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Editor

New Models, New Extensions of Attribution Theory

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Attributions as Decisions: A Two Stage Information Processing Model[1,2]

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Attribution theory is the most important development in social psychology. This audience hardly needs convincing; for skeptics all we need to do is to point out the dominance of attribution articles in the journals, chapters in edited volumes, and original books. Attribution theory has contributed to our understanding of traditional social psychology problems such as attitude change and resistance to change (e.g., Jones & Harris, 1967; McGuire, 1985), impression formation (e.g., Schneider, Hastorf, & Ellsworth, 1979), helping and altruism (e.g., Bradand & Lerner, 1975; Meyer & Mulherin, 1980), conformity (e.g., Ross, Bierbrauer, & Hoffman, 1976), aggression (e.g., Dyck & Rule, 1978; Zillman, 1978), and stereotyping (e.g., Hamilton, 1981). Less purely social areas have also been influenced by attributional work. For instance, the literatures on judgment and decision making (e.g., Nisbett & Ross, 1980), clinical problems (e.g., Anderson & Arnoult, 1985a; Arkin & Baumgardner, 1985), and

[1]This paper is based on a talk presented at the Third Attribution Conference, honoring Bernie Weiner, at the California School of Professional Psychology, Los Angeles, 1988.

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memory for traits and behaviors (e.g., Crocker, Hannah, & Weber, 1983) all have benefited by attribution theory. Of course, attribution theory also has advanced in sophistication and accuracy from a liberal borrowing of ideas from a variety of areas.

Types of Attribution Models

Normative Models

Much attribution work can be classified as being of one of three general types. The first is what I call normative models. These are models of the attribution process that specify how a rational, accurate attribution process may proceed. In many instances, such models represent ideal types, or what people should do for the sake of accuracy. They are prescriptive in nature. To some extent, they also describe what people can do under fairly restrictive, special, and ideal circumstances. The most obvious example of such a normative model comes from Hal Kelley's work (Kelley, 1967; 1973). Kelley has proposed proper attributional processes (analogous to the scientist role) for multiple instance cases (e.g., the covariation principle, the ANOVA cube) as well as for single instance cases (e.g., discounting, augmenting principles).

The primary role of normative models, in my view, is as point of comparison for examination of what people really do in a variety of situations. Deviations from optimal or normative attribution processes are not to be seen as "defects" for the models, because nobody (well, almost nobody) ever seriously believed that people used the normative processed perfectly.

Rather, deviations are useful because they tell us where to look for the actual processes people use. Indeed, "accuracy" may come about via a variety of processes; biases and errors point the way to the processes people actually use.

True Process Models

A number of researchers and theorists have occasionally mistaken normative models for what I call "true process" models. By process models I mean models of the attribution process designed to represent how people actually go about making attributions. Thus, Kelley's ANOVA cube has been interpreted as a model of what people actually do. Although it is true that the processes Kelley popularized (i.e., covariation detection, discounting, augmenting) are used by people under some circumstances, it is equally true that people do no typically think in the rational way suggested by the model. Other, more complicated processes are at work.

Three additional types of process models deserve brief mention here. Jones and Davis 1965; (see also Jones & McGillis, 1976) proposed a theory of correspondent inferences as a model of how people infer dispositions from behavior. An admittedly oversimplified summary of this model is that people infer dispositions that correspond to the observed (and labeled) behaviors. Thus, aggressive behavior is seen as being caused by aggressive dispositions. Jim Uleman's work on spontaneous attributions (Uleman, 1987) confirms that such correspondent inferences are fairly common and are made quickly and with little

effort or awareness. Jones and Davis (and others) have noted a number of variables that influence this process.

Motivational models posit a direct influence of deep (usually hidden) motives or needs on the attribution selection process (Zuckerman, 1979). Unfortunately, such models have usually been without a theoretically meaningful process, usually relying on a homunculus (ego) defending itself against threatening information. Claims that a particular attribution pattern is the result of an ego-defensive process require proof beyond the circular argument that the effects defend the ego. Specifically, some theoretical process is needed, as is independent empirical support for the process. In my view, neither the process nor supporting data currently exist. It is clear that self-serving "patterns" of attributions (i.e., accepting more responsibility for success than for failure outcomes) may be found in a wide array of situations (Arkin, Cooper, & Kolditz, 1980; Bradley, 1978). But no clear theoretical process has been proposed or tested, leaving the cognition/motivation debate in this area unresolved (Tetlock & Levi, 1982).

A final type of process model has received relatively little attention, but warrants development. This is the type called "Bayesian" decision models (Wetzel, 1982). The key point to these, one usually ignored by motivational models, is that prior beliefs influence the current attribution process. Obviously, people do not compute Bayesian probabilities when making a decision, but just as obviously, they do take into account the

strength of the prior belief as well as the subjective reliability of the new data for the attributional case at hand.

As is readily apparent, the first two types of attribution models, normative and true process, overlap considerably. This is because even the normative models are process oriented. The distinguishing feature used to tell when a model (e.g., Kelley's, or a Bayesian one) is being used as a normative one versus as a true process one lies in whether the scholar involved claims that the model truly represents what people do, or simply is seen as similar to what people can and should do.

Effects of Attributions

The third general type of attribution work focuses on the "effects" of attributions on other variables. Although hundreds (thousands?) of scholars have contributed to this work, one scholar in particular is identified with this approach -- Bernie Weiner (1986). Bernie has, of course, contributed much to the development of process models as well (e.g., Wong & Weiner, 1981), but in my view he has dominated and continues to dominate the attribution effects scene (along with his many excellent students, who are well represented at this conference). The kinds of questions asked by effects scholars are: What types of attributions do people make (e.g., Frieze, 1976)? What is the underlying organization or structure of attributions (Wimer & Kelley, 1982)? and most importantly, What are the effects of attributions on variables such as affect, success expectancies, motivation, performance, interpersonal interactions (e.g., Fincham,

1985; Weiner, Nierenberg, & Goldstein, 1976; Weiner, Russell, & Lerman, 1979)?

In short, much progress has been made over the last 30 years (since Heider's seminal work in 1958). This is particularly true, in my view, for Effects models. We know a great deal about how people respond to particular attributions for successes and failures, in both the achievement and the interpersonal domains. We know when people will get angry, depressed, happy, proud. We know when they will work harder, quit, or try a different approach.

However, our understanding of the attribution process itself is still quite limited. We know that people with different perspectives will often give different attributions (e.g., actor-observer differences). People with different information sets will often make different attributions -- this certainly is the major aspect of actor/observer differences (Eisen, 1979; Monson & Snyder, 1977). Numerous researchers have proposed that ego-defensive needs directly influence the attribution process, but I have not yet seen a convincing process model of how motive manipulations and features influence attributions. In all cases, the underlying "motives" or motive manipulations produce informational differences that by themselves are sufficient to account for observed attributional patterns.

Similarly, Kelley's ANOVA cube describes what people can do under ideal circumstances. The proposed processes (or more likely, analogous judgmental heuristics) are sometimes used.

In general, though, the model does not describe well how people actually make attributions.

Correspondent inference theory does little more than describe a truism relevant to those cases where a person attribution is being made -- aggressive behaviors are produced by an aggressive person, not a shy one. To be sure, the theory (and subsequent data) suggest conditions which promote or preclude correspondent inferences, but it does not really tell us much about attribution processes in general (nor was it intended to do so).

Overview of Today's Presentation

My goal today is to describe a process theory of attributions, and to present a few scattered tests of it. The theory has not been tested extensively, and several similar versions of it can account for the results I am going to present. This doesn't bother me, because all acceptable versions must change radically the way we look at the attribution process in order to account for the results. That is, the traditional models (e.g., Kelley's cube, correspondent inference theory, motivational models) are either silent on the research questions to be addressed, or they are contradicted by the empirical data to be presented. Three fairly common assumptions in particular are contradicted by the theory and data. First, it has been assumed (almost always implicitly) that people carry around (in their heads) a list of attributions, and apply the list to every attributional situation that arises. The 2-stage theory assumes, instead, that people have both specific and generic knowledge structures concerning various situations and

situation types, and that one part of the knowledge structures consists of a relatively small set of likely causes for the specific outcome. That is, there is a general causal structure for each type of situation, and these causal structures differ for different situations types.

