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WORKING PAPER
ALFRED P. SLOAN SCHOOL OF MANAGEMENT

Participation in Budgeting,
Locus of Control and Organizational Effectiveness

by

Peter Brownell

WP 1104-80

Winter 1980

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B.Com.(Hons.) (University of Melbourne) 1973

DISSERTATION

Submitted in partial satisfaction of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Business Administration

in the

GRADUATE DIVISION

OF THE

UNIVERSITY OF CALIFORNIA, BERKELEY

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Participation in Budgeting,
Locus of Control and Organizational Effectiveness

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Peter Brownell

ACKNOWLEDGEMENTS

Thanks are due to a great number of people who have assisted in the completion of this dissertation.

My dissertation committee chairman, John Wheeler provided technical assistance and much encouragement during many of the trying times associated with gathering the data for the study, and, indeed, throughout my doctoral studies. Jeff Pfeffer and Bill Watts, the other committee members, also provided much intellectual support during my research.

The participants in the behavioral discussion group including John Rhode, Gregory Tully, Kenneth Merchant, William Ricks, Bruce McCain, John Lawler and Sungbin Chun also offered many suggestions.

Fred Balderston and the staff of the Center for Research in Management Science including Linda Berg, Winifred McLeod and Katie Triest provided indispensable support during the conduct of the experimental phases of the research.

Bob Davis and John Anderson from the management of the participant company are also thanked for their cooperation in the study. Their roles were central, naturally.

Finally, you would not be reading these acknowledgements, indeed any part of the dissertation, were it not for the outstanding secretarial competence of my wife, Julie.

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A B S T R A C TParticipation in Budgeting, Locus of Control and
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by

Peter Brownell

Standard wisdom in the management/behavioral area of accounting has for many years asserted that in terms of motivation, morale, job satisfaction and performance, participation in budgeting is behaviorally sound organizational procedure. More recently, doubt has been cast on the universality of this notion and, at the theoretical level at least, the proposition that budgetary participation is beneficial only in some circumstances, has gained momentum.

In the dissertation, a model of the contingent benefits of budgetary participation has been developed and many conflicting results from previous research were reconciled within the model's framework. The research presented in the dissertation involves an empirical test of a part of this model. Specifically, the hypothesis tested is that in terms of performance and job satisfaction, the benefits of participation depend on, at least, the individual personality trait of locus of control.

The methodology used to conduct this research is three-phased. In the first phase, the research investigation was viewed as purely exploratory and the need existed for tight methodological controls.

This need was best satisfied through the use of a laboratory study approach which employed a business game played by business school students.

The results of this phase were sufficiently encouraging to warrant pursuit of their improved generalizability. Accordingly, two phases of extension of the research were conducted. In the first of these, systematic replication of the experimental result was conducted using a subject group comprised of executives of a Bay Area industrial corporation. This form of replication permits improving the generalizability of the experimental effect to the population of ultimate interest, managers with budgetary responsibilities.

The key feature of these two phases of the study is the causal nature of the evidence gathered, made possible through the use of a true experimental research design.

To further enhance the generalizability, a second extension phase was conducted. Moving beyond the artificial confines of the laboratory allows one to substitute the environment of the real world for the controlled but contrived environment of the laboratory. This was achieved through the administration of a survey questionnaire aimed at the on-the-job experience of the same group of executives used in the experimental replication phase.

The results reveal some differences between the three phases but the central research question was answered affirmatively, that is, locus of control was found to interact with participation in its effect on both performance and job satisfaction.

The implications of the findings could be significant for both budget system design and for personnel selection. Where permitted by environmental and technological conditions, an organization or organizational sub-unit may have some discretion over the level of budgetary participation afforded to a role occupant, that is, the role may be designed to suit its occupant. Conversely, where an organization or sub-unit of an organization has little such discretion due to environmental and technological conditions, the results may have strongest implications in the area of personnel selection and placement. That is, the occupant might be selected to suit the role.

It is perhaps premature to interpret these recommendations literally. The need exists for more research which addresses both questions alluded to above. Firstly, we need to know more about the contribution of budgetary participation to dealing with elements of the operating environment faced by the organization and, secondly, more work is needed in the pursuit of a more complete personality profile for use in selecting and placing personnel in organizational roles which are characterized by varying levels of participation.

The results of this study are encouraging in that they suggest that a promising potential exists for future research directed towards the improvement of organizational performance and job satisfaction through better matching of individuals and budgeting systems.

I INTRODUCTION

The fundamental purpose of this study is to investigate whether budgetary participation yields directly or indirectly identifiable benefits to an organization. The specific research question involves an examination of the role of a personality variable, internal/external locus of control, as a variable upon which the organizational effects of budgetary participation may depend. In this introductory section I shall develop a rationale for viewing the organizational effects of budgetary participation as strictly indirect.

The matter of participation in budgeting and decision-making has been a long-standing interest of researchers in (inter alia) management accounting. It is, perhaps, the most studied area in behavioral research in management accounting. Yet, in spite of the great volume of research aimed at answering the question of whether participation in the budgeting process is organizationally sound, no clear prescriptions emerge. Worse than this, we have witnessed a lack of agreement amongst academicians as to exactly what the state of our knowledge is.

In the early 1960s a polemic about the use of participation was published between Stedry (1964) and Becker and Green (1962, 1964). In their 1962 paper, Becker and Green suggest that:

"A successful participation budget does two things: (1) it induces proper motivation and acceptance of specific goals, and (2) it provides information to associate reward and punishment with performance."¹

¹ Becker and Green (1962), p. 401

In a reply, Stedry (1964) took Becker and Green to task on the generality of their views concerning participation. Charnes and Stedry (1963) had previously indicated their view that:

"It is not clear from recent evidence that participation in goal setting is so advantageous as to preclude the inclusion of non-participatively set goals in behavioral models."²

The simplistic view with which Stedry and others disagree would seem to be best depicted as in Figure 1.

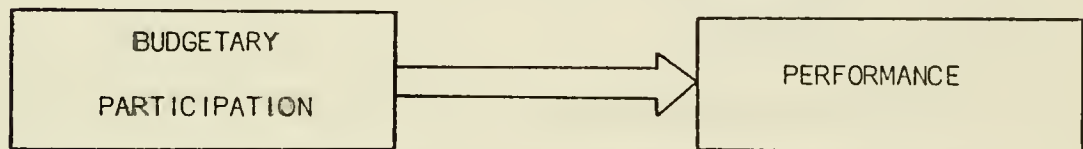


FIGURE 1

A Simplistic View of the Effect of Participation

As oversimplified as this view might seem, it appears as though a non-trivial amount of endorsement exists for it. In the words of Hopwood (1976):-

"The need for the involvement, the commitment, and not least, the participation of the lower members of the organization is viewed as a vital feature of more modern approaches to budgeting. Indeed there is a widespread belief that the participation of subordinates in setting their budgets is a panacea : a cure for all the many ills which have been associated with traditional budgeting systems."³

² Charnes and Stedry (1963), p. 6

³ Hopwood, (1976), p. 74

However, a more realistic view of the relationship between participation and performance appears to warrant the inclusion of several groups of variables upon which the performance implications of participatively set goals depend.

Hopwood, in commenting on some of the evidence, continues:-

"While it appears that an increase in participation in decision-making can often improve morale, its effect on productivity is equivocal at best, increasing it under some circumstances but possibly even decreasing it under other circumstances. The practical problem is in trying to identify which conditional factors determine the wider impact of a particular type of participative management programme."⁴

A more thorough assessment of the state of the art indeed reveals that at least four groups of variables can be shown to moderate the relationship between participation and performance. An expanded and, in my view, a more realistic view of the relationship appears in Figure 2.

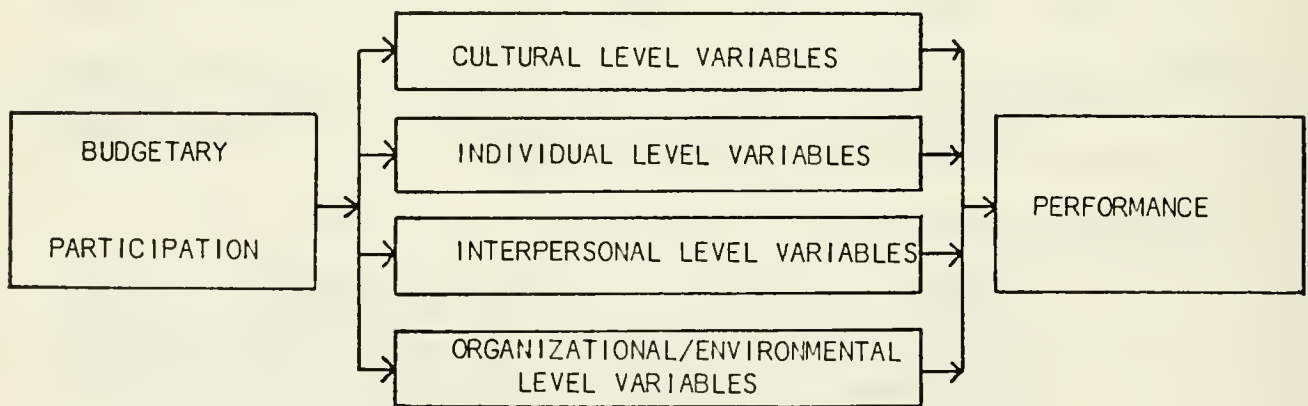


FIGURE 2

An Expanded View of the Effect of Participation

⁴ Hopwood (1976), p. 79

This expanded view of the relationship is still probably somewhat of a simplification but it does capture the most important variable inter-relationships which have been demonstrated in the literature. The view depicted in figure 2 therefore represents a framework which will afford some order to the literature review which follows. It also represents a framework for the research reported in the present study in which the impact of personality differences along the dimension of internal/external locus of control was investigated. It will be hypothesized and shown that individuals at the opposite extremes on this personality dimension have distinctly polar preferences for budgetary participation, preferences manifested in performance and elicited more directly in the form of reported job satisfaction.

In the next section of the paper a review of the literature will be presented and this will be followed in section III by a discussion of the locus of control construct. The major hypotheses will be presented in section IV and the methodology will be detailed in section V. Sections VI and VII report, respectively, the results of some statistical checks, and the discussion and analysis relating to the principal hypotheses. Finally, section VIII will offer some concluding remarks.

II REVIEW OF PREVIOUS LITERATURE

As indicated above, previous studies which have dealt with the issue of participation will be grouped into four categories in order to give the framework depicted in figure two some empirical content.

1. Participation and Cultural Level Variables

Many studies which have been set in different cultures are strictly non-comparable for reasons of vastly different methodology, differing definitions and operationalizations of participation, differing focal groups within the organization, and so on. In order to clearly isolate the impact of cultural differences one ideally needs to be satisfied that all other variables relevant to the relationship between participation and organizational effectiveness are adequately controlled. One pair of studies which comes closest to meeting this requirement comprises the Coch and French (1948) study, conducted in the United States, and the French, Israel and Ås (1960) study, set in Norway.

