the first group and 79.4% of the subjects in the second (cross-validation) group.

Estimates of punishment. Of the subjects in the first group, 17 estimated this cost as high and 36 estimated it as low. As hypothesized, the subjects saw the individual owner as demanding the most punishment and the unidentifiable owner as demanding the least ($F(1,51) = 8.11, p < .05$). Also subjects who made a high estimate of this cost scored significantly lower on the Sociopathy scale than did subjects who estimated this cost as low ($F(1,51) = 11.11; p < .01$). The linear combination of four variables (Owner Characteristics, Sociopathy, Clean, Locus of Control) significantly discriminated between the two groups ($F \text{ mult}(4,48) = 7.96; p < .01; (1 - \Lambda) = 39.9\%$). The covariate F ratios and Rao's V 's for Owner Characteristics, Sociopathy, and Clean were significant. Using the discriminant weights derived from this function, 77.4% of the subjects in the first group and 67.4% of the subjects in the second (cross-validation) group were correctly classified.

Personal vs. Situational Attributions. Forty-seven of the subjects attributed their actions to a personality characteristic, while 29 attributed their actions to the situation. Over 90% of the subjects who attributed their behavior to personality characteristics were returners and over 95% of the subjects who attributed their behavior to the situation were takers. As predicted, subjects who attributed their behavior to the situation (i.e., low cost estimate) scored significantly higher on the Sociopathy scale than did subjects who attributed their behavior to personality characteristics (high cost estimate) ($F(1,74) = 7.42, p < .05$).

The linear combination of Owner Characteristics, Sociopathy, Clean, Helpful, and Locus of Control significantly discriminated between the two groups

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($F_{\text{mult}}(5,70) = 4.03; p < .01; (1 - \Lambda) = 12.4\%$). The covariate F ratios for Sociopathy and Locus of Control were significant and in the predicted direction. That is, people who estimated this cost as low were more sociopathic and more external than those who estimated it as high.

In the first group 68.4% of the subjects were correctly classified; 69.5% of the subjects in the cross-validation group were correctly classified.

DISCUSSION

This study was a paper-and-pencil simulation of earlier studies in which subjects actually confronted lost money. Despite this difference in methodology, the results of the present study closely paralleled those obtained in these earlier studies. The relationship between owner characteristics and the dependent measure and the pattern of differences between returners and takers on the personality variables were in perfect accord with the findings of Penner *et al.* and Brookmire. As in prior studies, Owner Characteristics and scores on the Sociopathy scale were the strongest univariate predictors of the subject's reactions to the money. Finally, it was possible to cross-validate the discriminant function derived from the first group of subjects in the present study with almost no shrinkage. All of these data suggest that the phenomenon under investigation is quite stable and the simulation approach provided a viable way to investigate it.

It should be noted that in the prior studies over 40% of the subjects gave an ignore response; in the present study less than 10% of the subjects indicated they would ignore the money. This discrepancy may be explained by a difference in the costs associated with the ignore response in the two methodologies. In the earlier studies an ignore response was operationally defined as moving the money from the place it had been left to another location in the same room. (If the money was not moved, the subject was not included in the study.) In retrospect, many of the subjects in the prior studies may have opted for ignoring because it was the lowest cost course of action. A subject who ignored the money avoided the effort of finding someone to return the money to and the potential cost of a confrontation with the money's owner while in possession of the money. In the simulation the subjects simply indicated on a questionnaire what they would do. Thus, in this study ignoring was no less costly a response than were returning or taking. This resulted in substantial increases in the return and take responses at the expense of the ignore response.

Differences in Cost Estimates. As predicted, returners estimated all three costs to be significantly greater than did takers. More specifically, when asked to estimate the costs associated with a hypothetical person taking the money, returners indicated that the taker's actions would result in a great deal of harm to the money's owner and in considerable punishment for the taker. In contrast, subjects who indicated that they would take the money estimated both these costs as quite low. The subjects who indicated that they would return the money saw their actions as being due to a personality characteristic, almost exclusively, while the takers attributed their behavior to the situation.

This question was asked after the subjects had indicated what they would do in response to the money. Thus, it is reasonable to propose that part of the large difference between returners and takers on this question was due to a post-

hoc rationalization of their behavior. However, returners were also significantly more likely to attribute the behavior of a hypothetical taker to personality characteristics than were takers who strongly tended toward a situational explanation ($F(1,98) = 9.62, p < .01$). This question was asked prior to and independently of the question concerned with the subjects' own actions. This strongly suggests that the returners and takers tended to differ in their explanations of the behavior of interest even when their own actions were not involved.

These data led us to the following conclusions about a reward/cost view of the commission of pro- and anti-social acts. First, we find ourselves in general agreement with Piliavin et al.'s proposal that people evaluate the rewards and costs associated with their decision to act pro- or anti-socially. Our findings also indicate that one of the most important cost estimates is the person's judgment about what helping (or not helping) "says" about him/her as an individual. Pro-social behavior will be most likely to occur when people attribute their actions to personality characteristics rather than the situation they are in.

