THE IMPACT OF HYPOTHETICAL EXPLANATIONS ON PERFORMANCE: GENERALIZABILITY AND THE MEDIATING EFFECTS OF SELF-ESTEEM

By

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This study examined the extent to which the effects of generating hypothetical success/failure explanations and initial expectations would generalize and affect performance on subsequent unexplained tasks. Two types of generalization were examined; the extent to which explanation and initial expectation effects would generalize to a related, but unexplained, task performed immediately after explanations and expectations had been elicited; and the extent to which the explanation and initial expectation effects would generalize to performance on a subsequent (second) task despite the intervention of actual performance experience on a first task. The potential moderating effects of self-esteem on the processes described above were also examined. A hypothetical explanation task was used to make success- or failure-related cognitions differentially available for 60 high self-esteem (HSE) and 60 low self-esteem (LSE) subjects. Subjects wrote an explanation for either a hypothetical failure or success, or wrote no explanation (control) regarding performance on the Remote Associate Test (RAT). After stating performance expectancies for the RAT, half of the subjects worked on this task while the other half worked on the related anagram task. All subjects then stated performance expectancies for a word generation task and worked on this task. The results provided support for the
first type of generalization; the hypothetical explanation manipulation (in conjunction with self-esteem) affected performance on the first task regardless of whether the task was the explained (RAT) or the related (anagram) task. Success explanations increased the first-task performance of both HSE and LSE subjects, whereas failure explanations only decreased the performance of LSE subjects. The results also indicated, however, that the explanation manipulation did not generalize over time and affect performance on the subsequent (second) task. The results are discussed in terms of current self-esteem theory and the cognitive processes associated with generating causal scenarios for success and failure, expectations and performance.
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Introduction

People are active information processors; that is, they do not simply encode social behavior, but attempt to explain it in order to develop an organized, meaningful, and predictable view of their world (Heider, 1958; Tetlock & Levi, 1982). Because people have a pervasive tendency to construct causal explanations and because, in doing so, they often rely on the same principles or rules of inference used by scientists, they have been characterized by several theorists as "intuitive scientists" or "intuitive psychologists" (Nisbett & Ross, 1980; Ross, 1977). Given this pervasive tendency towards causal explanation, it is perhaps not surprising that "real" psychologists have engaged in a considerable amount of research examining explanation processes.

Early research on explanation processes focused primarily on explicating the inferential rules or strategies that people use in arriving at causal judgments (Jones & Davis, 1965; Kelley, 1967; Weiner, 1974). Subsequent theory and research expanded this focus to include (a) the role that causal explanations play in maintaining and changing personal beliefs and (b) the consequences that such explanations and resulting inferences have on subsequent behavior. The present paper is concerned with both of these latter issues. Specifically, the effects of explanation processes on personal beliefs (expectations) and subsequent behavior (performance) are examined in the context of the achievement domain.

Although explanation processes have been implicated in the
belief perseverance (e.g., Anderson, Lepper, & Ross, 1980; Lord, Ross, Lepper, 1979; Ross & Lepper, 1980; Ross, Lepper, & Hubbard; 1975) and the hindsight bias literatures (e.g., Fischhoff, 1975, 1977; Fischhoff & Beyth, 1975), the effects of generating explanations on subsequent beliefs are perhaps best exemplified by research in the "hypothetical" explanation literature.

This literature has demonstrated that simply generating causal explanations, even hypothetical ones, can alter beliefs in the direction of the explanation. For example, it has been shown that generating a causal explanation for a purely hypothetical, but possible, outcome increases the perceived likelihood of that outcome (e.g., Carroll, 1978; Ross, Lepper, Strack, & Steinmetz, 1977; Sherman, Zehner, Johnson, & Hirt, 1983). Ross et al. (1977) requested subjects first to read identical background information about a target, and then to write an explanation for some possible, but hypothetical, future event in the target's life. Subjects' subjective likelihood estimates (social judgments) were greatly influenced by the explanation they had generated; the events that had been explained were judged as more likely to actually occur than other possible, but unexplained, events.

A similar effect has been demonstrated with respect to people's beliefs about the relationship between variables in the social environment (social theories). Anderson and Sechler (1986) asked subjects to create causal explanations for hypothetical outcomes of (purportedly authentic) scientific studies. For example, some subjects were given a description of
the method section of a "recent psychological study" which examined risk taking and firefighting performance. After making predictions about the actual outcome of the study (i.e., did high risk takers make good/bad firefighters), subjects were asked to explain either a positive or negative relationship between the firefighters' performance and preference for risk taking. Finally, subjects predicted whether risky people would perform better or worse as firefighters. Anderson and Sechler reported that subjects' social theories changed in the direction of the just-completed explanation. Subjects who explained the high risk/good performance relationship came to believe in a positive relationship between riskyness and good firefighter performance, and subjects who explained the high risk/bad performance relationship came to believe that risky people performed badly as firefighters.

**Availability Mechanism**

In the hypothetical explanation literature, as well as in the belief perseverance and hindsight bias literatures, the mechanism presumed to underlie the effects of causal explanations on subsequent beliefs is an availability mechanism (Kahneman & Tversky, 1973). The availability heuristic, one of the cognitive heuristics people utilize when making judgments under uncertainty, holds that cognitive availability, the ease with which an event can be constructed, is one basis for the judgment of the likelihood of an event. Thus, the more cognitively available an outcome, the greater the perception that it is a likely outcome.
Within the last two decades, numerous studies have provided strong evidence that human probability judgments are affected by the differential availability of information in memory. The influence of availability factors in the area of social perception is well documented (Taylor & Fiske, 1978). For example, Higgins, Rholes, and Jones (1977) and Srull and Wyer (1979) demonstrated that impressions about a target person are greatly influenced if, prior to the receipt of information about the target, different trait concepts are primed in memory. It has also been found that when subjects are exposed to identical information about a target under the influence of different sets, schemas, or stereotypes the differential availability of this information in memory and the subjects' subsequent judgments about the target are reliably affected (Cohen, 1981; Snyder & Cantor, 1979; Snyder & Uranowitz, 1978).

Generating causal explanations for different outcomes also seems to influence judgments by making selective information more available in memory. Ross et al. (1977) suggest that generating a causal explanation for a potential outcome makes events indicative of that outcome more readily available in memory and therefore affects subjects judgments about the likelihood of the explained outcome. Anderson and Sechler (1986) concluded that the explanation effect on subjects' judgments about social theories was due to their inability or unwillingness to see that there were equally plausible causal explanations for the opposite relationship between social variables. Subjects appeared to depend on the available
plausible causal explanation they had written and failed to perceive that the availability of this explanation was not necessarily related to its correctness.

Sherman, Skov, Hervitz, & Stock (1981) have proposed that a causal explanation task works much like a priming procedure (Srull & Wyer, 1979) in making particular concepts more available in memory and that the subsequent judgments (i.e., expectancies) subjects make are then based upon the available concepts. When subjects explain a hypothetical outcome, information congruent with that outcome is made differentially available and subsequent judgments are strongly affected because they are based on the information that is presently available in memory. Sherman et al. (1983) reported more direct evidence for the role of an availability mechanism in the hypothetical explanation paradigm. They found that subjects' probability judgments were highly correlated with the information they could recall.

Thus, it appears that hypothetical causal explanations can alter people's beliefs about others (their social judgments) and their beliefs about relationships between social variables (social theories) by making different sets of cognitions more or less available in memory.

It has also been demonstrated that generating hypothetical causal explanations, as well as other availability manipulations, can alter people's beliefs about themselves (self-judgments). Salancik and Conway (1975) demonstrated that subjects' self-impressions of their religiosity could be
altered by making certain religious aspects of one's behavior differentially available (salient). They made either past antireligious or proreligious behavior salient for subjects by systematically pairing either the adverbs "on occasion" or "frequently" with statements about religious behavior. They assumed that if the adverb "on occasion" was used in a sentence, subjects would be more likely to endorse the statement as true for themselves than if the adverb "frequently" was used. Therefore, to make proreligious information salient to subjects, they paired the majority of proreligious behavior statements with the adverb "on occasion" and the majority of antireligious behavior statements with "frequently". The exact opposite pairing was done to make antireligious information salient to subjects. They then asked subjects to read the series of statements and indicate whether the statements of religious behavior applied to them or not. The result was that subjects' impressions of their present level of religiosity were significantly affected by whichever past religious behavior had been made salient.

Sherman et al. (1981) and Campbell and Fairey (1985) reported that asking subjects to write an explanation for a purely hypothetical success or failure outcome on an upcoming task influenced subjects' expectations regarding their performance; subjects who explained a hypothetical failure expected to perform worse and subjects who explained a hypothetical success expected to perform better than the no-explanation control subjects.
Sherman, Cialdini, Schwartzmann, & Reynolds (1985) and Gregory, Cialdini, & Carpenter (1982) have shown that simply imagining hypothetical future events, as well as explaining them, can render those events subjectively more likely. Sherman et al. (1985) asked subjects to imagine contracting a disease that had either easy-to-imagine or difficult-to-imagine symptoms. Subjects then rated the ease of imagining the symptoms and the likelihood of contracting the disease. Sherman et al. reported a main effect for symptom accessibility (availability); subjects asked to imagine contracting a disease judged themselves as more likely to contract the disease if the symptoms of the disease were easy-to-imagine than if they were difficult-to-imagine. The results also showed that judgments about the ease or difficulty of imagining the symptoms paralleled judgments of how likely it was to contract the disease; subjects who rated the symptoms as easy-to-imagine also judged the disease as more likely to occur; and those who had more difficulty imagining the symptoms judged it as less likely to occur. Sherman et al. (1985) suggest that if an outcome is easy to imagine, or explain, it will be more readily available in memory and thus judged to be more likely to occur. They also argue that the availability of an event should increase if it has recently been imagined, predicted, or explained.

Gregory et al. (1982) asked subjects to imagine being arrested for a crime or winning a contest. In both instances, subjects' subjective likelihood estimates were increased by the imagination task; they believed that the imagined event was more
likely to occur to them in the future. Gregory et al. (1982) suggest two possible ways by which imagination and/or explanation procedures could lead to the heightened availability of an outcome and thus to an increase in its perceived likelihood. First, a person who has recently imagined and/or explained an event has created a mental image of that event; any subsequent contemplation of the event will lead to the same image being recreated because this image has already been formed and is therefore more readily available in memory (Sherman et al., 1985). Second, an initial construction of an event through an explanation or imagination task may create a cognitive set that impairs one's ability and/or motivation to view the event in alternate ways. For example, Bruner and Potter (1964) demonstrated that the creation of a specific scenario or script hinders future thinking and renders the generation of other scenarios more difficult. In addition, Shaklee and Fischhoff (1982) reported that once subjects have generated a plausible cause for an outcome, they do not continue to search for other possible causes.

Even more striking, however, is evidence that an availability manipulation can influence not only subsequent beliefs but also subsequent behavior. For example, Gregory et al. (1982) reported that an imagination task could influence subjects' actual subsequent compliance behavior as well as their probability judgments. Homeowners who imagined watching and enjoying a cable television service were more likely to subscribe to such a service when given the chance to actually do
so. In addition, the Sherman et al. (1981) and Campbell and Fairey (1985) studies showed that generating an explanation for a purely hypothetical success or failure outcome not only influenced subjects' expectations (self-judgments) regarding their performance, but also affected their actual subsequent performance if expectations had been elicited. If performance expectations were stated, subjects who explained a hypothetical success expected to perform better, and actually did perform better; those who explained a failure expected to perform worse, and actually did worse, than control (no-explanation) subjects.

