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The Causal Structure of Situations: The Generation of Plausible Causal Attributions as a Function of Type of Event Situation

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The causal structures for each of four types of situations—interpersonal failure, noninterpersonal failure, interpersonal success, and noninterpersonal success—were explored and compared. A first group of subjects generated plausible causes for five specific situations in each of the four general types of situations. A second group of subjects provided similarity data on these causes, which were used in a cluster analysis of the causes. A third group of subjects rated the generated causes on each of six dimensions reported in the attribution literature: changeability, locus, stability, intentionality, globality, and controllability. Analyses of the clusters of causes and the ratings revealed (a) different types of causes were generated for different types of situations, (b) different types of situations led people to generate causes that differ in dimensional location, (c) the various causal dimensions were highly intercorrelated. These findings were applied to A. W. Kruglanski's (*Psychological Review*, 1980, **87**) model of attribution processes. In addition, implications for the study of interpersonal situations and for the cognition–motivation debate over "self-serving" bias in attribution were discussed. Finally, several methodological issues were examined.

Making attributions for experienced or observed events is a basic cognitive process. When faced with important, unusual, or unexpected events we search for meaningful explanations of their causes (Heider, 1958; Jones & Davis, 1965; Kelley, 1967, 1973; Pyszczynski & Greenberg, 1981; Wong & Weiner, 1981). The importance of these processes has not gone unnoticed. Contemporary social psychology has been dominated by studies of the rational use of information in forming attributions (e.g., Kelley, 1973), biases and errors in attributions (e.g., Nisbett & Ross, 1980; Ross & Anderson, 1982; Zuckerman, 1979), motivational and performance consequences of different types of attributions (e.g., Anderson, in press; Weiner, 1979), and attributional styles of various subpopulations

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(e.g., Anderson, Horowitz, & French, in press; Seligman, Abramson, Semmel, & von Baeyer, 1979). Yet, little is known about the process that people normally use in generating and selecting attributions when they are not being prodded, probed, or manipulated by psychologists. In the typical attribution study subjects provide causal ratings or choices on attributional factors or dimensions selected by the experimenter. Such a procedure is reasonable if the experimenter's list of attributions corresponds fairly closely to attributions the subjects would generate on their own as plausible causal candidates to consider.

But researchers have imposed the same causal structure on subjects in domains as varied as anagram performance and social perceptiveness (cf. Deaux & Farris, Note 1). The most frequently used model is the one proposed by Weiner (1972) for use in achievement settings. This model sees causality as being two dimensional,[1] the dimensions being *Locus* (internal vs external) and *Stability* (stable vs unstable). The four cells created by crossing these dimensions have been instantiated by researchers by the four attributional factors of *ability, effort, task difficulty,* and *luck*. Despite warnings by Weiner and others (Anderson & Jennings, 1980; Weiner, 1979) that these dimensions and particular instantiations of them may not be appropriate for many types of situations, there has been no effort to compare the causal structure of different types of situations. Meanwhile, researchers have continued to *assume* that the above model is appropriate for all situations.

However, the situation itself may suggest plausible causes that the person then tests until an acceptable one is found. Kruglanski (1980) proposed that the attribution process is a special case of knowledge-seeking behavior consisting of two stages—problem formulation and problem resolution. It is to the problem resolution stage (and subsequent effects) that researchers have devoted considerable attention (as cited above). The formulation stage, in which the person generates plausible alternative attributions, has not received such careful attention. To be sure, there have been attempts to discover empirically what attributions are naturalistically generated in a given setting (e.g., Falbo & Beck, 1979; Frieze, 1976). Other researchers have attempted to validate the dimensional structure of causes predicted by attributional theories (e.g., Meyer, 1980; Passer, Note 2; Passer, Kelley, & Michela, 1978). But there are no studies in which the perceived causal structures of different types of situations have been compared.