Second, many scholars have assumed that people have deep, hidden needs that directly influence the attribution process. The 2-stage theory assumes that the attribution process proper (i.e., final selection of an attribution) is unaffected by such hidden needs. However, situational manipulations or features that activate such vaguely defined motives as ego-involvement, ego-defensiveness, self esteem motives, and so on, change the information seen as relevant or appropriate to an objective attributional analysis. Thus, motivational effects occur before the attribution process, and occur for nonmotivational reasons.

A third common assumption also is contradicted to some extend, but I haven't thought about it long enough yet to feel comfortable declaring its overthrow; I also lack sufficiently powerful data for this task. Nonetheless the assumption is worth discussing here, for this group is most likely to benefit from whatever insight I have here, and (more importantly) is most likely to improve my own thinking on it. Here it is -- recent work (sparked again by Bernie Weiner) has noted the importance of the location of a cause on several dimensions -- locus, stability, controllability. This dimensional approach assumes that the location of a cause in multidimensional space determines its effects; two specific causes sharing the same location should yield

the same effects on variables such as success expectancies, affect, motivation (effort and direction of effort), and performance. My own work (as well as others) on attributional styles of depressed, lonely, and shy people has benefited from this dimensional approach (Anderson & Arnoult, 1985b; Feather, 1983; Seligman, Abramson, Semmel, & von Baeyer, 1979).

However, people do not think in dimensional terms, unless asked to do so by some nosy psychologist (there may be two exceptions to this -- liking and intelligence -- but my own recent work on implicit personality theory suggests otherwise). People do not attribute their recent miserable performance on a blind date to something that is internal, stable and uncontrollable; they attribute it to their social incompetence. This is not a problem for the dimensional approach if one regards dimensions as "second order" concepts useful to scientists (again, as pointed out by Weiner, and others). The problem, though, is that the kinds of attributions people make carry more information than the dimensional locations. Thus, I suspect that one can find attributions that are located in (essentially) the same place in multidimensional space, but that have different effects.

As an example, consider two possible attributions for initial failure at the task of persuading people to donate blood -- lack of effort, use of a poor strategy. Both attributions are in the same multidimensional space -- internal, unstable, and controllable. The primary implication of a lack-of-effort attribution is that one try harder. The person may try different strategies, or may not. The strategy attribution, though, implies that one should continue

trying hard, and that one should try a different strategy. Thus, if the task is one in which strategies are both important and non-obvious, the strategy attribution should lead to greater improvements in performance over time. However, if the task is one in which effort is important, and strategies are unimportant or are so obvious that the person selects the best one initially, the effort attribution should lead to greater improvements. I hope to have time to discuss this later, but as it is not central to the 2-stage theory, let's move on now.

Let me summarize this introduction by referring to Figure 1 and discussing it briefly. First, note that Bernie and his students have contributed to both the attribution process and the attributional effects sides of this figure. Attribution process questions include asking when it occurs, how it occurs, and what the contents or outcomes of the process are. The contents, of course, are attributions, and the effects of various contents have been documented across a wide array of important variables such as success expectancies, motivation, performance quality, and affect.

FIGURE 1. Attribution Process versus Attribution Effects

Attribution Process	vs.	Attributional Effects
*When *How *Contents		Effects of Content on: *Success Expectancies *Motivation *Performance Quality *Affective Reactions

The Two Stage Model

Testing Strategies

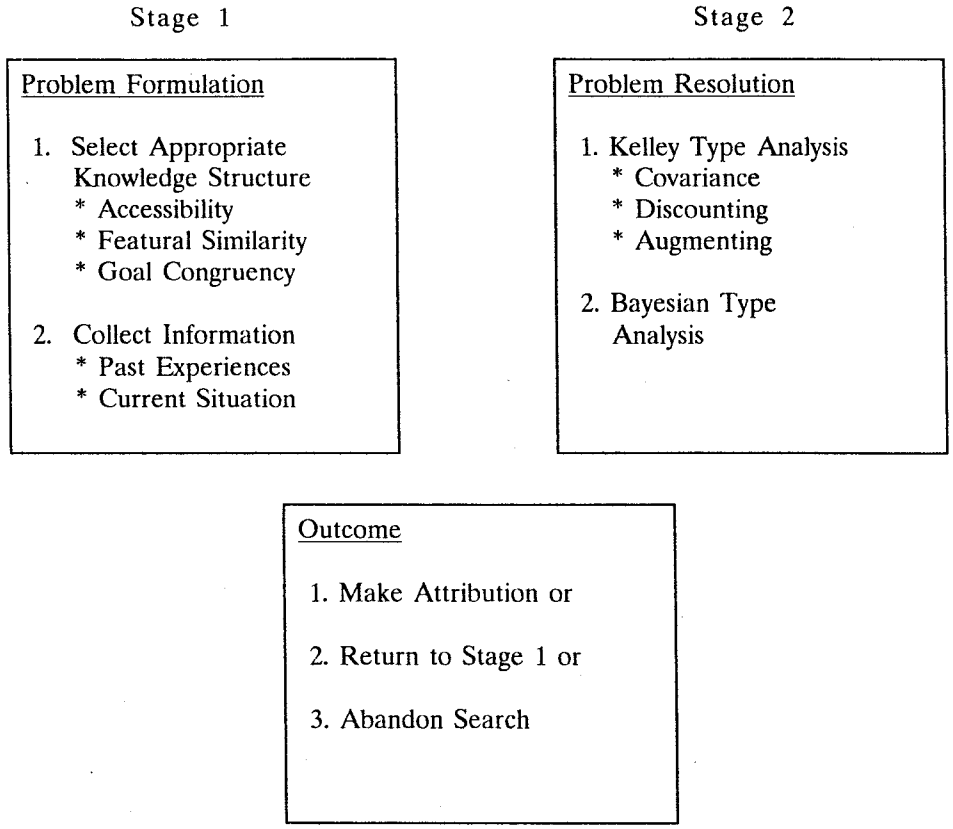
My focus today will be on my work concerning how the attribution process proceeds. There are two ways of testing process models, as can be seen in Figure 1. Most obviously, one can assess attributions and other cognitive contents of the process. In the first three sets of studies to be presented this approach was used. Alternatively, one can assess the various effects manipulating process variables to see if and when theoretically relevant manipulations produce important changes in them. The second set of studies to be presented used this approach.

The Two Stage Model

Here, then is the two stage model of attributional processing. I should point out that this model borrows heavily from Arie Kruglanski's (1980) work on lay epistemological processes.

Problem Formulation. The first stage, problem formulation, is one in which the causal candidates are generated and information relevant to testing them is brought to mind. First, a guiding knowledge structure is selected, based on a variety of criteria such as its accessibility (salience, chronic usage or recent priming). It is featural similar to the problem at hand (for example, only interpersonal knowledge structures will be recruited for use in explaining an interpersonal outcome), and goal congruency (two major goals are public self-presentation, which we are not concerned with today, and private attributions, which are intended to be accurate). The guiding knowledge structure

FIGURE 2. The Two Stage Model of Attribution Processing



contains information about the plausible causes for the specified outcome (i.e., the causal candidates) and about what further information is needed to test each of the causal candidates.

This guiding knowledge structure also prompts a search for this additional information, which may come from the person's past and from the current situation. It is at this stage that I propose to locate motivational effects. Specifically, motivational variables influence the kind of information seen as relevant to the attributional analysis, via activation of various knowledge structures.

