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**IS MANAGEMENT-BY-EXCEPTION A SINGLE
FACTOR ?**

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ABSTRACT

The current study examines the leadership behavior of Management-by-Exception by using quantitative and qualitative methods. By distinguishing between manifest (observable) and latent (unobservable) variables, the study enabled the concept of Management-by-Exception to be clarified. A sample of 480 senior police officers was used. The results support the notion that Management-by-Exception should be considered as a single latent variable. Qualitative analysis identified three manifest variables that are observable indicators of Management-of-Exception. Implications for investigating leadership using both quantitative and qualitative research methods are discussed.

IS MANAGEMENT-BY-EXCEPTION A SINGLE FACTOR?

INTRODUCTION

The relative contribution of quantitative and qualitative research in the field of leadership has been widely debated (Bryman, 1989; Hunt, 1991; Insch, Moore and Murphy, 1997). Berg (1995:3) states that quantitative research 'refers to counts and measures of things,' while Tesch (1992:56) defines qualitative research as 'predominantly or exclusively using words as data.' Quantitative research is based on the gathering of facts, stresses the importance of devising valid and reliable measurement procedures, and adopts the principles of scientific method by emphasising the importance of the generalisation and replication of results (Bryman, 1988). However, qualitative research adopts a naturalistic approach which aims to retain fidelity to the real world and stresses the importance of respondents' perceptions of reality (Bryman, 1988:70). Thus, the major contrast between the two approaches is evident in the differing views concerning how social reality should be studied.

There is a tendency among some writers to refer to quantitative and qualitative research as divergent paradigms (e.g., Filstead, 1979; Guba and Lincoln, 1982) which has led to an exaggeration of the differences between the two traditions. However, a more useful approach which minimises the distinction between quantitative and qualitative research relies on the selection of techniques according to their suitability in tackling particular research questions (Bryman, 1988). Such a view emphasises the strengths of various approaches.

Several researchers have recommended combining methodologies in the study of the same phenomena to achieve triangulation and to improve the study design (Denzin, 1978; Fielding and Fielding, 1986; Patton, 1990). In this context, quantitative and qualitative research may be viewed as different ways of examining the same research problem. The use of multiple methods strengthens the researcher's claims for the validity of the conclusions drawn where mutual confirmation of results can be demonstrated (Bryman 1988). Further, Patton (1990) suggests that where significant patterns of responses emerge through quantitative methods, it is often helpful to fill out the meaning of those patterns through in-depth study using qualitative methods to give substance to the areas of focus. However, the combinations of research methods refer to using different techniques in tandem, but as Bryman (1988) states, there is little evidence in the literature to suggest how different research methods might be integrated. The current study addresses this deficiency in the leadership research by examining the use of a latent variable in quantitative and qualitative research as a means of integrating the two approaches.

BACKGROUND

Previous qualitative research has focused on examining the manifest content, the elements that are physically present and countable. 'Manifest content is comparable to the surface structure present in a message' (Berg, 1995:176). Thus, a content analysis approach, for example, the 'constant comparison' method suggested by Glaser and Strauss (1967) involves examining the patterns evident in the data and classifying the data into preliminary categories. In a study of the social construction of the concept of leadership, Chen and Meindl (1991:532) used a similar approach where key words or phrases were extracted from qualitative data to form descriptive units or 'propositions'. These propositional descriptions were grouped into more superordinate theme categories. Several leadership studies have developed the classification of propositions into custom dictionaries, systems of category definitions to aid data analysis for particular projects (Insch, Moore, and Murphy, 1997; Meindl, Ehrlich, and Dukerich, 1985; Tesch, 1992).