Such a comparison is important on both theoretical and practical grounds. At a theoretical level the main question becomes "To what extent (if

[1] Note that more recent versions of the model have incorporated a third dimension, originally labeled "intentionality" (Rosenbaum, Note 3; Weiner, 1974). Weiner has since relabeled this dimension "controllability" (Weiner, 1979). The vast majority of studies, however, continue to focus on the locus and stability dimensions.

any) do situations determine which causes will be generated in the problem formulation stage?" In addition, the generalizability of our attributional models becomes an issue. While Weiner's attributional model of achievement situations seems to fit the data fairly well, can that model be generalized to other domains, such as interpersonal situations? Do people generate the same type of causes for failure in an interpersonal relationship as they do for failure at anagrams? Similarly, do causes of interpersonal outcomes have the same dimensional locations (i.e., are they as internal, stable, and controllable, etc.) as causes of noninterpersonal outcomes? To the extent that they differ, our attribution models may need to be modified. To study interpersonal problems, such as loneliness, the researcher must know the causal structure of interpersonal situations.

Another issue concerns possible differences in the types and dimensional locations of causes generated for success versus failure situations. If found, such differences may bear directly on the cognition versus motivation debate in understanding why people attribute success more to internal and less to external causes than failure (cf. Miller & Ross, 1975; Zuckerman, 1979). For example, success situations may elicit more internal causes than do failure situations even in the absence of self-esteem or control motivation concerns, thus challenging the motivation view of these asymmetrical attribution patterns.

While situations differ along many dimensions, these two were selected both because of their potential for demonstrating the general proposition and because each is of theoretical interest in its own right. That is, the results from this examination will address the general question of whether types of situations vary in their causal structure. At the same time the results will address the more specific questions concerning asymmetrical attributions of responsibility for success and failure and concerning differences in attributions for interpersonal versus noninterpersonal situations.

OVERVIEW

The present studies compared the causal structure of different types of situations using a methodology designed to eliminate impression management concerns and other possible motivational concerns. The propositions guiding these studies were (a) people generate plausible causal candidates for a given situation; (b) different types of situations suggest different types of causal candidates. The situations selected for use were taken from the Attributional Style Assessment Test (Anderson et al., in press). Four types of situations are sampled in this test—interpersonal failure, interpersonal success, noninterpersonal failure, and noninterpersonal success. Subjects examined each situation and generated plausible causal candidates for the outcome occurring to someone else. A second group of subjects sorted these causes into clusters perceived to be similar in meaning. Cluster analyses were performed on these data, yielding a

set of relatively independent types of causes. By examining the situations that stimulated the generation of the causes, the proposition that different types of situations lead to different types of causes was tested. A third group of subjects rated the causes on each of six dimensions of causality reported in the literature. Thus, the proposition that the average dimensional location of causes varies as a function of the type of situation was also tested.

METHOD

Generating the Causes

Nine male and fifteen female Rice University undergraduates participated in this study for credit towards a class requirement or for $3. Upon arrival at the experimental room, each subject was given a booklet containing all instructions and materials for the study. A condensed version of these instructions follows:

> On the following pages are listed some common situations with different outcomes (successes and failures). In each situation, consider the possible reason or reasons for the particular outcome of the situation. List the reason(s) on the blanks below the given situation. For each situation, give your first impression of the possible cause(s) for the outcome. There is no right answer; the important thing is your first impression of what cause(s) could have contributed to the outcome.

On the following pages were the situations from the Attributional Style Assessment Test (Anderson et al., in press), one per page. These situations describe events familiar to college students in each of four categories—interpersonal failure, noninterpersonal failure, interpersonal success, and noninterpersonal success. There are five of each of these four types of situations, and all twenty were presented to subjects in different random orders. Examples of these situations, in the format used in the present study, are interpersonal failure—"X has just attended a party for new students and failed to make any new friends"; noninterpersonal failure—"X has just failed the midterm test in a class"; interpersonal success—"X has been successful at cheering up his/her roommate who has been having a personal problem"; noninterpersonal success—"X has just won a game of *Scrabble* (the word game)." In this format, the subjects did not make public attributions for themselves, but anonymously generated plausible causes for some hypothetical person "X."