Problem Resolution. At stage two the information gathered at stage one is assessed via the kinds of processes postulated by a variety of scholars (though imperfectly). Covariation detection is done (to the extent possible by the "lay statistician"), the discounting and augmenting principles come into play (but less so than would be expected by a perfect judge), prior beliefs and probabilities are revised (or not). The outcome of all of this depends upon a variety of factors. If one of the causal candidates garners enough support, it becomes the attribution. If not, then one of two things can happen. The process may return to stage one and begin again, but with a different guiding knowledge structure. Alternatively, the search may be abandoned. The amount of time and resources available, as well as the perceived importance of attributional search will determine which of these courses will be followed.

This is a bit vague, but two unique points are worth mentioning. First, the model emphasizes the importance of real world knowledge brought to bear on the problem by the attributor. Attributions are not made in a vacuum, but in a historical context. Second, there are a variety of cognitive

processes going on, and a variety of nonnormative effects arise from these processes. For instance, priming various knowledge structures or causal candidates will influence the final outcome. In addition, various cognitive judgmental processes (such as covariation detection) differ from what a normative model specifies (Crocker, 1981; Lane, Anderson, & Kellam, 1985).

Empirical Tests of the Two Stage Model

Consideration of this model leads to a variety of unique predictions. Let's turn to several of these, and to the relevant data.

Different Causal Structures for Different Situation Types

The first assumption I wish to challenge is that people carry around one generic list of causal candidates that is used in different types of situations. Specifically, the two stage model assumes that people have specific knowledge structures for different types of situations, and that these knowledge structures include a small set of plausible causal candidates relevant to the particular type of situation. In essence, there is a causal structure of situations that varies from one type of situation to another. What this means operationally is that if you ask people to think about a particular type of situation and to generate plausible causal candidates for the specified outcome (i.e., success or failure), you will get different lists of causes for different types of situations. At one operational level this prediction is trivially true; playing professional sports requires an extremely high level

of physical ability whereas conducting original basic scientific research requires an extremely high level of intellectual ability.

There are two operational levels at which the prediction is not trivial. First, one can examine the generated causes to see if different general types emerge for different types of situations. In the sports and science examples just mentioned, the causes (extremely high physical and intellectual ability) are of the same general type, namely, ability. Thus, we can test to see if such general types of causes are equally likely to be generated as plausible causal candidates for different types of situations.

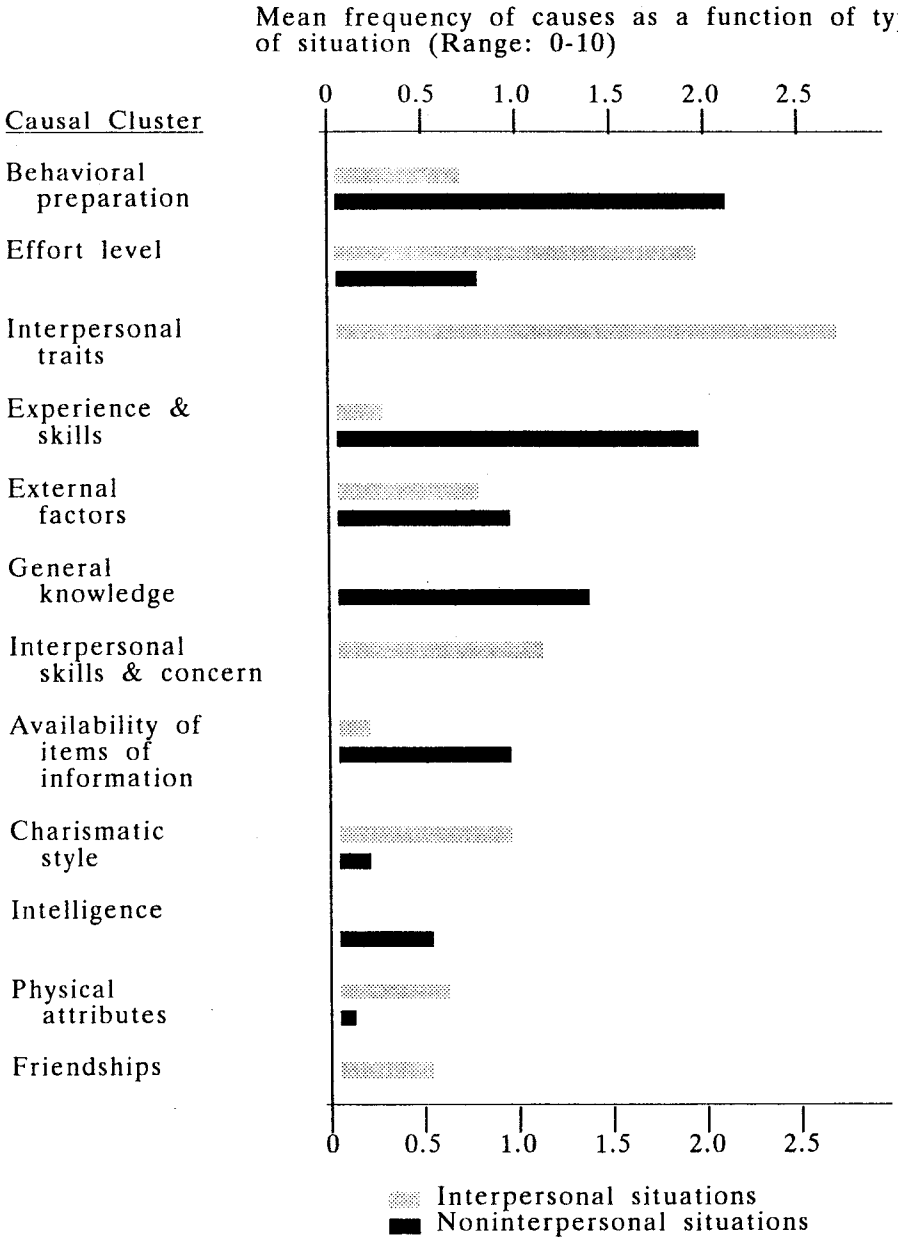
Second, one can examine the dimensional location of the generated causes to see if generated causes for different types of situations are differentially located in multidimensional space. Again, the previous sports and science examples yielded causes that are located in the same multidimensional space (i.e., internal, stable, uncontrollable) despite being quite different at a very specific level. Thus, to test the causal structure prediction in a nontrivial way one must look at the generated causal candidates (generated in response to different types of situation) from a more general perspective, either in terms of types (or clusters) of causes or in terms of multidimensional space location.

Several years ago I conducted research to examine this question (Anderson, 1983a). Three groups of subjects participated in this work. The first group examined four types of hypothetical situations contained in the Attributional Style Assessment Test (version I)(Anderson, Horowitz, & French, 1983) -- interpersonal success, interpersonal failure, noninterpersonal success, and

noninterpersonal failure. There were five situations of each type. These subjects were instructed to generate several plausible causal candidates for each situation (not attributions). Two researchers examined these causal candidates and rewrote them into a more general form, eliminating duplicates. For example, "worked hard at making friends" became "worked hard." This resulted in a set of 63 causal candidates, each worded in both a success and a failure direction (e.g., worked hard; did not work hard).

These 63 (success/failure) causal candidates were typed on individual cards and presented to a second group of subjects, whose task was to sort them into similar piles. These similarity sort data were then subjected to a cluster analysis procedure. Thirteen clusters, or general types of causes, emerged. This empirically derived classification scheme was then used to classify the causes generated by the original subjects in response to the four types of situations. Specifically, for each type of cause I examined (via 2 x 2 ANOVAs) the frequency with which it was generated as a function of the two independent variables of interpersonal versus noninterpersonal and success versus failure. The two stage model predicts that general causal types will not be generated with equal frequency across types of causes. The results strongly supported this prediction. There were quite a few main effects and interactions involving the type of situation variables. Figure 3 shows the interpersonal versus noninterpersonal main effect results.