Weber (1985:10) states that 'the best content analytic studies utilise both qualitative and quantitative operations on text' by including the calculation of frequencies and percentage frequencies of comments coded in each category. However, the quasi-statistical approach to content analysis does not necessarily reflect the importance or the nature of the data. Therefore, an alternative approach is required which examines the latent themes which are 'the deep structural meaning conveyed by messages' (Berg, 1995:176). This approach is

consistent with the identification of latent variables in quantitative analysis where a latent variable is a 'hypothesised and unobserved concept that can only be approximated by observable or measured variables' (Hair, Anderson, Tatham, and Black, 1995:623). In quantitative analysis, latent variables are statistically developed from linear relationships among items, while in qualitative analysis, latent variables are developed from the inferences derived from the messages (Holsti, 1969).

Problems arise from attempts to triangulate manifest with latent variables. Manifest variables (i.e., observable data) can not be directly compared with unobservable variables (i.e., latent variables). The current study utilises the quantitative latent variable, Management-by-Exception as a conceptual tool to analyse comments, thus unifying the study and allowing comparisons to be made. The approach allows a dialogue to 'be established between quantitative and qualitative research in such a way that the respective contributions of each approach can enhance our overall understanding of a domain' (Bryman, Stephens, and à Campo, 1996:356). Further, using this research approach illustrates how two distinctly different methods may be combined to enable triangulation of findings.

The current study examines both quantitative and qualitative data to illustrate the methodological issues under consideration, and thus, the substantive findings of the study have been omitted in this paper. Only a brief outline of the quantitative analyses is provided to enable comparisons to be made between the quantitative and qualitative findings.

The study focuses on the concept of Management-by-Exception which is only one part of a much broader study of leadership in a law enforcement agency. Management-by-Exception is one of seven leadership behaviors identified by the Multifactor Leadership Questionnaire (Bass and Avolio, 1990) and involves leadership behavior that emphasizes the controlling aspects of management, where leaders intervene only when things go wrong (Bass, 1985). The types of leader intervention in Management-by-Exception include correction, criticism, negative feedback, and negative contingent reinforcement (Bass and Avolio, 1993; Jolson, Dukinsky and Comer, 1993).

METHOD

The MLQ (Form 5R) developed by Bass and Avolio (1990) was distributed to senior police officers in an Australian Law Enforcement Organization, with 480 useable returns, representing a response rate of 82% from the population of 586. The questionnaire included ten items measuring Management-by-Exception and one open-ended question: *Do you have comments concerning leadership styles in this organization?* A total of 260 senior officers recorded their responses.

Quantitative Analysis

The Management-by-Exception construct was investigated using a one factor congeneric measurement model (i.e., LISREL 7.20, Sub-Model 1) resulting in an inadequate fit for all ten items where large residuals were evident among seventeen pairs of items, and eight factor score regressions did not exceed .10. Also, eight items had very low reliabilities. The model was respecified using only three items with the lowest residuals among the pairs, and the highest squared multiple correlations, resulting in a Goodness-of-Fit Index of .952, Adjusted Goodness-of-Fit Index of .924, chi-square of 120.87 (d.f.=35, $p=.000$). Since the Goodness-of-Fit Index was above .90 (Jöreskog and Sörbom, 1984), and the chi-square/degrees of freedom ratio was less than five (Marsh and Hocevar, 1985), the one-factor model provided an acceptable fit to the data. The standardized residuals were less than the critical value of 2.58 (Jöreskog and Sörbom, 1989:32).

Management-by-Exception was identified in this study as a single factor. The remaining seven Management-by-Exception items (i.e., 27, 34, 41, 48, 55, 62, 69) failed to load discretely or were unable to form a factor with a minimum of three items as suggested by Bollen (1989). The findings of the study could not support two

distinct types of Management-by-Exception (i.e., active and passive) as identified by Hater and Bass (1988). Thus only one type of Management-by-Exception was identified by the quantitative investigation. Table 1 provides the details of the one factor congeneric measurement model for the Management-by-Exception items.