Coch and French were able to secure the opportunity to study an "in-house" experiment at the Harwood Manufacturing Company in Virginia. The management agreed to test three possible schemes of employee involvement in decisions concerning changes in production scheduling. Under one scheme, selected employee representatives were to participate in meetings with top management while in the second scheme the active involvement of all employees affected by a decision was secured. Finally a third scheme involved the usual company procedure of simply informing organizational members of the impending change. Groups of

employees were randomly assigned to the three schemes but were matched across schemes in terms of both efficiency ratings before the production changes and the degree of change in work type involved.

The results graphically revealed the relative organizational desirability of the three schemes. The group subject to the usual company procedure experienced 17% resignations in the first 40 days (which was reported as having been typical in the past) and significant deteriorations in productivity. The group subject to the partial participation scheme experienced no resignations in the first 40 days and (slow) improvement in productivity while the group in the total participation condition (also experiencing no resignations) provided the greatest post-change productivity improvement.

French, Israel and Ås essentially replicated the Coch and French methodology in a footwear factory in southern Norway. However, a fuller theoretical discussion and consequently some better experimental controls were introduced. For example, the apparent need to distinguish between the objective (researcher defined) and subjective (subject perceived) level of participation was recognized and some manipulation checks (which confirmed the experimental inductions) were duly incorporated.

Although the precise nature of the production change differed slightly between the two studies,⁵ the authors concluded that this would

⁵ The production change implemented in the Coch and French study was, for all purposes, intended to be permanent while in the French, Israel and Ås study the change was a scheduled seasonal switch from the winter to summer footwear fashions.

not affect comparison of the results. However, the results differed vastly. French Israel and As found no significant difference between the post-change productivity levels of the three groups, a difference in result from the 1948 study which the authors attributed to the cultural setting.

While few other studies allow us to directly address the question of the impact of cultural differences, there is a broad body of literature which bears on the question. In particular, a large body of literature in this area falls under what Strauss et. al (1976) refer to as "legal" systems of participation inspired, in at least one eastern European country by socialist ideology. Workers' Councils, providing a formidable measure of joint-management to workers, have characterized the successful post-war development of Yugoslavia. Workers' Councils were introduced in 1950 and their form provides all employees of an enterprise ultimate authority with regard to basic policy, personnel, and technical issues facing the firm. Tannenbaum et. al. (1964) showed that the differential between control exercised at the top and the bottom of the Yugoslav organization is significantly less than the differential in comparable Italian, Austrian and United States organizations. Two separate studies have shown that the Yugoslav industrial system has proven itself in terms of national productivity (Kolaja, 1965; Pateman, 1970). Similar developments to the Yugoslav experience have been documented in France (Hauck, 1955), West Germany (Heller, 1971) and even Britain (Fuerstenberg, 1959).

Kibbutzism in Israel, has grown well beyond its traditional agricultural context and now extends to a large range of manufacturing

activities. Organizational structure in a kibbutz factory is characterized by many participative-type features. For example, officers from first-line supervisor upwards are elected by the workers and their tenure is limited to between three and five years. In addition, a Management Board consisting of the plant manager, production manager and workers' representatives, is established and is responsible for a wide range of organizational decisions. A study of Israeli kibbutz plants by Melman (1970) showed that they are more efficient than comparable non-kibbutz plants and that labor-management conflict in the kibbutz is virtually non-existent.

The level of participation which is deemed proper in a particular cultural context seems very likely to influence the effects of its introduction. French Israel and Ås⁶ discuss this and refer to it as "participation legitimacy". They did suggest that stronger trade union ties existed among workers in Norway and noted evidence concerning the view of participation as being a right rather than a privilege.

Hofstede (1967), in reporting the results of his extensive survey on budget control, cautioned the reader against cross-culturally generalizing his findings which dealt with five companies in the Netherlands. Differences between the industrial climate of Europe and the United States have been documented (Kast, 1964; Nowotny, 1964), but Hofstede feels that the most dangerous generalization is from Western to Eastern culture (or vice versa):

⁶ op. cit.

"The game of budget control as I described it is a Western game"⁷

2. Participation and Variables at the Organizational and Environmental Level

That variables at the organizational and environmental levels are important is not self-evident from the accounting literature. Rather, the implications for budget system design and, more specifically, the role of participation in effective budgetary control systems needs to be drawn out by a review of literature principally in organizational behavior.

Three variables dominate the emphasis at this level; environmental stability, technology and task uncertainty. A fourth, organizational structure, will be mentioned in connection with a couple of significant accounting studies. I shall review the literature in each group in turn.

A. Environmental Stability

In a significant study, Lawrence and Lorsch (1967) attempted to answer the basic question of what kind of organization it takes to deal effectively with various environmental, economic and market conditions. Lawrence and Lorsch studied firms in three industries; plastics, food processing and containers. These industries were represented as being located on a continuum of environmental stability with plastics firms facing the most turbulent and dynamic environment and container firms the most stable environment.

⁷ p. 281

Effective response to environmental conditions was defined by Lawrence and Lorsch in terms of the appropriate amounts of differentiation and integration.⁸ They found that successful firms in the plastics industry were most highly differentiated and, at the same time, most successfully integrated. Formality of structure was low, there were fewer levels in the organizational hierarchy, less frequent performance evaluation and fewer objective performance criteria. Of relevance in the present context was the finding that successfully integrated firms were characterized by lateral rather than vertical flows of information, a much lower and broader locus of decision-making authority and a higher degree of knowledge needed for decision making was typically located at lower levels.

Consistent with these findings is the view that involvement and participation of organizational members at lower levels is desirable when the organization faces a dynamic environment. Even within the organization the locus of influence in decision-making varied depending on the sub-environment faced by major functional divisions. Boundary spanning divisions such as marketing were characterized by a much broader base of decision-making influence and control than, for example, in production which is relatively buffered from the external environment.

⁸ Differentiation was defined as the "difference in cognitive and emotional orientation among managers in different functional departments". They defined integration as "the quality of the state of collaboration that exists among departments that are required to achieve unity of effort by the demands of the environment." (p. 11) Differentiation and integration were viewed as inter-related and simultaneously difficult to achieve. The more differentiation needed, the more difficult was the achievement of successful integration.

In contrast, successful firms in relatively stable environments (containers and, in particular, food processing) were characterized by much lower levels of differentiation and integration, many more hierarchical levels and a far greater level of formal structure. The locus of influence in decision-making and control was high in the organization and information, authority and responsibility flows were vertical rather than horizontal. Indeed, it was observed that in the poorest performing firm in the container industry, organizational members at lower levels in the hierarchy felt they had considerably more influence in decision-making than their counterparts in the high performing container industry. The locus of knowledge to make sound decisions was apparently elsewhere in the organization.⁹

In a theoretical work, Thompson (1967) isolates two dimensions of the environment faced by the organization. Firstly, an environment can be homogeneous or heterogeneous by which he means that customers either want the "same thing at the same time" (e.g. schooling) or "different things at different times". Secondly, an environment can be stable or unstable, self-explanatory descriptions of the frequency and nature of changes in the size, type and share of the market. Thompson suggests that organizations facing homogeneous, stable environments should employ standardized rules as control devices and that management should be authoritative and consist of networks of rule enforcement. In contrast,

⁹ This suggests an important but neglected view of the benefits of participation namely improved decision quality which might potentially result. In the majority of cases the benefits of participation are couched in terms of motivational desirability alone. Miles (1965) noted this point in his contrast between the "human relations" view and the "human resources" view of participation.

organizations facing heterogeneous, unstable environments should build decentralization and autonomy into the structure and control system and management should be democratic and consist of networks of equality of power sharing and influence.

Hayes (1977) focused more broadly on the question of the role of budgets in performance assessment in organizational sub-units. His conclusion was that budgets are more useful as standards for evaluating performance in production departments, which tend to have relatively unambiguous objectives and cause-effect relationships and which tend to be buffered from the external environment. Marketing and research and development departments, on the other hand, were found not to be so well suited to budgetary control. This raises an important contrast between budgeting as a planning tool and budgeting as a control tool. As a planning tool, budgeting assumes a particularly important role in organizations or organizational sub-units facing unstable external environments. Following Lawrence and Lorsch, such organizations or organizational sub-units are likely to be highly differentiated and therefore in need of a high degree of integration. The need for integrative planning in such organizations is also suggested by Lorange (1977) and the role of budgeting and budgetary participation in satisfying this need was hypothesized and found by Merchant (1978).

It seems, therefore, that the stability of the external environment affects the uses of budgeting as a planning tool, vis à vis a control tool, in opposite fashion. The use of budgets as performance evaluation and control devices appears better suited to organizations in stable environments than those in unstable environments (Hayes) while the

(integrative) planning function of budgets assumes relatively greater importance in dealing with unstable environments (Merchant). Note that environmental stability aside, the need for adaptive planning (scanning the environment for relevant information to be used in dealing with change in the future) remains. Thompson (1967) calls this "opportunistic surveillance".¹⁰ Merchant (1978) examined the role of budgeting in satisfying this need but his results were inconclusive.

The implications of the suggestions and findings for the role of participation in decision-making are clear: the effectiveness of participation depends, at least in part, on the environmental demands facing an organization as a whole and its individual functional units viewed separately.

B. Technology

A major factor at the organizational level is technology. It has been defined as "a technique or complex of techniques to alter 'materials' in an anticipated manner".¹¹

Burns and Stalker (1961) investigated this aspect and its relationship to organization design. In a study of British companies they found that where the rate of technical innovation was low, successful firms were managed with "mechanistic" systems characterized by functional specialization and detailed definitions of duties and responsibilities. On the other hand, rapid technical innovation was

¹⁰ p. 151

¹¹ Perrow (1965) p. 915

associated with firms which had "organic" systems of management with more flexible organizational arrangements, more consultation and participation and less rigorously specified tasks.

Woodward (1965), in another study of British industry, used four main groupings of production processes found in the surveyed organizations to characterize a technology continuum. In increasing order of technological sophistication the groupings were unit production, small batch, mass-production and continuous process.

She found that firms in the middle of the technical continuum tended to be most "mechanistic" while firms at the extremes were more "organic" characterized, notably, by high degrees of authority and responsibility delegation and much more permissive and participative management styles.

Thompson (1967) views technology from a slightly different perspective. For him, technology manifests itself in the nature of the interdependences between organizational sub-units and he isolates three types of interdependence: pooled interdependence, where organizational units are separate and do not interact (but where failure of any one renders the organization harm); sequential interdependence, where one unit is the supplier of another; and reciprocal interdependence, where units supply one another. Corresponding to each of these types of unit interdependencies there exists, according to Thompson, an appropriate organizational structure providing for co-ordination of activities. For pooled interdependence, co-ordination is best achieved by standardization of rules and routines which are set down for the behavior of all units. Where interdependence is sequential, co-ordination is by planning and the establishment of schedules for the

interdependent units, and, finally, for reciprocally interdependent units, co-ordination is by mutual adjustment and communications. Thompson makes it quite clear that participation and lower-level influence in decisions are increasingly appropriate as characteristics of co-ordination as we move from pooled through sequential to reciprocal interdependence.

