The patterns of causal reasoning used to explain corporate performance outcomes were analyzed using data from Letters to Shareholders in 181 annual reports published in 1972 and 1974. These data were used to analyze the nature of self-serving attributions, and other attributional phenomena, and the factors affecting the amount of causal reasoning. The typical self-serving pattern of attributions found in studies of individual performance was also found in this study of corporate performance. Neither a purely informational nor a purely motivational explanation was supported by these attributions. Unfavorable outcomes were attributed more to external, unstable, and uncontrollable causes than were favorable outcomes. Attributions were most prevalent when a corporation did worse than expected and chose to talk mostly about unfavorable outcomes. These findings contribute new insights to several theoretical issues and support the use of annual report data in analyzing organizational phenomena.

There has been a great deal of interest recently in the patterns of causal reasoning used to explain various facets of performance in organizations. Whether such causal analyses represent an attempt to explain the organization’s behavior to its own members or an attempt to communicate to external observers, they can have important effects on organizational strategies, performance, and the future availability of resources. In fact, Pfeffer (1981: 4) has argued that the task of management is “to provide explanations, rationalizations, and legitimation for the activities undertaken in the organization.”

This concern with understanding causal reasoning processes in organizations has been reflected in several streams of research: the effects of causal attributions on the evaluation of subordinates by superiors (e.g., Ilgen and Knowlton, 1980); on job satisfaction (Adler, 1980); on the assessment of one’s own performance relative to competitors (Hogarth and Makridakis, 1979); and on planning (Larwood and Whittaker, 1977). There has been only a limited amount of research, however, on the explanations provided for the performance outcomes experienced by a corporation. Bowman (1976) found that less successful and more successful companies in the food processing industry stressed different factors in their annual reports. Less successful companies discussed external factors affecting performance, while more successful companies discussed their own strategic directions. Bowman’s analysis, though provocative, did not focus directly on the patterns of causal reasoning used to explain corporate performance. The present study attempts to focus directly on such patterns and provide a conceptual framework for their analysis and interpretation.

Causal attributions for corporate performance are not only of substantive interest, but also provide data for examining several important theoretical issues. Staw (1980) provided an extremely useful framework for this purpose, noting that there are two types of rationality, prospective and retrospective. Prospective rationality refers to the typical view of rationality, which implies that one attempts to process information in such a way as to maximize future benefits relative to costs. Retrospective rationality, on the other hand, consists of rationalizing prior behavior in an attempt to make it appear rational. Such
retrospective rationality may occur when ego-defensiveness is
dominant.

Hence, causal reasoning processes may serve two different
goals, according to Staw's analysis: providing accurate expan-
ations of events to enhance control of future outcomes, or
providing justifications for prior actions. Staw (1980: 59) de-
veloped a framework specifying when these different patterns
may occur. Prospective rationality and the search for accurate
and plausible explanations are generally found after favorable
outcomes or when ego-defensiveness is low. After unfavor-
able outcomes, however, retrospective rationality is likely to be
used, particularly when there is high ego-defensiveness. Pre-
sumably, these patterns of occurrence for retrospective and
prospective rationality represent only the most likely cases.
That is, one might find retrospective rationality after favorable
outcomes or prospective rationality following unfavorable
outcomes.

Retrospective rationality may manifest itself in three ways,
according to Staw: (1) the search for explanations that relieve
one of responsibility, i.e., so-called "self-serving" or "hedonic"
attributions, typically expressed by attributing favorable out-
comes to causes internal to oneself and unfavorable outcomes
to external causes (Miller and Ross, 1975; Bradley, 1978;
Zuckerman, 1979); (2) the reevaluation of outcomes; or (3) the
attempt to recoup losses by committing new resources, i.e.,
escalation of commitment. The major focus of this study is on
the first possibility, using causal reasoning patterns for corpo-
rate performance to shed light on the nature of self-serving
attributions. The second possibility, reevaluation of outcomes,
may be unlikely in organizations, as Staw points out. Observers,
both internal and external to the organization, can usually
corroborate outcomes and verify if they have been distorted,
particularly if the outcomes in question relate to corporate
performance. Finally, the third possibility, escalation of com-
mmitment, was considered only tangentially in this study.

In addition to understanding what factors affect the nature of
the causal reasoning patterns used to explain corporate per-
formance, those factors that affect the amount of causal
reasoning engaged in are also important. It would be of interest,
within the framework of Staw's (1980) analysis, to examine
how often explanations are provided. The same factors that
affect self-serving attributions are also likely to affect the
incidence rate for causal explanations (Wong and Weiner,

Thus, the purpose of the present study was to examine the
causal reasoning patterns used to explain corporate perfor-
ance. Letters to Shareholders for a sample of corporations were
examined, and all instances where some performance outcome
of the corporation and its causes were discussed in the letters
were considered. These data were used to explore two main
theoretical issues: the nature of self-serving attributions and
the factors determining the amount of causal reasoning used by
the corporation.

SELF-SERVING ATTRIBUTIONS

The framework used to investigate causal reasoning in this
study uses three dimensions or properties of causes (Weiner,
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1979: (1) locus of causality, (2) causal stability, and (3) controllability of the cause. Locus of causality can be internal or external. A cause is internal if it resides in the individual or organization whose behavior is being examined, and external if it resides elsewhere in the environment. A cause is stable if it persists over time; it is unstable if it does not. Finally, a cause is controllable if the individual or organization whose behavior is being examined has it within its power to change that cause; it is uncontrollable if that individual or organization cannot do anything about it. Causal reasons for performance can be characterized on these dimensions and then analyzed.