Table 1
One Factor Congeneric Measurement Model for Management-by-Exception

Item No.	Management-by-Exception Items (The person I am rating....)	FSR	λ	Std Error
6.	is content to let me do my job the same way I've always done it, unless changes seem necessary.	.271	.727	.055
13.	avoids trying to change what I do as long as things are going along smoothly.	.628	.870	.066
20.	is satisfied with my performance as long as the established ways work.	.144	.562	.043

Note: FSR = Factor Score Regression; λ = Lambda; Original response categories for leadership were: 0 = Not at all; 1 = Once in a while; 2 = Sometimes; 3 = Fairly Often; and, 4 = Frequently, if not always.

Total Coefficient of Determination (R^2) for items = .825; Cronbach Alpha = .710; N = 469.

Qualitative Analysis

The comments on the questionnaires (n=260) were analysed using the indexing and retrieval system in NUD.IST (Non-numerical Unstructured Data Indexing Searching and Theorising computer software) which allows constant inspection and review of categories and their content (Richards and Richards, 1994).

The face validity of qualitative data relies on the fit between the data and the concepts developed (Dey, 1993). To demonstrate how the concepts and connections identified in the current study are grounded in the data, comments to exemplify the meaning of concepts were provided from the responses. Providing detailed excerpts served to document the researcher's interpretations. Berg (1995) recommends the inclusion of at least three independent examples for each interpretation particularly when using latent variables. This is consistent with the recommendation for the quantitative technique of factor analysis, where 'every factor . . . must have effects on three or more indicators of that factor' (Bentler and Chou, 1987:93).

Interrater Reliability

In the current study, interrater comparisons were used to assess face validity and to check that the comments assigned to categories reflected the designated concept. The data were re-coded independently and statistical coefficients of agreement were calculated. The interrater reliability estimate was calculated based on the formula suggested by Goodwin and Goodwin (1985:7), 'number of coding agreements/number of coding agreements plus number of coding disagreements.' *Agreement* meant that raters concurred on the classification of a comment. The interrater reliability of .89 was adequate given the suggestion that 70 per cent intercoder reliability is considered satisfactory (Miles and Huberman, 1984).

In the main study, an index system, utilising the conceptual framework devised by Bass and Avolio (1990) was developed and involved a hierarchy of categories. All comments in the study were first classified as (2)

Transformational Leadership, (3) Transactional Leadership, or (1) Non-Leadership. Comments classified as Transactional Leadership were further categorized into Contingent Reward and Management-by-Exception. Figure 1 illustrates the classification framework used to categorize the qualitative data for the study.

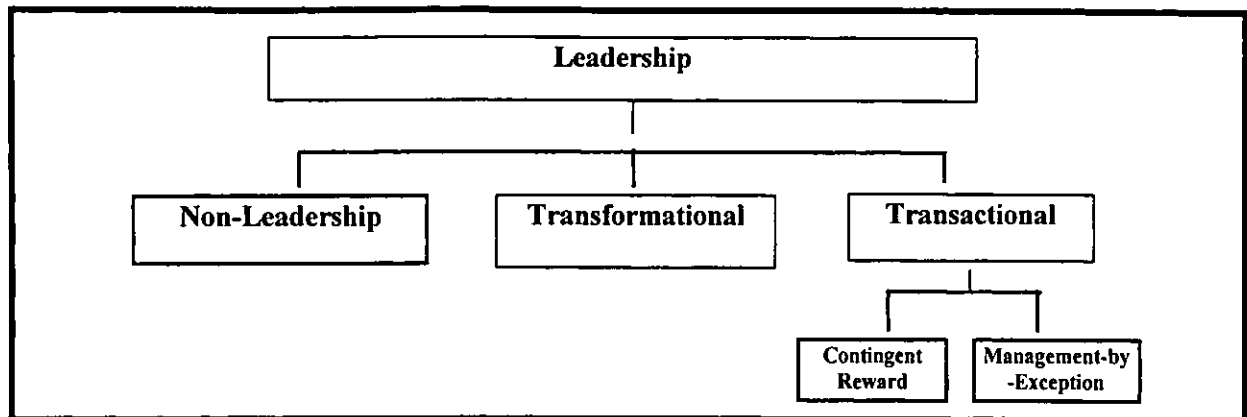


Figure 1: Categorization Framework for Analysis of Latent Qualitative Data

In the current study, the issue of Management-by-Exception was identified by 50 senior officers. Three typical examples are:

There is still a feeling of “us against them”. The only time that subordinates *normally see an officer is when they are being disciplined* (Senior sergeant with a chief executive as leader).

