Factors affecting the effectiveness of reward power*

SVENN LINDSKOLD
 Ohio University, Athens, Ohio 45701
 and

THOMAS V. BONOMA, BARRY R. SCHLENKER, and JAMES T. TEDESCHI
 State University of New York, Albany, N.Y. 12203

A simulated promisor was given the capability of sending promises and providing rewards to 180 male and female Ss during the course of a mixed-motive conflict interaction. Promises were of either high or low reward value and were fulfilled 10%, 50%, or 90% of the time; the promisor behaved totally, partially, or not at all accommodatively. When the promisor used his power exploitatively, Ss complied more often to promises of high than to promises of low reward values; but when the promisor was totally accommodative, the magnitude of the reward did not affect compliance, suggesting that normative considerations overrode expected value considerations in the latter conditions. Postgame impressions of the promisor were affected by all of the independent variable manipulations.

A contingent promise offers a reward in return for a favor from a target individual. Compliance by the target should be greatest when the value of the promised reward and the probability of receiving the reward are highest. Lindskold & Tedeschi (1971) conducted a study designed to examine the effects of value and probability associated with promises sent by a simulated source to a S during a mixed-motive interaction. They found a surprisingly high level of target compliance to the promises across all conditions of value magnitudes and probabilities. The negative results were attributed to the fact that the promisor was invariably accommodative on promise-relevant interactions, producing a situation in which the target would benefit even if the promisor did not give the additional offered reward. Lindskold and Tedeschi attributed the results to the fact that the promise signaled predictable cooperation by the source

of influence, irrespective of the expected value of the promise, and served to invoke the positive norm of reciprocity that help (cooperation or compliance) should be given for help received (Gouldner, 1960). It follows if this interpretation is correct that the effects of reward magnitude and probability should manifest themselves only when the promisor behaves exploitatively by taking advantage of the target's compliant behavior.

The present experiment employed three levels of promisor accommodativeness when attempting influence (0%, 50%, and 100%), three levels of promise credibility (10%, 50%, and 90%), two levels of reward magnitude (5 and 20 points), and sex of Ss in an attempt to evaluate the relative effects of expected value and accommodativeness on Ss' compliance to promises. A prisoner's dilemma (PD) game was employed to provide a backdrop of social conflict in which the use of inducements would seem justified. It was hypothesized that: (1) magnitude of the promised reward and promise credibility would interact with accommodativeness to determine compliance such that neither variable would affect compliance when the promisor was accommodative, but higher credibility and reward levels

would produce more compliance than the lower levels when the source was less than totally accommodative; (2) invariable accommodativeness should, by itself, invoke a norm of reciprocity and gain greater levels of compliance than when the source was partially or invariably exploitative; and (3) females were expected to show a greater degree of cooperativeness throughout the interaction than were males.

SUBJECTS AND APPARATUS

One hundred and eighty Ss, 90 of each sex, partially fulfilled an introductory psychology course requirement at the University of Miami (Florida) by their participation. Ss signed up and appeared at the laboratory in like-sex pairs. Ss were assigned by sex and in order of appearance across the 36 cells of the design. Although each believed he was participating with a peer, the interaction was with a simulated player. Each S was seated before an electronic game panel consisting of: the 2 by 2 payoff matrix for the PD, each cell of which could be separately illuminated to indicate S's and simulated player's choices after each trial; two switches for Choice 1 (cooperative) and Choice 2 (competitive) strategy selections; two add-subtract cumulative counters which kept running totals of both S's and simulated player's scores; a series of slots for printed messages, each with a light for incoming and a button for outgoing communications; and a series of lights serving as prompters and guides for the correct sequencing of events during the interaction. The payoff matrix was symmetrical and satisfied the requirements for the PD game (Rapoport & Chammah, 1965). If both the simulated player and the S cooperated, both gained 4 points; if both competed, both lost 4 points; but if one cooperated while the other competed, then the former lost 5 points while the latter gained 5.