A great deal of research has documented that individuals tend to attribute favorable outcomes to causes internal to themselves and to attribute unfavorable outcomes to factors external to themselves. This tendency has been labeled "attributional egotism," and the attributions have been called "self-serving," "hedonic," or "motivational" attributions. The attribution of favorable performance to internal causes has been termed "self-enhancing," and the attribution of unfavorable performance to external causes has been labeled "self-protective." The attributional patterns have been found both in experiments (for reviews, see Miller and Ross, 1975; Bradley, 1978; Snyder, Stephan, and Rosenfield, 1978; Zuckerman, 1979) and in studies of real-world settings (Lau and Russell, 1980). While Miller and Ross (1975) found support only for self-enhancing behaviors, later reviews (e.g., Zuckerman, 1979) found evidence of both self-enhancing and self-protective attributions.

Given the robustness of these findings at the level of individual performance, one would hypothesize the following pattern in explanations given for corporate performance: reasons internal to the organization will be cited for favorable performance outcomes and external factors will be noted for unfavorable outcomes. The existence of such self-serving attributions may indicate a distortion of causal reasoning about corporate performance that would lead to ineffective strategic responses. For example, a misattribution that poor performance was due to unstable external factors could result in the continuation of an ineffective strategy rather than in the adoption of a new strategy.

Despite general agreement over the existence of the pattern of results associated with self-serving attributions, there is some controversy over why this pattern occurs. One perspective is that self-serving attributions arise from ego-defensive rationalizations (Staw, 1980). Attributions as to the causes of performance can serve a self-presentational function. They allow individuals (or corporations) an opportunity to defend or enhance their self-esteem. Authors of several reviews have argued that recent research strongly supports this motivational explanation (Bradley, 1978; Snyder, Stephan, and Rosenfield, 1978; Zuckerman, 1979).

In an influential early analysis, however, Miller and Ross (1975) argued that self-serving attributions may occur even when ego-defensiveness is not involved. The self-serving attributions may be due to the nature of the information that is available or salient to the attributor and not due to ego-defensive motives. The particular informational explanation used by Miller and Ross is based on the premise that individuals (and presumably
organizations) usually intend and expect to succeed and make plans that will lead to success. Hence, if favorable outcomes occur, they are attributed to internal causes. Similarly, unfavorable outcomes are unexpected and unintended and are likely to be attributed to external causes. Miller and Ross also cite biases in covariation perception and assessment that may contribute to this basic attributional pattern. Although several later studies have somewhat discredited these specific informational explanations used by Miller and Ross (e.g., Bradley, 1978; Zuckerman, 1979), the basic premise that the self-serving pattern of attributions may be due to the nature of available or salient information still appears viable.

Snyder, Stephan, and Rosenfield (1978) noted that the degree to which self-serving attributions exist is a function of the circumstances in which the attributions are made. Fewer self-serving attributions may occur if there is a likelihood of having one’s explanations contradicted by others, if one’s future performance will also be subject to scrutiny, and if there is a desire to be accurate, for control purposes. These factors may hold in the setting studied here. Any reasons for performance provided in annual reports are subject to public scrutiny, and gross inaccuracies may be detected quickly. Future corporate performance will also be subject to careful examination, and discrepancies between this performance and prior explanations noted. Finally, Riess et al. (1981) argued that self-serving attributions involve not only self-presentational concerns, but actual biases in perceptions of causality as well.

Hence, there is still a great deal of controversy about the roles played by motivational and informational factors in self-serving attributions, although most researchers agree that both factors are involved to some extent. This issue is examined in the present study by considering not only the explanations given for favorable and unfavorable outcomes, but the nature of the surrounding economic environment. Specifically, both a good and a bad economic year were examined. One can then consider the relative patterns of attributions one would expect for the good and bad years, depending on whether informational or motivational factors were involved. In both years, one might expect a self-serving pattern of attributions for favorable and unfavorable outcomes. That is, as noted above, favorable outcomes will tend to be attributed to internal causes and unfavorable outcomes to external causes. One would also expect attributions to be more to internal causes in a good year (as there will be more successes) and more to external causes in a bad year. There should also be an interaction of year with outcome. The form of that interaction would be expected to differ, however, for the motivational and informational explanations of the self-serving attribution pattern.

Many particular motivational and informational explanations for self-serving attributions could be proposed. Thus, the specific rationale used for such explanations needs to be made clear. The informational argument used in this study is considered first. As noted above, the arguments based on intentions and expectations (Miller and Ross, 1975) have not been fully supported by later research. Thus, the informational explanation used in the present study is not based on such arguments. Rather, the reasoning follows Kelley’s (1971) attributional principles of discounting and augmentation. First, con-
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Consider the case of unfavorable outcomes. If an unfavorable outcome is experienced in a bad year, there are many potential external reasons for such unsatisfactory performance. On the other hand, if an unfavorable outcome occurs in a good year, there are fewer plausible external causes; hence, the augmentation principle implies that the role of internal causes would be judged to be greater (Kelley, 1971: 12). According to this particular informational argument, unfavorable outcomes should be attributed more to external causes in a bad year than in a good year. Similar arguments can be made for the case of favorable outcomes. Since there are more external causes for favorable performance in a good year, the role of internal factors should be discounted. If favorable outcomes occur in a bad year, however, the role of internal causes should be augmented, since such outcomes were obtained in spite of the presence of plausible inhibitory external factors. Thus, the particular informational argument used in this study predicts that unfavorable outcomes will be attributed more to external causes in a bad year than in a good year, while favorable outcomes should be attributed more to internal causes in a bad year than in a good year.

The motivational explanation is based on the notion that those attributions will be chosen that most enhance one's self-esteem after success and most protect one's ego after failure. First, consider unfavorable outcomes. There should be greater ego-defensiveness or greater need to protect self-esteem if unfavorable outcomes occur in a good year than if such outcomes occur in a bad year. In a bad year, others will also be experiencing unfavorable outcomes, and external causes are more plausible. Hence, according to the motivational explanation, attributions for failure should be more to external causes in a good year than in a bad year. For favorable outcomes, similarly, there is greater need to actively enhance one's ego when others are succeeding. If others are failing, then favorable outcomes would stand out, and one does not have as great a need to seek self-enhancement actively. Thus, the motivational argument would imply that attributions for success should be more to internal causes in a good year than in a bad year. This tendency for favorable outcomes, however, does not seem as strong as that posited for unfavorable ones. That is, favorable outcomes may tend to be attributed to internal causes, whatever the external environment. Taking all of the above arguments into account, the motivational argument used in this study predicts that unfavorable outcomes will be attributed more to external causes in a good year and that favorable outcomes may be attributed slightly more to internal causes in a good year than in a bad year.