The number of taxonomies of technology is substantial. While Woodward (and Stinchcombe, 1959) used length of production run, other classification schemes suggested in the literature include "routineness of the production process" (Trist and Bamforth, 1951; Gouldner, 1954; Hage and Aiken, 1969), "the degree of hardness of materials worked on" (Rushing, 1968) and "variety and programmability" (Perrow, 1970).

However, the same basic result has emerged from most examinations of the impact of technology on different organizational responses. For repetitive, easily programmable production activities, a more hierarchical structure with upward information flows and downward authority flows appears appropriate. Non-repetitive, short production run, custom type production activities are not so amenable to programmed controls and are probably better managed with use of individual supervision with small spans of control.

C. Task Uncertainty

Possibly closer to accounting in orientation is the view that organizations will respond differently (in terms of structure) to differing levels of task uncertainty. Galbraith's view is that in order to deal with uncertainty an organization needs to process more and more

information. Galbraith (1973, 1977) defines uncertainty as the difference between the amount of information required and the amount possessed by the organization and he views the amount required as being a function of the diversity of outputs, diversity of inputs and the level of goal difficulty. As an organization becomes more complex and faces a greater need for information, it can engage in either of 2 strategies. Clearly, it can either reduce its need for information through strategies such as the creation of slack resources ¹² and the creation of self-contained tasks (i.e. the break-down of interdependence), or, it can increase its information handling capacity by investing in vertical information systems and by creating lateral relations. The latter of these information handling strategies is particularly relevant in the context of participation. Galbraith, when referring to the creation of lateral relations, has in mind the idea of reducing the number of decisions referred upwards in the organization and bringing the "decision point" down to the "action point" where the information exists. In other words, increased influence of lower level organization members in decision-making is one key organizational strategy used to deal with task uncertainty and the attending level of informational handling capacity expansion.

In order for this response to task uncertainty to work effectively, Galbraith points to several conditions which must be satisfied. Information required for decision-making must be accessible at the level at which the lateral relations are created, participants in lateral

¹² In this context, slack is entirely functional. The view that slack is dysfunctional seems to predominate in the literature. See Schiff and Lewin (1974), for a review of literature, and (1970) for a subtle reply to Argyris (1952).

relationships must have the authority to commit their organizational sub-unit, and influence must be a function of knowledge and information. Status barriers unaccompanied by commensurate informational differences will be dysfunctional according to Galbraith.¹³

One body of empirical research which bears on the question of organizational response to task uncertainty is the early work on group behavior and communication initiated by Bavelas (1950) and Leavitt (1951). Shaw (1964) presents a most complete summary of this research and he concludes that the evidence suggests that more centralized networks (for example, wheel networks) are most effective in dealing with simple tasks. In contrast, more diffused networks (for example, circle networks) are superior in the case of complex tasks. Shaw suggests that a high-centrality position in a network is likely to become overloaded more easily when the network faces a complex task than when the task minimizes the information-processing requirements of the position, as in the case of simple tasks. This evidence re-inforces Galbraith's view.

D. Organizational Structure

As indicated at the beginning of this section, evidence from the accounting literature is sparse. Bruns and Waterhouse (1975) is one study in which the relationship between organizational structure and budgetary control was investigated. They hypothesized and found that in

¹³ Galbraith goes on to suggest that the use of lateral roles in the organization clouds the authority responsibility link which may result in organizational ineffectiveness due to role ambiguity. Role ambiguity may be desirable (Goodman, 1967) but it does behoove personnel management to carefully fit individuals to role descriptions due to individual differences in tolerance of ambiguity. Individual level variables will be considered more fully in section 4 of this review.

structured but decentralized organizations, the quantity of budget-related behavior was higher than in centralized organizations. Specifically, managers in decentralized organizations perceive themselves as having more influence, they participate more in budget planning and appear to be satisfied with budget related activities. In contrast, managers in centralized organizations are granted less responsibility, report less involvement in budget planning, experience superior initiated pressure,¹⁴ and see budgets as being less useful and limiting their flexibility.

Swleringa and Moncur (1972)¹⁵ investigated the budget-related behavior of a sample of managers in various branches of an international bank. Included in their study were several organizational level variables such as branch size and position in the organization. However, the results were inconclusive.

The results and suggestions from the literature, both in organizational behavior and in accounting appear to consistently indicate that participation offers some organizational advantages only in some circumstances. Organizations in unstable environments, faced with dynamic technology and high levels of task uncertainty appear to be particularly well suited to participation and influence of lower level organizational members. In contrast, centralization, providing little, if any, opportunity for lower level participation (without overlooking

¹⁴ Interpersonal aspects such as superior/subordinate relationships will be dealt with more fully in the next section of this review.

¹⁵ This study was the pilot for a more extensive work published in 1975. See section 4 of this review.

the continuing need for adaptability to change) may be a sounder response to stable, homogeneous environments and technology, associated with low to moderate levels of task uncertainty.

3. Participation and Variables at the Inter-Personal Level

The study which was responsible for catapulting the interest in behavioral aspects of managerial accounting, and more specifically, budgeting, to the present level was Argyris' (1952) famous Controllershship Foundation sponsored study. Argyris isolated at least four major problems of a behavioral nature with budgets:-

- (i) budget pressure tends to unite employees against management and tends to place the factory supervision under tension
- (ii) budget staff can obtain feelings of success only by finding fault with factory people
- (iii) the use of "needlers" by top management tends to make the factory supervisors see only the problems of their own area of concern
- (iv) supervisors use budgets as a way of expressing their own patterns of leadership.

Concentration on the last of Argyris' findings provides a useful introduction to the literature in this area since leadership styles have provided the basis for a great number of studies of participation in budgeting and decision-making. The developments trace back at least as far as the late twenties to the now classic Hawthorne Studies ¹⁶

¹⁶ A very complete report of the Hawthorne Studies can be found in F.J. Roethlisberger and W.J. Dickson "Management and The Worker", Cambridge: Harvard University Press, 1939.

conducted at Western Electric from 1927 through 1932. It was here that the importance of sociological and human factors in management was first uncovered. The essence of the findings of Mayo and his associates was that worker performance could be favourably influenced by changes in the leadership practices and attitudes of supervisory personnel.^{17, 18}

From this introduction began the focus of emphasis on leadership styles both in accounting and related area literature. Based on the fundamental contrast between classical Taylorian principles and the human relations viewpoint uncovered by Mayo, most theoretical expositions dealing with leadership styles have attempted to characterize leader behavior along two separate dimensions each representing one of the two basic views. The titles attached to these dimensions have varied greatly. "Employee oriented" versus "production oriented" (Katz, et.al. 1950), "consideration" versus "structure initiation" (Halpin, et.al. 1957), "concern for people" versus "concern for production" (Blake and Mouton 1964), and "profit conscious" versus "budget constrained" (Hopwood, 1972, 1974) represent just a few of the labels attached to fundamentally the same two underlying concepts. Almost invariably, a high degree of influence and amount of participation granted to subordinates is regarded as a key element in the human relations dimension, and this is how the leadership style

¹⁷ For a concise summary of the historical developments in management theory as they pertain to management accounting, see E.H. Caplan "Management Accounting and Behavioral Science", Reading, Massachusetts: Addison Wesley Publishing Company, 1971.

¹⁸ For an interesting recent debate on the findings of the Hawthorne Studies, see Frank and Kaul (1978) and Schlaifer (1979).

literature bears close association to the topic of present study. Let us look more closely at the accounting and related literature in the area.

Specifically motivated by Argyris' fourth conclusion listed above, Fertakis (1967) and DeCoster and Fertakis (1968) presented results of an investigation of the amount of budget pressure induced by leadership styles of consideration and structure initiation.¹⁹ They hypothesized that a greater amount of pressure would result from leadership styles high on the structure initiating dimension and low on consideration than where structure initiation was low and consideration high. Their findings were interesting. In the case of both leadership styles, budget pressure resulted, although the relationship may have been stronger in the case of structure initiating styles.

In a closely related investigation, Hopwood (1972, 1974) attempted to ascertain whether different amounts of job-related tension were experienced by cost centre managers evaluated by supervisors using "budget constrained" styles versus "profit conscious" styles. The findings suggested that greater tension was experienced by managers evaluated by supervisors whose style was budget constrained. Hopwood reports that his two dimensions are not completely independent however, and, as a result, construct validity of his measures can be questioned. He had attempted to capture the "consideration" and "structure initiating" dimensions mentioned above and these are conceived as being completely independent. Related to this point is an interesting finding

¹⁹ Halpin, et.al., op. cit.

in Hopwood's study. Only where a distinct imbalance in leadership style exists in the structure initiating (budget constrained) direction is the tension result significant. The same absolute amount of budget constrained behavior combined with a similar amount of profit conscious behavior was not found to be tension producing.

The last result of Hopwood's begins to explain the surprising results of DeCoster and Fertakis who found consideration and structure initiation equally associated with felt budget pressure. This phenomenon of one leadership style actually moderating the effect of the other was first reported in the literature by Fleishman and Harris (1962). They concluded that under conditions of high consideration, structure may be perceived by subordinates as supportive and helpful, whereas under low consideration the same structuring behavior may be seen as restrictive and threatening. This interpretation has been shown to be consistent with data from many other studies (Fleishman and Ko, 1962; Misumi and Toshiaki, 1965; Beer, 1966; Skinner, 1969; Fleishman and Peters, 1970; Hunt and Hill, 1971; Dessler, 1972, 1973) for such criterion variables as motivation, satisfaction, grievances, turnover, and even performance. However, evidence that this effect may be restricted to certain levels in the organization is provided by House (1972) who suggested that consideration may be an important moderator of structure- satisfaction relationships only for lower-level organizational members.

Otley (1978), in extending Hopwood's work, concluded that only where ambiguous leadership styles were reported was job-related tension significantly higher. The effects of intermediate levels of both types of leader behavior could be examined in Otley's study as he expanded

Hopwood's dichotomous "budget-constrained / profit-conscious" classification into a continuum.

The findings of Hopwood, Fertakis, Otley, and DeCoster and Fertakis all suggest that the exclusive use of one single leadership style in a budgetary context corresponds to neither reality nor to any prescriptions of leader behavior. Indeed the view more recently taken in the organizational behavior literature suggests that leader behavior should be situationally consistent only. (Heller, 1971; Kerr, et. al., 1974; Ritchie, 1976; Vroom and Yetton, 1973). Such a view is inconsistent with the exhortations of McGregor (1944) who suggests that consistency in leadership style is desirable because it allows subordinates to predict their superior's behavior and adapt to it. But predictability does not imply lack of variability. The antithesis of predictability is randomness:

"The critics and proponents of participative management would do well to direct their efforts toward identifying the properties of situations in which different decision-making approaches are effective rather than wholesale condemnation or deification of one approach".²⁰

Argyris (1962) calls this "reality-centered" leadership style, so Vroom's idea is by no means novel.

Put alternatively, the view of leadership style suggested by Vroom and by Argyris is one by which we would expect to need to explain some within-person variance in leader behavior. No such need is implied by the theoretical views expressed earlier.