Clustering the Causes

From data of each of the 24 subjects, the first generated cause for each situation was typed on a 3 × 5 card.[2] Only the general causal portion of subjects' statements were kept. For example, the statement "X worked hard at cheering up his or her roommate" was recorded as "worked hard." Both a success and a failure version of each cause was recorded on the same card. The resulting card for the above example thus contained both

[2] While subjects generated an average of 2.48 causes per situation, only the first cause generated was examined in subsequent analyses, for two reasons. First, only one cause was generated for some situations by some subjects. Second, this first cause was presumably the most salient, and was therefore of primary interest in the present research. Note that a 2 × 2 repeated measures ANOVA on the number of causes generated for each type of situation revealed a significant main effect of interpersonal versus noninterpersonal situations. Subjects generated more causes for noninterpersonal situations, $M = 2.60$, than for interpersonal ones, $M = 2.34$, $F(1, 23) = 9.18$, $p < .01$. The other effects were nonsignificant.

the following causes: worked hard/did not work hard. This procedure was followed because the purpose of the study was to examine the general types of causes generated for different types of situations. Obviously, if the entire statement was recorded the only discovery possible would be that the statement "X worked hard at cheering up his or her roommate" is generated only in response to a situation in which X is successful at cheering up his or her roommate—a rather trivial result. The removal of the specific features of each causal statement allowed a more interesting examination of the general types of causes generated. This step thus allowed a reduction in the number of different causes from 480 (20 situations by 24 subjects) to 127, by combining causes where the general causal portion was identical.

In the next step two judges examined each of these 127 causal statement cards and combined those that appeared to have the same meaning. For example, the cause "was perseverant/was not perseverant" was combined with "was persistent/was not persistent." When the two judges did not agree that a pair of causes had the same meaning, both causes were kept. In this way, 64 causes were combined with others, leaving a total of 63 different causes. Note that while the judges agreed on 64 combinations, they disagreed on only 4.

In the second phase of the study, 7 male and 15 female Rice University undergraduates participated either for credit towards a class requirement or for $3. Each subject was given the 63 cards with the causes on them, and was asked to sort the cards into piles of cards that seemed to go together. They were allowed to make as many or as few categories as they thought appropriate. The order of the 63 cards was randomized for each subject, and subjects were instructed to read through the entire deck before beginning to sort them into piles.

A similarity matrix of the causes was constructed, based on the proportion of times a pair of causes were sorted into the same category. This matrix was subjected to a nonmetric clustering procedure, to be discussed more fully in the results section.

Rating the Dimensional Location of the Causes

A third group of Rice University undergraduates participated (for credit or $3) in this final phase of the study. Ten male and eleven female subjects rated each of the 63 causes on each of six causal dimensions. The dimensions, chosen from the literature on attributional dimensions, were described as follows.

Changeability. The degree to which the cause implies that the person can change the factors that caused the outcome (cf. Anderson et al., in press).

Locus. The degree to which the cause is located within the person, rather than outside the person (cf. Weiner, 1979).

Globality. The degree to which the cause is relevant to many different situations rather than being specific to a few situations (cf. Seligman et al., 1979).

Stability. The degree to which the cause can be expected to be present at the same level every time the same situation arises (cf. Weiner, 1979).

Intentionality. The degree to which the cause reflects an intention (cf. Weiner, 1974).

Controllability. The degree to which the cause is a factor that the person has control over (cf. Weiner, 1979).

The ratings were based on 9-point scales: 9 indicated the cause was changeable, inside the person, global, stable, intentional, and controllable; 1 indicated the cause was unchangeable, outside the person, specific, unstable, unintentional, and uncontrollable.

A different random order of the causes was presented to each subject for this rating task. For each of the 63 causes, the mean rating on each of the six dimensions was calculated. These means were used in describing the clusters that emerged from the cluster analyses and in testing dimensional location differences in the types of causes generated for different types of situations.

Debriefing

All three groups of subjects were thoroughly informed of the purposes of and their contributions to the study, and were sent a written description of the study after their participation.

RESULTS AND DISCUSSION

Description of the Clusters of Causes

The 63 causes generated in the first phase of the study were sorted by a second group of subjects into categories of similar causes. These similarity data were analyzed by a nonmetric clustering procedure (Johnson, 1967). This procedure yielded 13 clusters of causes with the minimum intracluster correspondence being 23%—that is, each item within a cluster was grouped with each other item in that cluster by at least 23% of the subjects. (The individual causes are listed by cluster in the Appendix.) One of these clusters contained only two causes, accounted for only about 1% of the generated causes, and was therefore dropped from all subsequent cluster analyses.