Thus, the relative pattern of attributions expected for favorable and unfavorable outcomes in a good and a bad year differs according to the specific informational and motivational explanations outlined above. These attributions provide potential leverage, therefore, for distinguishing the motivational from the informational explanations for self-serving attributions in an organizational setting. Whereas Staw's (1980) analysis implies that the self-serving pattern will only be observed in situations characterized by high ego-defensiveness, it is possible that the same pattern of results could be due to factors unrelated to ego-defensiveness.
In summary, it is hypothesized that:

**Hypothesis 1a:** The proportion of attributions associated with internal causes relative to external causes will be greater when the outcome is favorable rather than unfavorable.

**Hypothesis 1b:** The proportion of attributions associated with internal causes relative to external causes will be greater when the outcome occurs in a context of other favorable outcomes (a good year) rather than a context of unfavorable outcomes (a bad year).

In addition it is hypothesized that:

**Hypothesis 1c:** The proportion of internal versus external attributions will be a function of an interaction between the context (year) and the nature of the outcome (favorable or unfavorable).

The specific form of the interaction of year and outcome may shed light on the motivational or informational basis for the attributional pattern, as noted above. The following alternative hypotheses are suggested for the motivational basis:

**Hypothesis 2a:** Attributions for unfavorable outcomes will be more to external causes in a good year than in a bad year.

**Hypothesis 2b:** Attributions for favorable outcomes will be slightly more to internal causes in a good year than in a bad year.

For the informational basis, the following hypotheses are suggested:

**Hypothesis 3a:** Attributions for unfavorable outcomes will be more to external causes in a bad year than in a good year.

**Hypothesis 3b:** Attributions for favorable outcomes will be more to internal causes in a bad year than in a good year.

The pattern of attributions for corporate performance on the other two attributional dimensions, stability and controllability, will also be examined briefly. In particular, using arguments parallel to those used above for locus of causality, one might expect attributions to be more unstable and uncontrollable following unfavorable outcomes than after favorable outcomes and to be more unstable and uncontrollable in a bad year than in a good year. There may also be a similar interaction of year with outcome.

**AMOUNT OF CAUSAL REASONING**

While the above hypotheses address specific patterns of attributions, the discussion also leads to the question of when will attributions be made, that is, when will corporations feel a need to explain their performance in their Letters to Shareholders? The answer to this question is provided in the attribution literature. Attributions are most prevalent when there are unexpected negative outcomes (Wong and Weiner, 1981). Thus, one might hypothesize that there would be an effect of performance relative to expectations, the type of outcome (favorable or unfavorable), and an interaction on the frequency and amount of causal reasoning present in the annual report data. This suggests the following hypothesis:

**Hypothesis 4:** Causal reasoning will be more prevalent when performance departs from expectations, for unfavorable outcomes, and particularly when outcomes are both unfavorable and unexpected.

**DATA AND METHOD**

**Annual Reports as a Data Source**

There were several reasons for using annual report data to examine the patterns of causal reasoning underlying corporate
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performance. First, corporate reports seem to provide fairly comparable sets of data for a broad sample of corporations. Other sources, such as articles or interviews with industry leaders, tend to be less comparable across industries and tend to be available for fewer corporations. Second, data from annual reports have been used in the past with some success (Lentz and Tschirgi, 1963; Bowman, 1976, 1978) and increased use of such data has been advocated by Pfeffer (1981).

Since the formats of annual reports vary a great deal, we decided to limit our analysis of each report to the Letter to Shareholders, which seemed to be the most standardized component of the reports that discussed performance. One conceptual issue that must be considered in using these letters as a data source, however, is whether the causal reasoning presented in these letters represents actual explanations for performance or justifications of performance, since the letter is, to some extent, intended to be a persuasive document. That is, it is partially intended to convince investors to buy stock or to convince current shareholders of their wisdom. Miller (1978) and Lau and Russell (1980) discussed the general problem of distinguishing explanations from justifications, noting that it is extremely difficult to resolve. Attributions, both in experiments and real life, often serve dual purposes both as explanations of performance and as rationalizations or justifications of that performance. In addition, attributions can serve an administrative purpose. For example, in a good year, administrators may emphasize the internal causes of positive results in order to motivate organization members.

There are also pressures on those who write the Letters to Shareholders to be accurate and avoid bias. Although such letters are not formally audited, they are subject to a great deal of public scrutiny from stock analysts, shareholders, and others. There could thus be severe consequences if obvious biases were shown in the causal reasoning presented (Snyder, Stephan, and Rosenfield, 1978). Hence, whether the causal reasoning represents explanations or justifications is probably not resolvable, although aspects of both are probably present in all causal attributions (Riess et al., 1981).

A second issue regarding the use of annual reports as a data source is that the Letters to Shareholders represent the results of many individual and group decisions. Most of the previous research cited above in support of the hypotheses, however, is based on individuals. Hence, although the previous findings may not be strictly applicable, they may still provide insights.

Sampling of Years, Industries, and Companies

Since it was critical to several of the hypotheses to examine performance in both a good year and a bad year, a year of each type was chosen by examining indices of economic activity such as the Gross National Product (GNP) and stock market indices (Federal Reserve Bulletin, 1975). Based on this examination, 1972 was chosen as a good year (GNP increased 6 percent in constant dollars, stock market indices increased roughly 11 percent) and 1974 as a bad year (GNP decreased 2 percent in constant dollars, stock market indices decreased roughly 23 percent). Although the economic environment clearly differed in 1972 and 1974, however, other aspects of the corporate environment may also have differed, so some

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caution must be exercised in interpreting the results related to year as being solely due to differences in the economic environment.