To summarize, the studies reviewed above indicate that (a) a hypothetical explanation task can affect the type and amount of information that is available in memory, (b) differential availability of information can in turn affect subsequent judgments (beliefs), and (c) judgments can in turn affect subsequent behavior. While the evidence shows that an availability manipulation influences people's beliefs and behaviors, there are some important differences between social judgments, social theories, and self-judgments that should be noted because they may affect the degree of influence that an availability manipulation will have.

**Self-Judgments versus Social Judgments**

Although there is evidence that availability factors can influence self-judgments as well as social judgments (e.g., Jennings, Lepper, & Ross, 1981; Salancik & Conway, 1975; Sherman et al., 1981), there are some major differences between social and self judgment and these differences (outlined below) would
suggest that (a) availability manipulations would generally have less impact on self-judgments than on social judgments and (b) individual differences would play a greater role in mediating the effects of availability on self-judgments than on social judgments.

First, individuals are more likely to have stronger initial beliefs about themselves than about others (particularly the "artificial" others used in most social judgment studies). Individuals' impressions about themselves are based on more information and are better organized and integrated than their beliefs about others (Rogers, 1981). In addition, research on the self-concept has demonstrated that people seek consistency and stability of the self; they actively resist and/or avoid information that is incongruent with their initial self perceptions (e.g., Greenwald, 1980; Markus, 1977; Swann & Read, 1981; Tesser & Campbell, 1983). To the extent people hold strong initial beliefs, an availability manipulation should be less effective in altering these beliefs. For example, Anderson and Sechler (1986) reported that the effects of a hypothetical explanation task were weaker if the judgment domain was one in which the individual held strong initial beliefs.

A second major difference has to do with the content of the prior information base. In social impression studies, identical information about an artificial target other is given to all subjects. The availability manipulation therefore "operates" on an equivalent set of possible cognitions. In contrast, an availability manipulation dealing with self-impressions
"operates" on an idiosyncratic information base (i.e., the individual's previous behaviors, feelings, thoughts, experiences, beliefs, etc.). Because individual information pools will differ with respect to the relative frequency and/or strength of the cognitions targeted for availability, the effectiveness of the manipulation will vary across subjects.

The effects of individual differences in the context of a hypothetical explanation paradigm is illustrated by contrasting the results of the Sherman et al. (1981) study with the Campbell and Fairey (1985) study. These two studies are reviewed in detail below since both the procedures they used and their results are highly relevant to the present study.

Sherman et al. (Study 1)

Subjects were informed that they would be taking an anagram test. Prior to working on the test, experimental subjects were asked (a) to imagine that they had already taken the test and had performed either very well or very poorly and (b) to write an explanation for this purely hypothetical outcome. Control subjects neither imagined nor explained any outcome. Half of the subjects in each explanation condition (success/failure/control) then stated their expectations regarding their performance on the upcoming test. Finally, all subjects were given 20 minutes to work on a 25-item anagram test.

The hypothetical explanation task influenced the expectations (self-judgments) of those subjects who had been asked to state expectations; subjects who had explained a
failure expected to perform worse and subjects who had explained a success expected to perform better than control subjects. Of even greater import was the result that, if subjects had stated performance expectations, those who had explained a hypothetical success actually performed better, and those who had explained a hypothetical failure actually performed worse than control subjects. Sherman et al. interpreted these results as support for the notion that the explanation task made causal reasons for success or failure differentially available in memory. When subjects were asked to state actual performance expectations, they searched memory for relevant factors and selectively retrieved the information that the explanation task had made salient (available). Finally, if the actual task was entered with firm expectations, these expectations elicited behaviors that confirmed the expected outcome. That is, eliciting performance expectancies resulted in a self-fulfilling prophecy. Research in the field of social perception has demonstrated a comparable self-fulfilling phenomenon with respect to our expectations about the behavior of others (e.g., Archibald, 1974; Rotter, 1954; Rosenthal, 1974; Snyder & Swann, 1978; Snyder, Tanke, & Berscheid, 1977).

Campbell and Fairey (1985)

Campbell and Fairey, using the same experimental procedures as the Sherman et al. study described above, examined the potential mediating role of individual differences in self-esteem. They noted that trait self-esteem was potentially relevant in this context, given the large body of literature
indicating self-esteem differences in the influence of prior success and failure outcomes on subsequent expectations and performance (Jones, 1973; Shrauger, 1975). It is well documented that individuals with low self-esteem (LSE) generally have lower performance expectations than high self-esteem (HSE) individuals (e.g., Coopersmith, 1967; Kiesler & Baral, 1970; Shrauger, 1972). More important, however, is evidence that individuals who differ in self-esteem explain success versus failure in different ways and that these explanatory style differences may indeed create differences in expectations and task performance following success and failure experiences. Numerous studies have shown that self-esteem and depression are strongly linked to differences in explanatory style for negative events (e.g., Anderson, Horowitz, & French, 1983; Feather, 1983; Ickes & Layden, 1978; Peterson & Seligman, 1984); depressed and LSE people will more readily and consistently use "characterological" (Janoff-Bulman, 1979) factors to explain negative outcomes than nondepressed and HSE people. That is, LSE people are more likely to explain negative events using internal, stable, and global reasons.

Because differences in attributions given for prior outcomes mediate subsequent expectations and subsequent performance (Abramson, Seligman, & Teasdale, 1978; Anderson, 1983), Campbell and Fairey (1985) predicted that LSE and HSE people would exhibit differences in expectations and performance following the generation of a failure explanation; LSE individuals would show lower expectancies and more impaired performance than HSE
individuals (Peterson & Seligman, 1984). They did not, however, anticipate any self-esteem differences in the success or control explanation conditions. They noted that although previous research has consistently obtained significant self-esteem differences under failure conditions, success or control conditions have generally not produced reliable self-esteem differences (e.g., Brockner, 1979; DePaulo, Brown, Ishii, & Fisher, 1981; Diener & Dweck, 1978; Shrauger & Sorman, 1977; Zuckerman, 1979). That is, they predicted that the effects of individual differences in self-esteem would be asymmetrical across success, control, and failure conditions; self-esteem differences would be pronounced and significant in the failure condition, but not in the success or control conditions.

The Campbell and Fairey study replicated the findings of Sherman et al. (study 1) with respect to the overall effects of hypothetical success and failure explanations on expectations and subsequent performance. They also provided support for the role of individual differences in mediating the effects of the availability manipulation. Consistent with the "asymmetry hypothesis", they reported that LSE subjects displayed significantly lower expectancies and lower performance than HSE subjects in the failure-explanation condition, but there were no reliable self-esteem differences in expectancies or performance in the success or control conditions. Stated differently, for LSE subjects, a success explanation increased expectations and a failure explanation decreased expectations; for HSE subjects a success explanation increased expectations, but a failure
explanation had no impact (i.e., their expectations were identical to those HSE subjects who wrote no explanation). With respect to performance, LSE subjects' performance decreased if they explained a failure, but explaining a success increased performance relative to the control (no-explanation) group; for HSE subjects, explaining either a success or failure outcome increased performance relative to the control group.

Together these two studies provide important extensions of the previous availability research findings. First, they show that a hypothetical explanation task can influence not only social judgments, but also self-judgments (expectations). Second, they indicate that the influence of the explanation task (availability manipulation) can extend beyond judgments (expectations) to actual behavior (performance). Third, they demonstrate that asking subjects to state an expectancy may be an important manipulation in that it may be creating an expectancy rather than simply measuring one (see also Dweck & Gilliard, 1975). Only when explicit expectations had been elicited did the hypothetical explanation task have the anticipated effects on subsequent performance. That is, the cognitions made differentially available by the hypothetical explanation task must be consolidated in the form of expectations in order to influence subsequent performance; the hypothetical explanation task affected expectations which in turn affected subsequent performance. Finally, the Campbell and Fairey results emphasize the importance of individual differences in self-esteem when examining the effects of
hypothetical success and failure explanations on expectations and performance; self-esteem appears to mediate the influence of hypothetical failure, but not hypothetical success, explanations.

Generalization

The present study is designed to conceptually replicate and extend the findings of Sherman et al. (1981) and Campbell and Fairey (1985). The primary goal is to examine the extent to which the effects of hypothetical explanations and stated expectations generalize to a task other than the one involved in the explanation. Two types of generalizations are examined. The first type involves the extent to which explanation and expectation effects will generalize to a task for which explanations and expectations have not been made, but which shares qualities (i.e., is related) with the task involved in the explanation. The second kind of generalization involves ascertaining if the explanation and expectation effects will generalize still further and affect performance on a second subsequent task despite the intervention of actual performance experience on the first task. The second purpose is to examine the potential moderating effects of self-esteem on the processes described above.

A second study conducted by Sherman et al. (1981) has investigated, at least partially, some of these issues and is therefore discussed below.

Sherman et al. (Study 2)

In a second study, Sherman et al. examined whether the
explanation and expectation effects would generalize to a new task after subjects received feedback on the task that had been explained. Subjects were asked to explain either a hypothetical success or failure outcome for an anagram task and to state expectations for their performance on "upcoming word tasks". Experimental subjects then worked on either a very difficult or a very easy anagram task (either experienced a failure or success outcome); control subjects did not work on the anagram task. Finally, all subjects worked on a "different" word task, a word generation task.

Sherman et al. expected that the hypothetical explanation task would affect performance on the word generation task despite intervening feedback on the anagram task. Although they anticipated that subjects might generate spontaneous explanations following their actual performance feedback on the anagram task (Ross, Lepper, and Hubbard, 1975), they felt that the effects of actual anagram performance feedback would not take precedence over the initial explanations because previous results, from research which looked at stereotypes resistance to change (Abelson, 1959) and the "illusory correlation" phenomenon (Chapman & Chapman, 1967), have shown that initial belief systems influence the interpretation of subsequent information, so that once an explanatory script is created, new information will be interpreted and absorbed into the script in a way so as to maintain the initial belief(s). Even information that is incongruent with initial beliefs can be interpreted so as to strengthen the initial belief (Lord, Ross, & Lepper, 1979).
Thus, Sherman et al. predicted that subjects' actual performance feedback would be interpreted in such a way that the effects of the initial hypothetical explanation and expectation would be maintained.

The results showed, as in study 1, that explaining a hypothetical outcome increased the subjective probability of that outcome; subjects who explained a hypothetical failure for the anagram task expected to do marginally worse on the upcoming word tasks than did subjects who explained a hypothetical success. The effect of the explanations on actual anagram performance was the same as in study 1; although obviously all subjects performed better on the easy than the difficult anagram task, subjects solved more anagrams if they had explained a success than if they had explained a failure. Hypothetical success and failure explanations, when followed by explicit expectancy statements (all subjects stated expectations), affected actual performance such that the explained outcome was behaviorally confirmed. Of greater interest, was the result that the effects of the hypothetical causal explanations and stated expectations generalized to the word generation task; subjects who had previously explained a hypothetical success for the anagram task performed better on the word generation task than did subjects who had previously explained a hypothetical failure. In addition, the explanation task exerted more influence on subjects' word generation performance than did subjects' manipulated success or failure on the anagram task.

Although both the present study and the Sherman et al.
(1981) second study examine the generalizability of explanation and expectation effects on future performance, there are several important differences between the two studies. The present study includes a "no explanation" condition which was not used by Sherman et al. in their second study. This is an important condition because, without it, it is not possible to ascertain whether hypothetical explanations are necessary for expectations to have any effect on performance on the next task. The Campbell and Fairey study provided suggestive evidence that explanations are indeed necessary for expectations to have an effect on subsequent performance. That is, expectations were positively and substantially correlated with performance for subjects who had written an explanation, but were virtually uncorrelated for those subjects who had not written an explanation. In addition, Sherman et al. asked subjects to give a general expectancy rating for the upcoming word "tasks" and not just for the task that was explained. The present study asks subjects to state performance expectations specifically for the task that has been explained.