The remaining 12 clusters, along with selected descriptive data, are presented in Table 1. While space limitations preclude a cluster by cluster description, a few points of interest may be noted. The clusters show a diversity not captured in most attribution studies. For example, one cluster consisted of six causes labeled "Interpersonal Traits," including causes such as "has outgoing personality" and "is friendly." This cluster accounted for 14% of all causes generated, and had the highest average intracluster correspondence. On the average, each cause in this cluster was grouped together with each other cause 74% of the time. The average dimension ratings and the rankings in Table 1[3] revealed that people perceived these interpersonal traits as being relatively stable and internal causes with only moderate changeability and controllability. This is quite similar in meaning to the ability category in achievement settings (Weiner, 1979).

It is also interesting to note the infrequency of External Factors. About 9% of the causes fit this cluster. Given the emphasis attribution researchers usually place on task difficulty and luck as external causal factors, this result may seem a bit surprising. Examination of the particualr causes that comprised this cluster revealed that task difficulty (or ease) accounted for only about 1% of the total attributions, and that luck accounted for less than 3%. These results are similar to those found in achievement settings (e.g., Frieze, 1976).

Overall, results in Table 1 suggest that when a wide range of situations

[3] The dimensional ratings of the causes were averaged, using weightings based on the frequency that each cause was generated, to get a picture of the dimensionality of each cluster. No statistical tests are used here since we are primarily interested in describing the clusters.

TABLE 1

DESCRIPTIVE DATA FOR THE TWELVE CLUSTERS OF CAUSES

Causal cluster	No. of items	Relative frequency	Average intracluster correspondence	Mean dimensional rating and rank order on six causal dimensions[a]					
				Changeable	Locus	Global	Stable	Intentional	Controllable
Behavioral preparation	5	.15	56%	7.6 (1)	6.9 (6)	6.8 (1)	5.3 (10)	6.5 (2)	7.0 (2)
Effort level	9	.15	53%	6.8 (2)	7.4 (2)	6.5 (4)	5.5 (8)	6.8 (1)	7.0 (1)
Interpersonal traits	6	.14	74%	5.8 (9)	7.6 (1)	6.1 (8)	6.3 (1)	4.9 (9)	5.4 (9)
Experience & skills	4	.11	55%	6.1 (6)	5.8 (8)	6.1 (7)	5.8 (3)	4.9 (8)	5.5 (8)
External factors	7	.09	45%	4.1 (12)	3.0 (12)	5.6 (10)	4.2 (11)	3.1 (12)	3.1 (12)
General knowledge	2	.07	64%	6.7 (3)	7.3 (3)	6.6 (3)	5.6 (6)	5.2 (5)	6.3 (3)
Interpersonal skills and concern	8	.06	57%	6.0 (7)	7.2 (5)	6.2 (6)	5.8 (4)	5.8 (4)	5.7 (6)
Availability of items or information	4	.06	56%	6.4 (4)	5.4 (11)	6.7 (2)	5.7 (5)	4.9 (7)	6.0 (4)
Charismatic style	4	.06	44%	5.9 (8)	6.8 (7)	5.6 (9)	5.4 (9)	5.8 (3)	5.9 (5)
Physical attributes	4	.04	61%	4.8 (11)	5.6 (9)	5.0 (11)	5.6 (7)	4.2 (11)	5.0 (10)
Intelligence	4	.03	62%	5.0 (10)	7.3 (4)	6.4 (5)	6.1 (2)	4.2 (10)	4.4 (11)
Friendships	4	.03	44%	6.1 (5)	5.5 (10)	4.9 (12)	3.4 (12)	5.1 (6)	5.6 (7)

[a] Numbers in parentheses denote rank orderings of the clusters within each causal dimension. The larger the mean (and the lower the rank number) indicates that the causes in the cluster are perceived as being more changeable, more internal, more global, more stable, more intentional, more controllable.

is considered, the standard list of attributional factors is inadequate. It is also clear that the generated causes overlap considerably with those identified by Weiner and others, particularly when we consider the rated dimensional location of the clusters.