Four different industries were chosen in an attempt to sample a wide range of sensitivity to the economic environment, rate of technological change, and so on. While no formal hypotheses relating to the different industries were made, it was felt that any effects should be demonstrated in a range of settings. The four industries chosen were metal mining; aircraft, guided missiles, and parts (aerospace); scientific instruments; and telephone communications. In the results section, evidence is presented that, on average, 1972 was a more favorable year than 1974 for each of these industries. The 1980 United States Securities and Exchange Commission Directory was used as a source of company names. All companies required to file annual reports are listed by industry code. The codes used for the selected industries were 100 (metal mining), 372 (aerospace), 381 (scientific instruments), and 481 (telephone communications). The number of companies listed under each was 121, 49, 107, and 65, respectively.

The total list of companies was reduced to only those whose fiscal year ended during the September to December quarter. This was considered necessary so that the fiscal years of the companies in the sample would correspond as closely as possible to the calendar years for the chosen good and bad year. The reduced list consisted of 71 metal mining companies, 37 aerospace, 73 scientific instruments, and 64 companies under telephone communications. To keep the sample to reasonable proportions for data coding, all 37 companies in the aerospace industry and random samples of 50 companies each from the other three industries were selected. A letter was then written to the Securities and Exchange Commission requesting copies of the Letter to Shareholders for the annual reports covering performance for these companies in 1972 and 1974. A total of 181 Letters to Shareholders was received. The number of each industry in each year was: metal mining, 18 (1972) and 23 (1974); aerospace, 18 (1972) and 19 (1974); scientific instruments, 26 (1972) and 31 (1974); and telephone communications, 21 (1972) and 25 (1974). Thus, in a few instances, data were not available for each company in both years.

Coding of Attributions

The unit of analysis was the specific instance of causal reasoning rather than the entire annual report. Specific instances of attributions were an appropriate focus for the study because the nature of corporate performance, as presented in the Letter to Shareholders, was complex. Typically, these letters discussed a variety of performance outcomes for several operating units within the corporation. There is no unambiguous method for summarizing these individual outcomes and their associated attributions in a single statement that describes the relationship of causal reasoning to overall corporate performance. Thus, the attributions were considered individually. This approach is consistent with other analyses of performance attributions in real-world settings (Lau and Russell, 1980).

In each letter, all instances of causal reasoning were identified. An instance of causal reasoning was defined as a phrase or

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sentence in which some performance outcome, such as profits, sales, or return on investment, was linked with a reason for that outcome. Each such instance was then coded as to the favorability of the performance outcome (favorable or unfavorable), and the reason given for the performance was coded with respect to the locus of causality (internal or external), stability of the cause (stable or unstable), and controllability of the cause (controllable or uncontrollable). For each letter, the total amount of causal reasoning present was also measured. Finally, whether the outcome in a given year was expected or unexpected was determined by comparing current performance for the company as a whole with that of the previous year. These coded observations were then analyzed using log-linear models and analyses of variance to test the hypotheses.

The data were collected and coded in three stages. In the first stage, two graduate student coders worked with the authors on pilot data. During this stage, a procedure for identifying and coding attributions was developed by considering a wide variety of examples.

In the second stage, both students independently read all Letters to Shareholders and identified all attributions in the letters. The link between outcome and cause had to be specific and clearly stated. A statement such as “Profits were high because metal market prices were higher on world markets” was considered an attribution because a specific outcome was linked to a cause. Outcome statements for which the causes could be only inferred were not considered. Thus, “Sales and prices increased” was not considered to be an attribution.

To be considered an attribution, the outcome and causal information had to appear in close proximity to each other. Typically, an attribution statement was contained in one or two sentences. If a sentence included more than one cause for a performance outcome, each cause was treated as a separate attribution. Thus, the statement “Company sales increased because of new product introduction and creative advertising” was considered two attributions.

Restatements of outcomes were not identified as attributions. Thus, a statement such as “Profits were high because sales were high” was not treated as an attribution because no causal reason was given. The statement merely discussed two outcomes. Similarly, statements claiming favorable outcomes despite adverse conditions were excluded if no specific cause was stated. For example, “The company continued to maintain its sales in spite of a significant drop in industry demand” was not coded as an attribution, because no causal reason for the maintenance in sales was provided. It should be noted that statements such as those in the two examples above could, strictly speaking, be classed as attributions. That is, the “because” and “in spite of” statements are technically causal. The major problem with these statements is that they cannot be readily coded. For example, in the “profits were high because sales were high” statement, “sales were high” could be coded as either an internal or external cause, depending on why sales were high.

Finally, all attributions had to apply to the year of the annual report. The attributions could also include an explanation of
performance in past years, but statements only pertaining to anticipated performance in future years were not considered.

There was initial agreement among the coders on 94.6 percent of the attributions (the specific sentence in the letter) initially identified. In cases where there was a disagreement, the two coders discussed the statement and came to an agreement. A total of 421 attributions resulted from this process. To measure the amount of causal reasoning, coders recorded the number of attributions, the total number of lines devoted to attributions, and the total number of lines in each letter.

In the third stage of the coding, the two graduate students independently coded each attribution in terms of the success or failure of the performance, the locus of causality, stability of the cause, and controllability of the cause, based on Weiner’s (1979) discussions of these concepts and Lau and Russell’s (1980) criteria for locus and stability. Each attribution could not necessarily be coded on all criteria, since there was sometimes insufficient information to allow a judgment to be made on some dimension. When any ambiguity existed about a dimension, the dimension was not coded. This resulted in fewer observations on the stability dimension.

For locus of causality, an attribution was coded as “internal” if it referred to causal factors internal to the organization (e.g., strategy, R&D effort, workforce skill) and “external” if it referred to something outside of the company (e.g., market prices, inflation, the weather, competition). A total of 416 attributions could be coded for locus of causality, of which 187, or 45 percent, were internal, and 229, or 55 percent, were external. The rate of agreement between the two coders was 98 percent.