FIGURE 3. Frequency of Generation of General Causal Types as a Function of the Interpersonalness of the Situation Types



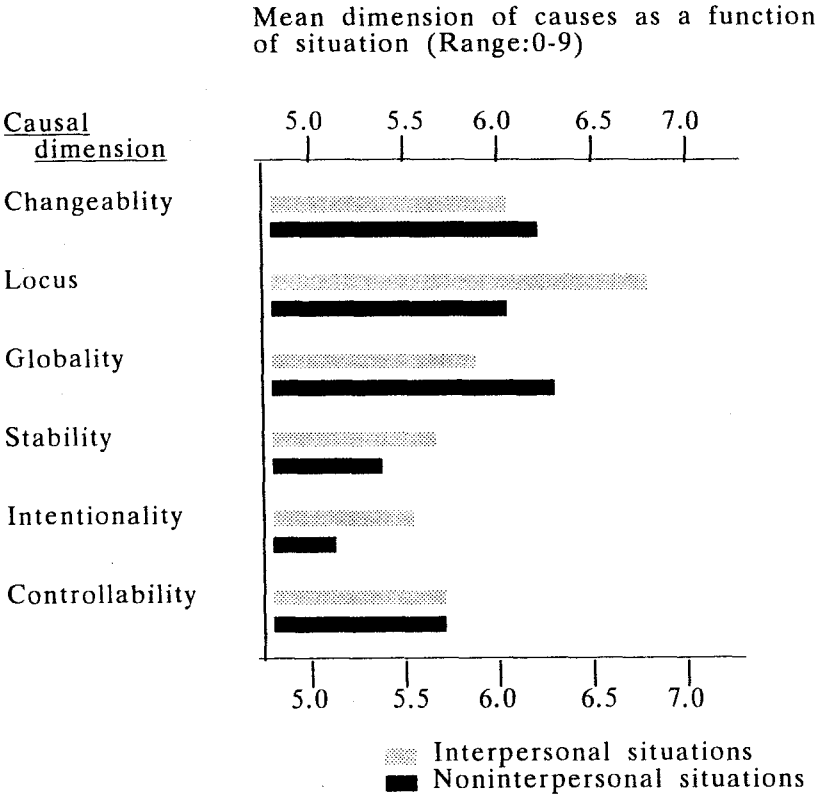
The third group of subjects rated the 63 causes on each of six causal dimensions, derived from previous attribution work. Thus, for each causal candidate one could derive scores indicating its location in multidimensional space. These scores were assigned for each dimension for each causal candidate generated by the first group of subjects. Thus, it was possible to see if the dimensional location of causes differed as a function of the type of situation that led to its generation. The results of this analysis also strongly supported the two stage model predication; there were many main effects and interactions involving the interpersonal versus noninterpersonal and success versus failure variables. Figure 4 shows only the interpersonal versus noninterpersonal main effect results. Again, the original report has more detailed results.

In sum, different types of situations do seem to have different causal structures. Thus, people do not consider the same set of causal candidates for different types of situations. This work demonstrates that interpersonal situations differ from noninterpersonal ones, and that the causal structure of success differs from that for failure, even for the same task. Obviously, there are other ways of partitioning situations; I suspect that many of them would yield comparable causal structure effects.

Causal Structure/Attribution Relation

A second prediction from the two stage model concerns the effects of causal structure, which is a feature of stage one processes, on attributions at stage two. Knowing the causal

FIGURE 4. Mean Dimensional Location of Causal Candidates as a Function of the Interpersonalness of the Situation Types



structure of a set of situations should allow one to predict the attributions that will be made for those situations. That is, there should be a correlation between causal structure and attributions. A corollary to this involves the different information available for actor and observer subjects. In general, observers will have less relevant information than will actors. Thus, observer attributors are particularly dependent on the causal structure information.

Actor attributors, however, tend to have more individuating information such as their own past performance in past similar situation. Thus, actor attributors are more likely to reject the causal structure suggested by the first run through the two stage process, and are more likely to search for alternative knowledge structures (with different causal candidates). There is some evidence in support of this, in terms of processing times to certain kinds of attributional questions (see Smith, 1984). The main point here, though, is that actor attributions are expected to deviate more from the causal structure than observer attributions because of actors' superior information base.

Both of these predictions were tested in a recent study of mine (Anderson, 1985). Subjects made attributions for themselves and for an unknown other person, for each of the hypothetical situations used in the earlier causal structure research. The correlations between causal structure of these situations and the attributions generated for them were computed separately for actors and observers. As expected, knowing the causal structure of the situation did allow very good prediction of the attributions, as shown by the high correlations presented in Figure 5. Also as predicted, observer attributions correlated significantly higher with the causal structure than did the actor attributions.

Relocating Motivational Effects

The third prediction to be considered today concerns recent work on the effects of motivational manipulations. As mentioned earlier, numerous scholars in this area subscribe to the notion

FIGURE 5. Correlation Between Observer and Actor Attributions and Causal Structure Across Situational Types

Causal structure correlations with actor and observer attributions

Actor r = .88

Observer r = .97

t(diff) = 3.91 .p < .002

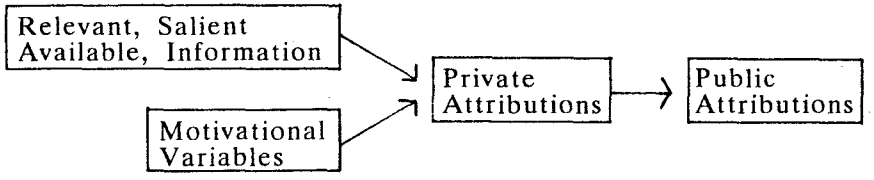
that the motivational state of the person can directly influence the attribution process. That is, an ego-involved person will make attributions that protect or enhance the ego. In my view, the motivation/cognition debate in attribution theory has consisted of two separate patterns. The motivation theorists have demonstrated a variety of interesting and important effects, such as the finding that people typically accept more responsibility for successful outcomes than they do for failure ones. They have then assumed that the result of this attributional pattern (i.e., self-enhancement or protection) is also the cause of it. But no process, other than some magical, circular, or teleological one, has been proposed. The cognitive theorists (e.g., Miller & Ross, 1975), on the other hand, have devoted considerable energy to explaining away the important phenomena discovered by the motivational theorists, but in nonmotivational terms. Indeed, they have provided a variety of cognitive processes through which such seemingly motivational effects occur. For example, people are more likely to perceive a covariation between their behaviors and

success than between their behaviors and failure, primarily because success is congruent with their intentions, their efforts, and their expectations.

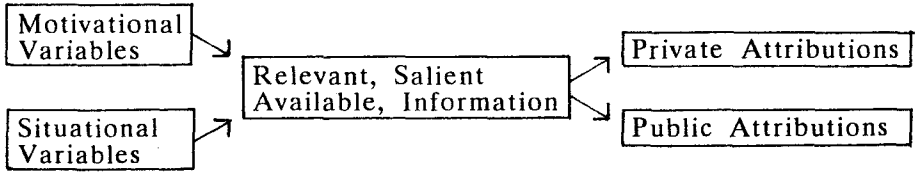
The most recent motivational paradigm was designed to rule out such cognitive process differences between the success and failure situations, by manipulating motivational factors (e.g., ego-involvement) after the success or failure experience has taken place. For example Miller (1976) had subjects succeed or fail on a "social perceptiveness" test. Afterwards, they were given information about the supposed validity of the test in order to manipulate ego-involvement. High involvement subjects were told that the test was very valid, had been given to many people, was used in job candidate selection, and was related to marital satisfaction and other social perceptiveness type variables. Low involvement subjects were told that the test was new, hadn't been given to many people, and didn't seem to correlate with much of anything. Then, subjects were asked to attribute responsibility for their performance on the test. Because the ego-involvement manipulation took place after the outcome feedback, the informational differences supposedly had been ruled out. Thus, if the high ego-involvement subjects showed a stronger self-serving pattern of attributions (i.e., more personal responsibility for success than failure) than low ego-involvement subjects, the effect must be due to a motivational impact on the attribution process. However, this line of reasoning assumes that the cognitive sets of the two ego-involvement groups will be the same at the time the attribution process is engaged, an assumption that is

demonstrably false. The two state model predicts that the motivational manipulation changes the knowledge structures brought to bear on the attributional problem. Specifically, highly ego-involved subjects are more likely to see their past performances in related domains as being relevant to the current analysis. This informational difference, arising from stage one processes, produces the attributional difference seen at the end of stage two processes. The model essentially relocates motivational effects from attribution selection (stage two) to problem formulation (stage one). Furthermore, it provides a clear process model for motivational influences, and it is (in my view) a cognitive one, though I have no strong objection to those who wish to call it motivational. Figure 6 displays this relocation.