Types of Situations

The causes generated by the first group of subjects have been reduced to 12 general types (or clusters), without regard to the type of situation for which they were generated. A basic prediction was that the probability that a given type of cause will be generated depends upon the type of situation under consideration. To test this, we can compare the mean number of times a type of cause was the first one generated (by the first group of subjects) for the different situations. Since each type of situation was presented five times, the mean can range from 0 to 5. These means are presented in Table 2.

The design is a 2 × 2 factorial (Interpersonal/Noninterpersonal × Success/Failure), with each subject generating causes for all four types of situations. Therefore, the number of generated causes was analyzed by a 2 × 2 repeated measures ANOVA. The F values that reached significance for each type of cause are presented in Table 2.

As can be seen in Table 2 there was a main effect of interpersonal versus noninterpersonal types of situations on the generation of causes for 11 of the 12 types of causes. (For example, Behavioral Preparation was generated significantly more often for noninterpersonal than for interpersonal situations.)

This large number of significant effects demonstrates that the likelihood of a given type of cause being proposed depends to a great extent on the type of situation under consideration. In the attribution process people do not simply examine a standard list of possible causes; instead, people generate different plausible causal candidates depending upon the situation.

Rather than describing in detail the findings in Table 2, I will point out a few of the more interesting ones. First note that the causes involving interpersonal traits and interpersonal skills and concern were almost exclusively generated in relation to interpersonal situations. This is not particularly surprising, perhaps, but the fact that such causes were frequently invoked (see Table 1) indicates that researchers using interpersonal tasks must allow for this type of attribution.

Another cause of interest is the Effort Level cluster. For this cause there was both a main effect of the interpersonal factor and an interaction effect. Effort Level causes were more likely to be generated for interpersonal than for noninterpersonal situations, and this effect was particularly strong when the outcome was failure.

Finally, consider the External Factors cluster. Numerous studies have shown that people tend to blame external factors more for failure than

TABLE 2

MEAN NUMBER OF TIMES A CAUSAL CLUSTER WAS GENERATED FOR EACH TYPE OF SITUATION, AND THE PATTERNS OF SIGNIFICANCE

	Type of situation[a]				*F* values		
	Failure		Success				
Causal cluster	Interpersonal	Noninter-personal	Interpersonal	Noninter-personal	Main effect of interpersonal vs noninterpersonal	Main effect of success vs failure	Interaction of interpersonalness by outcome
Behavioral preparation	.42	1.08	.42	1.12	18.84***		
Effort level	1.33	.33	.75	.54	10.05**		12.39**
Interpersonal traits	1.25	.04	1.50	0	56.85***		
Experience & skills	.12	.88	.21	1.08	26.32***		
External factors	.62	.75	.17	.29		12.25**	
General knowledge	0	.58	0	.75	24.90***		
Interpersonal skills and concern	.42	0	.71	0	33.99***		
Availability of items or information	.17	.67	0	.33	16.32**	9.86**	
Charismatic style	.38	.04	.58	.12	14.52***		
Physical attributes	.08	.33	0	.33	11.90**		
Intelligence	0	.25	.04	.38	5.90*		
Friendships	.17	0	.46	0	18.58***	6.81*	6.81*

[a] Means can range from 0 to 5.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

they credit such factors for success. This asymmetry has often been cited as evidence of some motivational bias (see Zuckerman, 1979). But even these uninvolved, unthreatened, unmotivated (in the defensive sense) subjects generated more External Factor causes for failure situations than for success situations. It appears that external causes are not as salient or as plausible when explaining success as when explaining failure. These results must arise from nonmotivational differences between the perceived causal structure of success and failure, differences that must exist in many studies that purportedly show motivational biases in attributions for success and failure (see also Frieze & Weiner, 1971).

In sum, the results in Table 2 show that different types of situations do lead to the generation of different general types of causal candidates. Attribution problem formulation differs as a function of the situation.

One might object that these results had to occur given the particular methodology and level of cluster specificity. For example, the interpersonal skills and concern cluster could be generated only for interpersonal situations. The finding that this type of cause was generated more frequently for interpersonal situations is, in this view, trivial. Nevertheless, researchers investigating attribution processes in interpersonal settings must be aware of these types of naturalistic attributions in order to accurately represent their domain of study. But more importantly, most of the causal clusters are not tied to a particular type of situation. Most could plausibly be generated from any of the four types of situations. Effort Level, for instance, contains causes that could apply to almost any situation. Yet there were significant differences in the frequency of many of the causal clusters as a function of situation type.