The present study tests the notion of generalizability in two ways, both of which differ from Sherman et al.'s procedures. First, in order to see the extent to which the effects of explanation and expectation generalize to a task other than the one for which explanations and expectations are generated, some subjects first work on the task associated with the explanations and expectations while other subjects first work on a different, but related, task. Second, all subjects
then work on a second related task in order to see if explanation and expectation effects will generalize still further and affect performance on the second task despite the intervention of actual performance experience on the first task. Although Sherman et al. manipulated performance feedback on the first task, the present study uses actual performance experience to test whether the effects of the initial explanation task will predominate over actual performance on the first task and thus exert influence on subjects’ performance on the second task.

Overview of the Present Study

To reiterate, the present study has several purposes. One purpose is to provide a conceptual replication of the findings of Sherman et al. (1981) not only with respect to the effects of hypothetical explanations on expectations (self impressions) and the subsequent effect of both on actual performance, but also with respect to whether explanation and expectation effects can indeed generalize to tasks other than the one for which explanations and expectations have been made. A second purpose is to replicate and extend the results obtained by Campbell and Fairey (1985) concerning the role of self-esteem in mediating the processes described above.

In the present study, LSE and HSE subjects are requested to write an explanation for a hypothetical success or failure on an upcoming word task, the Remote Associate Test (RAT), or to write no explanation. Subjects in each explanation condition are then asked to state their performance expectancies for the RAT. Half
of the subjects then work on the RAT; the other half work on a "different" but related task, the anagram (AN) task. All subjects then state their performance expectations for the next task, a word generation task, and work on the task.

**Hypotheses**

In summary, the hypotheses to be addressed in this study are:

**Hypothesis I.** Subjects who explain a hypothetical success outcome will expect to perform better on the first task than those subjects who explain a hypothetical failure outcome. Subjects who explain no outcome will give intermediate expectations.

**Hypothesis II.** Success-explanation subjects will perform better on the first task than failure explanation subjects or subjects who write no explanation.

**Hypothesis III.** LSE subjects will show significantly lower expectations and performance than HSE subjects in the failure-explanation condition, but not in the no-explanation and success-explanation conditions. Explaining a hypothetical failure should have a substantially negative effect only on the expectations and performance of LSE subjects; explaining a success should have a positive effect on the expectations and performance of both LSE and HSE subjects ("asymmetry hypothesis").

**Hypothesis IV.** The effects of explanation and expectation should generalize to a task other than the one involved in the explanation. Thus, hypotheses I-III should hold for those
subjects who are asked to work on the anagram task as well as for those who work on the RAT.

**Hypothesis V.** The RAT explanation and expectation tasks will continue to exert influence on expectations and performance for the second word task, the word generation task, despite actual performance experience on an intervening task.

**Hypothesis VI.** The self-esteem differences observed in the expectations and performance of subjects on the first task will also be observed on the second task.
Method

Design

The design was a 2-- Self-esteem (high/low) x 3-- Explanation (success/failure/none) x 2-- Initial task type (RAT/AN) between subjects factorial design.

Subject Selection

Approximately three weeks prior to the study students in introductory psychology classes were pretested on the Texas Social Behavior Inventory (TSBI). This scale is a 32-item, Likert scale designed to assess individual differences in perceptions of social competence and self-esteem. The reliability and validity of the scale have been demonstrated elsewhere (Helmreich, Stapp, & Ervin, 1974). On the basis of a median split of scores on this measure students were classified as either high or low in self-esteem. Sixty high self-esteem (HSE) and 60 low self-esteem (LSE) subjects were randomly selected from the pretest group to participate in the study. At the time of recruitment no mention was made of the pretesting. Subjects received extra course credit for their participation.

Procedure

Subjects participated in groups of four to six, but following the initial instructions they were placed in individual cubicles so as not to be able to see or communicate with one another. They were informed that the study was concerned with various factors that underlie verbal performance and creativity, and that during the experiment they would be asked to work on three related tasks: A word generation task
(WG); the Remote Associate Test (RAT); and an anagram task (see Appendix A for the specific tasks used).

The general instructions included a description of the three types of word tasks (WG, RAT, ANAGRAM) and instructions for generating solutions (sheets with the specific instructions and examples were also given to subjects at the time they actually worked on the tasks). It was emphasized that these three tasks are highly related in that each involves both creativity and verbal ability, albeit in slightly different ways. Subjects were told that they would work on all three tasks, but that the order of the tasks was determined by random assignment.

After receiving the general instructions, all subjects rated themselves on a set of 15 bipolar trait adjective pairs (e.g., Quiet-Out-spoken; Cautious-Risky) (see Appendix B). This initial rating task was used both in the Campbell and Fairey (1985) and the Sherman et al. (1981) studies to make personal dispositions salient when subjects were subsequently asked to write an explanation for a hypothetical performance outcome.

Prior to working on the first word task, two-thirds of the subjects were asked (a) to imagine that they had already completed the Remote Associate Test (RAT) and that they had done either very badly (worse than most all other students) or very well (better than most all other students) and (b) to write an explanation for such an outcome (see Appendix C). It was made clear to the subjects that the experimenter had no idea how well or poorly they might do on the actual upcoming RAT word task and that the explanation was for a purely hypothetical performance outcome on the task. The other third of the
Subjects neither imagined nor explained any performance outcome.

Subjects in each explanation condition (success/failure/none) subsequently stated their performance expectations for the RAT by checking on a 9-point scale how well they thought they would perform on the RAT relative to other UBC students (see Appendix D).

All subjects were then given 10 minutes to work on the first task. For half of the subjects, the first task was the RAT (the same task as the one used in generating explanations and eliciting expectations); the other subjects worked on the anagram task (i.e., a different, but related task). Subjects working on the RAT were given a 12-item list of Remote Associates to solve in 10 minutes. The list was a mixture of easy and difficult items taken from McFarlin and Blascovich (1982). Subjects working on the anagram task had 10 minutes to work on a set of 15 anagrams which consisted of a mixture of easy, moderate, and difficult items (Sherman et al., 1981). For each task a cover page, giving the specific instructions for the task and an example, was attached to the front of the task.

After 10 minutes the task booklets were collected and subjects were given a brief questionnaire (see Appendix E). This questionnaire asked them to rate on 7-point scales: how many of the items they thought they had solved correctly (RAT)/(Anagram); how well they thought they had performed; how satisfied were they with their performance;
how hard had they tried on the task; to what extent were they able to concentrate effectively; to what extent they had felt anxious; to what extent they cared about performing well on the task; and how well they thought they had performed on the task relative to the other students who did the task. In addition, all subjects were asked to rate on a 9-point scale how they expected they would perform, relative to other students, on the second word task, the word generation task.

When subjects finished the questionnaire, they were given booklets containing the word generation task (a cover page with the instructions and the task itself). Subjects were given 10 minutes to form as many English words, of four or more letters, as possible from the three words: Margarine; Nothingness; and Ginger Ale (Sherman et al., 1981). After the word generation task, the booklets were collected and subjects were given a final questionnaire (see Appendix F).

Finally, subjects were debriefed (see Appendix G) and thanked for their participation.

Dependent Measures

The primary dependent measures were: subjects' initial expectancy ratings; subjects' performance on the first word task (either the RAT or anagram); the expectancy ratings that subjects gave for the second task (WG task); subjects' performance on the WG task; and finally, a set of measures derived from a content analysis of the explanations.
The content analysis of the explanations was carried out using procedures based on the classification system reported by Campbell and Fairey (1985), with some minor modifications. First, the number of different reasons given was coded. Subsequently, each reason was classified into one of the five categories outlined below. Finally, the number of reasons in each category was divided by the total number of reasons thus providing the relative distribution of these reasons across the five categories.

**Characterological Reasons (dispositional stable)**

The reasons in the two categories listed under this heading tend to be internal, stable, and global (Janoff-Bulman, 1979). That is, some enduring characteristic of the person is invoked to explain an outcome. In the attribution literature regarding performance, ability is usually seen as the main classification of characterological reasons. However, in the present study, as in the Campbell and Fairey (1985) study, subjects expressed reasons that were characterological in nature (i.e., internal, stable, and global), but which did not include an ability component but rather an emotional one. These "residual, emotional" reasons were categorized as chronic affective reactions.

**Ability.** This category included any reason that suggested that performance was the result of having or not having some specific or general ability. Frequently cited abilities were vocabulary, creativity, spelling, intelligence, and the ability to think abstractly about words. General statements such as "I
am not able to think spontaneously" or "I have a quick, alert mind" were also included.

**Chronic Affective Reactions.** All characterological reasons other than ability were included in this category. All such residual reasons indicated that performance was due to chronic affective reactions in achievement settings. Common examples included "I always panic under pressure", and "I always desire to do well".

**Noncharacterological Reasons (unstable situational)**

The reasons in the three categories listed under this heading tend to be unstable, specific, and external (or temporarily internal) in nature. That is, the reasons given for the occurrence of a behavior, or an outcome, focus on the situation or some specific temporary aspect of one's condition (i.e., fatigue), rather than on any aspect of one's character.

**Chance.** Chance included any reason that suggested that performance was due to a chance occurrence. Commonly expressed reasons included "I just happened to know the words", "I was lucky, they were obvious relations", and "It was a fluke".

**Motivation.** This category included any reason that indicated that performance was due to motivation and/or effort. Common reasons included trying or not trying hard, and caring or not caring about performing well.

**Temporary Situational.** This category included any reason that suggested that performance was the result of things that were occurring only in this particular instance. For example, "I didn't panic on the task", "I was tired", and "I was able to
concentrate on the task ".

All explanations were coded by two female judges who were blind with respect to the subject's self-esteem score. There was strong agreement with respect to the number of different reasons (99.3%) given and category assignment of each reason (96.7%). The two judges were able to solve any disagreements and in all instances were able to reach a consensus.
Results

Results are presented in several sections. The first section describes the results of univariate analyses conducted on subjects' (a) initial expectations, (b) first-task performance, (c) second-task expectations, and (d) second-task performance. The second section details the change in the effects of the experimental variables on expectations and performance over time. The third section presents analyses of subjects' responses on the task questionnaires. The fourth section describes the content of the explanations and the distribution of this content across type of explanation and self-esteem. The final section examines (a) the correlations among the dependent measures, both across and within levels of the explanation manipulation, and (b) the correlations of full-scale self-esteem scores with the dependent measures, both within and across levels of the explanation manipulation.

Initial Expectation Ratings (E1)

Subjects' initial expectations (E1) regarding their performance on the Remote Associate Test (RAT) were analyzed in the context of a 2-- Self-esteem (high/low) x 3-- Explanation (success/failure/none) ANOVA. There were main effects for explanation, F(2,114) = 8.66, p< .001 and for self-esteem, F(1,114) = 13.59, p< .001. Success-explanation subjects expected to perform better on the RAT (1.15) than did failure-explanation subjects (.13). Control (no-explanation) subjects gave intermediate expectations (.50). With respect to self-esteem, HSE subjects indicated that they expected to
perform better (.97) than did LSE subjects (.22).