An attribution was coded as stable if the cause could be expected to persist over time and thus would predict the same outcome for the future. For example, the introduction of new technology that reduced production costs was considered stable. Unstable causes were those that could change in the future, such as high set-up costs. The stability coding was the most difficult, in that many causes were too ambiguous to code on this dimension. Only 287 of the 421 attributions could be coded for stability, of which 184, or 64 percent, were stable, and 103, or 36 percent, were unstable. The agreement between coders was 93.7 percent. The high level of intercoder reliability for stability was a result of having excluded the ambiguous cases from the analysis.

With regard to controllability, a cause was coded as controllable if it could have been changed by the organization (e.g., strategy, marketing effort, acquisition decisions) and uncontrollable if the organization had no power to change it (e.g., market prices). As noted below, controllability and locus were closely related (i.e., most external causes were also uncontrollable). A total of 407 attributions could be coded for controllability, of which 171, or 42 percent, were controllable, and 236, or 58 percent, were uncontrollable. The agreement between coders was 98 percent.

Any explicit statement of improvement over past years or an absolute high level of performance in sales, profits, or costs was coded as a favorable outcome, with statements of the
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opposite sort coded as unfavorable outcomes. All 421 attributions were coded for outcome, with total agreement between the coders. Of these attributions, 232 (55 percent) were favorable and 189 (45 percent) were unfavorable.

To provide additional insight into the coding scheme, several examples are given:

“This net income was a historical high for the mine, and was due to higher prices on the free market where all production was sold.” (Favorable, External, Unstable, Uncontrollable)

“...continues to maintain its program for new product design. Such a program is costly, however, and this cost is reflected in the modest profits.” (Unfavorable, Internal, Stable, Controllable)

“During the fourth quarter, the best...subsidiary...recorded its start-up costs, accounting for a substantial portion of the operating loss in this period.” (Unfavorable, Internal, Unstable, Controllable)

“With the market slowdown in building activity, there was a drastic decline in orders...” (Unfavorable, External, Unstable, Uncontrollable)

Finally, some interpretation of the reliability figures is necessary. First, the total of 421 attributions means that there were on average 421/181 = 2.33 attributions coded per report. As noted above, the coders only used those instances that were unambiguously and explicitly related to performance. They did not attempt to code the entire shareholder letter. Statements relating outcomes to outcomes (e.g., “Profits increased because sales increased”) and statements with ambiguous interpretations were not coded. If such statements had been included, the coding reliability estimate would presumably have been deflated. Thus, the reliability figures must be interpreted in the context of the procedures used for statement selection.

Measuring Performance Relative to Expectations

Financial data for each company were obtained from Moody’s \(\text{Moody’s Industrial Manual, Moody’s OTC Industrial Manual, or Moody’s Public Utility Manual}\) for 1971, 1972, 1973, and 1974. In particular, data on operating revenues were examined. An attempt was made to consider “normal” revenues. Any extraordinary one-time effects on revenue were not considered. The percentage change from 1971 to 1972 and from 1973 to 1974 was calculated for each company. Then the companies were ranked on this index, within industry, for 1972 and 1974. Within each year for each industry, the companies were split into thirds. The lowest third was considered to have worse than expected performance in that year, the middle third to have expected levels of performance, and the top third to have better than expected performance. This method for determining performance relative to expectations distinguishes performance relative to expectations from effects due to year and effects due to industry, since the companies were ranked separately by industry within each year. That is, all companies may do poorly in a bad year compared to the year before, or all companies in one industry may do poorly, but we were concerned only with how poorly each company did, relative to other companies in the sample of their industry. This method for determining expected performance is based on the assumption that companies interpret their performance relative to the performance of other companies during the same year and in the same industry. This may not be true, of course. Companies
may often think of their own circumstances as unique and not compare themselves to others.

This very simple method was used to measure performance relative to expectations because it was felt that such data are what managers consider intuitively — changes from the previous year. Revenue was used, rather than some other indicator, because it appeared to be the least ambiguous signal — it depends on accounting conventions to a lesser extent than other potential indicators. Hence, it was felt to be the most visible and easily interpretable indicator. It should be noted, however, that this measure is simply a relative performance measure. It is not a measure of individuals’ expectations in any direct sense, although it was argued above that it may be related to such measures. In addition, the procedure defines “expectations” as deviations from an industry average. A given firm may always deviate from the industry average, however, and most observers may expect it to continue to deviate.

Hence, the issue of measuring expected performance is very complex, and the measure used above has some potential problems. But it was felt to be a reasonable first attempt, given the available data. A simple measure of performance relative to expectations was used, with the idea that only fairly robust patterns of results would be likely to be found using such simple measures. An interesting topic for future research could be an investigation of what information managers use in judging whether performance expectations have been met.

**Overview of the Analysis**

Log-linear models were used for the hypotheses in which the dependent measures are binary. For example, in the analysis to examine the nature of self-serving attributions, the dependent variable is whether an attribution is to internal or external causes. The independent variables for that analysis are the type of outcome (favorable or unfavorable), year (1972 or 1974), and industry (mining, aerospace, scientific instruments, and telephone communications). The latter factor was included to reduce unexplained variance even though no specific hypotheses had been developed for it. The output of the analysis should include estimates of the main effects for each factor, and possible interactions. Fortunately, the technique developed by Grizzle, Starmer, and Koch (1969) meets these requirements and is available in the SAS statistical package (SAS Institute, 1982). This procedure is especially well suited to cases in which log-linear models are to be used with clearly defined independent and dependent variables (Guthrie, 1981).