FIGURE 6. Relocating Motivational Variables



Model depicting motivational influences on the attribution process.



Model depicting motivational influences on the information selection process, both not on the attribution process.

The simplest way to test this idea consists of several steps. First, one must show that motivational manipulations do produce knowledge structure differences in problem formulation. The best way is to do this with uninvolved observer subjects, because obtained informational differences cannot be attributed to ego-involvement. In one such study (Anderson & Slusher, 1986, experiment 1), I gave observer subjects the same high versus low ego-involvement instructions used by Miller, though of course, they were not ego-involved because they did not take the "social perceptiveness" test and knew they were not going to do so. They were asked to indicate what kinds of information about another person they would deem useful in interpreting that person's performance on the test. We predicted that those who saw the High involvement description of the test would be more likely to ask for relevant information, such as marital satisfaction.

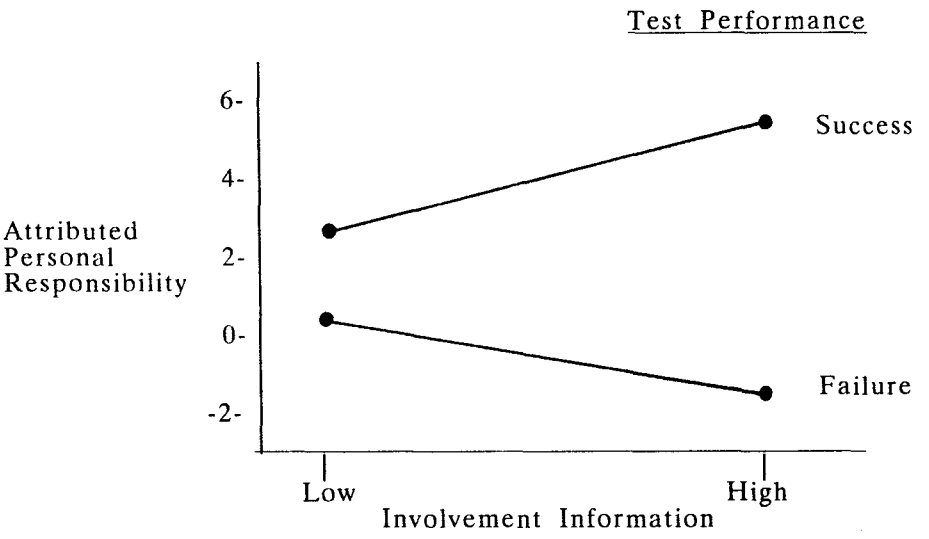
Next, subjects rated several different pieces of potential supplementary information for how relevant it would be in interpreting a target person's performance. Some of the items were "relevant" (e.g., marital satisfaction); some were not (e.g., eye-hand coordination). Figure 7 presents the results. As expected the so-called ego-involvement manipulation influenced the knowledge structures used in problem formulation by these uninvolved observer subjects. High involvement descriptions of test validity led to more requests of relevant information, and higher relevance rating of relevant information than did low involvement descriptions.

FIGURE 7. Observer Requests for and Ratings of Relevant Information as a Function of the Ego-Involvement Instruction Set

	Ego-involvement Instructions		
	High Involvement	Low Involvement	High-Low Difference
% Subjects Spontaneously Requesting at least 1 Relevant Piece of info.	77 %	33 %	44 %
Average Relevance Ratings of Relevant Information	7.05	5.86	1.19
Average Relevance Ratings of Irrelevant Information	3.84	4.27	-.43

In two subsequent experiments we (Anderson & Slusher, 1986) demonstrated that this stage one informational difference was sufficient to reproduce the exaggerated self-serving pattern of attributions in observer subjects who made attributions about some unknown other person. Figure 8 presents the results from one of these experiments. Because these observer subjects were not making self-attributions, we concluded that there was no evidence that the motivation manipulations in this paradigm had any influence on the stage two attribution process. Rather, motivation manipulations seem to have their impact on stage one knowledge structure selection processes.

FIGURE 8. Observer Responsibility Attributions



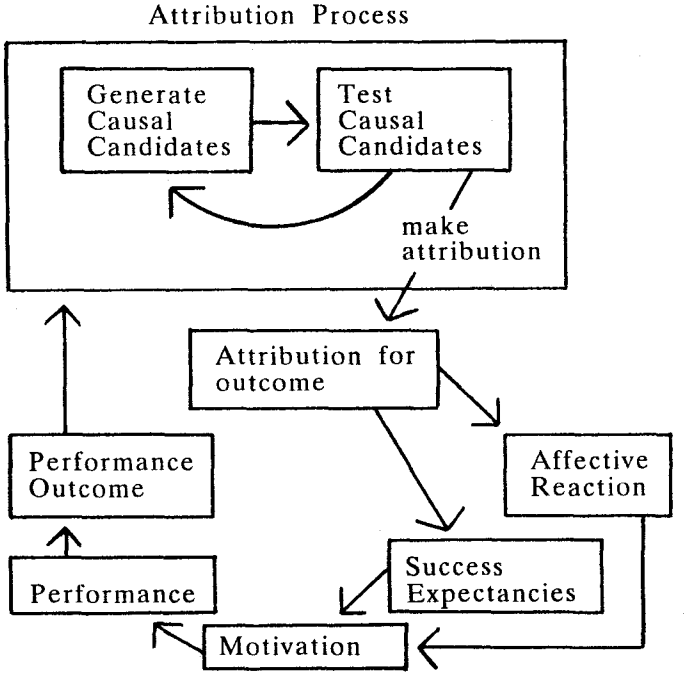
Priming Causal Candidates

The final two predictions I wish to discuss concerning priming effects. The two stage model suggests that by changing the knowledge structure used at stage one, the attributions made at stage two as well as subsequent behaviors may be changed. In particular, if one makes different sets of causal candidates available at stage one, and if the candidates available include truly plausible ones (i.e., they are likely to be accepted at stage two), then one should be able to influence success expectancies, motivation, and performance (as well as other variables).

Figure 9 presents a simple attributional model of motivation and performance, with the two stage model detailed as "Generate Causal Candidates" (stage one) and "Test Causal Candidates" (stage two). I will not describe the model in detail here, both because it is fairly self-explanatory, and because more detailed models of a similar nature have been presented elsewhere by Bernie, of course, and others (e.g., Anderson & Arnoult, 198?). My point here is that knowing something about the effects of various types of attributions allows one to test attribution process models by manipulating variables designed to influence attributions, and then measuring various outcome effects. One could also attempt to measure attributions, but the realistic situations in which I'm interested tend to elicit public attributions influenced by self-presentation concerns rather than private attributions. Thus, we get better tests of the model by looking at other types of effect variables.

Priming In and Out of Context. The fourth prediction, then, is that by priming a particular cause (thereby changing the stage one knowledge structures and causal candidate list) one should be able to change the performance of people in a given task. Furthermore, the priming effect should occur in situational contexts that are very different from the priming situation. For example, priming someone to attribute failure at a basketball shooting task to lack of ability should influence reactions of failure in that task, and to failure in a subsequent interpersonal task as well.

FIGURE 9. Attribution Model, With Attribution Process Detailed



Of particular interest to me is people's performance after exposure to initial failures at a task. The main reason for this interest is that many people display self-defeating reactions to failure, and attributions play an important role in these reaction.