Although the Self-esteem x Explanation interaction anticipated by the asymmetry hypothesis was not reliable, the patterning of the cell means was consistent with the hypothesis. A planned comparison corresponding to the asymmetry prediction was highly significant, $F(1,114) = 22.81, p< .001$. Although HSE subjects had higher expectations than LSE subjects in every explanation condition, an analysis of the simple effects of self-esteem within explanation levels also yielded results consistent with the asymmetry position. Self-esteem differences were significant in the failure-explanation condition, $F(1,114) = 8.72, p< .005$, but not in the success-explanation condition ($F < 1$). In the control condition, there was also a reliable self-esteem difference, $F(1,114) = 6.13, p< .02$, reflecting the general observation that LSE individuals usually have lower performance expectancies than HSE individuals. Cell means are presented in Figure 1.

Performance on the First Task (P1)

Subjects' performance on the first task (P1) was analyzed in the context of a 2-- Self-esteem (high/low) x 3-- Explanation (success/failure/none) x 2-- Initial task type (RAT/anagram task) ANOVA. Consistent with both the Sherman et al. (1981) and the Campbell and Fairey (1985) studies, there was a main effect for explanation, $F(2,108) = 6.09, p< .003$. Success-explanation subjects performed better (.40) than failure-explanation subjects (-.33), with control subjects exhibiting intermediate levels of performance (-.08).
Figure 1. Mean initial task expectancy rating as a function of explanation condition and self-esteem.
The self-esteem effects obtained by Campbell and Fairey (1985) were also replicated. There was a significant Explanation x Self-esteem interaction, $F(2,108) = 3.77, p < .03$. This interaction is depicted in Figure 2. An analysis of simple effects indicated that self-esteem differences in performance were significant only in the failure-explanation condition, $F(1,108) = 6.66, p < .02$; LSE subjects performed worse than HSE subjects. In the success-explanation and control conditions, LSE subjects actually performed slightly better than HSE subjects, but not significantly so ($F < 1$). Stated differently, the effect of the explanation manipulation differed for LSE and HSE subjects. For LSE subjects, a failure explanation decreased performance and a success explanation increased performance relative to the control group. For HSE subjects, either a success or failure explanation increased performance relative to the control group. The linear-trend component was highly significant for LSE subjects, $F(1,57) = 15.69, p < .001$, but not for HSE subjects ($F < 1$); the quadratic-trend component approached significance for HSE subjects $F(1,57) = 2.67, p < .09$, but was not reliable for LSE subjects ($F < 1$).

A primary purpose of the present study was to ascertain if the explanation manipulation would generalize to a related, but unexplained, task performed immediately after explanations and expectations had been elicited. The present results indicate that the manipulation does indeed exhibit this kind of generalization. There were no main effects or interactions for
Figure 2. Mean first task performance as a function of explanation condition and self-esteem.
initial task type, $F < 1$. That is, the explanation manipulation (in conjunction with self-esteem) affected subsequent performance in the anticipated direction regardless of whether the performance took place on the task for which explanations and expectations had been generated (RAT) or on a different, but related, task (anagram).

The results presented thus far indicate that the explanation manipulation, in conjunction with self-esteem, affected subjects' initial expectations and performance. Because the manipulation affected both expectations and performance, it is of some interest to ascertain whether the manipulation's impact on performance was completely mediated by its effect on expectations or whether it also had an independent or direct effect on performance. To examine this issue, a $2 \times 3 \times 2$ (Self-esteem x Explanation x Initial task type) univariate analysis of covariance (ANCOVA) was conducted on first-task performance with initial expectations ($E_1$) as a covariate (see Rogosa, 1979 and Reis, 1982 for a discussion of the use of ANCOVA in analyzing mediational effects). The analysis indicated that $E_1$ was a significant predictor or correlate of first-task performance, $F(1,107) = 6.40, p < .02$. Of greater interest, however, was the fact that, even after the impact of $E_1$ was removed, the main effect for the explanation manipulation was still reliable, $F(2,107) = 3.89, p < .03$. Thus, the impact of the explanation manipulation on performance was not totally mediated by initial expectations; the manipulation exerted an effect on first-task performance independent of its effect on
initial expectations.

**Expectation Ratings for the Second Task (E2)**

Subjects' expectations for the second task (E2), the word generation task, were analyzed in the context of a 2 x 3 x 2 (Self-esteem x Explanation x Initial task type) ANOVA. Cell means associated with the explanation and self-esteem factors are depicted in Figure 3. Again there was a main effect for explanation, $F(1,108) = 3.05, p = .05$. Subjects who had explained a success expected to perform better on the word generation task (.30) than did failure-explanation subjects (-.37). Control subjects gave intermediate expectation ratings (-.12). There were no main effects for self-esteem or initial task type ($Fs < 1$).

Although the omnibus Self-esteem x Explanation interaction was not reliable, the patterning of the cell means was comparable to that obtained on the initial expectation ratings (recall that the interaction was also not reliable for initial expectations). The planned comparison relevant to the asymmetry prediction was significant, $F(1,114) = 8.64, p < .01$. An analysis of the simple effects of self-esteem within levels of explanation indicated that self-esteem differences in expectations were marginally reliable in the failure-explanation condition, $F(1,108) = 3.68, p < .06$, but not in the success-explanation or control conditions ($Fs < 1$).

A 2 x 3 x 2 (Self-esteem x Explanation x Initial task type) ANCOVA was conducted to examine the issue of mediational and direct effects of the explanation manipulation on second-task
Figure 3. Mean second task expectancy rating as a function of explanation condition and self-esteem.
expectations. The initial expectation ratings (E1) and performance on the first task (P1) were entered as covariates. Results indicated that the explanation main effect on second-task expectations was strongly mediated by subjects' initial expectations and performance. The ANCOVA indicated that the E1 covariate was highly significant, \( F(1,106) = 34.90, p < .001 \); the P1 covariate was also a significant source of independent variation, \( F(1,105) = 15.27, p < .001 \). When the impact of these two variables on E2 was removed, the main effect for explanation did not approach significance (\( F < 1 \)). This analysis suggests that the effect of the explanation manipulation on subjects' second expectation ratings was nearly completely mediated by its effects on initial expectations and performance; there was no reliable independent or direct effect of the manipulation on expectancies when its indirect effects via initial expectations and performance were removed.

**Performance on the Second Task (P2)**

A second primary purpose of the present study was to ascertain if the explanation manipulation would further generalize to performance on a second unexplained task after the intervention of actual performance experience on a prior task.

Subjects' performance on the second task (P2) was analyzed in the context of a 2 x 3 x 2 (Self-esteem x Explanation x Initial task type) ANOVA. The ANOVA yielded no reliable effects, all \( F \)s < 1.70. In particular, the explanation manipulation exerted no reliable impact (\( F < 1.68 \)) on subjects' second-task performance, a finding that contradicts the results
obtained by Sherman et al. (1981, study 2). Potential reasons for the contradiction are explored in the discussion section.

Although there was no evidence for generalization to the second task it should be noted that the pattern of the means associated with the explanation and self-esteem factors on P2 was identical to the pattern for P1 (see Figure 4.). Although the differences in the P2 means were greatly attenuated and no longer reliable, they did exhibit the same relative pattern associated with the P1 means.

Although the independent variables failed to exert a significant influence on subjects' performance on the word generation task, it is of some interest to note whether subjects' prior responses, such as performance on the first task (P1) and first and second task expectation ratings (E1 and E2), which were influenced by the explanation manipulation, were predictive of performance on the second task. A multiple regression analysis was conducted with the three variables mentioned above (E1, E2, and P1) as predictor variables and performance on the word generation task as the criterion variable. The analysis indicated that a significant amount of the variance ($R^2 = .21, F(3,116) = 10.24, p< .001$) was accounted for by these three predictor variables.

**Attenuation of the Experimental Variables over Time**

The univariate analyses reported above suggest that the impact of the explanation manipulation deteriorated over time/task. The manipulation (in combination with self-esteem) significantly influenced subjects' expectations and performance
Figure 4. Mean second task performance as a function of explanation condition and self-esteem.
on the first task, but had a somewhat weaker influence on the second-task expectations and no reliable influence on the second-task performance. To determine if the apparent attenuation of the manipulation on expectations and performance was indeed a significant one across time/task, analyses of variance with repeated measures were conducted for both expectations and performance.

A 2 (Self-esteem) x 3 (explanation) x 2 (Initial task type) x 2 (Time) ANOVA on the two expectation measures (E1 and E2) yielded a significant main effect for time, \( F(1,108) = 36.22, p < .001 \). Overall, subjects claimed higher expectations for the first task (.60) than for the second task (.07). There was also a Self-esteem x Time interaction, \( F(1,108) = 5.58, p < .02 \). High self-esteem subjects demonstrated a larger drop in expectations from time1 to time2 than LSE subjects. The Self-esteem x Time interaction reflects the fact that there was a significant self-esteem main effect for E1, but not for E2. HSE subjects exhibited higher expectations for the first task than LSE subjects (.97 vs. .22), but expectations for the second task were similar for both HSE (.05) and LSE (-.18) subjects (the simple effects tests were given in the univariate analyses). Stated differently, although both LSE and HSE subjects' expectations dropped significantly from time1 (task1) to time2 (task 2), a simple effects analysis of time within self-esteem revealed that HSE subjects exhibited a steeper drop in expectations, \( F(1,108) = 35.11, p < .001 \), than did LSE subjects, \( F(1,108) = 6.69, p < .02 \).
Finally, there was a marginal three-factor interaction between self-esteem, explanation, and time, $F(2,108) = 2.83$, $p < .06$. An inspection of the means indicated that the Self-esteem x Time interaction was only pronounced in the control condition, $F(1,108) = 10.88$, $p < .005$. In this condition, HSE subjects' expectation ratings dropped sharply from time1 (1.0) to time2 (-.25), while LSE subjects' expectations remained constant (0.0 at both time1 and time2). The interaction was not reliable in the success- and failure-explanation conditions, $Fs < 1$.

The 2 x 3 x 2 x 2 repeated measures ANOVA on the two performance measures (P1 and P2) yielded no reliable main effects or interactions for time.

The repeated measures analyses for expectations and performance indicated that the attenuation of the explanation manipulation effect was not statistically reliable despite the fact that it had a more substantial effect on initial expectations and performance than on subsequent expectations and performance; the Explanation x Time interaction was not reliable for either expectations ($F = .88$, $p < .42$) or performance ($F = 2.16$, $p < .12$). The lack of a reliable interaction is perhaps not particularly surprising given that the overall pattern of the means at time1 and time2 was highly similar for both measures.

**Questionnaire Responses**

**First task questionnaire.** On the questionnaire given after subjects had completed the first task (either Remote Associate
Test/anagram task), subjects rated their perceptions of and satisfaction with their performance. Because these two measures were highly correlated (r = .73, p < .001), they were converted to z-scores and summed to form a more stable index of perceived performance. The perception index (PP1) was substantially correlated with performance on the first task (r = .68, p < .001). A 2 x 3 x 2 (Self-esteem x Explanation x Initial task type) ANOVA of the index yielded only a main effect for explanation, F(2,108) = 6.33, p < .003. Subjects perceived their performance more favorably in the success-explanation condition (.69) than in the control (.01) or failure-explanation (-.70) conditions. Although the Self-esteem x Explanation interaction was reliable for actual performance on the first task, the interaction was not reliable for perceptions of performance, F(2,108) = 1.60, p < .20.

Subjects also rated the extent to which they had tried hard to perform well on the task. The ANOVA yielded only a main effect for self-esteem, F(1,108) = 3.98, p < .05; LSE subjects indicated that they tried harder (5.93) than HSE subjects (5.60). In addition, subjects rated the extent to which they cared about doing well, were able to concentrate, and had experienced anxiety while working on the task. No significant effects were found on any of these three ratings.