[There is] *too much emphasis and time on supervision, management and inspections*. [There is] almost no real leadership (Chief inspector with a chief executive as leader).

Most of the current leaders *only report when things go wrong* (Chief inspector with a superintendent as leader).

All comments in this category highlight the perceived negative intervention of leaders by followers resulting in discipline or negative outcomes for the follower. Previous studies identified that Management-by-Exception could be split into two latent variables: passive and active (Bass, Avolio, and Atwater, 1996; Hater and Bass, 1988; Hoover, 1987; Yammarino and Bass, 1990). In accordance with Hater and Bass (1988), the comments in the Management-by-Exception category were re-examined to determine whether passive (e.g., preserves the status quo), or active aspects (e.g., maintains a vigilance for mistakes or deviations) were evident. The comments in the current study could not be distinctly classified according to the passive-active dichotomy. However, commonalities were evident among many of the comments. Three groupings were apparent and the common terms or concepts among them were identified and labelled as the descriptive or manifest categories of (a) autocratic leadership, (b) maintaining the status quo, and (c) over-regulation.

- (a) Leadership behavior described in terms of an autocratic style was identified by 32 senior officers (interrater reliability = .91). Three typical example are:

Due to the nature of the organisation and work personnel, *the majority have an autocratic style of leadership* (Inspector with a chief executive as leaders).

There is still a tendency for *the more autocratic style of leadership to be prevalent in the service* (Inspector with a superintendent as leader).

[My leader is] essentially *too dictatorial* and interfering in management at lower levels (Senior sergeant with an inspector as leader).

All of these comments describe leadership as having an *autocratic* or *dictatorial* style, and therefore, it seemed appropriate to classify these observations as reflecting the manifest variable labelled autocratic.

- (b) Maintaining the status quo was identified by eight senior officers (Interrater reliability =.88). Three typical example are:

Traditionally there has been an element of *that's the way it has always been done* (Senior sergeant with a chief inspector as leader).

Frequently, the attitude is *we do that because we have always done that* and they cannot lift themselves to actually change things for the better (Senior sergeant with an inspector as leader).

It is a typical example of *why fix it if it is not broken* (Inspector with a chief inspector as leader).

All of these comments describe the behavior of leaders in terms of keeping the situation from changing and therefore these observations reflect the manifest variable of maintaining the status quo. Although, the comments have some similarities with passive Management-by-Exception (Hater and Bass, 1988), the aspect of taking action once the status quo was broken was not evident.

- (c) The issue of over-regulation was raised by ten senior officers (Interrater reliability=1.00). Three typical example are:

[There is an] *over-emphasis on the minor issues*, [and a] failure to generally address the important issues of customer service delivery, effective patrols, and staff development. [Also, there is an] *over-reliance on traditional policing procedures* (Inspector with a chief executive as leader).

It could be said that there are *too many supervisors* in the force and that it is *over supervised* (Senior sergeant with a chief executive as leaders).

[There are] *too many levels of management* [and] *too many people to explain decisions* to (Inspector with a chief executive as leader).

These comments describe a pre-occupation with the multiple reporting of the same information to many people at different levels in the organization. These observations describe situations that reflect the manifest variable of over-regulation. While this manifest variable is similar to the description of active Management-by-Exception (Hater and Bass, 1988:697), the comments do not contain the negative elements of a 'vigilance for mistakes or deviations.' Therefore, the current study indicated that it was more appropriate to classify the observations as a manifest variable because the comments did not provide evidence of the latent variable, active Management-by-Exception. Table 2 provides details of the frequency distribution, percentage frequency distribution, and the interrater reliabilities for each category in the qualitative data analysis of the manifest variables of autocratic, maintaining status quo, and over-regulation that make up the latent variable of Management-by-Exception.