²⁰ V.H. Vroom "Industrial Social Psychology" in Handbook of Social Psychology edited by G. Lindzey and E. Aronson, vol 5, Reading, Mass.: Addison Wesley, 1970, pp. 239-240.

This contingency or situation-specific view of leader behavior has been investigated by Heller ²¹ and by Vroom and Yetton.²² Heller hypothesized and found that the degree of "power sharing and influence" afforded to subordinates in decision making depends on the importance of the decision to the company, the extent of agreement between superior and subordinate as to skill differences between them, the extent of agreement as to the amount of training required to elevate subordinates to the superior's level, the span of control of the superior, and the locus of information availability.

Vroom and Yetton, investigating the same question, found that leadership style depended on the importance of a high quality decision, the extent to which the leader possesses sufficient information and expertise to make a decision alone, the extent to which the problem is structured versus unstructured (deterministic versus stochastic), the extent to which acceptance or commitment is critical to effective implementation of the decision, the extent to which subordinates are likely to disagree over the preferred solution and the extent to which a speedy decision is necessary.

These two organizational behavior studies are two major, recent expositions of the need for a contingent view of appropriate leadership style and hence appropriate participation levels. Many other studies in organizational behavior have addressed this issue, however, and have uncovered several important moderating variables.

²¹ Heller, op.cit.

²² Vroom and Yetton, op.cit.

Halpin (1954) found that pressure (in the form of time urgency, task demands, interunit stress or physical danger) affected satisfaction of military platoon members with structuring leadership styles. Structure was found to be resented by the platoon members in low pressure situations, such as training, while it was positively related to satisfaction in high pressure situations, such as combat. Oaklander and Fleishman (1964) extended this result and concluded that source of pressure was the critical moderator variable. Where the source was seen to be external, structuring behavior was preferred, while considerate behavior was found to be more helpful in dealing with intraunit pressure.

Task characteristics have also been shown to moderate the leadership - criterion relationship, although there is some disagreement as to the precise nature of the relationship. House, Filley and Kerr (1971) concluded that when work was not intrinsically satisfying, increased resentment seemed likely to occur as the imposition of structure increased. House (1971) elaborated on this conclusion by suggesting that performance, in contrast to satisfaction, would benefit from structuring leader behavior where routine, structured tasks were involved. Hunt and Liebscher (1973) confirmed this conclusion. However, Ritchie (1976) suggests that the relationship is likely to be the same for both performance and satisfaction and that, in the case of intrinsically rewarding but unstructured situations, subordinates actually seem to prefer a more directive structured role by their superior. No evidence is cited on this latter point, however.

Level within the organization has already been mentioned in

connection with the Hopwood study. Other evidence tends to confirm House's (1972) suggestion that structure is preferred at lower levels and resented at higher levels (Stogdill and Coons, 1957; Hill and Hunt, 1973; Bradshaw, 1970). However, Hunt and Liebscher (1971) and Hunt, Hill and Reaser (1971) report few or no important differences attributable to job-level. While there may be disagreement about the nature of the moderating effect of job-level, there does seem to be unanimity on the point of the existence of a job-level type of moderator.

Work group size has also been found to affect the relationship. Meyer (1972) found that in small work groups, supervisors tended to behave more like technical specialists exhibiting supportive, considerate behavior, while supervisors with larger spans of control tended to emphasize administrative functions and to exhibit more structuring behavior. Similar results are due to Merchant (1978).

The upward influence of the superior is another variable which has been found to moderate the leadership - criterion relationship. Time spent by superiors with organizational staff or higher management as an "advocate" for subordinate interests may be more important from the subordinates' view than time spent by the superior with subordinates themselves. The use of more structured, less personal leader style, where this is due to significant amounts of time spent by the superior with higher level management, was found by Meyer (1972) to please subordinates. Herold (1972) also found superior's upward influence, and the associated subordinate independence, to be a powerful subordinate satisfier.

Other factors determining appropriate leader style have been suggested in the literature. These include goal specificity (Korten, 1968), the existence of suitable communication channels (Tannenbaum and Massarik, 1950), task difficulty (Shaw, 1963), the quality of leader - member relations (Fiedler, 1967), the degree of trust exhibited by the superior (Zand, 1972) and the homogeneity of within-group skills and abilities (Mulder, 1971).

In concluding this section of the review of literature, one extremely important caveat requires mention. Almost without exception, the empirical results reported here were produced with use of survey research techniques which raises the question of the causal direction of the relationships studied. Ritchie (1976) asks the question most cogently:

"Does democratic supervision cause high performance, or is democratic behavior a luxury permitted only supervisors whose subordinates are already highly productive?"²²

Goodstadt (1970) presents evidence that indicates that effective work groups will elicit general supportive behavior by superiors while a less effective unit will generate close supervision.

4. Participation and Variables at the Individual Level

For reasons of empirical tractability, it seems, the major level of emphasis in the accounting literature which deals with participation is at the individual level. The researcher is provided with a broader methodological base at this level for the scope for good experimental, laboratory based research is far greater here than at other levels of

analysis. It is clearly more difficult to satisfactorily model organizational level variables, for example, in the laboratory. In addition, the measurement instrumentation for individual level variables, compared with that at higher order levels of analysis, is more sophisticated.

The research to be reviewed here is grouped according to the focal variables of each study. The major variables which have been studied are performance, job satisfaction, attitudes, motivation, commitment to goals, feedback, goal difficulty and personality traits. Of particular importance in the present context are studies which have employed performance and/or job satisfaction as criterion variables. As indicated in Section 1, these are the two criterion variables chosen for the present investigation.

Self report measures of job satisfaction are easy to obtain and hence a considerable number of studies has investigated the role of participation as it affects job satisfaction. In a field study of industrial supervisors, Milani (1975) developed and used an instrument²³ to measure participation and assess its relationship to job satisfaction, attitudes towards the company and performance. He found a significant relationship between the level of participation and the satisfaction and attitude variables but his results for performance were weak. Vroom (1964) found that managers who felt they were consulted on their operating budgets and that their suggested changes were given

²³ Very few attempts at direct measurement of participation are to be found in the literature. Notable contributions in the literature in this area are those of Milani, Hofstede (1967), Likert (1961), Vroom (1960), Vroom and Yetton (1973) and Heller (1971).

proper consideration reported higher job satisfaction. Similar results are due to Ivancevich (1972). However, an interesting contrast was found by Carroll and Tosi (1973) who failed to report improved attitudes and job satisfaction levels resulting from participation. They suggested that the effects of participation on job satisfaction are conditioned by the perceived legitimacy of participation and the extent to which participative management practices are spread throughout the organization. This suggests a problem in the approach of systematically varying the level of participation in different organizational subunits a strategy which Heller (1971) explicitly endorses.

Cherrington and Cherrington (1973), in their laboratory study of participative budgeting, uncovered another moderating variable. They found that the reward structure had a major impact on the relationship between participation and job satisfaction. Subjects in their "group-based" budget condition (corresponding to high participation) reported high satisfaction where reward was based, at least in part, on achieving the budget (the "budget" and "output-budget" conditions). The lowest satisfaction scores for subjects in the "group-based" condition were reported by those who were rewarded on the basis of output only. In contrast, subjects in the "imposed" budget condition (corresponding to low participation) reported highest satisfaction where the reward structure was based solely on output. The lowest satisfaction scores reported by those in the "imposed" condition were from those who were rewarded only according to their ability to achieve the imposed budget level.

Demski and Feltham (1978) provide a theoretical view of the need

for budget-based reward structures. They conclude that in the event that effort and skill levels of budget participants are not fully observable (a form of market incompleteness) by a risk-averse management, budget-based reward structures are superior to other reward structures.

Hofstede (1967) also uncovered a factor which appears to moderate the job-satisfying effects of participation. In his extensive survey of budgeting practices cited earlier, he found that the area of participation was an important consideration. Specifically, participation of foremen in the technical standards component of budget preparation was significantly correlated with job satisfaction while participation in the development of more aggregate, financial objectives components of the budget was not. Hofstede attributed this difference in result to the availability of what he referred to as external reference points. Only where individuals felt that they had a valid contribution to make based on their on-the-job experience, was participation satisfying.

The role of participation in achieving commitment of organizational members to budget goals is seen as an important one. Foran and DeCoster (1974) employed a laboratory setting to investigate whether the degree of favourableness of feedback (concerning the extent of acceptance of subordinate recommendations) influenced commitment to goals. Their results were positive in the predicted direction. French, Kay and Meyer (1966) found little difference between the level of goal commitment of "high" and "low" participants and suggested that threat levels may condition the response of "high" participants. Searfoss and Monczka

(1973) provide evidence consistent with Foran and DeCoster, on the other hand. They found a highly significant positive relationship between perceived participation and goal directed effort and goal commitment.

The chosen level of goal difficulty and its relationship to subsequent performance level is also suggested to be affected by the level of participation. Stedry (1960) studied 108 students in a laboratory study in which budget level difficulty was manipulated and aspirations and performance observed. He found that only difficult-to-achieve budgets seemed to have a positive effect on performance. Stedry and Kay (1966) performed a similar type of investigation in the field and although the results are inconclusive (due to a small number of subjects) they do suggest that, except for extremes of goal difficulty, more difficult goals are more motivating (as evidenced by performance rather than as directly measured). Shapira's (1976) results are similar but more interesting in that they indicate that the nature of the reward structure is also critical. Where reward is extrinsic, and independent of performance, chosen levels of goal difficulty will be lower than where reward is intrinsic. This result further confirms the importance of reward structure as discussed above in connection with the Cherrington and Cherrington (1973) study.

Other studies which have shown a direct relationship between participation and aspiration levels associated with more difficult goals include Raia (1965), Locke (1968) and Carroll and Tosi (1973). Some interesting moderating factors emerge from these studies. Raia suggested that seniority influenced the extent to which difficult goals were motivating. Carroll and Tosi suggest that maturity and

self-assurance are also important conditioning variables, and Stedry and Kay and Swieringa and Moncur both noted the importance of age. It is likely that these variables are highly correlated.

Collins (1978) additionally suggested the importance of tenure with the company as a variable which moderates the participation - attitudes relationship. He found that a stronger positive association existed for low-tenure (less than five years) organizational members than for high-tenure (more than fifteen years) members.

Studies which have directly assessed the motivational impact of participation are few and far between. Yet references to motivation abound due to the inference that performance and motivation are positively related. That remains an empirical question even though our priors might be strong. Hofstede (1967) attempted to measure a concept he referred to as motivation by developing an instrument based on the curious combination of attitudes toward the budget and relevance of the budget. Again, these may be correlated with motivation but the empirical question remains. Hofstede found that among many variables, participation explained the greatest proportion of observed variance in motivation, as he measured it. But he noted that past levels of participation were important. Where these are high, the effect on motivation is observed, while where they are low, participation has little effect. Meyer, Kay and French (1965) reached a similar conclusion.