Post-experimental questionnaire. On the questionnaire given after the second task, subjects rated perceptions of and satisfaction with their second-task performance. The two perception measures were again highly correlated (r = .78,
p < .001), and the sum (perception index --PP2) was again substantially correlated with actual performance (r = .49, p < .001). The ANOVA on the second perception index yielded a significant main effect for explanation, F(2,108) = 3.74, p < .03; subjects perceived their performance more favorably in the success-explanation condition (.46) than in the control (.14) or failure-explanation (-.61) conditions. There was also a significant main effect for self-esteem, F(1,108) = 5.28 p < .03; HSE subjects perceived their performance more favorably (.38) than did LSE subjects (-.38).

In order to determine if the explanation and self-esteem effects on the second perception index (PP2) were mediated by subjects' previous responses, a 2 x 3 x 2 ANCOVA was performed on the second perception index. Expectations on the first and second tasks (E1 and E2), performance on the first and second tasks (P1 and P2), and the first perception index (PP1) were entered as covariates. This analysis revealed that P2 (F(1,103) = 25.70, p < .001), P1 (F(1,103) = 6.86, p < .01), E2 (F(1,103) = 6.06, p < .02) and PP1 (F(1,103) = 4.45, p < .05), all exhibited significant independent influences on subjects' perceptions of their second-task performance. When the impact of these variables was removed the main effect for explanation was no longer reliable (F = 2.39, ns.). However, the main effect for self-esteem, although reduced, remained fairly reliable (F = 3.65, p < .06)

On the post-experimental questionnaire, subjects also rated how they viewed their general verbal ability relative to other
students. Analysis of this measure yielded a self-esteem main effect $F(1,108) = 8.08, p< .005$; HSE subjects rated their general verbal ability higher (5.57) than did LSE subjects (4.92). There was also a main effect for explanation $F(2,108) = 4.94, p< .009$; subjects who had explained a success rated their verbal ability higher (5.65) than those who had explained a failure (4.77); control subjects gave intermediate ratings (5.30).

One other measure on this questionnaire indicated a significant difference between the groups. This measure examined whether subjects felt that they had a lot on their minds and that this in turn had affected their performance. There was a significant main effect for explanation, $F(2,108) = 4.49, p< .02$; subjects in the failure-explanation condition stated that this factor was more applicable to themselves (4.70) than did the control (3.80) or the success-explanation (3.72) subjects. No reliable group differences ($Fs <1$) were found on any of the questionnaire's other measures (how hard subjects said they tried, how much they cared about doing well, how well they were able to concentrate, or whether they experienced anxiety while working on the task).

Content of the Explanations

As outlined in the Method section, the total number of different reasons subjects used in their explanations was coded, as well as the distribution of these reasons across five categories: two dispositional stable (characterological) categories (ability and chronic affective reactions) and three...
unstable (noncharacterological) categories (chance, motivation, and temporary situational factors). There were no reliable effects on the total number of reasons given ($F_s < 1$). However, a 2 x 2 x 5 (Self-esteem x Explanation x Category) repeated measures ANOVA on the percentage of reasons in each category did yield some interesting results. Mean percentages, along with summary percentages for characterological versus noncharacterological categories are given in Table 1. There was a significant Explanation x Category interaction, $F(3,228) = 22.8$, $p < .001$. Success explanations contained a greater proportion of ability reasons (62.6% vs 21.8%) and a smaller proportion of chance (4.4% vs 17.7%) and temporary situational reasons (11.8% vs 42.8%) than did failure explanations ($F_s > 8.73$, $p < .004$). The distribution of chronic affective and motivational reasons did not differ reliably between the success- and failure-explanation conditions ($F_s < 1.1$).

There were no significant main effects for self-esteem on the percentage of reasons given in any particular category. However, a 2 x 2 (Explanation x Self-esteem) ANOVA on the total percentage of characterological reasons yielded a marginal Explanation x Self-esteem interaction, $F(1,76) = 3.37$, $p < .07$. This result represents a replication of a well established self-esteem difference in attributions (e.g., Campbell & Fairey, 1985; Zuckerman, 1979). High self-esteem subjects exhibited a stronger self-serving bias than LSE subjects. Although both groups of subjects gave a larger percentage of characterological
### Table 1

**Content of Explanations by Explanation Type and Self-Esteem**

<table>
<thead>
<tr>
<th>Explanation type</th>
<th>Success</th>
<th>Failure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content category</strong></td>
<td>LSE</td>
<td>HSE</td>
</tr>
<tr>
<td><strong>Characterological reasons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability</td>
<td>61.3</td>
<td>64.1</td>
</tr>
<tr>
<td>Affective reactions</td>
<td>16.6</td>
<td>23.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>77.8</td>
<td>87.5</td>
</tr>
<tr>
<td><strong>Noncharacterological reasons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chance</td>
<td>8.8</td>
<td>0.0</td>
</tr>
<tr>
<td>Motivation</td>
<td>1.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Situational</td>
<td>11.8</td>
<td>11.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>22.3</td>
<td>12.5</td>
</tr>
</tbody>
</table>

**Note.** Entries are the mean percentage of reasons given in each category. Self-esteem differences are high self-esteem (HSE) percentages minus low self-esteem (LSE) percentages. n = 20 in each table entry.
reasons for succeeding than for failing, this difference was more pronounced among HSE subjects.

Correlational Analyses

The correlations between initial expectations and explanation content are presented first. Second, the correlations among the dependent variables (El, P1, PP1, E2, P2, and PP2) are given (a) for the entire sample and (b) within levels of the explanation manipulation. Finally, the correlations between full-scale self-esteem scores and the dependent measures are given (a) for the entire sample and (b) by levels of explanation.

Expectations and explanation content. The ANOVA indicated that, as anticipated, subjects' expectations were influenced by the differential availability of reasons for succeeding and failing (the explanation manipulation). It was further anticipated that the proportion of characterological reasons contained in the explanations should be positively correlated with subjects' expectations in the success-explanation condition and negatively correlated with their expectations in the failure-explanation condition. The correlations were -.20 in the failure-explanation condition and .07 in the success-explanation condition. Although these correlations were in the right direction, they were not reliably different (z = 1.17, p < .20). However, the correlations between the percentage of ability reasons given (one of the characterological categories) and initial expectations did reveal a reliable difference, (z = 2.20, p < .04). The
correlation was positive in the success condition ($r = .26, p < .05$), and negative in the failure condition ($r = -.24, p < .06$).

**Correlations among the dependent variables.** The correlations among the dependent measures, for the entire sample and within levels of the explanation manipulation, are presented in Table 2. The intercorrelations were all positive and reliable (only the P1/PP1 correlation did not quite reach significance) across the entire sample. The discriminant validity of the expectation and performance measures is attested to by the fact that the correlations between the two expectations (E1 and E2) and the two performance measures (P1 and P2) were higher than were the correlations between expectations and performance on the same task.

It is also interesting to note that the E1/ P1 correlation is highly comparable to the E1/ P2 correlation. This pattern is consistent with the notion that the effects of the explanation manipulation on subsequent performance were not completely mediated by initial expectations (a notion supported by the ANCOVA result). Recall that the manipulation reliably affected first, but not second, task performance. If the effects of the manipulation on first-task performance were completely mediated by its effects on initial expectations, one would expect that the correlation between E1 and P2 would be significantly lower than the correlation between E1 and P1. Because this is clearly not the case, it appears that the weakening of the explanation manipulation effect over time/tasks may be due to something
Table 2
Correlations Among the Dependent Measures Within/Across Explanation Condition

<table>
<thead>
<tr>
<th></th>
<th>P1</th>
<th>PP1</th>
<th>E2</th>
<th>P2</th>
<th>PP2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S / F / C</td>
<td>(T)</td>
<td>S / F / C</td>
<td>(T)</td>
<td>S / F / C</td>
</tr>
<tr>
<td>E1</td>
<td>.16 / .31 / -.04</td>
<td>(.22)</td>
<td>.24 / .27 / .03</td>
<td>(.25)</td>
<td>.50 / .55 / .43</td>
</tr>
<tr>
<td>P1</td>
<td>.64 / .71 / .57</td>
<td>(.68)</td>
<td>.36 / .45 / .27</td>
<td>(.40)</td>
<td>.41 / .35 / .53</td>
</tr>
<tr>
<td>PP1</td>
<td>.35 / .49 / .35</td>
<td>(.44)</td>
<td>.20 / .44 / .26</td>
<td>(.33)</td>
<td></td>
</tr>
<tr>
<td>E2</td>
<td>.32 / .30 / .23</td>
<td>(.29)</td>
<td>.40 / .26 / .41</td>
<td>(.38)</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td>.53 / .49 / .36</td>
<td>.48)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. Correlations with values $\pm .18$ (T) and $\pm .31$ (S/F/C) are reliable at the .05 level.

T = Total sample, n = 120; S = Success-explanation condition, n = 40; F = Failure-explanation condition n = 40; C = Control (no-explanation) condition, n = 40; E1 = Initial expectations; P1 = First-task performance; PP1 = First-task perception index; E2 = Second-task expectations; P2 = Second-task performance; PP2 = Second-task perception index.
other than a deterioration of the relation between initial expectations and the two performances.

Although the correlations did not differ reliably between the explanation conditions, there were a couple of interesting patterns. In general, the correlations among the dependent measures were more pronounced for subjects who had generated explanations (success and failure conditions) than for subjects who had not (control condition). In particular, initial expectations (El) were more highly correlated with both first and second task performance, second-task expectations, and perceptions of first task performance among subjects who had generated an explanation. This pattern is consistent with the results of the Campbell and Fairey (1985) study; the correlation between expectations and performance was reliable among subjects who had generated an explanation but not among control subjects.

**Correlations with full-scale self-esteem scores.** The analyses of variance yielded several effects for the median split on self-esteem. To ascertain if these effects were limited to the median split or obtained across the entire range of the self-esteem variable, correlational analyses were conducted using the raw self-esteem scores. Correlations of the dependent variables with raw self-esteem scores, both for the entire sample and within levels of the explanation manipulation, are presented in Table 3.

The correlational analysis revealed that, for the entire sample, only El and PP2 correlated reliably with self-esteem. The remaining correlations were close to zero. This pattern is
Table 3

Correlations of Dependent Measures with Self-Esteem Within/Across Explanation Condition

<table>
<thead>
<tr>
<th></th>
<th>E1</th>
<th>P1</th>
<th>PP1</th>
<th>E2</th>
<th>P2</th>
<th>PP2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-esteem (Success)</td>
<td>.21</td>
<td>-.03</td>
<td>-.16</td>
<td>.11</td>
<td>.05</td>
<td>.10</td>
</tr>
<tr>
<td>Self-esteem (Failure)</td>
<td>.43**</td>
<td>.36*</td>
<td>.19</td>
<td>.35*</td>
<td>.22</td>
<td>.19</td>
</tr>
<tr>
<td>Self-esteem (Control)</td>
<td>.25</td>
<td>-.26</td>
<td>-.10</td>
<td>-.16</td>
<td>-.05</td>
<td>.32*</td>
</tr>
<tr>
<td>Self-esteem (Total)</td>
<td>.29**</td>
<td>.04</td>
<td>.00</td>
<td>.09</td>
<td>.08</td>
<td>.18*</td>
</tr>
</tbody>
</table>

* *p < .05, two-tailed  **p < .01, two-tailed

Note. Total sample, n = 120; Success/Failure/Control, n = 40.
E1 = initial expectations; P1 = first-task performance;
PP1 = first-task perception index; E2 = second-task expectations;
P2 = second-task performance; PP2 = second-task perception index.
comparable to the ANOVA results and suggests that the ANOVAs were not dependent on an advantageous split of the self-esteem scores.