These log-linear analyses use likelihood-ratio chi-squares to test the various hypotheses. As Lau and Russell (1980) noted, such log-linear chi-square analyses are not strictly appropriate, because there can be several observations (attributions) from a single Letter to Shareholders, and the same companies are examined in 1972 and 1974. Hence, the observations are not completely independent. Since the sample size is fairly large, the number of companies relative to the number of attributions per company is large, the nature of the outcomes discussed by a company is diverse, and there is no work characterizing the extent or effect of such lack of independence, we assume, as did Lau and Russell, that this departure from independence is not a serious problem.
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To analyze when attributions were made (amount of causal reasoning), we used analyses of variance with the total number of lines of attributions in a letter and the relative number of lines of attributions (total number of lines of attributions, divided by total number of lines in the letter) as dependent variables (Lau and Russell, 1980). Note that, unlike the earlier analyses, these dependent measures are defined at the level of the company in a given year, not at the level of individual attributions. That is, there can only be a single observation for each company in each year. Hence, the earlier definition of type of outcome cannot be used, since that refers to the individual attributions. Instead, the following outcome factor was defined: what the company chose to talk about in their Letter to Shareholders was defined as unfavorable if less than half of the attributions from that letter referred to favorable outcomes, and as favorable if half or more of the attributions were about favorable outcomes. Thus, the independent variables were what the company chose to talk about (favorable or unfavorable), and performance relative to expectations (lower, same, higher).

RESULTS

Preliminary Analyses

Several preliminary analyses were performed to check the choice of year and to examine the interrelationships among the locus of causality, stability, and controllability factors. These analyses were all performed using the two-way contingency tables formed by each pair of factors considered. First, the proportion of favorable and unfavorable outcomes in 1972 and 1974 was examined to check the choice of year. The percentage of favorable outcomes was 73.2 percent in 1972 and 43.6 percent in 1974. These percentages are significantly different ($\chi^2 (1) = 33.9, p < .0001$). In addition, the proportion of favorable outcomes was greater in the good year (1972) than the bad year (1974) for all industries, and this difference was significant at the .05 level for all industries except metal mining (see Table 1 for the frequencies on which these comparisons were based). Next, the interrelationships among the three attributational dimensions were examined. Locus of causality and stability were significantly related, with 73 percent of the attributions to internal causes being stable, and 53.3 percent of the attributions to external causes being stable ($\chi^2 (1) = 11.5, p < .001$). Locus and controllability were very closely related, with 94.9 percent of the attributions to internal causes being controllable and .9 percent of the attributions to external causes being controllable ($\chi^2 (1) = 94.5, p < .0001$). Finally, stability and controllability were also related, with 79 percent of the attributions to controllable causes being stable, and 52.1 percent of the attributions to uncontrollable causes being stable ($\chi^2 (1) = 20.8, p < .0001$). Hence, there is a pattern of relationships among the dimensions, in that internal, stable, and controllable causes tend to be associated, as do external, unstable, and uncontrollable causes.

Self-Serving Attributions

To examine the hypotheses related to self-serving attributions, a log-linear analysis was run with locus of causality as the dependent variable, and outcome, year, and industry as independent variables. Hypothesis 1 predicted effects of outcome,
year, and year-by-outcome interaction. The proportions of attributions to internal and external causes for each cell are shown in Table 1, as are the results of the log-linear analysis.

<table>
<thead>
<tr>
<th>Locus of Causality</th>
<th>Metal Mining</th>
<th>Aerospace</th>
<th>Scientific Instruments</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Favorable</td>
<td>Favorable</td>
<td>Favorable</td>
<td>Favorable</td>
</tr>
<tr>
<td>Internal</td>
<td>.44</td>
<td>.50</td>
<td>.65</td>
<td>.52</td>
</tr>
<tr>
<td>External</td>
<td>.47</td>
<td>.50</td>
<td>.58</td>
<td>.40</td>
</tr>
<tr>
<td>N</td>
<td>16</td>
<td>19</td>
<td>12</td>
<td>23</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Chi square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>1</td>
<td>9.77**</td>
</tr>
<tr>
<td>Outcome</td>
<td>1</td>
<td>16.46**</td>
</tr>
<tr>
<td>Industry</td>
<td>3</td>
<td>6.44</td>
</tr>
<tr>
<td>Year x outcome</td>
<td>1</td>
<td>6.75**</td>
</tr>
<tr>
<td>Year x industry</td>
<td>3</td>
<td>1.47</td>
</tr>
<tr>
<td>Outcome x industry</td>
<td>3</td>
<td>10.16*</td>
</tr>
<tr>
<td>Year x outcome x industry</td>
<td>3</td>
<td>4.08</td>
</tr>
</tbody>
</table>

*p < .05; **p < .01

The analysis shows significant effects due to outcome and year, with year-by-outcome and industry-by-outcome interactions. The outcome effect strongly demonstrates the self-serving attributional pattern stated in hypothesis 1a: the proportion of favorable outcomes attributed to internal causes is 59.9 percent, while only 27 percent of unfavorable outcomes are attributed to internal causes. The year effect is also as stated in hypothesis 1b: 58 percent of 1972 performances are attributed to internal causes, compared to 36.6 percent of 1974 performances. The most interesting theoretical finding, however, is the year-by-outcome interaction. If all outcomes are aggregated across industries, in the good year (1972) 61 percent of favorable outcomes were attributed to internal and 39 percent to external causes. In the bad year (1974), 59 percent of favorable outcomes were attributed to internal and 41 percent to external causes. For unfavorable outcomes, 50 percent were attributed to internal and 50 percent to external causes in 1972; 20 percent were attributed to internal and 80 percent to external causes in 1974.

These data do not support either the motivational or informational hypotheses unequivocally. The proportions of favorable outcomes attributed to internal causes do not differ between 1972 and 1974 ($\chi^2 (1) = .12$, n.s.), whereas the proportions of unfavorable outcomes attributed to external causes do differ ($\chi^2 (1) = 14.34, p < .001$), with failure attributed more to
Causal Reasoning

external causes in a bad year. The results for unfavorable outcomes support the informational explanation (hypothesis 3a). The results for favorable outcomes appear to be slightly more consistent with the motivational explanation (hypothesis 2b).