Merchant (1978) hypothesized that higher levels of motivation, in particular the intrinsic component, would be associated with high participation. Using Hackman and Porter's (1968) motivation measure and

a construct for participation factor-analytically derived from Fertakis' (1967) Budget-Related Behavior Questionnaire, the hypothesis was confirmed for measures of both intrinsic and extrinsic motivation. The relationship between participation and attitude towards the budget system (part of Hofstede's motivation conception) was moderated by budget difficulty, however.

Recent developments in the use of expectancy theory (see Mitchell, 1974, for a review of theoretical and empirical research) as a theoretical framework for deriving motivation measures are emerging in the accounting literature (Ferris, 1977; Rockness, 1977). This may be a fruitful area for further research. Indeed, it has been suggested that many research findings in behavioral/managerial accounting can be explained in terms of an expectancy theory framework (Ronen and Livingstone, 1975).

Finally, personality and individual differences have been subject to some limited study in the area of participation. Perhaps the best known contribution is Vroom's (1960). He showed that individuals high on authoritarianism were unaffected by the opportunity to participate while those low on the measure showed a distinct preference to participate. Vroom (1964) also suggested the relevance of ego-involvement in the same context. Foran and DeCoster (1974) were unable to replicate Vroom's findings concerning authoritarianism but failure of the participation manipulation was suspected in Foran and DeCoster's study.²⁴

²⁴ A more recent study by Abdel-Halim and Rowland (1976) again failed to confirm Vroom's finding, however.

Hofstede also provided an indirect test of the moderating effect of authoritarianism on job satisfaction. Grouping authoritarianism into high, moderate and low, he found that attitude toward the budget was significantly, and positively, correlated with participation only for high authoritarians. Separately, he reported that attitude toward the budget correlated significantly, and negatively, with job satisfaction. Although the direct correlation between participation and job satisfaction was not reported for each of his three "authoritarianism" groups, it seems reasonable to conclude (as he did) that the Vroom result was replicated.

In a questionnaire survey of 137 middle level managers in four electronics companies, Swieringa and Moncur (1975) found that three items in their questionnaire, independence of thought and action, participation in goal setting and participation in choice of methods all loaded on a single factor in a factor analysis and each was significantly correlated with job satisfaction. They noted, however, that this correlation was strongest for individuals low on a "cautiousness" measure which they included in their study.²⁵ Managers who are relatively more cautious are apparently content to be less influential in budgeting than those who are more aggressive.

Need for independence (French, Kay and Meyer, 1966) and self-esteem (Carroll and Tosi, 1973) are also suggested as important personality differences which will condition the effects of participation, and age,

²⁵ The Gordon Personality Profile and Personality Inventory (Gordon, 1963).

as an individual difference variable, was found by Alutto and Acito (1974) to moderate the participation-job satisfaction relationship.

Conclusions

The purpose of this literature review was two-fold. Firstly, a compilation and integration of research findings in the area of participation provides an a priori test of the framework set forth in Figure 2. Many diverse and often conflicting results were reconciled within this model of the relationship between participation and the many criterion variables which have been studied. The literature therefore provides some support for the validity of the framework.

Secondly, the review covers the important contributions in the literature at the individual level of analysis, the chosen level for the present investigation. As mentioned in the introduction, this study is an investigation of the role of internal/external locus of control, a personality variable, as a moderator of the relationship between participation and two important organizational criteria, performance and job satisfaction.²⁶ The discussion now turns to an examination of this personality variable.

²⁶ A "complete" review would not only be inordinately lengthy, but possibly redundant also. For example, just in the area of job satisfaction, Locke (1976) estimates the number of studies at well above 3000.

III INTERNAL/EXTERNAL LOCUS OF CONTROL

While having its origin in psychological literature, at least one recent study in accounting has suggested the relevance of this personality variable in the context of budgeting. Swieringa and Moncur (1975) found that locus of control was one of three "attitudinal"²⁷ variables which were the best predictors of managers' budget related behavior.

In order to develop a clear statement of the hypothesis at test in the present study it is necessary that some attention be devoted to the psychological literature in which the concept of locus of control has had its development.

In an expository paper dealing with the locus of control dimension of personality (Rotter, Seeman and Liverant, 1962), the construct was described as distributing individuals according to the degree to which they accept personal responsibility for what happens to them. As a general principle, "internal control refers to the perception of positive and/or negative events as being a consequence of one's own actions and thereby under personal control; external control refers to the perception of positive and/or negative events as being unrelated to one's own behaviors and therefore beyond personal control" (Lefcourt, 1966 p. 207).

²⁷ Strictly speaking, locus of control is more popularly conceived as being a relatively stable characteristic which endures over time and across situations and which is therefore more of the nature of a personality variable than an attitude. For a more complete treatment of the difference between an attitude and a personality, see Anastasi (1958).

The concept of locus of control has its theoretical background in social learning-theory (Rotter, 1954, 1955, 1960). It is asserted that personal differences will affect the extent to which an individual perceives a reinforcement as following from or contingent upon his own behavior or attributes, versus the degree to which he feels that the reinforcement is controlled by forces outside of himself and may occur independently of his own actions. In other words, the effect of reinforcement for a human subject is not a simple stamping-in process but is dependent on whether the individual perceives a causal relationship between the behavior on which the reinforcement is contingent and the reinforcement itself.

In the event a reinforcement is perceived by an individual as resulting from his own action but not being entirely contingent upon it, then it is typically perceived as the result of luck, chance, fate or, as unpredictable due to the complexity of his surrounding environment. An individual interpreting events in this way is labeled as having a belief in external control. Alternatively, if the individual perceives that the event is entirely contingent on his own behavior and relatively uninfluenced by external forces then he is labeled as having a belief in internal control. In Rotter's theory, the locus of control construct is considered to be a generalized personality characteristic operating relatively consistently across a wide variety of situations, although we will need to return to this point shortly.

The empirical work in psychology which has tested the notion of locus of control has generally employed one or other of two strategies of investigation. The first has been to provide a relatively ambiguous

task under two conditions, one in which the subject is instructed that it is skill determined and the other in which the subject is instructed that it is chance determined. Phares (1957) employed this approach and using a 26-item Likert-type scale to measure locus of control found that internals responded better to the "skill" instructions and externals to the "chance" instructions. James (1957) revised Phares' test and, still using a Likert format, developed a 26-item (plus fillers) instrument and essentially replicated Phares' findings.

The second strategy involves presenting different tasks which are surreptitiously controlled by the experimenter and which are implicitly defined as skill or chance by the subject. The findings of several studies employing this approach generally confirm the expectation that internals are far less likely to attribute the outcome of their actions to chance, even when the outcome is randomly manipulated by the experimenter. On the other hand, externals invariably describe the action-outcome relationship as pure chance even when not manipulated (Rotter, Liverant and Crowne, 1961; Holden & Rotter, 1962; Blackman, 1962).

Among the other empirical findings in the area are several studies which have hypothesized and found that internals, with a belief that the outcome of a decision is dependent upon their own actions, exhibit far more initiative in their attempts to control their environment than externals (Seeman and Evans, 1962; Seeman, 1963; Lefcourt, 1966; Rotter, 1966; Phares, Ritchie and Davis, 1968). It has also been found that externals are generally more susceptible and submissive to direct influence by others, than are internals (Rotter, 1966; Ritchie and

Phares, 1969; Biondo and MacDonald, 1971).

Several studies in the area have shown that locus of control interacts significantly with situational control characteristics to affect performance on a wide variety of tasks including reaction time tests (Cromwell, Rosenthal, Shakow and Zahn, 1961) task decision time (Rotter and Mulry, 1965), digits reversal tests (Houston, 1972) and nonsense syllable matching tasks (Watson and Baumal, 1967). The hypothesis that performance will be greatest under conditions of congruence between the individual's generalized expectancy as far as locus of control is concerned, and the situational control characteristics of the task, was confirmed in all of these studies.

There is no unanimity surrounding the point concerning the cross-situational consistency of internal/external attributional tendencies. Perhaps the major counter viewpoint is due to Weiner, et. al. (1971) in the area of attribution theory. Weiner, et. al. postulate that individuals utilize four elements of ascription to explain the outcome of an achievement-related event; ability, effort, task difficulty and luck. The first two components in their model (ability and effort) describe qualities of the person undertaking the activity, while the latter two (task difficulty and luck) are external to the person, or environmental factors. However, the four components can also be classified according to a separate dimension, namely stability. In repeated trials at a given task, ability and task difficulty have somewhat enduring characteristics, while effort and luck are relatively variable or unstable in repeated attempts at the task. The major point of departure from Rotter's view centres on Weiner et. al's contention

that most of the empirical work in the locus of control area focuses on the differential effects of skill (ability) versus chance (luck) instructions, that is, the effects of an internal, stable characteristic are compared with those of an external, unstable characteristic. Weiner, et. al., therefore conclude that it is not possible to independently examine the two dimensions (locus of control and stability) using the empirical paradigm employed in locus of control literature. Weiner et. al. are essentially arguing that the internal/external attribution is strictly a situational phenomenon. For example attributions to ability (internal) rather than to luck (external) are more likely in situations where an individual succeeds at a task at which he has experienced much past success. Conversely, task difficulty (external) is more likely than effort (internal) to be a causal attribution in a situation where success or failure is accompanied by a similar degree of success or failure of other relevant peer group members.

Briefly stated, Weiner, et. al. argue that a general tendency toward internality or externality in the absence of some situational context, is not anticipated. Weiner et. al. and Rotter therefore seem to assume polar stances on the issue. For Weiner, et. al., there is no such thing as a generalized individual difference trait along the locus of control dimension, while for Rotter, not only are such individual differences observable, they tend to manifest themselves consistently across a wide variety of situations. However, Rotter realistically concedes that:

"... the more clearly and uniformly a situation is labeled as skill or luck determined, in a given culture, the lesser the role such a generalized expectancy would play in determining individual differences in behavior".²⁸

It is not difficult to visualize real-life situations in which the most extreme Internal would be forced to attribute the outcome of an event to an external factor. For example, a surviving passenger of an aircraft disaster could scarcely take responsibility for the accident no matter how strong his general tendency was to make internal attributions.

Despite the potential division of opinion raised by the above discussion, the treatment of the construct as a personality variable is justified simply as a function of the sheer weight of evidence concerning the wide variety of situations across which predictions regarding locus of control have been confirmed. Throop and MacDonald (1971) amassed a bibliography of 339 items of research in the area and such a research effort is only sustainable in the presence of positive results.

As a predictor of a given set of criteria, however, Weiner et. al's. view point cannot be dismissed lightly. Indeed, Lefcourt (1972) urges researchers to include situational variables, together with locus of control, in the "explanatory limelight". The issue of whether business situations arouse consistent responses as far as locus of control is concerned is an empirical question on which the present study should shed some light.

²⁸ Rotter (1966) p. 2

The instrument employed to measure locus of control has undergone much change and modification over the years during which empirical studies in psychology have examined the variable. The Phares (1957) study was the first attempt to measure individual differences and, as mentioned, he employed a 26-item Likert-type scale. The modified Phares instrument was developed and used by James (1957) and others for some years.