The pattern of the correlations within levels of the explanation manipulation also support several findings revealed by the analyses of variance. In the success-explanation condition, self-esteem was not reliably correlated with any of the dependent measures. However, in the failure-explanation condition, self-esteem was substantially correlated with several of the dependent variables; self-esteem was positively and reliably correlated with initial expectations (E1), first-task performance (P1), and second-task expectations (E2). These correlations provide further evidence for asymmetrical self-esteem effects under success and failure conditions; individual differences in self-esteem had a relatively strong relation to expectations and performance under threatening conditions, but was a less useful predictor under nonthreatening conditions.

The pattern of the correlations in the failure-explanation condition appeared to attenuate both across and within tasks. That is, the correlations were more substantial on the first-task measures (E1 and P1) than on the second-task measures (E2 and P2). It also appeared that within the first task the correlation was more substantial for measures taken earlier (E1 vs P1).

Self-esteem was positively and reliably correlated with perceptions of second-task performance (PP2) only in the control
condition. This indicates that the self-esteem main effect obtained on PP2 was primarily due to subjects in the control condition. The correlation of PP2 with self-esteem was also positive in the success and failure conditions, but not as substantial as in the control condition.
Discussion

The primary purpose of the present study was to examine if the effects of a hypothetical success/failure explanation manipulation would generalize to performance on related, but unexplained, tasks. Two different types of generalization were investigated. The second purpose was to investigate the mediating role of self-esteem in the above mentioned processes. Before addressing these issues, however, it is worth noting briefly that several findings of the present study replicate some important results obtained in previous studies.

Replications of Previous Results

Explanation effects on performance. Generating hypothetical explanations for success and failure on a specific task strongly affected subsequent expectations and performance on that task. This finding replicates the results of the Sherman et al. (1981, study 1) and the Campbell and Fairey (1985) experiments. Relative to a control (no-explanation) group, subjects who explained a hypothetical failure not only expected to perform worse, but actually did perform worse; subjects who explained a hypothetical success not only expected to perform better, but actually did perform better. These three studies taken together strongly support the notion that people will not only make an inferential leap from possibility (hypothetical explanation) to probability (expectation), but also from probability to actuality (performance). That is, merely considering the possibility of a particular self-relevant outcome and the reasons it would come about makes outcome-congruent reasons
differentially available. This increased availability of cognitions congruent with the desired outcome affects beliefs and behavior in the direction of a self-fulfilling prophecy.

Alternatively, a motivational rather than a cognitive approach could be used to explain the finding mentioned above. That is, subjects may have been motivated to appear publicly consistent; subjects who claimed that they expected to perform poorly on the first task may have attempted to maintain public consistency by purposely performing poorly on the task. However, the public consistency explanation seems less plausible in the present situation given that the "consistent" behavior is in direct opposition to the motive to appear socially desirable (cf. Aronson & Carlsmith, 1962).

**Process.** The present study also provided some evidence consistent with Campbell and Fairey's (1985) argument that the impact of the explanation manipulation on performance is not completely mediated by its impact on expectations. This appears to be true despite the fact that when people do not form task-specific expectancies following the explanation manipulation, the explanation manipulation does not exert consistent effects on performance (Sherman et al., 1981; Campbell and Fairey, 1985). Results from both the correlational analyses and the analysis of covariance indicated that the explanation manipulation exerted reliable effects on first-task performance that were independent of its effects on initial expectations. That is, the differential availability in memory of reasons for success versus failure appears to persist beyond
the formation of expectations to exert an additional effect during task performance itself. On the other hand, when no expectation is formed these cognitions are not made relevant to the specific task at hand, and thus have little impact on performance.

Consistent with this argument was the fact that in both the present study and the Campbell and Fairey (1985) study, expectations were more highly correlated with performance among subjects who had generated explanations. One implication of this pattern is that the differential cognitions elicited by the explanation manipulation not only affect expectations, but also remain available and operate to keep performance in line with those expectations. That is, the differential cognitions are common antecedents to both initial expectations and performance, and thus act to keep the two more closely linked. When explanations have not been generated, and subjects are asked to state expectancies, it seems plausible that little or no review of past performance or attributional activity takes place; subjects simply give their stereotypical general expectancies. Such general, stereotypical expectancies have been shown to have little relationship with subsequent task performance (e.g., Zuckerman, 1979).

**Self-esteem.** The self-esteem effects obtained by Campbell and Fairey (1985) were also replicated here. Individual differences in self-esteem mediated the effects of the hypothetical explanation manipulation on expectations and performance. In both studies, LSE subjects exhibited
significantly lower expectations and performance (on the initial task) than did HSE subjects in the failure-explanation condition, but there were no reliable self-esteem differences in expectations or performance in the success-explanation condition. There were also self-esteem differences in the content of the failure explanations; LSE subjects gave a larger percentage of characterological reasons for failure than did HSE subjects. These data, in conjunction with other studies noted in the introduction, support the notion that there is an asymmetry with respect to the impact of self-esteem on reactions to success and failure. The asymmetry hypothesis states that the effects of individual differences in self-esteem are asymmetrical across success and failure conditions; self-esteem differences in performance are more pronounced under failure conditions than under success conditions. This asymmetry in performance is perhaps derived from a similar asymmetry with respect to self-esteem differences in explanatory style for negative and positive events. Low self-esteem people will consistently rely more on characterological factors to explain negative outcomes than will HSE people; explanatory styles for positive events typically exhibit the opposite pattern, but the self-esteem differences are less pronounced.

Generalization

Immediate unexplained task. Results of the present study supported the notion that an explanation manipulation would generalize to an unexplained, but related, task performed immediately following the elicitation of explanations and
expectations, but they did not support the hypothesis that the effects would persist and affect performance on an unrelated subsequent task. The explanation manipulation (in conjunction with self-esteem) had highly comparable effects on first-task performance regardless of whether subjects worked on the task for which explanations and expectations had been generated (RAT) or on a different, but related, task (anagram).

In accounting for this generalization effect it is important to consider the content of the explanations. Although subjects often gave rather specific task-related reasons in their explanations, they also included reasons that were more general in nature. Some related to verbal tasks in general, such as good/poor verbal ability and others were extremely general, such as chronic emotional responses to evaluation/performance situations. The differential availability of those more general reasons for success and failure apparently persisted in affecting performance on a task that was related, but not identical, to the one used to elicit explanations and expectations.

Whether or not an explanation manipulation would affect performance on immediately performed tasks that are more divergent from the explained task is an unresolved issue. It is also unknown to what extent the present generalization effect may have been due to specifically telling subjects that the two tasks were highly related.

Subsequent task. In contrast, there was no support for the second type of generalization. The explanation manipulation did
not affect subjects' performance on a second related, but unexplained, task undertaken after performance experience on the first task. That is, the effects of the explanation manipulation did not generalize over time despite the fact that subjects received no direct feedback regarding their performance on the first task. This result is in direct contrast to the findings of Sherman et al. (1981, study 2). In that study, subjects who explained a hypothetical success/failure for the anagram task performed better/worse on the subsequent word generation task despite the intervening anagram task performance and the manipulated success/failure feedback that was, for half of the subjects, opposite in valence to the explanations.

There are several differences between this study and the Sherman et al. (1981, study 2) study that might account for the discrepant results. One possible reason for the opposing results has to do with the type of tasks that were used in the two studies. Although both studies used as the second task the identical word generation task, they differed with respect to the task used in the explanation manipulation. In the Sherman et al. study, subjects wrote explanations for a hypothetical anagram performance, whereas in the present study they wrote explanations for a hypothetical RAT performance. It could be argued that anagram tasks are more closely related in terms of performance components (i.e., manipulating letters of a word) to word generation tasks than are tasks that involve the retrieval of word associates (the RAT). If this were true, it would be more likely that hypothetical anagram explanations would
generalize to word generation performance than would hypothetical RAT explanations. Indeed, in the present study, the correlation between performance on the word generation and the anagram tasks was higher than the correlation between the word generation task and the RAT ($r = .63$ vs $r = .29$; $z = 2.53$, $p < .02$). Although these correlations are consistent with a "task overlap" explanation for the discrepant results, it is important to keep in mind that explanations generated for the RAT did have a highly significant impact on anagram performance when the anagram task was performed immediately after the explanation manipulation. The fact that the RAT explanation generalized so readily to immediate anagram performance implies that the RAT is not so unrelated to "letter manipulation tasks" as to be necessarily ineffective. Therefore, although the difference in the type of task used in the explanation manipulation is a possible reason for the discrepant results (and the lack of a present generalization effect), it is not necessarily the most persuasive.

A second possible reason for the discrepant results has to do with the number and specificity of expectations that subjects formed. Sherman et al. required their subjects to form only one general expectation (i.e., for the "upcoming word tasks") after writing explanations and before starting the first task. In contrast, the present study required subjects to form two expectations; a specific initial expectation for the RAT (elicited after the explanations but before first-task performance) and a second specific expectation for the word
generation task (elicited after first-task performance).

The theoretical process assumed to underlie the effects of hypothetical explanations on subsequent performance is availability. However, differential availability of success/failure-related cognitions does not, in itself, produce differences in subsequent performance. As noted by both Sherman et al. (1981) and Campbell and Fairey (1985), the cognitions made differentially available by the manipulation must be "consolidated" or "made relevant" to an upcoming performance by the explicit formation of expectations. When expectations are not elicited, the hypothetical explanation appears to remain just that, "hypothetical".

One must assume that when the present subjects were required to form a new, specific expectancy for the second task the same availability process applied. In searching memory for information to help them make this second judgment, subjects utilized the information that was most recently available. In this case, perceptions of their performance on the first task would be highly available. Because subjects had been told that the tasks were highly related, they would have been aware that their performance on the first task was a potentially useful source of information regarding how they might expect to perform on the next task. The specific cognitions generated earlier by the explanation task might, of course, also be relatively available, but certainly to a much lesser degree than they were when initial expectations were formed.

These highly available perceptions of first-task performance
would, of course, be affected by the explanation manipulation (recall that the manipulation had a significant impact on actual first-task performance). They would also, however, be affected by idiosyncratic standards for considering/evaluating performance and by individual variation in actual performance within the explanation conditions (i.e., error). This combination of an explanation induced/idiosyncratic component appeared to result in the manipulation having (a) a barely reliable effect on second-task expectations and (b) no significant effect on second-task performance. If one accepts the previously stated argument that the effect of the manipulation on performance is not completely mediated by expectations, then it appears that the attenuation of the effect over time was due to the fact that (a) the differential cognitions elicited by the manipulation became less salient over time and (b) the formation of a new expectation increased the salience of idiosyncratic variation on first-task performance.

In the Sherman et al. study, no new expectancies were elicited from subjects after first-task performance. Thus, there was no need for subjects to consider their previous performance and use this information to judge the likelihood of their performing well or poorly on the second task. Although subjects' perceptions of their first-task performance would have been available, they would have had little influence on subsequent performance because, as noted above, availability of different cognitions by itself is not sufficient to affect subsequent performance.
In summary, the factors mentioned above provide a reasonable and compelling argument for why the effects of the explanation manipulation in the present study did not generalize over time whereas they did in the Sherman et al. (1981, study 2) study.

Additional Self-Esteem Effects

As noted earlier, the present study replicates the self-esteem effects reported by Campbell and Fairey (1985) on first-task expectations, first-task performance, and content of the explanations. There were, however, some additional self-esteem effects that should be noted.

