Supervisor Performance Attributions:

A Possible Barrier to Managerial Acceptance of Decision Aids

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Summary

Researchers exploring the adoption of decision aids by managers have noted an apparent reluctance on the part of managers to use decision aids such as linear programming and mathematical forecasting models. In this study, the leader attribution process was explored as a possible explanatory process for this reluctance. Specifically, the impact of the subordinate's use of a decision aid on the supervisor's attributions of the causes of that performance were examined. Four conditions were explored: success while using decision aids, failure while using decision aids, success without using decision aids, and failure without using decision aids. The results suggest that for success outcomes the use of a decision aid had no significant impact on the supervisor's attributions. By contrast, in the event of failure supervisors were more likely to attribute the cause of the failure to some quality of the subordinate (lack of ability or effort) when decision aids were used than when they were not used. These results imply that managers who use decision aids incur greater risk in the event of failure, as the cause of that failure is attributed to them (rather than the situation) to a larger extent than would be the case if decision aids were not used.
As the cost of computing decreases and its power increases, there has been a growing number of decision aids which have been promoted as tools by which general managers may enhance their decision making success. Examples of these decision aids are linear programming tools, statistical packages, network models (CPM/PERT), probability analysis tools (including decision trees), and mathematical forecasting models. Although the number and versatility of the decision aids that are available to managers have increased greatly, the efforts to get managers to use these tools have met with failure or with mixed success. For example, in a recent article (Morgan, 1989) reviewing Management Science/Operations Research (MS/OR) use in the private sector, substantial growth in MS/OR activity was noted in the 1960s. However, by 1973 there was a decline in the percentage of firms with MS/OR departments. Some companies reported no use of MS/OR at all. Furthermore, when companies reported the use of only one or a few MS/OR techniques, statistical analysis, rather than optimization models, was usually cited.

The apparent reluctance of managers to use tools which have been known to have a positive effect on the decision making process is puzzling. Surveys concerned with why MS/OR was either not used at all or not used more frequently yielded reports of problems in relationships between managers and analysts as the most frequently cited reasons (Morgan, 1989). These communication problems, in conjunction with a lack of MS/OR education among executives, were seen as the major barriers to MS/OR use.

As a result of this apparent reluctance of managers to adapt new tools to their repertoire of skills, there is a need to examine possible barriers to the adoption of decision aids by managers. There has been a growing recognition that behavioral issues must be incorporated into our understanding of how decision aids are accepted (Hughes & Gibson, 1987). A critical factor in the adoption of any new set of behaviors or skills is the way in which these behaviors affect how the performance of the adoptee is evaluated. Thus, in examining possible reasons why decision aids are not more widely
accepted by managers, the potential impact of decision aid use by a subordinate on how the supervisor views the performance of that subordinate deserves careful examination.

**Attributions Regarding the Cause of Performance**

Recently, research exploring the leader attributional process has offered a possible explanation for the reluctance of managers to embrace decision aids. Leader attribution research has sought to understand the evaluative process that the leader or supervisor goes through when confronted with an instance of subordinate performance. A critical feature of the model is the recognition that supervisors engage in a diagnosis phase in which they attempt to determine whether the source of the current performance is either internal or external to the subordinate (Green & Mitchell, 1979). Attributions are internal to the person whenever the performance is seen as either due to the individual's level of ability or to the level of effort which was exerted on the task (Weiner, et al 1972). By contrast, the performance would be attributed external to the subordinate if the supervisor saw the critical determinants of that performance to be due to either the difficulty/ease of the task or simply good/bad luck.

The supervisor's attribution of the cause of subordinate performance is important because it can affect the supervisor's choice of rewards or punishments, the closeness with which the subordinate is supervised, and expectancies about the subordinate's future performance (Green & Mitchell, 1979; Weiner et al 1972). When attributions are internal, supervisors see the subordinate as directly responsible for the successful or unsuccessful performance. By contrast, when supervisor attributions are external, the cause of the successful or unsuccessful performance is seen as stemming from conditions that are not directly within the control of the subordinate.