Liverant, Rotter and Seeman (see Rotter, 1966) then jointly undertook to broaden the test by developing sub-scales for different areas such as achievement, affection and general, social and political attitudes. The earliest version of this scale included 100 forced-choice items, each comparing an external belief with an internal belief. Item and factor analyzed by Liverant, (see Rotter, 1966) the instrument was reduced to 60 items, however further item analysis indicated that the sub-scales were not generating separate predictions. Achievement items tended to correlate highly with social desirability, for example. In particular the 60-item instrument was found to be highly correlated with the Marlowe-Crowne Social Desirability Scale (Crowne and Marlowe, 1964). For different samples the overall correlation ranged from .35 to .40 which was deemed to be too high. Consequently, the attempt to identify separate sub-areas of control was abandoned.

Items on the 60-item instrument which fell into any of three groups were subsequently eliminated. The three groups were:-

1. Items with a high correlation with the Marlowe-Crowne Social Desirability Scale;

2. Items with proportional splits in response such that one of the two alternatives was endorsed more than 85 percent of the time and;
3. Items with non-significant correlations with other items and/or the total test score.

Via this process the scale was reduced to 23 items. The most popularly used scale presently includes an additional six filler items to make the purpose of the test more ambiguous.

Rotter (1966) presents test data on the scale, derived from a series of samples. The results of this testing indicate that internal consistency estimates are relatively stable and test-retest reliability for a one-month period appears consistent for two quite different samples. Correlation with the Marlowe-Crowne Social Desirability Scale as a test of discriminant validity has been effectively reduced to as low as .07 in some cases. Factor analysis revealed that most of the scale variance was accounted for by a single general factor while several additional factors involved only a few items with loadings far from sufficient to suggest the existence of any clear-cut sub-scales within the test. Robinson and Shaver (1973) provide further supporting evidence on these issues.

Rotter cites a series of studies (Seeman and Evans, 1962; Seeman, 1963; Gore and Rotter, 1963; Phares, 1965) in attesting to the construct validity of the locus of control dimension. These studies are characterized by observations of the attempts of people to better their life conditions, that is, to control their environment in important life situations and this is "perhaps the most important kind of data to assess construct validity" (Rotter, 1966 p. 19).

An alternative view of construct validation is the multi-method, mono-trait approach to the assessment of discriminant validity (Campbell and Fiske, 1959). Highly correlated measures of a maximally similar personality trait derived from several maximally different measurement methods provide strong evidence of construct validity. The locus of control construct has been operationalized in many ways ranging from the James-Phares instrument discussed above, to the forced-choice format of the Rotter instrument used in the present study. Highly correlated results emerged from the administration of no less than four instruments in one study (Cromwell, Rosenthal, Shakow and Zahn, 1961).²⁹

The complete 29-item instrument employed in this study is presented in Rotter (1966, pp. 11-12), and also in Swieringa and Moncur (1975, pp. 242-244), and for the convenience of the reader, Appendix 2 to this study. The instrument scores individuals from zero (extreme internal) to twenty-three (extreme external). Recall that the remaining six items are fillers.

²⁹ The James-Phares instrument (Phares, 1957; James, 1957), the 60-item Liverant scale, a sub-scale of the Liverant instrument dealing with a "dominance" dimension and the Bailer-Cromwell scale (Bailer, 1960).

IV HYPOTHESES

The theoretical foundation and empirical support from the psychology literature give rise to the following hypotheses. Externals, possessing more general characteristics of lack of initiative (Seeman, 1963) and lack of confidence in their own ability to make co-ordinating decisions will perform relatively poorer under conditions of high budget participation than under conditions of low budget participation. Externals are more likely to be stressed by the relatively autonomous decision-making conditions of high participation where they will need to develop co-ordinating decisions in a situation in which they feel performance is chance determined. The unfavourable impact of such stress on performance and satisfaction of externals in reaction time tests has been found by Cromwell, Rosenthal, Shakow and Zahn (1961).

Conversely, internals, characterized by greater self-direction and initiative, will conceive performance as being contingent on their own abilities and therefore respond favourably in terms of performance to conditions of high budget participation. They will also report relatively high levels of satisfaction in such conditions. They will be uncomfortable on the other hand with low budget participation conditions where they are deprived of control over the situation. They will feel less capable of performing well against relatively imposed budgets than against budgets which reflect a large degree of their own influence. Performance is likely to suffer, therefore, in low budget participation conditions and reported satisfaction is also likely to be lower.

The Hypotheses can now be stated in null form:

Ho_a: There will be no significant interaction between participation and locus of control affecting performance

Ho_b: There will be no significant interaction between participation and locus of control affecting job satisfaction.

V. METHODOLOGY

The overall research methodology chosen to investigate the present research question is three-phased. In this section, the three phases will be discussed in turn.

i Phase One - Experiment with Student Subjects

Initially, investigation of the research question was exploratory in nature due to lack of prior evidence on the hypothesized relationship. It was decided that a laboratory experimental approach was desirable in this phase of the study. However, there are two further reasons why this phase was well suited to the laboratory.

Firstly, the laboratory setting is particularly amenable to the study of the impact of individual differences because, at least in theory, individual differences manifest themselves behaviorally across a wide variety of situations and contexts.

Secondly, and more importantly, an experimental approach provides a setting in which causal inferences are possible. For any exploratory study, the primary need is to confirm the theoretical relationship hypothesized before giving concern to the generalizability of the relationship. This is in contrast to the survey approach which, through the generation of correlational evidence has complementary strengths methodologically and which, therefore, would not be well suited to the initial phase of the inquiry.

The chosen experimental design conforms essentially to the post-test control group design (Campbell and Stanley, 1966, p. 25) which

takes the following form:

R X O_1

R O_2

where R represents random assignment to each of the two experimental conditions ("high" and "low" participation), X represents the manipulation, and O_i represents the observation on a subject in group i , $i = 1, 2$.

The features of this design warrant discussion. The first point to note is the absence of a pretest, or, observations on O_i before administration of X. The particular design of the experiment developed to provide the initial hypothesis test does not permit a pretest because the X and the posttest O_i are delivered to subjects in a single natural package. That is, the chosen setting for the experiment is a business game in which the X (participation manipulation) was administered in the same natural package which generated the O_i 's. I will return to this point when describing the business game. The advantage of joint delivery of the X and generation of the O_i is that it reduces the likelihood of subjects being able to determine the nature of the X. Clearly, subject awareness that participation was being manipulated would likely introduce bias due to a demand characteristic (Carlsmith, Ellsworth and Aronson, 1976 pp 280-282).

An often debated issue in experimental design is the question of whether absence of a pretest causes concern as to the possible existence of any initial systematic differences between groups. The pretest is indeed deeply embedded in the thinking of research workers in education and psychology, but it is not actually essential to true experimental

designs. For psychological reasons it is difficult to give up "knowing for sure" that the experimental and control groups were "equal" before the differential experimental treatment. Campbell and Stanley continue:

"Nonetheless, the most adequate all-purpose assurance of lack of initial biases between groups is randomization. Within the limits of confidence imposed by the tests of significance, randomization can suffice without the pretest."³⁰

A second point to note is the more general interpretation of the nature of a control group followed in this study. In many educational and psychological research settings the X is simply a dichotomous "absent/ present" phenomenon. In the present setting, the X takes on a "high/low" orientation and either the high or low condition group assumes the role of control group. This approach is necessary if the X administration and O_i generation is to be delivered in a single natural package, as in the present case. This is an issue which is more rhetorical than methodological in nature as far as the present context is concerned.

A third design feature worthy of note concerns the decision to administer the locus of control instrument in advance of the X/O package rather than the reverse. The issue involved concerns counter-balancing the design to test for order effects by administering the X/O package after the locus of control instrument to half the sample, and reversing the order for the other half. The approach involving administration of the instrument before the X/O package was adopted in preference to administering after and also in preference to the counter balanced approach. This was so for two reasons. Firstly, opinion is divided as

³⁰ op. cit. p. 25.

to whether counter-balancing achieves the intended purpose. Comparison of the sub-group which receives the X/O package first with the sub-group which receives it second is distorted by factors additional to simply order effects. The principal alternative explanation of observed differences between these sub-groups is fatigue. For lengthy experimental sessions subjects receiving the X/O package first will provide the O_i 's in the early part of an experimental session while subjects receiving the package second will provide the O_i 's some time later in a session. It is therefore not possible to separate the fatigue and order effects, so the counterbalanced design was rejected. Secondly, the potential for sensitising subjects in a damaging way is much greater if the locus of control instrument is administered after the X/O package. Systematic differences in treatment due to the differential X/O package (high versus low participation) would almost certainly introduce bias to the locus of control responses, while administration of the locus of control instrument before the X/O package introduces no differential or systematic bias to the responses to the X/O package. This latter approach was therefore preferred.

Finally, the design is a between-subjects design since every subject received one or other of the two X/O packages. An alternative form of counterbalancing could have involved each subject receiving both packages in turn (a within-subjects design) with the order of administration being reversed for half the sample. The principal argument against this type of counterbalancing rests on the fact that in studying the results of, say, the low participation X/O package, half the subjects have responded to the package without having been sensitized by the high participation X/O package first, while the other

half will have been sensitized by the high participation package. Exposure of the manipulated variable would result and order effects would be inevitable.

The final form of the two experimental groups can be depicted as follows:

R	L	X _H	O ₁
R	L	X _L	O ₂

where L represents administration of the locus of control instrument and the H and L subscripts to X refer to the high and low participation conditions, respectively.

In the initial phase, forty-six business school students were recruited to take part in the experiment which was conducted in the Management and Behavioral Sciences Laboratory of the Center for Research in Management Science at the University of California at Berkeley. Subjects took part in the experiment without monetary compensation.³¹

Subjects were greeted upon their arrival at the laboratory and then escorted to their cubicle in which they remained for the duration of the experimental session which lasted for approximately two hours. Subjects began by reading the instruction sheet ³² for the business game following which questions were answered and the operation of the

³¹ If an expectancy view of motivation is taken then I believe the arguments for monetary compensation (extrinsic reward) are outweighed by the arguments for no monetary compensation (intrinsic reward). The latter viewpoint is more consistent with the need to achieve maximum involvement and interest on the part of subjects. Shapira's (1976) findings address this point.

³² See Appendix I

computer terminals (the medium by which the game was played) was demonstrated.

An experimental session began with the administration of the twenty-nine item locus of control instrument.³³ Upon completion of the locus of control instrument the business game started.

In the game, subjects assumed the role of one of four senior managers in an organization which produces and sells a single perishable product. The decisions required of the subjects were quite simple. In each of twenty fiscal quarters, subjects were firstly required to submit their recommendation for the budgeted level of sales in physical units. In order to assist in the development of recommendations in early quarters, subjects were provided with the previous four quarter's results of operations in the form of performance reports. An example appears in Appendix 3.

Following the subject's submission for recommended budget, the recommendations of the other three managers ³⁴ were presented. After a short delay, subjects were informed of the final determination which top management had reached for the budget. Subjects had been informed via the instructions that the final determination of top management would be based on the four managers' recommendations (the subject's recommendation plus the other three "managers'" recommendations).