Table 2
Categorization of Management-by-Exception (n=50)

Categories	f	% ^a	I.R. ^b
Autocratic	32	64	.91
Maintaining status quo	8	16	.88
Over-regulation	10	20	1.00
Total	50	100	
^a Percentages have been rounded		^b Interrater Reliability	

DISCUSSION

The comments classified as Management-by-Exception provided evidence for a single qualitative latent variable which could be further classified into three manifest qualitative variables of autocratic, maintaining status quo, and over-regulation. These manifest variable categories were more inclusive than the passive and active Management-by-Exception dichotomy suggested in previous studies (Bass, Avolio and Atwater, 1996; Hater and Bass, 1988; Hoover, 1987; Yammarino and Bass, 1990). This finding raises doubts about the existence of a passive and active form of Management-by-Exception and supports the findings of Tepper and Percy (1994).

The qualitative findings were consistent with the quantitative findings which indicated that Management-by-Exception is a single latent variable. Previously, the existence of the passive and active Management-by-Exception latent variables has only been demonstrated in quantitative studies (Bass, Avolio, and Atwater, 1996; Hater and Bass, 1988; Hoover, 1987; Yammarino and Bass, 1990). These studies used exploratory factor analysis which has well documented deficiencies (Bollen, 1989; Long, 1983; Marsh and Hocevar, 1985), particularly where principal components analysis with varimax rotation is used (Borgatta, Kercher and Stull, 1986; Gorsuch, 1990; Hubbard and Allen, 1987; Snook and Gorsuch, 1989). Therefore, the approach of developing theory purely based on quantitative analysis highlights problems that may develop when the analytical process of analysis is not grounded in the data (Tesch, 1995).

The logic of treating passive and active Management-by-Exception as latent variables may be flawed because the definitions given by Hater and Bass (1989:697), for example for active Management-by-Exception, 'maintains a vigilance for mistakes or deviations' suggest that the elements are observable. Therefore, passive and active Management-by-Exception should be classified as manifest rather than latent variables. To validate the existence of additional latent Management-by-Exception variables, research needs to be conducted that is underpinned by theory and less reliant on exploratory quantitative methods.

This study supports the existence of a single latent variable for Management-by-Exception although only three items loaded out of ten on this construct. Therefore, the qualitative manifest variables could be used to further develop more robust items to measure this continuous underlying construct (e.g., to what extent is your leader autocratic, to what extent does your leader focus on maintaining the status quo, and to what extent does you leader engage in over-regulating behavior?).

CONCLUSION

The purpose of the study has been to illustrate the value of using quantitative latent variables as a framework for qualitative data analysis. The qualitative analysis of manifest and latent leadership variables revealed details which would not be evident from quantitative analysis alone. Further, the study went beyond the quasi-

statistical approach to content analysis suggested by Weber (1985) by focusing not only on the frequency of comments in categories but also on the richness of the data. Therefore, qualitative procedures included in the study provided a means of accessing unquantifiable aspects of the study (Berg, 1995), and captured respondents' personal experiences and perspectives (Patton, 1990).

The qualitative analysis produced unanticipated results by highlighting the existence of three manifest variables (i.e., autocratic, maintaining the status quo, and over-regulation) which are indicators of the latent variable, Management-by-Exception. The evidence for these manifest variables was grounded in the data. Further, the technique described in the current study of using theoretical constructs to provide a framework for qualitative analysis was sufficiently flexible to incorporate additional categories when the examination of data revealed extra variables. The qualitative analysis validated the findings from the quantitative study concerning the existence of a single latent variable of Management-by-Exception, thus triangulating the findings. In conclusion, the study suggests that latent variable analysis can provide a unifying framework across techniques combining quantitative and qualitative methods. The integration of methods has wide application for in-depth leadership research. Further, such an approach provides a means whereby the boundaries between the two traditions of quantitative and qualitative research may become less distinct.

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