These same data can be used to examine self-serving attributions in each of the two years. In 1972, 61 percent of favorable outcomes are attributed to internal causes, and 50 percent of unfavorable outcomes are attributed to external causes. In 1974, 59 percent of favorable outcomes are attributed to internal causes and 80 percent of unfavorable outcomes are attributed to external causes. There is no evidence for the self-serving pattern in 1972, the good year ($\chi^2 (1) = 1.59$, n.s.), but strong evidence in the bad year, 1974 ($\chi^2 (1) = 37.3, p < .0001$). Taken together, these findings seem to imply the reverse of the pattern predicted by Staw (1980). Motivationally based attributions (retrospective rationality) seem to appear after favorable outcomes and informationally based attributions (prospective rationality) after unfavorable outcomes.

The industry-by-outcome interaction, while not predicted, is also of some interest. The results show that metal mining appears to differ from the other three industries, with all outcomes seen as caused to a great extent by external causes, whether favorable or unfavorable.

The patterns of attributions on the stability and controllability dimensions were also examined briefly. The major finding of interest from these analyses was that the causes of favorable outcomes were attributed as more stable (82.8 percent) and more controllable (59.9 percent) than the causes of unfavorable outcomes (37.3 percent stable and 20 percent controllable). These effects are both significant at $p < .001$. Hence, favorable outcomes tended to be attributed to internal causes that were stable and controllable. After an unfavorable outcome, the pattern tended to be to attribute the outcome to causes that were external, unstable, and uncontrollable.

Factors Affecting the Amount of Causal Reasoning

Before considering analyses of the amount of causal reasoning as presented in hypothesis 4, the measure of performance relative to expectations will be examined. As noted above, the classification is unrelated to year and industry because of the method used to develop it. One can, however, examine the relationship between the measure of performance relative to expectations and the outcomes of all the various attributions that were coded. The proportion of favorable outcomes in the attributions is 38 percent for companies doing worse than expected, 66 percent for those doing as expected, and 66 percent for those doing better than expected ($\chi^2 (2) = 29.6, p < .001$). The latter two proportions may be the same, because what companies choose to talk about may not match exactly the total set of outcomes they experience. This finding provides some confidence, however, for using the measure of performance relative to expectations.

As noted, the analyses for the amount of causal reasoning can be carried out only at the company level, rather than potentially having several attributions from each company in each year, as in the earlier analyses. Hence, two factors were used as independent variables: performance relative to expectations.
and the type of outcome the company chose to talk about (mostly favorable or mostly unfavorable). The mean values for the relative number of lines devoted to attributions are shown in Table 2. The results of the corresponding analysis of variance are also shown.

Table 2

<table>
<thead>
<tr>
<th>Type of Outcome Talked about</th>
<th>Performance Relative to Expectations</th>
<th>Lower</th>
<th>Same</th>
<th>Higher</th>
<th>Means</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mostly unfavorable</td>
<td></td>
<td>.14 (24)*</td>
<td>.11 (13)</td>
<td>.08 (11)</td>
<td>.12 (48)</td>
</tr>
<tr>
<td>Mostly favorable</td>
<td></td>
<td>.07 (16)</td>
<td>.07 (27)</td>
<td>.11 (24)</td>
<td>.08 (67)</td>
</tr>
<tr>
<td>Means</td>
<td></td>
<td>.11 (40)</td>
<td>.08 (40)</td>
<td>.10 (35)</td>
<td>.10 (115)</td>
</tr>
</tbody>
</table>

Analysis of Variance

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>F-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance relative to</td>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>expectations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of outcome talked about</td>
<td>1</td>
<td>3.02</td>
</tr>
<tr>
<td>Interaction</td>
<td>2</td>
<td>3.69*</td>
</tr>
</tbody>
</table>

* $p < .05$
* Numbers in parentheses are sample sizes.

The analysis shows no main effects, but it does reveal a significant interaction between performance relative to expectations and outcome. Examination of the mean values reveals that the largest amount of causal reasoning occurs in the cell representing a company that does worse than expected and chooses to talk mostly about unfavorable outcomes. In addition, companies talk more about unfavorable outcomes when they are doing worse than expected or as expected, but talk more about successes when they are doing better than expected. Taken in total, these two sets of results support hypothesis 4 and replicate the general pattern of results found by Wong and Weiner (1981).2

**DISCUSSION**

The results provide interesting and provocative insights and also raise several questions. The findings on self-serving attributions indicate that the typical pattern of attributions found in studies of causal reasoning for individual performance also generally characterizes attributions to causes of corporate performance. While Staw (1980) suggested that self-serving attributions are due to ego-defensive rationalizing, the findings of this study present a more complex picture. Attributions to causes of unfavorable performance appear to be informationally based. On the other hand, the pattern of attributions to the causes of favorable outcomes appears to support a motivational explanation. Thus, neither explanation is fully supported, and no firm conclusions can be drawn that would help resolve the informational/motivational debate. It appears that separating these two positions will be very difficult. The results observed, however, do indicate that the typical self-serving attribution pattern of results need not indicate retrospective rationality. This finding is consistent with the arguments in

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2 Analyses were also run using the number of lines of attributions as the dependent variable. The results were similar, in that the number of lines of attributions is largest when the company does worse than expected and chooses to talk mostly about unfavorable outcomes. However, the interaction fails to reach significance ($p < .14$), and there are main effects of type of outcome ($p < .06$) and performance relative to expectations ($p < .02$).
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Snyder, Stephan, and Rosenfield (1978) that many factors can affect the degree to which attributions are self-serving, including the plausibility of the causes given, the likelihood of contradiction by others, the likelihood of contradiction by one’s subsequent performance, the desire to be accurate, and so on. As argued above, several of these factors may lead to more accurate reporting in annual reports for the case of attributions to the causes of unfavorable corporate performance. Since these reports are subject to careful scrutiny by outsiders, the corporation may not wish to raise expectations unrealistically; their subsequent performance will be monitored, and there may be marketplace survival advantages to accurately gauging the causes of performance. It is unclear why these factors do not appear to operate for the case of favorable performance.