Dimensional Locations of Causes

Theoreticians interested in understanding the effects of attributions on subsequent behavior and affect have cogently argued that the dimensional location of a given attribution determines its impact (e.g., Abramson, Seligman, & Teasdale, 1978; Weiner, 1972, 1974, 1979). A general finding, for instance, is that attributing an achievement failure to an internal, stable cause (i.e., ability) leads to lowered success expectancies. The previous section demonstrated that the generation frequency of a given causal cluster depended upon the type of situation being considered. A correlated question concerns the effect of situation type on the dimensional location of generated causes.

We can address this question by comparing the average dimension location of the causes generated by the first group of subjects, for each type of situation. Recall that the third group of subjects rated each of the original 63 causes on each of six dimensions of causality. By averaging these ratings for each dimension on each cause, we derive six dimension scores for each of the 63 causes. That is, each cause generated by the

first group of subjects has associated with it a controllability score, a stability score, a locus score, a changeability score, a globality score, and an intentionality score. On each dimension, and for each subject, we can calculate the average position of the causes generated for each of the four types of situations. These means are presented in Table 3. We may apply the same 2 × 2 repeated measures ANOVA used above to these data. The significant F values are presented in Table 3.

A quick look at Table 3 reveals that different types of situations do lead people to generate causes that differ in their dimensional location. Indeed, the two most commonly discussed dimensions, locus and stability, both yielded significant differences as a function of the interpersonalness of the situation and the outcome of the situation. In addition the interactions were also significant. Examination of the means for these two dimensions reveals that interpersonal situations stimulate people to generate causes that are more internal and more stable than the causes generated for noninterpersonal situations. Furthermore, causes generated for success situations are more internal and stable than those generated for failure situations. Finally, while the interpersonal situations (success and failure) differ only slightly on these dimensions, noninterpersonal success and failure situations differ greatly.

These latter findings are particularly interesting when compared to the motivational bias literature discussed earlier, in which people attribute success more to internal factors and less to external factors than they attribute failure. Paralleling the above interaction results, a review of "motivational bias" studies suggests that the bias is weak and inconsistent in interpersonal influence settings, but strong in other settings (Zuckerman, 1979). More importantly, the dimension structure of causality of *non-interpersonal* success and failure that arises from the present data is identical to results that the motivational theorists have claimed as support for their position—people attribute success to stable internal factors and failures to unstable external factors. But again, the present subjects were not making attributions for themselves; they were simply generating plausible causes for situations that might occur to an unspecified person "X." Thus, these findings may account for many of the reports of "motivational" biases in attributions. (It does not account for all such results.)

Other significant findings in Table 3 indicate that interpersonal situations and success situations yield less global causes, but yield more intentional ones. The remaining two dimensions, changeability and controlability, did not differ as a function situation type.[4]

[4] This lack of significant differences may have occurred because the type of situations sampled really do not differ in causal structure along these important dimensions. Alternatively, the ratings of changeability and controllability may have been unreliable. While reliability data are lacking, the similarity of the definitions of these two dimensions suggests that

TABLE 3

MEAN DIMENSIONAL SCORES OF THE CAUSES GENERATED FOR EACH TYPE OF SITUATION, AND THE PATTERNS OF SIGNIFICANCE

	Type of situation[a]				*F* values		
	Failure		Success				
Causal dimension	Interpersonal	Noninter-personal	Interpersonal	Noninter-personal	Main effect of interpersonal vs noninterpersonal	Main effect of success vs failure	Interaction of interpersonalness by outcome
Changeability	6.06	6.09	6.17	6.31			
Locus	6.79	5.88	6.82	6.33	31.81***	4.28*	5.02*
Globality	6.09	6.32	5.83	6.30	21.07***	5.11*	
Stability	5.68	5.30	5.70	5.54	21.16***	7.08*	6.92*
Intentionality	5.41	5.02	5.57	5.43	4.75*	9.67**	
Controllability	5.77	5.63	5.82	5.97			