In a recent experiment (Anderson, in preparation), these priming notions have been tested, though I should note that I want to replicate the study before concluding the predictions are entirely confirmed. Subjects performed two tasks. In one they

tried to score as many points as possible in one minute in a basketball shooting task, using a child's basket and a foamball. Subjects had to shoot with their non-preferred hand, and were allowed to choose to shoot from one of several places marked on the floor. The locations had varying point values, and there were several one minute trials. The second task consisted of preparing and delivering (on several trials) a one minute TV commercial designed to persuade people to donate blood to a local blood bank. In both tasks, subjects received failure feedback on initial trials. Also, subjects were video taped performing both tasks. Order of task was counterbalanced across subjects.

The priming manipulation was delivered by a confederate. As the subject entered the lab, the confederate walked out with the experimenter. While discussing the task with the experimenter (whichever one the subject was going to do first), the confederate mentioned one of three types of causes -- ability, strategy, or effort. The conversation was staged such that the subject had to hear it. These three causes were chosen because the effects literature suggests that they produce clear and different outcomes. Ability attributions for failure typically produce lower motivation and performance quality, whereas strategy and effort attributions typically produce higher motivation and (often) improved performance. These effects are often context dependent, but seemed applicable to the tasks at hand. Strategy and effort were both used as a preliminary test of the notion that dimensional locations of causes do not capture all the important information contained in an attribution. Specifically, strategy and effort

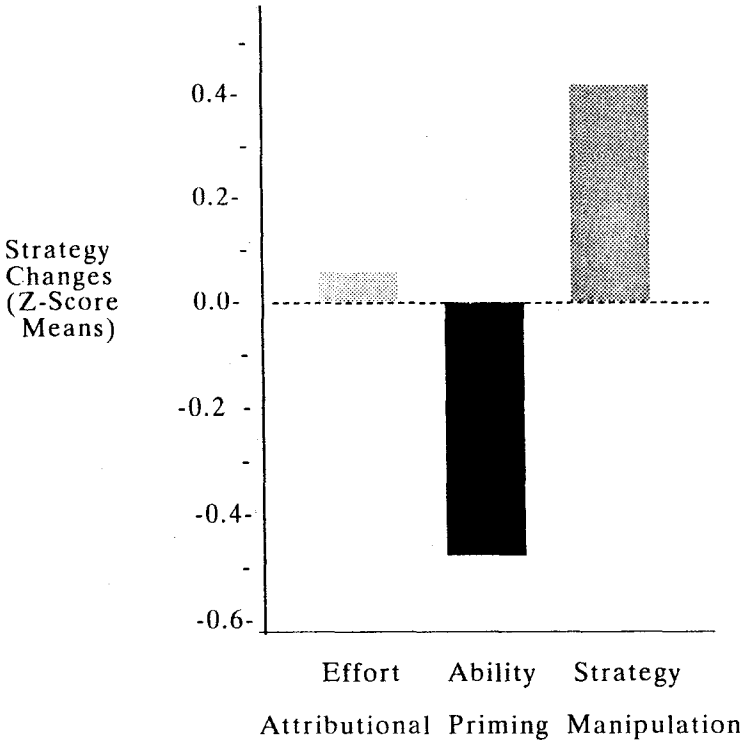
attributions are located close to each other dimensionally (they are internal, unstable, controllable). But I expected them to produce some different effects.

After the subjects completed the first task, the experimenter primed the cause again, but related it to the first task. Thus, the primed cause was never mentioned in conjunction with the second task.

Only two of the various dependent measures are of interest in the present context. One was a measure of the number of strategy changes subjects displayed across trials. Even though effort and strategy attributions are located in essentially the same multidimensional space, they have slightly different meanings. Failure attributed to effort should lead to increased effort, and perhaps to a few strategy changes. That is, trying harder often involves trying something else, but does not guarantee trying something else. Failure attributed to use of a poor strategy should lead to continued high effort, but also guarantees a shift in method or strategy. Thus, the priming manipulation should result in more strategy changes in the strategy primed subjects than in the ability primed subjects, with effort primed subjects showing an intermediate level of strategy changes.

For each task, strategy changes scores were converted to z-scores so that an overall analysis could be done. The results, as shown in Figure 10, confirmed the two stage model prediction of priming. Furthermore, there were no main or interaction effects of order (first vs. second task), indicating that the prime was equally effective even on the out-of-context task.

FIGURE 10. Strategy Changes as a Function of Priming Manipulations



The second measure of interest was change in performance quality. For both tasks, this was measured by dividing the difference in performance between the late and early trials by the sum of the late and early trial performances. Positive scores therefore indicated improvement whereas negative scores indicated declines in performance.

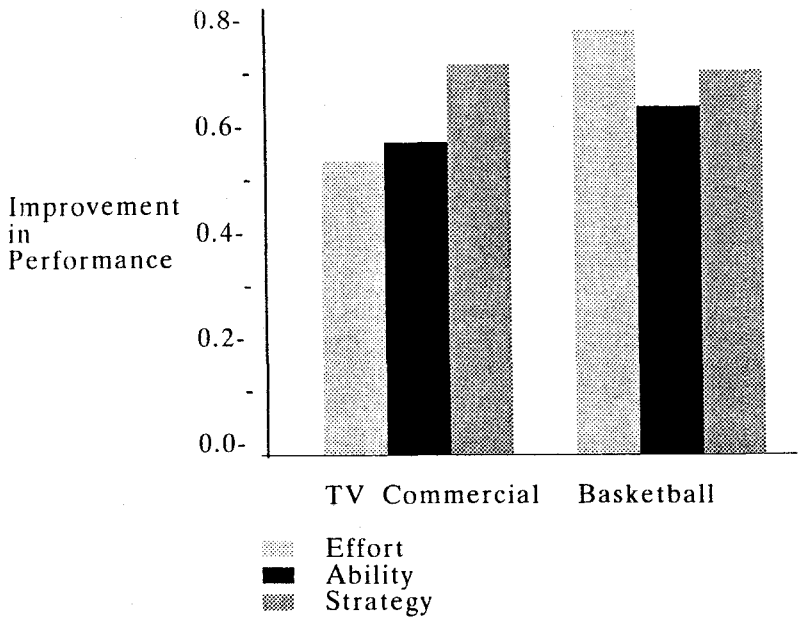
Predictions for the TV Commercial task were straightforward, based on similar previous work. Strategy subjects were expected to show the most improvement on this task. Because subjects typically work very hard at this task, and because the task is strategy dependent, it was expected that effort subjects would not show unusually high improvement. Ability subjects also were expected to show relatively little improvement.

The basketball task is somewhat different, though. Performance certainly is both strategy and effort dependent. But the best strategy may be obvious to most subjects -- pick a distance which allows one to make many shots but not one so close that the point value is to low. Thus, shifts in strategy may not help performance much. Effort level is important in the sense that the faster one recovers the ball the more shots can be taken. In addition, the more attention one pays to the task, the quicker one learns to adjust to shooting errors. Thus, effort subjects were expected to show lots of improvement relative to the ability subjects. Strategy subjects were expected to show intermediate levels of improvement.

Note that the two stage model merely predicts that the priming manipulation would have some reliable effects on performance. Specific predictions, as outlined above, depend on the adequacy of the effects models being used. Figure 11 presents the results of the performance improvement measures. As expected, the strategy subjects showed the most improvement in the TV Commercial task, whereas the effort subjects showed the most improvement in the basketball task. These effects were

both significant, as were the task by attributional prime interaction. However, as expected the task order variable did not interact with the prime and the task variables, suggesting that the priming effects were essentially the same on both the first and second task.

FIGURE 11. Performance Changes as a Function of Priming Manipulations.



One final feature concerning these data also are of interest. Note that strategy and effort are located in essentially the same multidimensional causal space (internal, unstable, controllable). Thus, according to a dimensional approach they should yield the

same effects. That they did not do so on either the strategy change or the performance quality measures suggests that the specific attributions themselves carry important information (see also Sujan, 1986). Obviously, one can create more dimensions to account for such failures of the dimensional approach, but it is not clear to me how valuable it would be to do so.