Although both LSE and HSE subjects' expectations dropped from time1 (first task) to time2 (second task), HSE subjects displayed a more pronounced drop. Stated differently, HSE subjects exhibited higher first-task expectations than did LSE subjects, but after working on the first task the two groups did not differ in their second-task expectations. In accounting for this differential decrease in expectations, several factors are worth noting. First, the higher initial expectations of HSE subjects represents a well established empirical result (e.g., Zuckerman, 1979). Indeed, several researchers examining the effect of expectations on performance have used self-esteem scores as a surrogate measure of differences in generalized expectancies (Shrauger, 1975). Second, there were no related self-esteem differences in first-task performance. Third, the two first-task tests were ones which would easily allow subjects to ascertain generally how well they had performed despite the lack of performance feedback. That is, on the 15-item anagram
test subjects would know generally how many they had answered correctly; both LSE and HSE subjects answered, on average, 60% correctly. Similarly, on the 12-item RAT, it was easy for subjects to know if they had indeed retrieved a word that was associated with all three task words; both LSE and HSE subjects retrieved, on average, 50% of the words. In short, both groups exhibited performance levels that most college students would view as representing only a moderate level of performance.

Finally, in giving the second-task expectations, both groups knew they would be working on the word generation task and that this task was "highly related" to the first task. In short, LSE subjects gave moderate first-task expectations, exhibited moderate first-task performance and indeed gave moderate second-task expectations. In contrast, HSE subjects gave stereotypically high first-task expectations, but exhibited only moderate first-task performance. Knowing that they were actually going to work on the "highly related" word generation task (i.e., performance could be verified), they moderated their second-task expectations.

This moderation of the HSE subjects' second-task expectations appears to be in direct conflict with previous research. For example, McFarlin and Blascovich (1981) reported that, even after having received failure feedback on a previous task, HSE subjects' expectations remained stereotypically high when they were asked to give expectation ratings for a subsequent task. However, unlike the present study where subjects were expressly told that the tasks were highly related,
the subjects in McFarlin and Blascovich's study were explicitly
told that the two tasks were unrelated. It therefore appears
that, when HSE subjects are aware that two tasks are not
related, they maintain characteristically high expectations for
performance on a second task despite failure on a previous one.
However, when they are aware that two tasks are related and are
asked to form personal judgments regarding first-task
performance, they modify their expectations for a second task so
as to be more in line with "reality". Whether they actually
hold lower expectations, or whether they simply state lower
expectations to prevent a loss of face that might occur due to a
discrepancy between predicted and actual performance remains an
unanswered question.

A second result worth noting is that although there were no
self-esteem differences in (a) first-task performance, (b)
perceptions of first-task performance, (c) second-task
expectations, and (d) second-task performance, there were
substantial self-esteem differences in first-task expectations
(described above) and perceptions of second-task performance
(PP2). This self-esteem main effect on PP2 was still present
even when the effects of previous responses were statistically
removed using an ANCOVA procedure.

In interpreting this re-emergence of a self-esteem effect on
perceptions of second-task performance it is important to
consider the conditions under which reality constraints operate
on one's perceptions of, or attributions for, performance.
First, reality constraints are lessened when one does not
actually have to engage in future performance. If there is no way for others or oneself to verify future performance, it is easier to distort one's perceptions about present or past performance. At the time subjects were asked about their perceptions of second-task performance, it was apparent that they would not be actually working on any further tasks. The time limit for the experiment was almost up and the questionnaire itself was labelled "post-experimental questionnaire". Thus, if HSE subjects no longer anticipated future evaluation there would be less reason for them to be "realistic" or cautious in their public perceptions of their performance. They were in no danger of risking a loss of self-esteem because there was no chance of further evaluation to challenge their perceptions of their ability (Zuckerman, 1979).

Second, there are fewer reality constraints on perceptions of performance when there are no objective standards by which to judge the performance. The three tasks in the present study differed with respect to subjectivity of standards. As noted earlier, both the RAT and the anagram task provide fairly well defined standards for judging performance (subjects could make a rough estimate of percentage correct). This was not true for the word generation task; subjects would have little idea of how many words constituted a good performance. Thus, it was probably easier to distort perceptions of performance on the word generation task, than on either the RAT or the anagram task. That is, on the word generation task there are less well defined standards by which to evaluate performance, and this
could allow stereotypical self-esteem differences to emerge.

This re-emergence of a self-esteem difference is interesting because it raises the issue of temporal stability of self-esteem differences in generalized (stereotypical) performance expectancies, and the question of how these generalized performance expectancies are maintained over time despite the fact that no actual performance differences exist between HSE and LSE subjects. As suggested above, sooner or later people work on something that is not subject to reality constraints whether it be a task that has no objective standards or one that entails no further possibility of evaluation, and this most likely allows stereotypical self-esteem differences to be maintained over time.

**Future Directions**

In order to resolve the conflicting results of this study and those of Sherman et al. (1981, study 2) with respect to the generalization of hypothetical explanation effects over time, a new study is presently under way. The new study employs the same tasks used by Sherman et al. (1981). Subjects generate success/failure explanations, state expectations, and perform on an anagram task; the second-task performance takes place on a word generation task. Thus, if the lack of generalization in the present results was due to the fact that the task involved in the explanation manipulation was not strongly enough related to the task used for second-task performance, one would anticipate that the explanation manipulation would generalize to second-task performance in the new study. Of greater import, is
the explicit manipulation of whether or not subjects state second-task expectancies before working on the second task. Half of the subjects are asked to form explicit performance expectations for the second task while the other half do not. Therefore, if the failure of the present explanation manipulation to generalize to second-task performance was due to the formation of new expectations, one would anticipate that in the new study generalization will occur if no new expectations are formed for the second task, but will not occur if new expectations are explicitly formed. Hopefully, this new study should resolve the contradictory findings of the present study and the Sherman et al. study.

Finally, it is important to address the applied significance of the present findings. Because explaining a hypothetical success had a positive and substantial impact on subjects' first-task expectations and performance but not on their subsequent task performance, it appears that the elicitation of positive prebehavioral cognitions may not be an effective long-term strategy for treating individuals with chronic low expectancies (e.g., low self-esteem, low achievement, shy, depressed). However, the results concerning first-task performance suggest that the elicitation of positive prebehavioral cognitions immediately before starting a task may have a beneficial short-term effect on performance. Thus teaching people to generate reasons for why they might succeed on a task just prior to engaging in the task may prove to be a useful strategy for improving immediate performance, especially
after exposure to prior failure. However, any long-term effects will most likely require a more drastic or intensive treatment approach such as reattribution training. As Dweck (1975) demonstrated with "helpless" children, exposure to success treatments alone does not result in long-term performance improvements, but training to attribute failure to noncharacterological factors such as effort does lead to maintained or improved performance after failure. Thus, it seems that for any treatment to have long-term performance benefits for people with low self-esteem, a restructuring of their cognitive reactions to failure is necessary. However, positive prebehavioral cognitions may aid the restructuring process by providing individuals with a short-term strategy to improve performance while they undergo reattribution training.
References


Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (Ed.), *Advances in experimental social psychology*


Footnotes

1Because the raw scores on the RAT, WG, and anagram tasks are not comparable, these scores were converted to z-scores before analysis.

2Preliminary analyses yielded no effects for sex of subject.

3Contrast weights were +2 for LSE/success, +2 for HSE/success, -3 for LSE/failure, -1 for HSE/failure, and 0 for both no explanation groups. Note these same weights were used by Campbell and Fairey (1985), and they contain both the main effect for explanation task and the Explanation x Self-esteem interaction inherent in the asymmetry hypothesis.

4Because the three predictors were substantially intercorrelated, individual Beta weights and significance levels are not reported. When there is multicolinearity among the predictors, Beta weights are highly dependent on sample-specific variability and are not particularly informative.

5These correlations were not calculated separately for HSE and LSE subjects because within-cell variations themselves represent individual differences. In addition, such correlations would be based on a cell size of only 10. Finally, the ANOVA indicated that these measures were correlated with self-esteem in some cells of the design (i.e., failure) but not in other cells.
Appendix A

Word Tasks
The next thing you will do is the Remote Associate Test (RA test). In the RA test you are given three item words and your job is to come up with a fourth English word (answer) that is associated, in some way, with all three of the given item words. For example, if given:

Birthday--Surprise--Dinner

the correct fourth word (answer) is PARTY.

On the following page is a list of 12 RA items. You will have 10 minutes to generate as many correct answers as you can. Try to do the best you can.

DO NOT TURN THE PAGE OVER UNTIL TOLD TO DO SO
<table>
<thead>
<tr>
<th>Item</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>shelf-read-end</td>
<td>------</td>
</tr>
<tr>
<td>sea-home-stomach</td>
<td>------</td>
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<tr>
<td>car-swimming-cue</td>
<td>------</td>
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<tr>
<td>chocolate-fortune-tin</td>
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<tr>
<td>bass-complex-sleep</td>
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<td>desert-ice-spell</td>
<td>------</td>
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<td>inch-peg-deal</td>
<td>------</td>
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<td>shopping-washer-picture</td>
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<td>head-street-dark</td>
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<tr>
<td>stalk-trainer-king</td>
<td>------</td>
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<tr>
<td>widow-bite-monkey</td>
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<tr>
<td>red-go-car</td>
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</table>
The next thing you will do is an anagram task. In an anagram, a word is taken and the letters are mixed up and rearranged. Your job is to unscramble the letters and make a common English word out of them. For example, NIDREN can be unscrambled to form the word DINNER.

On the following page is a list of 15 anagrams. You will have 10 minutes to solve as many as you can. Try to do the best you can.

******************************************************************************

DO NOT TURN THE PAGE OVER UNTIL TOLD TO DO SO.
ANAGRAMS

VARBE
SEMYS
GOTHET
ATHEW
VAHEY
CINIG
HOTBO
PPOCRE
ONERSP
KILERL
FERIG
RVAITI
STUQE
RAGUE
YENAH
The next thing you will do is the Word Generation task (WG). In a WG task you are given an original word from which you are to form as many English words, of four or more letters, as possible. For example, if given the original word INSPIRATIONAL you would form new words like: RATIONAL, SPIRAL, NATION, NATIONAL, PRINT, SPIT, etc.

On the following page you are given three original words and for each word you are to generate as many new words, of FOUR or MORE letters, as you can. You will have 10 minutes to do so. Try to do the best you can.

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<table>
<thead>
<tr>
<th>MARGARINE</th>
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*IF YOU NEED MORE SPACE WRITE ON THE BACK OF THIS PAGE*
Appendix B

Personality Checklist
Listed below are 15 pairs of trait adjectives. For each pair put an "X" on the line to indicate how you would rate yourself with respect to the pair of adjectives.

<table>
<thead>
<tr>
<th></th>
<th>Predictable</th>
<th>Unpredictable</th>
<th>Unconventional</th>
<th>Conventional</th>
<th>Assertive</th>
<th>Soft-spoken</th>
<th>Solemn</th>
<th>Light-hearted</th>
<th>Tactful</th>
<th>Candid</th>
<th>Gentle</th>
<th>Boisterous</th>
<th>Deliberate</th>
<th>Spontaneous</th>
<th>Extravagant</th>
<th>Thrifty</th>
<th>Thrifty</th>
<th>Thrifty</th>
<th>Competitive</th>
<th>Cooperative</th>
<th>Quiet</th>
<th>Out-spoken</th>
<th>Independent</th>
<th>Dependent</th>
<th>Cautious</th>
<th>Risky</th>
<th>Ambitious</th>
<th>Laid-back</th>
<th>Yielding</th>
<th>Dominant</th>
</tr>
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</table>
Appendix C

Explanation Tasks
One of the tasks you will be doing today is the Remote Associate Test (RA test). In the RA test you are given three item words and your job is to come up with a fourth English word (answer) that is associated, in some way, with all of the three given item words.