[a] Means can range from 1 to 9. Large numbers indicate that the causes are perceived as being more internal, more global, more stable, more intentional, and more controllable.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Interrelationships of Causal Dimensions

The present data allow an examination of another empirical issue of increasing interest to attribution researchers. The major dimensional models of attributions for performance outcomes suggest that the causal dimensions are orthogonal. That is, for each combination of the various levels of the dimensions, a causal factor can be identified. For example, an internal, unstable, and uncontrollable cause is mood (Weiner, 1979). While it appears clear that causal dimensions may be orthogonal in this theoretical or logical sense, it is less clear that such orthogonality exists in the population of causes used by people in a wide variety of contexts (see Weiner, 1979, for a related discussion). Causes that are high on one dimension (e.g., internal) may also tend to be high on another (e.g., stable), even though one or more causes might be identified that are high on one and low on the other. Interestingly, Passer et al. (1978) have shown that causes may be unevenly distributed in multidimensional space.

In the present studies, subjects generated 63 causes for 20 different situations. While these situations do not constitute a random sample of the population of success and failure situations, they do represent a fairly broad range of such situations, and hence, allow a test of the orthogonality hypotheses at an empirical level. Thus, the six average dimensional ratings for each of the 63 causes were intercorrelated. The resulting correlations, presented in Table 4, demonstrated that the perceived dimensionality of a large sample of subject-generated causes is not orthogonal at all. All six dimensions correlated with each other with only one exception (Globality and Stability appeared unrelated). For example, causes that are internal are also likely to be changeable, global, stable, intentional, and controllable.

While it is clear that these results refute the orthogonality hypothesis at the empirical level, the implications for the attribution models are less clear. As Weiner (1979) has pointed out, our scientific models need not be the same as subjects' phenomenal ones. Whether such dimensional models (with logical orthogonality) are still appropriate is an issue beyond the scope of the present paper, and will therefore be left as an open question.

CONCLUSIONS

Theoretical Implications

It was proposed that the problem formulation stage of the attribution process is an extremely important one. At this stage people generate

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their mean ratings on the 63 causes should be positively correlated if the ratings of each were reliable. In fact, the correlation was quite high, $r = .93$, ruling out the unreliability explanation.

TABLE 4
INTERCORRELATIONS OF THE PERCEIVED DIMENSIONALITY OF CAUSES

	Locus	Globality	Stability	Intentionality	Controllability
Changeability	.57**	.50**	.40*	.81**	.93**
Locus	—	.40*	.66**	.67**	.68**
Globality		—	.19	.38*	.42**
Stability			—	.43**	.45**
Intentionality				—	.90**
Controllability					—

* $p < .01$.
** $p < .001$.

plausible causal candidates for the event to be explained (Kruglanski, 1980). The present results clearly demonstrate that the potential causes a person will consider for an event depend to large extent on the particular type of situation being examined. A type of cause that seems very plausible and salient in one situation may not even be considered in another. Since salient potential causes are more likely to be selected than less salient ones (e.g., Taylor & Fiske, 1978), understanding the attribution process entails understanding what variables influence the generation and salience of causal candidates, variables that act at the problem formulation stage. Distinctiveness of causal agent is one such variable (Taylor & Fiske, 1978). Hearing another person mention a particular cause as a potential factor is another (Anderson, in press; Anderson & Jennings, 1980). The present results indicate that the type of situation itself makes different types of causes salient.

The second major set of results indicated that the dimensional location of generated causes depends upon the type of situation. That is, the different types of situations sampled in the present studies yielded causes that differed on the locus, globality, stability, and intentionality dimensions. Such information is particularly important when comparing the attributions people make for different situations, as is commonly done in the motivational bias literature. It is also important when constructing attributional models intended to cut across important domains, such as achievement versus interpersonal. The results from the cluster analysis in Table 1 point out several types of causes that attribution researchers must attend to, when working with interpersonal situations.

A word of caution about the generality of these results is in order. I do not claim that the causal clusters listed in Tables 1 and 2 comprise a complete list of attributional factors for all types of situations. A complete examination of the types of causes for different types of situations must await the development of a complete taxonomy of situations. Given the virtually limitless number of ways situations can be classified, this appears

to be an impossible task. A main point of this research, then, is that since the types and the dimensional locations of causes that people generate *do* vary from situation to situation, researchers examining a new situation must assess its causal structure. Otherwise, the door is opened for systematic errors in interpretation, and it is shut to the possibility of discovering new types of attributions or attributional dimensions.