Priming Congruent versus Conflicting Causal Candidates. The fifth and final prediction I want to discuss concerns attributional style and the interpersonally debilitated. Numerous researchers have demonstrated that people with various problems in living such as depression, loneliness, and shyness have different attributional styles than do their non-debilitated counterparts. In addition, attributional style differences are particularly pronounced when assessed for interpersonal failures (e.g., Anderson & Arnoult, 1985b; Anderson, Horowitz, & French, 1983; Anderson, Jennings, & Arnoult, 1988). Specifically, people suffering from these problems in living are relatively more likely to attribute interpersonal failures to uncontrollable causes such as their lack of ability or their personality traits, and are relatively less likely to attribute such failures to controllable causes such as insufficient effort and use of an ineffective strategy. Indeed, one of the problems of past motivational models of attribution has been their inability to account for self-deprecating patterns of attributions displayed by such clinically troubled groups. A typical motivational explanation has been to posit a different set of hidden needs for these people. The two stage model (as well as research in self-schema theory) suggests that the self-deprecating

pattern arises from stage one processing. That is, the knowledge sets used by depressed people (for instance) are different than those used by nondepressed.

There are two likely sources of difference at stage one. One possibility is that the debilitated people have a different and maladaptive causal structure for the problem situations. The other possibility is that the causal structures are essentially the same, but that the self-relevant information (e.g., beliefs, prior probabilities, recall of past experiences) brought to bear on the problem is different. Of course, it is also possible that both are different.

Let us assume, for the moment, that the difference is the causal structure perceptions. What does the two stage model have to say about performance and interventions designed to influence performance in interpersonal settings? Briefly, it suggests that attributional priming manipulations should have significant and specific effects on variables such as success expectancies, motivation, and performance. People with maladaptive attributional styles for interpersonal failure should be more adversely affected by initial failures than people with adaptive attributional styles. Priming adaptive cases should improve the failure response of people with a maladaptive attributional style, but should have little impact on people with an adaptive style. Conversely, priming maladaptive causes should hurt the performance of people with an adaptive style, but should have little impact on people with a maladaptive style. This is because the priming manipulations would affect the knowledge

structures and causal candidates lists of subjects only when the prime "contradicts" the attributional style.

At the moment there are no data on possible differences in causal structure between people with adaptive versus maladaptive attributional styles. I do have one relevant priming study, though (Anderson, 1983). Subjects were preselected for having either a maladaptive or an adaptive attributional style for interpersonal failures, and performed an interpersonal persuasion task. Prior to the task they were assigned to one of three attributional priming conditions. Some subjects received no prime; these were expected to perform as a function of their attributional style. Maladaptive style subjects were expected to have lower success expectancies, lower motivation, and poorer quality performances than were adaptive style subjects. Other subjects received adaptive primes. Specifically, they heard mention of strategy and effort causes as potential explanations for performance. The remaining subjects received maladaptive primes, hearing mention of ability and trait causes. The priming manipulations were embedded in the experimental instructions, presented quite some time before task performance.

The task was to persuade people on the telephone to donate blood to the local blood bank. This is a difficult interpersonal persuasion task, guaranteeing much failure. Subjects examined relevant blood bank information and made a (rigged) failure call in the laboratory. Subsequently, they called from their homes for a one week period, and then returned to the lab. The three

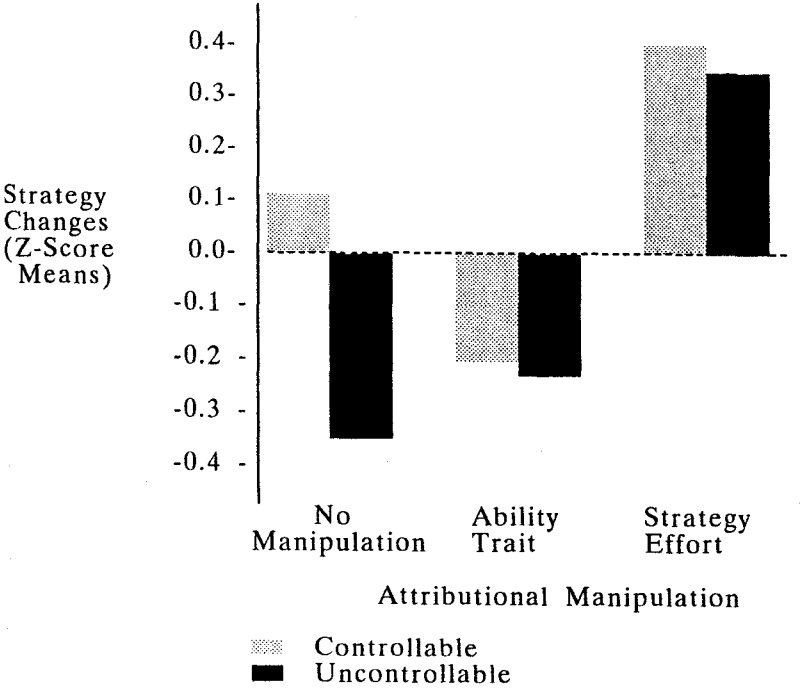
primary dependent measures were success expectancies, motivation, and performance quality.

On all three measures the predicted results (outlined above) were obtained. A z-score composite index of these results is present in Figure 12. Attributional style had a dramatic impact on performance in the absence of causal primes. It had no impact in the priming manipulation conditions. In those conditions, subjects' performances depended upon the causal primes. Thus, it appears that part of the problem of people with maladaptive attributional styles lies in their causal structure of the problem situations. Further work is needed on this point, however.

Conclusions

To summarize, the two stage model views the attribution process as a variant of Kruglanski's epistemic problem solving process. Specifically, the first stage consists of problem formulation; the second stage consists of problem resolution. Problem formulation is influenced by a variety of factors, including the salience or accessibility of relevant guiding knowledge structures. In stage one a variety of knowledge structures are brought to bear on the problem, including information about one's past performance in the domain, one's expectancies and intentions, and other information from the present situation. Motivational manipulations and motive levels have their impact at this stage, by influencing the selection of relevant knowledge structures. Problem resolution is the actual

FIGURE 12. Performance Quality (Z-Score) as a Function of Attributional Style and Priming Manipulations



attribution process. People do use the various attributional process proposed by Kelley and others, but do so imperfectly. For example, people do something like a covariation assessment, but do so through use of various judgmental heuristics (see the edited volume by Kahneman, Slovic, & Tversky, 1982).

The main advances of this model are: (a) It takes into account the knowledge held by the perceiver concerning the past, the target of the attribution analysis (self or other), situations, and causes; (b) It relies on demonstrated information processing effects at the attributional stage, rather than normative principles; (c) It accounts for motivational variables in testable, process

terms; (d) It suggests that people's knowledge about causes goes beyond dimensional thinking, and thus accounts better for our intuitions and for our data; (e) It suggests a fairly detailed account of attributional style problems; and (f) It suggests practical ways of modifying maladaptive thought processes and subsequent self-defeating behaviors by modifying the underlying social cognitions.

Future work will be directed at testing some of the presently untested predictions, and further specification of the admittedly vague premises in the present version. Those of you who have ideas or data relevant to any of this are invited to share them with me. I would certainly appreciate any assistance or insight offered.

References

Anderson, C.A. (1983a). The causal structure of situations: The generation of plausible causal attributions as a function of type of event situation. Journal of Experimental Social Psychology, 19, 185-203.

Anderson, C.A. (1983b). Motivational and performance deficits in interpersonal settings: The effects of attributional style. Journal of Personality and Social Psychology, 45, 1136-1147.

Anderson, C.A. (1985). Actor and observer attributions for different types of situations: Causal structure effects, individual differences, and the dimensionality of causes. Social Cognition, 3, 323-340.