For example,

if given: Birthday--Surprise--Dinner as the item words,

a right answer for the fourth word would be PARTY since all three of the given item words are a type of party (e.g., Birthday party, Surprise party, Dinner party).

Before you start the Remote Associate Test (RA test), we’re interested in how people come to explain and understand things about themselves. Of course we don’t know at the present time how well or how poorly you will do on the RA test. Some subjects do very well and others do quite poorly. We’d like you to imagine that you tried the RA test and that you did very, very well -- better than almost all other subjects. How would you explain such a performance? Use things that you know about yourself (your past history, your characteristics, etc.) and the type of task it is which might help to explain why you did so well. Think carefully and try to come up with as good an explanation as you can.

To repeat, we have no idea how you will do on the RA test. We would simply like to see how you would explain a hypothetical outcome. TURN THE PAGE OVER and explain why you did so well on the RA test.
The reasons I did very well on the RA test are:
One of the tasks you will be doing today is the Remote Associate Test (RA test). In the RA test you are given three item words and your job is to come up with a fourth English word (answer) that is associated, in some way, with all of the three given item words.

For example,

if given: Birthday--Surprise--Dinner as the item words,

a right answer for the fourth word would be PARTY since all three of the given item words are a type of party (e.g., Birthday party, Surprise party, Dinner party).

Before you start the Remote Associate Test (RA test), we're interested in how people come to explain and understand things about themselves. Of course we don't know at the present time how well or how poorly you will do on the RA test. Some subjects do very well and others do quite poorly. We'd like you to imagine that you tried the RA test and that you did very, very poorly -- worse than almost all other subjects. How would you explain such a performance? Use things that you know about yourself (your past history, your characteristics, etc.) and the type of task it is which might help to explain why you did so poorly. Think carefully and try to come up with as good an explanation as you can.

To repeat, we have no idea how you will do on the RA test. We would simply like to see how you would explain a hypothetical outcome. TURN THE PAGE OVER and explain why you did so poorly on the RA test.
The reasons I did very poorly on the RA test are:
Appendix D

Expectation Rating Scale
We are interested in your expectations about how you will perform on the Remote Associate Test (RA test). Please try to assess as accurately as you can what your performance will be. Circle the number which indicates your rating.

-4  -3  -2  -1  0  +1  +2  +3  +4
likely to do much likely to do about likely to do much
do worse than the same better
do other UBC students as other than other
UBC students UBC students UBC students
Appendix E

Task Questionnaires
Task Questionnaire

I.D.# ________

Now we would like to ask about your perceptions of your performance on the Remote Associate Test. For the following questions circle the number which indicates your rating.

1. How well do you think you performed on the task relative to other students?

1 2 3 4 5 6 7 8 9
WORSE THAN BETTER THAN
OTHER UBC OTHER UBC
STUDENTS STUDENTS

2. How satisfied are you with your performance?

1 2 3 4 5 6 7
NOT VERY VERY
SATISFIED SATISFIED

3. To what extent would you say you tried hard to do well on the task?

1 2 3 4 5 6 7
DID NOT TRY DID TRY
VERY HARD VERY HARD

4. To what extent would you say you cared about doing well on the task?

1 2 3 4 5 6 7
CARED VERY CARED A
LITTLE GREAT DEAL

5. To what extent do you feel you were able to concentrate on the task?

1 2 3 4 5 6 7
CONCENTRATED CONCENTRATED
VERY POORLY VERY WELL
6. To what extent would you say you experienced anxiety while working on the task?

1  2  3  4  5  6  7
NOT AT ALL  VERY
ANXIOUS  ANXIOUS

7. How many of the Remote Associate items do you think you got correct?

----------

8. How well do you expect to do on the next word task, the word generation task, in relation to other students doing the task?

1  2  3  4  5  6  7  8  9
WORSE THAN  BETTER THAN
OTHER UBC  OTHER UBC
STUDENTS  STUDENTS
Task Questionnaire

I.D. # ________

Now we would like to ask about your perceptions of your performance on the Anagram Task. For the following questions circle the number which indicates your rating.

1. How well do you think you performed on the task relative to other students?

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2. How satisfied are you with your performance?

<table>
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<th>5</th>
<th>6</th>
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<td></td>
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<tr>
<td>Very Satisfied</td>
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<td></td>
<td></td>
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3. To what extent would you say you tried hard to do well on the task?

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<th>7</th>
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<tr>
<td>Did Try Very Hard</td>
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<td></td>
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</table>

4. To what extent would you say you cared about doing well on the task?

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<tr>
<td>Cared A Great Deal</td>
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5. To what extent do you feel you were able to concentrate on the task?

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</table>
6. To what extent would you say you experienced anxiety while working on the task?

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<th>7</th>
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</thead>
<tbody>
<tr>
<td>NOT AT ALL</td>
<td>ANXIOUS</td>
<td>VERY</td>
<td>ANXIOUS</td>
<td></td>
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<td></td>
<td></td>
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</table>

7. How many anagrams do you think you solved?

--------

8. How well do you expect to do on the next word task, the word generation task, in relation to other students doing the task?

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>WORSE THAN</td>
<td>OTHER UBC</td>
<td>BETTER THAN</td>
<td>OTHER UBC</td>
<td>STUDENTS</td>
<td>STUDENTS</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>
Appendix F

Post-Experimental Questionnaire
Post-Experimental Questionnaire

I.D.# _________

Now we would like to ask about your perceptions of your performance on the Word Generation Task. For the following questions circle the number which indicates your rating.

1. How well do you think you performed on the word generation task relative to other students?

   1 2 3 4 5 6 7 8 9
   WORSE THAN BETTER THAN
   OTHER UBC OTHER UBC
   STUDENTS STUDENTS

2. How satisfied are you with your performance?

   1 2 3 4 5 6 7
   NOT VERY VERY
   SATISFIED SATISFIED

3. To what extent would you say you tried hard to do well on the task?

   1 2 3 4 5 6 7
   DID NOT TRY DID TRY
   DID NOT TRY VERY HARD
   VERY HARD

4. To what extent would you say you cared about doing well on the task?

   1 2 3 4 5 6 7
   CARED VERY CARED A
   VERY LITTLE GREAT DEAL

5. To what extent do you feel you were able to concentrate on the task?

   1 2 3 4 5 6 7
   CONCENTRATED CONCENTRATED
   VERY POORLY VERY WELL
6. To what extent would you say you experienced anxiety while working on the task?

1 2 3 4 5 6 7
NOT AT ALL ANXIOUS

7. How many English words of four or more letters did you manage to generate?

----------

8. Listed below are a set of temporary factors that sometimes affect performance on any given day. Please indicate to what extent you feel these factors may have affected your performance today by circling the appropriate number.

A. I am tired and/or not feeling well today.

1 2 3 4 5 6 7
NOT AT ALL APPLICABLE

B. I have a lot of other things on my mind today.

1 2 3 4 5 6 7
NOT AT ALL APPLICABLE

C. I’m just having a “bad day”.

1 2 3 4 5 6 7
NOT AT ALL APPLICABLE

D. I was just unlucky.

1 2 3 4 5 6 7
NOT AT ALL APPLICABLE

E. The testing environment was a particularly poor one for me.

1 2 3 4 5 6 7
NOT AT ALL APPLICABLE
9. How would you rate your general verbal ability relative to other students?

<table>
<thead>
<tr>
<th>1</th>
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<th>9</th>
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<tbody>
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<td>WORSE THAN MOST OTHER STUDENTS</td>
<td>BETTER THAN MOST OTHER STUDENTS</td>
<td></td>
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<td></td>
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</table>
Appendix G

Consent and Debriefing Forms
I freely and voluntarily agree to be a participant in the research project entitled, "Factors Affecting Verbal Performance", to be conducted at the Psychology department during the academic year 1985-86 with Jennifer Campbell and Patricia Fairey as Principal Investigators. The procedures to be followed and their purposes have been explained to me and I understand them. They are as follows: I will fill out a personality check list; work on several word tasks; and complete several short questionnaires. The time required of me is about 1 hour. I understand that all information is confidential and that I will not identify myself on any of the experimental materials. I understand that I may withdraw from the experiment at any time without explanation and with no penalty. I have been given the right to ask questions and my questions, if any, have been answered to my satisfaction. The experimenter also agrees to discuss the experiment and answer any questions I may have at the conclusion of the study. I have read and understand the foregoing. I have also received a copy of this consent form.

-----------------------------
(Research Participant)        (Date)
Debriefing Statement

We thank you for your participation in this study. At this point, we would like to explain more fully the procedures and purposes of the study. We ask you to read and sign this form to ensure that the experimenter has not forgotten to tell you any relevant information.

In the experiment you first completed a personality checklist. For those of you who explained a hypothetical outcome for the Remote Associate Test (RA Test), it was used so that relevant personality characteristics would come to mind when you were asked to explain your hypothetical performance.

Some of you were then asked to explain either a hypothetical success or failure outcome concerning the RA test and some of you did not explain any outcome. You were then asked to state expectancies for your performance on the upcoming RA test. Next, half of you were given the RA test and the other half were given a different, but related task, the anagram task. Finally, everyone stated performance expectancies for the word generation task and then worked on the task.

Previous research has shown that when people are asked to generate explanations for a hypothetical success or failure, their expectations concerning future performance are affected. Explaining a hypothetical success leads to higher expectations while explaining a failure leads to lower expectations. Furthermore, there is some evidence that when expectations are explicitly formed (e.g., stated), actual performance is also influenced.

In this study, we were interested in seeing if the effects of explanation and expectation generalize to a task other than the one involved in the explanation. Thus, some of you first worked on the RA test (the task that explanations and expectations were generated for) while others first worked on a related task, the anagram task. We were also interested in whether these effects would generalize still further and affect performance on a second related task despite the intervention of actual performance on the first task. This was the purpose of asking you to work on the word generation task.

A second purpose of the study was to examine the potential moderating effects of self-esteem on the processes described above. There is evidence that people with high self-esteem explain success and failure in a different manner than people with low self-esteem and that this difference in explanatory style may produce differences in expectations and task performance. Earlier in the term you completed a self-esteem scale. The scores from this scale will enable us to determine if self-esteem did in fact make a difference in how explanations affected explanations and subsequent performance.
All of the data collected in this experiment are strictly confidential and will not be associated with your name in any way. We ask that you do not discuss this research with your friends and classmates until after this academic year. If any questions occur to you later, or if you wish to find out the results of the study, please contact Patricia Fairey (228-6487). The results should be available after June.

******************************************

I have read the above and understand it. Any questions have been answered to my satisfaction. I agree not to discuss this experiment with classmates or friends until the summer or 1986.

-------------------------------------  ---------------------
(Research Participant)                (Date)
Appendix H

Summary of the Analyses
Summary of the Analysis of Variance for First-task Expectations

<table>
<thead>
<tr>
<th>SOURCE OF VARIATION</th>
<th>SUM OF SQUARES</th>
<th>DF</th>
<th>MEAN SQUARE</th>
<th>F</th>
<th>SIGNIF OF F</th>
</tr>
</thead>
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<td>MAIN EFFECTS</td>
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<tr>
<td>MSE</td>
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Summary of the Analysis of Variance for First-task Performance

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Summary of the Analysis of Variance for Second-task Expectations

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**WITHIN SUBJECT FACTORS ARE:**

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**Within Subject Factors Are:**

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