It was at this juncture that the participation manipulation took

³³ See Appendix 2

³⁴ In actual fact, these were robots.

place. The final determination of top management was a weighted average of the four recommendations, however the weights differed in each of the two participation conditions. In the high participation condition a weight of 0.90 was attached to the subject's recommendation and a weight of 0.10 was attached to the average of the other three managers' recommendations. In the low participation condition, the weights were, respectively, 0.05 and 0.95. The decision to depart from symmetric weights was largely intuitive and was based on the results of pilot testing of the game.

Subjects were then presented with a statement of the percentage deviation of each of the four manager recommendations from the top management determination. In the high participation condition the percentage deviation of the subject's own recommendation from top management's final determination was typically much smaller than any of the deviations of the other three "managers", while in the low participation condition the percentage deviation was typically larger than for any of the other "managers". The purpose of this statement was to strengthen the participation induction.

In the present context then, participation is defined and operationalized as the perceived amount of influence an individual has on a jointly-set final budget.³⁵ Since it is the perception of participation which needs to be manipulated, some important check items were included in the post-experimental questionnaire to validate the perceptual manipulation. (See Appendix 4).

³⁵ This conception follows French, Israel and As (1960); Vroom (1960) and Hofstede (1967). More will be said on this point later in the section.

Subjects were then informed of the level of advertising expenditure to be undertaken in the forthcoming quarter, following which they were asked to submit their second decision, the price to be charged. The objective was to select a price which, combined with the advertising expenditure, would produce an actual level of sales exactly equal to the final budget determination. Sales levels which fell short of budget (excessive price) led to unsold product which was dumped due to its perishable nature. Conversely, an insufficient price resulted in the sale of all units of product budgeted but also led to the generation of unfilled orders. The overall objective was to dump no product and generate no unfilled orders. Either type of budget variance (resulting from excessively high or low price) was to be viewed as equally unfavourable.

A deterministic function linked quantity sold with advertising and price. The function used was as follows:

$$q = 20 (2000 - p) + A/2$$

where q is quantity sold

p is price charged in cents per unit

A is advertising expenditure.

For a given q (the final budget) this equation can be solved for p and A well within the twenty iterations of the game. However, more difficult functions including, for example, a random element were ruled out on the basis of pilot tests.

In the final phase of each fiscal quarter of the game a performance report was presented. This report was identical in format to the four previous quarter's reports mentioned earlier.

All other conditions were matched across the two experimental groups. For example, the same advertising expenditure and the same "other managers' recommendations" were presented in any given period of the game to subjects in each group.

Upon completion of an experimental session, subjects were asked to complete the post experimental questionnaire mentioned earlier. The questionnaire is presented in Appendix 4. Question 1 of the questionnaire asks: "Indicate the extent to which you enjoyed playing the game." This question, together with questions 3 and 5, was included only a filler. However, the response to question 1 was used as a surrogate measure for satisfaction and the results of phase one of the study reveal that the question was worthwhile. More will be said on this point in Section VII.

Subjects were then thanked for their assistance and advised that complete de-briefing would be conducted via a mailing subsequent to the completion of all experimental sessions. This mailing was conducted within two weeks after the completion of the final session.

ii Phase Two - Laboratory Replication With Manager Subjects

The results of phase one of the investigation will be reserved for discussion in a later section, but suffice to say that they were sufficiently encouraging to warrant the pursuit of further verification of the hypothesis. Phase two of the study therefore represents the first phase of two extensions to the pilot study described above.

For reasons of subject, task, situation and reward surrogation, any attempt to generalize the phase one result beyond the confines of the

laboratory would be capricious. Even if we were able to view the experimental situation as a perfect model of the real-life situation of interest, we would still be constrained with respect to generalization. The point is well made by Carlsmith, Ellsworth and Aronson (1976):

"No matter how similar or dissimilar the experimental context is to a real-life situation, it is still only one context; we cannot know how far the results will generalize to other contexts unless we carry on an integrated program of systematic replication."³⁶

Carlsmith et. al. distinguish between two types of replication. In the one case, a direct replication involves a re-run of the initial experiment maintaining the task, reward, situational and subject characteristics of the initial experiment. The purpose of direct replication is to investigate whether the experimental effect is stable. Secondly, there is systematic replication where the experimenter varies some quality of the initial investigation in order to improve the generalizability of the experimental effect. Addressing this point, Carlsmith et. al. continue:

"We would be able to generalize to a greater extent if the experimenters had based their conclusions on the study of a heterogeneous sample of subjects, a wide variety of problems, a wide variety of settings, or a wide variety of response measures"³⁷

Phase two of the present study involves varying the subject group in order to replicate systematically the phase one study.

Strictly speaking, a replication with the use of a sample of subjects different to the initial sample meets the criteria of Carlsmith

³⁶ p. 88.

³⁷ p. 89.

et. al. As indicated in the latter quote above, they suggest that the more heterogeneous a subject sample, the greater is the extent to which we are able to generalize the experimental effect. Even successful replication with a subject group bearing no obvious resemblance to the population of ultimate interest allows us to raise our priors that the result holds for the population of ultimate interest. Clearly, however, access to a sample of the population of ultimate interest is the strongest form of systematic replication as far as the issue of generalizing the experimental effect is concerned.

With this end in mind, a sample of forty-eight middle-level management personnel were recruited from a large San Francisco Bay Area oil refinery to take part in the systematic replication. These subjects were almost all shift supervisors whose job responsibilities embraced the periodic need for involvement in the development of operating budgets for various divisions within the refinery. Final responsibility for divisional budgets rested with division superintendants, or supervisors, the immediate superiors of the participant subject groupmembers.

The decision to limit the study to a single organization involves the trade-off between control and still further improved generalizability. It was felt that control was more important, at least for the time being, than added enhancement of generalizability. Confirmation of the research hypothesis in all three phases of the present study might warrant an extension with this form of improved generalizability in mind. In addition, obtaining the commitment of the participating organization was facilitated by the fact that a broad

statement of the results of the study, possibly uniquely relevant to the organization, was promised at the conclusion of the study.

In summary, the second phase of the present study involves replication of the pilot-study unchanged in all respects except for the varied subject group.

iii Phase Three - Field Extension

Following the exhortation of Hofstedt and Kinard (1970) a third phase of the inquiry was conducted; a questionnaire survey of the same managers involved in the second phase of the inquiry. The survey is specific to the on-the-job budget related activities of the participant group.

Hofstedt and Kinard view the role of the field study as

"... best employed to verify laboratory results in a complex environment this very complexity is a necessity in testing the practical value of results"³⁸

The role of the field extension is to move beyond the empirical realizations (Carlsmith et. al) of the laboratory with an appropriate shift from "experimental realism" to "mundane realism".³⁹ This phase of the study involves a shift from the contrived but controlled environment of the laboratory to the real, but less well controlled environment of the job setting. Generalizability is potentially enhanced by moving to an investigation of the real, rather than the experimental effect of

³⁸ p. 51.

³⁹ Carlsmith, et. al., p. 81.

the participation/personality interaction. Confirmation of the research hypothesis in both the experimental and survey phases of the investigation will tend to provide a "multi-method/ mono-trait"⁴⁰ validity test of the empirical realization of participation in the laboratory and the instrument employed to measure participation in the field. Alternative assessment of validity of these two operationalizations of the construct is almost impossible.

The variables requiring measurement in the field study phase are participation, performance and job satisfaction, and the discussion now turns to the choices which were made in this area.

Participation

Several attempts at direct measurement of budgetary participation are to be found in the literature. Usable instruments are due to Vroom (1960), Likert (1961), Hofstede (1967), Heller (1971), Vroom and Yetton (1973) and Milani (1975). The focus of each of these instruments differs, unfortunately. This is due to the fact that a precise, agreed-upon definition of participation is lacking in the literature. It will be recalled that the definition of participation most favoured by this author was that implied by the operationalization developed for use in the experimental phases of this study. This definition warrants re-statement: Participation is the perceived amount of influence an individual has on a jointly-set budget. The critical elements of this definition are the underlined sections and these elements deserve explanation as they were employed as criteria for selection of the

⁴⁰ Campbell and Fiske (1959).

instrumentation for the concept. The writings of Hofstede and Milani (the two major contributors to the accounting literature in this area) will be used as a basis for this discussion.

Hofstede does not offer a specific definition of participation but he discusses the concept in terms of a means of reconciling the scientific management view of the need for organizational control and the human relations view of the need for individual autonomy. Hofstede sees participation as a means of achieving a compromise between the control needs of higher management and the autonomy needs of the individual:

"As to inputs (to the budgeting process), the ones I was most interested in were those influencing the balance between individual autonomy and managerial control. This balance is influenced strongest in the process of setting budget standards"⁴¹

By viewing participation in this light, Hofstede recognizes the two critical dimensions of participation alluded to in the earlier stated definition. Increased autonomy in this context relates to increased influence on budget-matters, while the simultaneous maintenance of managerial control relates to the joint nature of the budget decision-making or the involvement of superior and subordinates in the budget-setting process. Participation is therefore viewed as at least a two-dimensional construct. It is neither influence alone nor involvement alone. Autonomy alone represents "the degree to which a person within an organizational system is able to affect his own actions"⁴² or the ability to proceed in the absence of joint

⁴¹ Hofstede, p. 17. Parentheses and emphasis added.

⁴² op. cit., p. 13

consultation with superiors. It is influence without involvement and should therefore be distinguished from participation. The joint nature of the budget decision, whereby subordinates and superiors contribute to the decision is a necessary condition for participation, but, like influence, it is not a sufficient condition. Involvement in the joint-decision process without real subordinate influence on the decision is involvement without influence or what Argyris (1952) described as "pseudo-participation".

Hofstede's instrument partially meets this "two-tiered" criterion of acceptance as a suitable measure. The instrument is a single Likert-type item with an eight-point scale⁴³ with each point anchored by a verbal description. For example, the verbal description attached to the second highest level of participation is "proposal by me, followed by consultation, with my opinion generally prevailing". This verbal description clearly captures the involvement and influence dimensions discussed above. However, the instrument is not entirely consistent with this two-dimensional conception of participation. The verbal anchoring for the highest level of participation is "decision taken by me without consultation". This description tends to suggest autonomy rather than participation as conceived above.

Milani's measure is more comprehensive. It is a six-item Likert-type instrument and the influence and involvement dimensions are well represented. For example, two items address the frequency of budget-related discussions between subordinate and superior, the involvement dimension, and two others seem to address the amount of

⁴³ Hofstede (1967) p. 179.

influence and importance of the subordinate's contributions to be budget-setting, the influence dimension.

It was decided to administer both the Hofstede and Milani measures, although emphasis in the analysis would be placed on the Milani measure for two reasons. Firstly, in terms of the above theoretical considerations, it is superior to the Hofstede measure, and secondly, being a multi-item measure, internal reliability estimates would be measurable. Reliability of the Hofstede instrument is not assessable. The principal benefit of additionally administering the Hofstede measure rests in the fact that a convergent validity ("mono-construct / multi-method") assessment will be possible.⁴⁴ Finally, the decision to employ measures developed within the accounting literature will enable a more meaningful integration of the results of the present study with past results, a neglected direction in much recent work in the area. The Hofstede and Milani instruments are presented in Appendices 5 and 6 respectively.