Anderson, C.A., & Arnoult, L.H. (1985a). Attributional models of depression, loneliness, and shyness. In J. Harvey & G. Weary (Eds.) Attribution: Basic issues and applications (pp. 235-279). New York: Academic Press.

Anderson, C.A., & Arnoult, L.H. (1985b). Attributional style and everyday problems in living: Depression, loneliness, and shyness. Social Cognition, 3, 16-35.

Anderson, C.A., Horowitz, L.M., & French, R. (1983). Attributional style of lonely and depressed people. Journal of Personality and Social Psychology, 45, 127-136.

Anderson, C.A., Jennings, D.L., & Arnoult, L.H. (1988). The validity and utility of the attributional style construct at a moderate level of specificity. Under Review.

Anderson, C.A., & Slusher, M.P. (1986). Relocating motivational effects: A synthesis of cognitive and motivational effects on attributions for success and failure. Social Cognition, 4, 270-292.

Arkin, R.M., & Baumgardner, A.H. (1985) Self-handicapping. Chapter in J.H. Harvey & G. Weary (Eds.), Attribution: Basic issues and application (pp. 169-202). New York: Academic Press, Inc.

Arkin, R.M., Cooper, H., & Kolditz, T. (1980). A statistical review of the literature concerning the self-serving attribution bias in interpersonal influence situations. Journal of Personality, 48, 435-448.

Bradand, J.E., & Lerner, M.J. (1975). A little time and effort: Who deserves what from whom? Personality and Social Psychology Bulletin, 1, 177-181.

Bradley, G.W. (1978). Self-serving biases in the attribution process: A reexamination of the fact or fiction question. Journal of Personality and Social Psychology, 36, 56-71.

Crocker, J. (1981). Judgment of covariation by social perceivers. Psychological Bulletin, 90, 272-292.

Crocker, J., Hannah, D.B., & Weber, R. (1983). Person memory and causal attributions. Journal of Personality and Social Psychology, 44, 55-66.

Dyck, R.J. & Rule, B.G. (1978). Effect on retaliation of causal attributions concerning attack. Journal of Personality and Social Psychology, 36, 521-529.

Eisen, S.V. (1979). Actor-observer differences in information inference and causal attribution. Journal of Personality and Social Psychology, 37, 261-272.

Feather, N.T. (1983). Some correlates of attributional style: Depressive symptoms, self-esteem, and Protestant ethic values. Personality and Social Psychology Bulletin, 9, 125-135.

Fincham, F.D. (1985). Attributions in close relationships. In J. Harvey & G. Weary (Eds.), Attribution: Basic issues and applications, (pp. 203-234). New York: Academic Press.

Frieze, I.H. (1976). Causal attributions and information seeking to explain success and failure. Journal of Research in Personality, 10, 293-305.

Hamilton, D.L. (Ed.)(1981). Cognitive processes in stereotyping and intergroup behavior. Hillsdale N.J.: LEA.

Heider, F. (1958). The psychology of interpersonal relations. New York: John Wiley & Sons.

Jones, E.E. & Davis, K.E. (1965). From acts to dispositions: The attribution process in person perception. In L. Berkowitz (Ed.), Advances in experimental social psychology, Vol. 2. (pp. 219-266). New York: Academic Press.

Jones, E.E., McGillis, D. (1976). Correspondent inferences and the attribution cube: A comparative reappraisal. In J. Harvey, W.J. Ickes, & R.F. Kidd (Eds.), New directions in attribution research, Vol. 1. (pp. 389-420). Hillsdale, N.J.: LEA.

Jones, E.E., & Harris, V.A. (1967). The attribution of attitudes. Journal of Experimental Social Psychology, 3, 1-24.

Kahneman, D., Slovic, P., & Tversky, A. (Eds.)(1982). Judgment under uncertainty: Heuristics and biases. New York: Cambridge University Press.

Kelley, H.H. (1967). Attribution theory in social psychology. In D. Levine (Ed.), Nebraska symposium on motivation, vol. 15 (pp. 192-238). Lincoln: University of Nebraska Press.

Kelley, H.H. (1973). The process of causal attribution. American Psychologist, 28, 107-128.

Kruglanski, A.W. (1980). Lay epistemo-logic -- Process and contents: Another look at attribution theory. Psychology Review, 87, 70-87.

Lane, D.M., Anderson, C.A., & Kellam, K.L. (1985). Judging the relatedness of variables: The psychophysics of covariation detection. Journal of Experimental Psychology: Human Perception and Performance, 11, 640-649.

McGuire, W.J. (1985). Attitudes and attitude change. Chapter in G. Lindzey & E. Aronson (Eds.), The handbook of social psychology, vol. 2, 3rd edition, (pp. 233-346). New York: Random House.

Meyer, J.P., & Mulherin, A. (1980). From attribution to helping: An analysis of the mediating effects of affect and expectancy. Journal of Personality and Social Psychology, 39, 201-210.

Miller, D.T. (1976). Ego involvement and attributions for success and failure. Journal of Personality and Social Psychology, 34, 901-906.

Miller, D.T., & Ross, M. (1975). Self-serving biases in the attribution of causality: Fact or fiction? Psychological Bulletin, 82, 213-225.

Monson, T.C., & Snyder, M. (1977). Actors, observers, and the attribution process. Journal of Experimental Social Psychology, 13, 89-111.

Nisbett, R.E. & Ross, L. (1980). Human inference: Strategies and shortcoming. Englewood Cliffs: Prentice-Hall.

Ross, L., Bierbrauer, G., & Hoffman, S. (1976). The roll of attribution processes in conformity and dissent: Revisiting the Asch situation. American Psychologist, 31, 148-157.

Schneider, D.J., Hastorf, A.H., & Ellsworth, P.C. (1979). Person perception, 2nd edition. Menlo Park: Addison-Wesley.

Seligman, M.E.P., Abramson, L.Y., Semmel, A., and Von Baeyer, C. (1979). Depressive attributional style. Journal of Abnormal Psychology, 88, 242-247.

Smith, E. (1984). Attribution and other inferences: Processing information about the self versus others. Journal of Experimental Social Psychology, 20, 97-115.

Sujan, H. (1986). Smarter versus harder: An exploratory attributional analysis of salespeople's motivation. Journal of Marketing Research, 23, 41-49.

Tetlock, P.E., & Levi, A. (1982). Attribution bias: On the inconclusiveness of the cognition-motivation debate. Journal of Experimental Social Psychology, 18, 68-88.

Uleman, J.S. (1987). Consciousness and control: The case of spontaneous trait inferences. Personality and Social Psychology Bulletin, 13, 337-354.

Weiner, B., Nierenberg, R., & Goldstein, M. (1976). Social learning (locus of control) versus attributional (causal stability) interpretations of expectancy of success. Journal of Personality, 44, 52-68.

Weiner, B. (1986). An attributional theory of motivation and emotion. New York: Springer-Verlag.

Weiner, B., Russell, D., & Lerman, D. (1979). The cognition-emotion process in achievement-related contexts. Journal of Personality and Social Psychology, 37, 1211-1220.

Wetzel, C.G. (1982). Self-serving biases in attribution: A Bayesian analysis. Journal of Personality and Social Psychology, 43, 197-209.

Wimer, S., & Kelley, H.H. (1982). An investigation of the dimensions of causal attribution. Journal of Personality and Social Psychology, 43, 1142-1162.

Wong, P.T.P., & Weiner, B. (1981). When people ask "why" questions, and the heuristics of attributional search. Journal of Personality and Social Psychology, 40, 650-663.

Zillmann, D. (1978). Attribution and misattribution of excitatory reactions. In J. Harvey, W. Ickes, & R. Kidd (Eds.) New directions in attribution research, vol. 2, (pp. 335-368). Hillsdale, N.J.: Lawrence Erlbaum Associates.

Zuckerman, M. (1979). Attribution of success and failure revisited, or: The motivational bias is alive and well in attribution theory. Journal of Personality, 47, 245-287.