This strong endorsement of the reward/cost view of pro- and anti-social behavior must be tempered by the realization that other variables (e.g., empathy, modeling) will also exert an influence on people's behavior. Also, it is unreasonable to view the relative importance of the costs specified by the model as invariant across all situations. However, it would appear as if a consideration of the rewards and costs involved in a pro- or anti-social act represents a viable way of explaining the phenomenon.

The Effect of the Personality and Situational Variables on the Cost Estimates. The second major question addressed by this study was whether the cost estimates specified by the model are influenced by the personality and situational variables selected for examination.

As predicted, owner characteristics significantly influenced the estimates of the harm to the owner and expected punishment. With regard to the first cost, 60% of the people who estimated it as high were in the individual owner condition; 13% were in the unidentified owner condition. Fifty per cent of the low estimators of this cost were in the unidentified owner condition; 14% were in the individual condition. Owner characteristics had a much weaker effect on estimates of punishment. Of the 17 people who estimated this cost as high, 59% were in the individual owner condition and 6% were in the unidentified owner condition. However, among the people who estimated this cost as low, only 39% were in the unidentified owner condition and 28% were in the individual condition.

Sociopathy scores were significantly related to all three cost estimates. As predicted, subjects who estimated the three costs as low were significantly more sociopathic than were subjects who estimated these costs as high. Further, sociopathy was the most powerful univariate and multivariate predictor of the last two cost estimates (punishment and negative self-evaluation).

The finding that people who estimated the first two costs as high were significantly less sociopathic than people who estimated these costs as low was consistent with prior experimental work on Sociopathy. For example, House and Milligan (1976) and Stone and Penner (1978) both found that high socio-

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pathic individuals display less vicarious anxiety in response to another's distress than do low or nonsociopathic individuals. Thus, it is not surprising that the people who saw little harm in the taking of the money and the amount of expected punishment as minimal were more sociopathic than people who estimated these costs as high.

The manner in which Sociopathy affected the subjects' explanations of their behavior (i.e., whether it was due to personality or situational factors) was consistent with the clinical description of sociopathic individuals. According to the Diagnostic and Statistical Manual (II) (1968), Sociopaths deny responsibility for their anti-social acts. In the present study, subjects who attributed their behavior to situational factors (i.e., denied responsibility for their actions) scored significantly higher on the Sociopathy scale than the subjects who attributed their behavior to personality characteristics.

Contrary to our predictions, the importance assigned to the six values exerted an influence on only one of the cost estimates. The importance assigned the value Clean added significantly to the separation of the subjects who made high and low estimates of expected punishment. However, none of the univariate F ratios for any of the value rankings was significant.

Despite the fact that value importance was only minimally related to the cost estimates, in this study and prior ones (Homant and Rokeach, 1970; Shotland and Berger, 1970; Staub, 1974) values have been found to be significantly related to the commission of pro- and anti-social acts. Thus, while value importance affects the behavior of interest, it does not appear to affect the cost estimates specified by the model. It would appear then that values either exert their impact directly on the behavior or they influence cost estimates not specified by the model. Given the apparent potency of values as determinants of social behavior (cf. Rokeach, 1973), it might be fruitful for future research to investigate these two possibilities.

The data on Locus of Control were equivocal. Subjects who attributed their behavior to personality characteristics were more internal than those who attributed their behavior to the situation, but this was significant only at the .10 level. Locus of Control did contribute significantly to the separation of the two groups in the discriminant analysis.

Locus of Control in consort with Sociopathy did produce a cooperative suppression effect (Cohen and Cohen, 1975). That is, these two variables were negatively correlated (low sociopaths tended to be external), but in the discriminant function each variable's presence increased the strength of the relationship between the other variable and the dependent measure. (This also occurred in the cross-validation group.) In other words, the amount of variance accounted for by Sociopathy and Locus of Control in combination was greater than the sum of the variance accounted for by each variable.

These findings led us to the following conclusions. First, owner characteristics and Sociopathy were the most potent determinants of the three cost estimates. Locus of Control significantly influenced the subjects' self-attributions only when its relationship with Sociopathy was taken into account.

In conclusion, it would appear that the conceptualization presented in the introduction to this paper is substantially valid. This conclusion is based on the rather clearcut results of the major analyses and the fact that it was possible to

cross validate these results without any appreciable shrinkage. The personality and situational variables selected for examination appeared to influence the cost estimate. The cost estimates, in turn, affected the subjects' responses to the lost money.

FOOTNOTES

¹Brookmire, D.A. Pro- and anti-social behavior as a function of situational and personality variables. Unpublished Master's thesis. University of South Florida.

²Rao's *V* is an estimate of whether the addition of a variable to the discriminant function contributes significantly to the separation of the two groups.

³These analyses are based on 100 subjects because two of the subjects failed to complete the questionnaire.

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Reprint requests should be sent to:

L. A. Penner
Dept. of Psychology
University of South Florida
Tampa, FL 33620