PROCEDURE

Each S was seated alone in an experimental cubicle and given a set of printed instructions which were later reviewed orally for the S by the E. The rudiments of PD play were explained and Ss were instructed to obtain as many points as they could (an individualistic set). Ss were led to believe that the simulated player could send the posted promise message anytime and could reward the S if the latter did as the message requested. Whenever a white communication light was illuminated on the S's panel, the simulated player transmitted a message which read, "If you make Choice 1 on the next trial, I will add n points to your counter," where n was either 5 or 20 points. Ss were required to communicate their intentions in reply

*The present study was supported in part by Grant No. ACDA-0331 from the U.S. Arms Control and Disarmament Agency (National Research Council) to the second author, by a National Science Foundation fellowship to the third author, and by National Science Foundation Grant GS-27059 to the fourth author.

Table 1
Means and Standard Deviations of Effects on Compliance

Accommodation	Independent Variable			
	Reward		Sex	
	5 Points	20 Points	Males	Females
All Ss	8.14 (6.51)	6.21 (5.47)	8.06 (6.44)	6.30 (5.59)
100% Only	6.13 (6.12)	5.88 (6.45)	—	—
0% and 50% Combined	9.15 (6.48)	6.38 (4.97)	—	—

Note—Standard deviations are given in parentheses.

to the promise messages, but could not initiate communications. The replies from which they could select were: "I will make Choice 1," "I will make Choice 2," and "I do not wish to reveal my intentions."¹

Promise credibility could not be held constant within probability conditions if S compliance was free to vary, so a criterion of 10 compliant responses (Choice 1) was set. When a S had complied 10 times, no further promises were sent. With the criterion established, Ss within each credibility level would experience the same promise credibility and the same number of rewards. Since the number of unsuccessful promises (i.e., promises to which the S noncomplied by making Choice 2) were free to vary, consistently compliant Ss would have experienced fewer unsuccessful promises before reaching the criterion. The number of unsuccessful promises was therefore chosen as an indirect index of compliance.

In the 10%, 50%, and 90% credibility conditions, the simulated player rewarded Ss only after the fifth compliant response, after the even-numbered compliances, or after all but the fifth compliance, respectively.

A fixed number of options was provided the E so that he could potentially send a promise message to a S prior to predesignated PD trials. Two threat options were placed randomly within each block of 10 trials over the 150 game iterations played. The simulated player attempted to establish one successful promise (i.e., promise to which the S complied) per block of 10 trials. As long as the pace of one successful promise per block of 10 trials was maintained, only one promise was sent in the block. If the pace was not maintained, both promise options were used in each successive block until the pace was reestablished. In no case could more than two promises be sent in a block. After the criterion was satisfied, the PD trials to 150 were played without further message exchanges.

The simulated player made the cooperative choice on the PD trials following transmission of a promise message (accommodativeness) 0%, 50%, or 100% of the time, depending upon the S's cell assignment. The simulated player was 50% cooperative over all 150 trials (as predetermined by a table of random numbers) and maintained this level in the 0% and 100% accommodative conditions by making the strategy choice opposite to that made on a promise trial two game trials afterward.

At the conclusion of PD play, S rated the simulated player on a shortened form of the semantic differential (Osgood, Suci, & Tannenbaum, 1957).

RESULTS

Compliance

A 2 by 3 by 3 by 2 analysis of variance was performed on the number of unsuccessful promises sent to each S—an indirect measure of compliance. The only significant main effects found were those of reward magnitude ($F = 4.13$, $df = 1/144$, $p = .04$) and sex ($F = 3.82$, $df = 1/144$, $p = .05$). Consistently greater compliance was tendered by Ss when the 20-point reward was promised than when a 5-point reward was offered. Females were more compliant than were males.

No other significant effects were found on this measure. The means and standard deviations for significant compliance effects are reported in Table 1.