A large body of research suggests that supervisor attributions may be affected by the context in which the performance occurs. These contextual events apparently serve as cues to causality that the supervisor uses in making attributions regarding subordinate
performance. For example, it appears that supervisor attributions can be affected by expectations regarding appropriate subordinate roles (Lipshitz, 1989), the quality of the leader-member relationship (Fedor & Rowland, 1989; Heneman, Greenberger, & Anonyou, 1989), the supervisor's level of experience with the subordinate's job (Mitchell & Kalb, 1982), the previous work history of the subordinate and seriousness of the performance outcome (Mitchell & Wood, 1980). Collectively, these findings suggest the importance of the context in which the performance occurs as an important determinant of the supervisor's attributions.

Central to the current study is the possibility that the subordinate's use of a decision aid in reaching a decision might have an impact on the supervisor's attribution of the causes of that performance. While previous research has not explored the specific ways in which the use of decision aids might affect the attributional process, the use of a decision aid marks a significant change in the situation which may be expected to affect the attributions that the supervisor makes regarding subordinate performance. Given the apparent reluctance of managers to adopt these tools, it may be that the use of decision aids biases the attributional process unfavorably from the point of view of the subordinate. Thus, where decision aids are used and the outcome is a success, the success may be attributed to a greater extent to sources external to the manager (ease of task or luck) than if decision aids were not used. By contrast, where decision aids are used and the outcome is a failure, the failure may be attributed to a greater extent to sources internal to the manager (ability or effort) than if decision aids were not used. Thus, the following hypothesis may be advanced:

Hypothesis 1: The performance of subordinates who succeed while using a decision aid will be attributed more to external causes (less internal attribution) than will the performance of subordinates who succeed without using decision aids.
Hypothesis 2: The performance of subordinates who fail while using a decision aid will be attributed more to internal causes (less external attribution) than will the performance of subordinates who fail without using decision aids.

Method

Subjects and Procedure

Evening MBA students who were employed in full time positions voluntarily participated in the study. Participants had completed part of a course on decision sciences and were familiar with decision aids.

The procedure was similar to that used in previous attributional leadership research (e.g., Dobbins & Russell, 1986; Dobbins, Pence, Orban, & Sgro, 1983; Green & Liden, 1980). One of four different vignettes was randomly assigned to each participant. Participants were asked to take the role of the manager in evaluating a subordinate's performance. In each vignette, a decision situation was described in which a subordinate needed to develop a plan to assure project completion in a reasonable time frame. The satisfactory completion of such a plan was described as crucial to the project's success and one which would have a significant effect on the organization. After reading the vignette, subjects completed a measure of their attributions of the causes of the described performance.

Outcome Manipulation. Half of the subjects were provided a vignette in which the outcome of the decision was a success (the company completed the project on schedule and made a nice profit). By contrast, the remaining subjects received a vignette in which the outcome was a failure (the company was unable to complete the project on schedule and incurred substantial losses).

Decision Aid Manipulation. Half of the subjects were provided a vignette in which the subordinate used a decision aid (formulated the problem as a linear program) as part of his attempt to solve the problem. By contrast, the other respondents were
provided a vignette that was not explicit about the process by which the decision was reached.

Measures

Attributions for subordinate performance were assessed with four items similar to those use in previous research (Dobbins et al., 1983; Dobbins & Russell, 1986; Green & Liden, 1980). Individual items asked the respondent to rate the degree to which the target person's specific job knowledge (internal: ability), level of effort (internal: effort), level of task/job difficulty (external: task difficulty), and factors beyond anyone's control (external: luck) influenced the observed performance. Response options ranged from 1 = "Very High" to 7 = "Very Low". A single measure representing the extent to which the observed performance was attributed to factors internal to the subordinate was prepared by reverse scoring the two external attribution questions and summing all items. Higher scores represent more external attributions.

Results

Sample Characteristics

A total of 154 subjects participated in the study, of which 31% were female. The respondents were approximately 30.17 years old (SD = 7.88) and had approximately 8.99 years (SD = 6.04) of work experience.