Methodological Implications

Several methodological points follow from these considerations. Providing subjects with the customary four attributional choices from the Locus × Stability model, without regard to the situation, will often be inappropriate. Such a procedure forces subjects to use causes that may be unrelated to the cause they would use in a more naturalistic setting. A more subtle limitation lies in making salient some causes that might not normally occur to the subject. Finally, the subject is prevented from making an attribution to a cause not on this list.

Several alternative methodologies reduce these problems. One may use pretest subjects, generating plausible causes for the target situations, to determine the final causal factors to be used on an attribution measure (forced choice or rating scale). In this way the advantage of allowing subjects to respond with more naturalistic causes is combined with the advantages of simple, objective measures of attributions (see Anderson et al., in press and Elig & Frieze, 1979, for related discussions).

A second and more complex approach parallels the methods used in the present studies. Subjects in the main study may give their attributions in an open-ended format. These responses may subsequently be clustered into meaningful groups on the basis of similarity data provided by a new group of subjects. Or one might have the initial subjects group their own open-ended responses on the basis of categories discovered to be representative of that domain by previous research. Finally, one can assess the dimensional location of the causes either by having a new group of subjects rate the causes or by having the initial subjects rate their own responses (cf. Seligman et al., 1979).

A final point concerns the necessity of assessing the effects situational manipulations may have in attributional studies. As pointed out earlier, for example, the effects of manipulations of success and failure on subsequent attributions led a number of theorists to posit motivational biases. The finding that people are more prone to attribute their successes than their failures to internal, stable causes can be more simply explained in terms of the differential salience of causes as a function of the situation (see also Miller & Ross, 1975; Ross & Anderson, 1982). More recently, motivational theorists have demonstrated asymmetrical patterns of attributions for success and failure with designs that purportedly rule out nonmotivational interpretations (cf. Zuckerman, 1979). But these studies,

too, have failed to assess the impact that their situational manipulations may have on the cognitive formulation of the attribution problem, prior to the attribution selection stage. Assessing the impact of situational manipulations on the formulation stage may resolve this long-standing debate. More generally, understanding the causal structure of particular situations is crucial to understanding attributional effects in those situations.

APPENDIX

The 63 Different Causes, Grouped into Clusters[5]

Behavioral Preparation
- Did prepare
- Planned ahead
- Did practice enough
- Is self-disciplined
- Was organized

Effort Level
- Worked hard
- Tried hard (Failure: tried too hard)
- Tried hard (Failure: did not try hard enough)
- Made an effort
- Was persistent
- Really wanted the outcome
- Sincere in effort
- Was enthusiastic
- Concentrated on task

Interpersonal Traits
- Is fun to be with
- Is likeable
- Is friendly
- Is popular
- Has outgoing personality
- Has good personality

Experience and Skills
- Is better skilled
- Has experience
- Does task often
- Is good at task

External Factors
- Has sufficient time
- Free time coincides (with task demands)
- Had good luck
- Due to chance

[5] Only the success versions are listed.

Task was easy
Others were receptive
Had bad opponent
General Knowledge
Has good overall knowledge
Is very literate
Interpersonal Skills and Concern
Is an understanding person
Sympathetic and compassionate
Cares about (other) person
Is a good listener
Is good at consoling
Interacts well with people
Communicates well
Was open
Availability of Items or Information
Had the necessary aids
Had good product or performance
Knew relevant information
Used right approach
Charismatic Style
Is effective salesperson
Is persuasive
Has leadership; is charismatic
Takes initiative
Physical Attributes
Is in good condition
Was healthy
Is athletic
Is beautiful
Intelligence
Is creative; has good ideas
Is talented
Is smart
Has analytic mind
Friendships
Knows (other) person well
Has good group of friends
Has close friends
Has same interests
Attitude Toward Task[6]
Likes task
Enjoyed task

[6] As noted in the text, this cluster was dropped from the cluster analyses because of its relative infrequency of occurrence.

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