Although a main effect of reward magnitude was found on compliance, a planned comparison (Winer, 1962, p. 209) was made to test the hypothesis that the value of reward would be effective under the exploitative conditions but not when the promisor was 100% accommodative. There was no difference in compliance due to reward magnitude when accommodation by the promisor was 100% ($F < 1$). When accommodation was either 50% ($F = 3.41$, $df = 1/174$, $p < .10$) or 0% ($F = 2.95$, $df = 1/174$, $p < .10$), the differences in mean compliance were marginally significant; in both instances when reward magnitude was greater, compliance was higher. When the latter two conditions were combined (both involved exploitation by the promisor) the difference between compliance to the 5-point reward and the 20-point reward was significant ($F = 6.35$, $df = 1/174$, $p < .02$).

Cooperation

Since the number of unsuccessful promises sent to an S was allowed to covary in the design in order to establish the criterion number of successful promises, analysis of covariance was performed on the cooperation data to eliminate this factor as a determinant of overall cooperativeness. Analysis of these data over all 150 trials yielded a marginally significant main effect of sex ($F = 3.59$, $df = 1/143$, $p < .06$); females were more cooperative overall than were males (see Table 2). A significant interaction ($F = 3.05$, $df = 4/143$, $p < .02$) of credibility, accommodation, and sex was also obtained (see Table 3) and indicated

Table 2
Means and Standard Deviations for Significant Effects

Source	Dependent Variable			
	Overall Cooperation	Evaluation	Activity	Potency
Reward				
5 Point			1.14 (3.44)	
20 Point			−0.58 (3.76)	
Credibility				
10%		0.22 (4.21)		0.02 (3.49)
50%		2.16 (4.71)		−1.46 (2.44)
90%		3.07 (4.26)		−1.95 (3.43)
Accommodation				
0%			1.21 (4.03)	
50%			−0.02 (3.14)	
100%			−0.35 (3.77)	
Sex				
Males	.42 (.13)			
Females	.47 (.13)			

Note—Standard deviations are given in parentheses.

that in the 100% accommodation condition males displayed a low degree of cooperation over all credibility assignments while females in the same accommodation condition displayed a high degree of cooperativeness. Both male and female Ss in the 0% and 50% accommodation conditions, however, displayed widely variant and inconsistent levels of cooperation across cells of the interaction.

Semantic Differential Ratings

A separate analysis of variance was performed on each of the three subscales of the semantic differential. The data on which these analyses were performed are summarized in Table 2. A main effect of promisor credibility was found on evaluation ($F = 6.38$, $df = 2/140$, $p < .002$). Range tests indicated that Ss in the 10% credibility condition evaluated the simulated player less favorably than did Ss in either the 50% ($p < .005$) or 90% ($p < .001$) conditions. The latter two conditions did not differ significantly.

There were main effects of both accommodation ($F = 3.12$, $df = 2/140$, $p < .05$) and reward magnitude ($F = 11.59$, $df = 1/140$, $p < .001$) on the activity subscale. Ss who were promised rewards of 20 points considered the simulated player less active than did Ss promised the 5-point reward. Further, range tests showed that Ss in the 0% accommodation condition considered the simulated player to be more active ($p < .05$) than did Ss in the 100% accommodation condition; ratings in the 50% condition were intermediate between the two but different from neither.

Finally, only credibility ($F = 6.24$, $df = 2/140$, $p < .003$) produced an effect on the potency subscale. Ss in the 10% credibility condition considered the simulated player to be more potent than did Ss in the 50% condition ($p < .05$) or 90% condition ($p < .005$), while the latter two conditions did not differ significantly.

DISCUSSION

The major hypothesis guiding the present study was confirmed. Promises of a large reward produced significantly more compliance than promises of a small reward only when the source was partially or totally exploitative in his behavior. Reward magnitude did not affect compliance when the source's behavior was totally accommodative. The results suggest that Ss were less committed to social considerations and were guided primarily by the magnitude of reward when the source used his power exploitatively.

The parallel expectation that promise credibility would mediate compliance when the source was exploitative was not confirmed.