Interpretation of the results of this study of self-serving attributions is subject to several caveats. First, as noted earlier, the reasoning presented in annual reports represents an unknown combination of attempts at justification and explanation. In addition, since the Letters to Shareholders may be written by outside consultants in some cases, the relationship between the reasoning in these letters and the causal reasoning process of those in the corporation is not totally clear. The data in the letters, however, are an excellent source of information for studying corporate causal reasoning, despite these potential problems, because the annual reports appear at regular, predetermined intervals and are linked to performance during a specific time period. For these reasons, annual reports were felt to be superior sources of information compared to a wide variety of industry publications also examined during the initial phase of this research.

A second caveat relates to the implicit causal assumption characterizing most of the analyses and interpretations presented above. The implicit assumption has been made that corporations experience some outcome and then engage in causal reasoning. That is, some favorable or unfavorable performance occurs, and then the corporation directs its attention to internal or external factors that are seen as causal. However, Bowman (1976, 1978) does not make the same assumption. He argues that some companies succeed and others fail because of their focus on either internal or external events. He argues that successful companies pay more attention to developing strategies for interacting with the environment and to how internal decisions affect future performance. Companies that fail, on the other hand, are seen as being much more reactive to environmental conditions, without a strong sense of internal direction. The pattern of self-serving attributions seen in this study is consistent with either interpretation; causal precedence cannot be inferred from the present data.

A final caveat concerns the coding procedures used. As noted in some detail above, the reliability estimates need to be interpreted carefully, since ambiguous statements and some uninterpretable statements were excluded from the coding. In general, an attempt was made to include in the analyses only those statements that could be clearly coded.

The pattern of attributions after unfavorable outcomes tended to be to external, unstable, and uncontrollable causes. This has some interesting potential implications in light of some of the
research done by Staw and his colleagues on the escalation of commitment after failure (see Staw, 1981, for a review). In particular, Staw and Ross (1978) found that investment of additional resources in a project after an unfavorable outcome was highest when the cause of failure was external to the project, unstable, and uncontrollable by the organization (although this interpretation is subject to some debate, as noted by Conlon and Wolf, 1980). Hence, one might speculate that attributional tendencies such as those found in the present study could lead to escalation of commitment after many unfavorable outcomes. Unfortunately, there is no direct evidence for such escalation in the present study. An interesting area for future research would be to attempt to code escalation and de-escalation behaviors in Letters to Shareholders and relate these behaviors to factors such as the types of causal attribution found after failure.

Consistent industry differences appeared in several of the analyses. Metal mining differed from the other three, in that performance tended to be attributed more to external and unstable causes. This reflects the industry view that the market price for metal determines performance to a large extent, even if that price itself is volatile and unpredictable. Hence, performance can be attributed clearly to external causes, even if those causes are also unstable.

The findings on the amount of causal reasoning clearly support prior research (Wong and Weiner, 1981), although one must bear in mind the difficulties inherent in the development of the measure of performance relative to expectations. One finds more causal analyses when performance is unfavorable and worse than expected. The attribution literature suggests that this occurs because more attention is directed toward unexpected, negative information. But, since annual reports can be used as persuasive documents, higher levels of justification through causal reasoning may occur because corporations have a greater need to attract investments after a year of unexpected negative performance.

Organizational strategies emphasize the adaptation of the organization to changes in its environment. Successful adaptations are based on the accurate assessment of the factors affecting performance. This study demonstrates some biases in the causal reasoning used to assess performance and indicates that annual reports are a useful source of information to examine this aspect of strategic behavior in corporations.

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In a laboratory pretest, informational cues from a supervisor were shown to have a significant effect on how subjects perceived and responded to an experimental task. The effects of objective task changes and informational cues from supervisors on (1) employee perceptions of task attributes, (2) affective responses, and (3) productivity were then examined in a field experiment in two manufacturing facilities. Results suggested that perceptions of task attributes and affective responses were significantly influenced by both the objective task changes and the informational cues from supervisors. In addition, some interactive effects were detected. Objective task changes were also found to influence productivity; but no relationship between productivity and supervisory cues was found.*

BACKGROUND

The idea that the social environment can influence employee perceptions, attitudes, and behaviors has been a central element in organizational science since publication of the Hawthorne studies. Roethlisberger and Dickson (1939: 557), for example, noted that “the meanings which any person in an industrial organization assigns to the events and objects in his environment are often determined by the social situation in which the events and objects occur.” Subsequent social science research has reinforced the contention that social forces are an important consideration in understanding behavior (e.g., Asch, 1955; Janis, 1972; Milgram, 1973).

Recently, the concept of social information and its role in influencing perceptions, attitudes, and behaviors has been applied to the study of the workplace (Salancik and Pfeffer, 1977, 1978). Various elements of this application, which has been labeled the social information-processing (SIP) approach to job attitudes and task design, have recently been tested by a number of researchers including Oldham and Miller (1979), O’Reilly and Caldwell (1979), Weiss and Shaw (1979), White and Mitchell (1979), O’Connor and Barrett (1980), and O’Reilly, Parlette, and Bloom (1980).

Prior to the development of the SIP approach, most task design research was based on the task attributes model. The task attributes model offers a different framework for studying employee perceptions and responses to job characteristics. This viewpoint was first developed by Hackman and Lawler (1971) in a study that assessed the extent to which employees perceived and responded to certain job attributes. These attributes were assumed to be objective measurable facets of the work that affected employee satisfaction, motivation, and performance. A number of cross-sectional correlational studies (e.g., Brief and Aldag, 1975; Hackman and Oldham, 1976; Sims and Szilagyi, 1976), laboratory experiments (e.g., Umstot, Bell, and Mitchell, 1976), and at least one field experiment (Orpen, 1979) have supported the validity of the model, showing that employee perceptions of task attributes are positively correlated with outcome variables such as satisfaction, motivation, and, to a lesser extent, performance.

Missing from many of these studies, however, is any meaningful consideration of the social context in which work is performed. Although the original formulation of the task attributes...