Descriptive Statistics

Table 1 presents the means and standard deviations for the attributions of respondents by condition. It was hypothesized (Hypothesis 1) that respondents would be more likely to attribute the cause of successful performance as internal to the subordinate when decision aids were not used as opposed to when they were used. A univariate Analysis of Variance failed to support this hypothesis (F(1,81)=2.36, ns). This result argues that the use of decision aids by the subordinate did not have an impact on the how the supervisor attributed the cause of successful performance.
Insert Table 1

About Here

It was also hypothesized (Hypothesis 2) that, respondents would be more likely to attribute the cause of failure as internal to the subordinate when decision aids were not used as opposed to when they were used. The mean score for the vignette in which a decision aid was used was somewhat lower (more internal attribution) than that for the vignette in which a decision aid was not used (mean = 16.08 vs 17.52, respectively). A univariate Analysis of Variance (F(1,69)=6.91,p<.05) indicated that this difference was significant, supporting hypothesis 2. This result suggests that a performance failure in which a decision aid was used was attributed more to internal causes than in situations in which no decision aid was used.

Discussion

The present study examined the possibility that the use of decision aids may affect the attributions that supervisors make regarding the causes of subordinate performance. The study is limited in its use of a vignette rather than actual behavior. To the extent that actual behavior may differ in real situations these differences may limit its generalizability. However, the use of a vignette made it possible to explore the attributional process using a full experimental design. This is a necessary first step prior to expanding this line of inquiry by the use of field studies or field experiments.

The results offer partial support for the hypothesized relationship between supervisor attributions and the subordinate's use of decision aids. While no statistically significant relationship was found between the use of decision aids and supervisor attributions when the decision outcome was a success, in situations involving subordinate failure this relationship was significant. Specifically, the cause of failure was attributed to the subordinates themselves (internal attribution) to a greater extent when the
subordinate had used a decision aid than when a decision aid was not used. Thus, managers who experience failure but who do not use decision aids have that failure attributed externally to either to task difficulty or to bad luck than their counterparts who used decision aids.

The implication of this finding is that the use of decision aids biases the supervisor's attributional process unfavorably from the standpoint of the subordinate. If the use of a decision aid results in failure, that failure is attributed more to a lack of ability or effort on the part of the subordinate than if decision aids were not used. Thus, a low risk option would be not to use decision aids.

This presents managers with a dilemma. They wish to encourage general managers to use decision aids yet the use of these aids carries with it additional cost in the event of failure. Clearly, one way in which general managers may avoid this problem is to conceal the contribution of decision aids to their decisions. While this overcomes the problem of attributional bias, it does little to promulgate useful tools among other managers.

In seeking to promote the use of decision aids, managers need to recognize the complexity of the reward environment. In particular, the results argue it may be naive to promote decision aid adoption at lower levels of the organization with the hope of ultimately winning converts among upper managers. Instead, the results suggest that managers seeking the widespread adoption of decision aids need to spend time accumulating support at upper levels of the organization. Future work could explore the degree to which managerial experience with decision aids reduces the apparent negative bias that decision aids have on the attributional process.

Finally, it appears plausible that organizational and national cultures may have an impact on the the attributional biases discovered here. Specifically, managers in organizations or cultures which offer higher levels of support may not experience the deleterious effects of using decision aids and failing. As a consequence, adoption of
decision aids by these managers may carry less risk. The possibility of cultural differences which impede or promote the adoption of decision aids has obvious implications for competition in an increasingly global marketplace. Future work should explore the degree to which organizational support affects the attributional process and reduces the apparent bias that decision aids have on supervisor attributions.

In summary, the reluctance of managers to adopt decision aids may not be as irrational as it initially appears. Managers who use decision aids apparently incur greater risk in the event of failure, as the cause of that failure is attributed to them (rather than the situation) to a larger extent than would be the case if decision aids were not used. Successfully promoting the adoption of decision aids by managers requires addressing these concerns either through education of upper level management or enhancing organizational support.
References


Table 1.
Means and Standard Deviations for Attributions

<table>
<thead>
<tr>
<th>Condition</th>
<th>n</th>
<th>Mean&lt;sup&gt;1&lt;/sup&gt;</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>41</td>
<td>18.95</td>
<td>1.86</td>
</tr>
<tr>
<td>With Decision Aid</td>
<td>42</td>
<td>19.62</td>
<td>2.09</td>
</tr>
<tr>
<td>Without Decision Aid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With Decision Aid</td>
<td>37</td>
<td>16.08</td>
<td>2.20</td>
</tr>
<tr>
<td>Without Decision Aid</td>
<td>34</td>
<td>17.53</td>
<td>2.44</td>
</tr>
</tbody>
</table>

<sup>1</sup> Higher values correspond to more external attributions.