Table 3
Means for Interaction of Credibility, Accommodation, and Sex on Overall Cooperation

Accommodation	Credibility					
	10%		50%		90%	
	Males	Females	Males	Females	Males	Females
0%	.49	.43	.37	.51	.47	.42
50%	.44	.43	.37	.42	.46	.50
100%	.37	.46	.42	.43	.34	.44

Although the paradigm has yielded consistent and replicable results with respect to linear positive effects of threat credibilities on the compliant behavior of target individuals (cf. Tedeschi et al., 1971), no effects of promisor credibility were found in either the Lindsold and Tedeschi study or the present one. A game-theoretic explanation might be that the expectation that a promisor would be exploitative leads the S to view his choice as between noncompliance and a loss of 4 points (along with the promisor) or compliance and a loss of 5 points. The slight chance of gaining a 5-point reward for compliance would produce more compliance than noncompliance by a S. Even in the 10% credibility condition, the S was rewarded after the fifth compliance (establishing at that point in the interaction a credibility of 20% for promises from the source). Thus, when the promisor was exploitative or led the target to expect exploitation, credibility did not mediate compliance. When the promisor was accommodative, the S gained by compliance whether or not the promisor gave the added reward and hence the credibility was not an important consideration.

Females were more compliant than males. Also, consistent with prior studies (Lindsold & Tedeschi, 1971; Schlenker et al, 1970) females were more cooperative than males. However, the differences in cooperativeness were confined to the 100% accommodation conditions. Males were tempted to try to exploit the accommodative source on both message and nonmessage trials, while females were lured into compliance and cooperation as long as the source was completely accommodative. It is interesting to note that these sex differences are the exact opposite of those found by others in the context of mixed-motive interactions when no communications are employed (cf. Marwell et al, 1970; Rapoport & Chammah, 1965). The addition of explicit communications of intent clarified the nature of social influence, and females, who are more suggestive and conforming than males (cf. McGuire, 1969), perform the expected behaviors.

The impressions of the source were affected by his behaviors but did not always show up in the S's behaviors. The promisor was rated more positively when his credibility was high than when it was inconsistent or low, indicating that the consistent provision of promised benefits does gain one an increment of liking, if not added compliance. However, the promisor with the least credibility was evaluated as most potent, suggesting that what one loses in liking is gained in perceived power. Finally, sources who were either totally accommodative or offered large rewards were perceived as less active than their exploitative counterparts. Apparently, a source who is perceived to be competitive by virtue of offering small rewards, behaving exploitatively, or maintaining low credibility for promises induces in the target perceptions of a dynamic source of influence.

REFERENCES

- GOULDNER, A. W. The norm of reciprocity: A preliminary statement. *American Sociological Review*, 1960, 25, 161-179.
- LINDSKOLD, S., & TEDESCHI, J. T. Reward power and attraction in interpersonal conflict. *Psychonomic Science*, 1971, 22, 211-213.
- MARWELL, G., SCHMITT, D. R., & SHOTOLA, R. Sex differences in a cooperative task. *Behavioral Science*, 1970, 15, 184-186.
- MCGUIRE, W. J. The nature of attitudes and attitude change. In G. Lindzey and E. Aronson (Eds.), *The handbook of social psychology*, Vol. 3 (2nd ed.). Reading, Mass: Addison-Wesley, 1969. Pp. 136-314.
- OSGOOD, C. E., SUCI, G. J., & TANNENBAUM, P. H. *The measurement of meaning*. Urbana: University of Illinois Press, 1957.
- RAPOPORT, A., & CHAMMAH, A. M. *Prisoner's dilemma*. Ann Arbor: University of Michigan Press, 1965.
- SCHLENKER, B. R., BONOMA, T. V., PIVNICK, W., & TEDESCHI, J. T. Compliance to threats as a function of the wording of the threat and the exploitativeness of the threatener. *Sociometry*, 1970, 33, 394-408.
- TEDESCHI, J. T., BONOMA, T. V., & BROWN, R. A paradigm for the study of coercive power. Mimeographed manuscript, State University of New York at Albany, 1971.
- WINER, B. J. *Statistical principles in experimental design*. New York: McGraw-Hill, 1962.

NOTE

1. The results pertaining to the use of reply messages are complex and are not reported here.