Performance

Anticipating the unavailability from the participant organization of objective performance evaluation data, the issue of alternative measures of the criterion arises.

Traditionally, the problem of dealing with the unavailability of objective data has been dealt with by the use of surrogates such as salary (Hulin, 1962) and organizational level (Henry, 1948). The extent

⁴⁴ Campbell and Fiske (1959)

to which these surrogates are satisfactory is impossible to assess, however, Contemporarily it has become popular to employ superior ratings and a review by Guion (1965) of the criteria used for test validation indicated that in research conducted during the early 1960s, superior performance ratings were being employed twice as often as all other methods, including objective measures.

A parallel development in the performance evaluation area was the growth of popularity of multi-dimensional taxonomies of performance and by the late 1960s the use of multi-dimensional performance ratings supplied by superiors was extensive. This approach soon fell into some disrepute following some key findings by Lawler (1967), Miner (1968), Thornton (1968) and Nealy and Owen (1970). Influenced largely by the earlier work of Campbell and Fiske (1959), the multi-trait / multi-rater approach to the validation of superior ratings was employed in a series of studies. The main finding which emerged was that when compared to self-ratings of performance, superior ratings fell far short on many desirable aspects. It was found that superior ratings were subject to relatively greater halo error,⁴⁵ implying that superiors tended to evaluate subordinates on a more "global" basis than the subordinates were evaluating themselves. Apparently, superiors are less able to discriminate between performance levels on various dimensions than those being rated are able to do themselves. Additionally, superior ratings were found not to be so preferred to self-ratings in terms of leniency error (the tendency for mean ratings to be higher as had been claimed

⁴⁵ The intercorrelations between performance dimensions (multi-trait/mono-method) were higher for superior ratings than for self ratings.

by other earlier studies (Parker, Taylor, Barrett and Martens, 1959; Prien and Liske, 1962), so long as the "research only" use of the data was made clear to the respondents. This specific result was confirmed by Sharon and Bartlett (1969).

These difficulties with superior ratings render the tests of convergent and discriminant validity (using the Campbell and Fiske approach) misleading. This was the finding of Heneman (1974). High intercorrelations among superior ratings on separate dimensions combined with low intercorrelations for the self-ratings clearly restricts the ability of the test to confirm convergent and discriminant validity of the separate dimensions. Given the absence of halo error, it has been suggested that raters at different organizational levels probably observe such a vastly different set of facets of a ratee's job performance the validity tests using the Campbell and Fiske approach are rendered meaningless:

"In assessing 'validity' of performance ratings, high agreement between such raters (self and superior) may be an unduly severe and perhaps even an erroneous requirement."⁴⁶

Nonetheless, the Campbell and Fiske approach remains as the most thorough and widely used means of assessment of validity of a measure and construct. Its use in the present study was initially proposed but due to the subsequent unavailability of superior ratings, was not employed in the final analysis. In the light of the above evidence, however, the unavailability of these data should not be viewed too seriously.

⁴⁶ Borman (1974), p. 105. Internal quote marks in original, parentheses added.

Turning to the issue of dimensionality of the performance criterion, a further choice had to be made for the present study. Global ratings on a single overall dimension alone were not seriously considered in the present study due, firstly, to the fact that it is almost intuitively obvious that performance is multi-dimensional, and secondly, the fact that in an empirical setting the reliability of a single item instrument is not assessable. In relation to the first point, it is worthy of note that recognition of the multi-dimensional nature of managerial performance dates back at least to the 1930s and 1940s (Gulick, 1937; Fayol, 1949).

On the other hand, performance ratings involving an excessive number of dimensions are to be avoided. Even in the unlikely event that one large set of orthogonal dimensions existed, the true independence of the dimensions in such a rating instrument would remain a statistical artifact alone. It would be cognitively impossible for respondents to discriminate between all dimensions of a large set. This was a conclusion of Kavanagh, et. al. (1971) who had employed a twenty - dimension performance rating scale and who obtained disappointing results on a discriminant validity test using the Campbell and Fiske approach.

The requirements for the instrument to be used in the present study therefore involved a taxonomy of performance involving more than a single dimension, but not so many as to introduce the Kavanagh, et. al. problem. The only taxonomy which meets this requirement, and for which adequate developmental data and testing evidence is available, is the Mahoney, et. al. (1963, 1965) taxonomy involving eight performance

dimensions. This taxonomy was employed in the study and the discussion now turns to an evaluation of its features.

The Mahoney, et. al. measure grew out of the study of the role of managerial performance in the achievement of overall organizational effectiveness. Until their study, much of the literature in this area was fragmented due to the variety of perspectives taken. The large range of perspectives taken was in part due to the fact that there exist real differences in managerial practice from one job or organization to another. Mahoney, et. al. attempted to ascertain whether there exists a core of performance activities which runs through all managerial roles within and across organizations.

Their investigation, based on surveys conducted on over 450 managerial assignments in eight organizations, began with the development of an a priori set of dimensions from previous literature. The objective in this stage of their research was to identify a range of dimensions which were orthogonal, and sufficient in number to permit identification of variations of managerial performance in different assignments. At the same time, Mahoney, et. al. recognized that the number of dimensions should not be so large as to threaten the empirical reliability and validity of the measure.

Testing of the set of a priori dimensions was conducted by the use of a "specific incidents" test. A list of 100 examples of managerial activity was developed and a classification of the 100 items into the various performance areas performed. The list was then presented to a sample of managers who were asked to perform the same classification of the items. The median agreement between the two sets of classifications

was set at 70% and pilot testing continued until the set of dimensions employed reached this target. The final set of eight dimensions which emerged is presented in Appendix 7.

Further validity tests involved a comparison of the ranked importance of each dimension, based on time spent in each area, with the rated importance of each area. In one such test, the rank-order correlation reached 0.976, indicating that managers tend to allocate their time among areas on the basis of their relative importance.

The most comprehensive independent assessment of the validity of the taxonomy was carried out by Heneman (1974). Using the Campbell and Fiske approach, Heneman made assessments of convergent and discriminant validity of the taxonomy based on 102 pairs of self/superior ratings. The results showed good convergent validity, the ratings by self and superior on each dimension being significantly correlated overall. Discriminant validity also appeared satisfactory but the strength of the test was limited due to the halo error which was noted in the case of the superiors' ratings. Additional evidence on the separate dimensionality of the Mahoney et. al. measures is provided by Penfield (1974).

Overall, the Mahoney, et. al. taxonomy appeared suitable for the present study, in terms of both sound development and satisfactory performance in independent testing.

Job Satisfaction

The list of available instruments to measure job satisfaction is long. Robinson et. al. (1969) catalogued no less than sixteen different

instruments to be found in the literature and the number of ad hoc measures used in single studies defies estimation. Two criteria were used to select the appropriate measure for the present study. Firstly, it was viewed desirable to employ a measure for which reliability and validity estimations were possible, and secondly, a measure extensively employed in the literature will allow integration of the results of the present study. Two measures appear to satisfy these criteria best. These are the Job Descriptive Inventory (J.D.I.) (Smith, Kendall and Hulin, 1969) and the Minnesota Satisfaction Questionnaire (M.S.Q.) (Weiss, Dawis, England and Lofquist, 1967). In a study of convergent and discriminant validity, Gillet and Schwab (1975) chose the J.D.I. and the M.S.Q. scales for examination "because of their careful development and because they have been used extensively by investigators in the field".⁴⁷ The discussion will deal with these two instruments in turn.

J.D.I.

The J.D.I. is a 72-item instrument which requires respondents to answer "yes", "no", or "?" (unable to decide) according to whether their present occupation is suitably described by each of 72 descriptors. For example, on the scale dealing with work, there are 18 descriptors such as fascinating, routine, boring, challenging, etc. The instrument has five scales; work, supervision, pay, promotions and co-workers. Each response is pre-coded as either satisfying or dissatisfying. This pre-coding was achieved via the use of sets of triads to which respondents were asked to reply whether a particular descriptor

⁴⁷ Gillet and Schwab (1975), p. 313.

described their present job, the job they would like the most and the job they would like the least. Administering an instrument of this type in four developmental studies, Smith et. al. established the descriptors of most desired jobs and least desired jobs on the basis of majority response. For example, a response of "yes" to the descriptor "creative" was found to characterize the most desired job in many more instances than the response "no". The descriptor "creative" is therefore pre-coded "yes" for satisfying and "no" for dissatisfying. In this same fashion, the responses to all other descriptors were pre-coded as either satisfying or dissatisfying.

An immediate problem emerges with the use of this instrument in the present study. It is the basic thesis of this investigation that participation will be satisfying for some individuals (internals) and dissatisfying for others (externals). However, the pre-coded response to the descriptor "asks my advice", for example, is "yes" implying that a response of "no" indicates dissatisfaction. In contrast, a response of "no" for an external would likely be satisfying according to the thesis of this study. This problem of directionality is not unique to the J.D.I. For example, the Porter instrument (Porter, 1961; Porter and Lawler, 1968) is built on the basis of a subtractive model in which respondents are asked how much of a certain attribute presently exists in their job and how much should exist. The difference score is used as a measure of satisfaction. The problem is clear:

"If a worker indicates that he has more pressure in his job than there should be, this is obviously dissatisfaction. But if he indicates that he has more responsibility than there should be, it is not clear whether he is satisfied or dissatisfied, and it is therefore unclear how to interpret the difference."⁴⁸

⁴⁸ Zedeck, S., and Blood, M.R. (1974) p. 181-2

M.S.Q.

The M.S.Q. is a 100-item Likert-type questionnaire which asks respondents to indicate on a scale of 1 to 5 their satisfaction with a set of job attributes. The instrument covers twenty scales with 5 items representing each scale. In contrast to the J.D.I., the instrument permits responses ranging from "very dissatisfied" to "very satisfied" for each item on each scale.

The M.S.Q. was developed from a pool of items which began with the Hoppock Job Satisfaction Blank,⁴⁹ the Employee Attitude Scale⁵⁰ and a series of experimental items concerning attitudes towards supervision, co-workers, pay and promotion and general job satisfaction. The final instrument is accompanied by an array of reliability and validity statistics and these deserve some mention. On the matter of internal consistency, the reported data include the Hoyt (analysis of variance) coefficient of reliability for administrations of the instrument to twenty-seven diverse subject groups. 83% of the coefficients were above 0.80 and only 2.5% were lower than 0.70. For stability, test-retest statistics are reported for intervals of one week and one year. The median statistic for the 20 scales over a one week period was 0.83 while over one year it was 0.61. Finally, the evidence on construct validity is derived indirectly from construct validation studies of the Minnesota Importance Questionnaire (M.I.Q.). Weiss et.al. report a set of studies in which the separate scales of the M.S.Q. were regressed on M.I.Q. scores (vocational needs) and on levels of occupational reinforcement.

⁴⁹ Hoppock, R. (1935)

⁵⁰ Fox, H., Albers, W.S. and Helleweg, A. (1954)

The hypothesis under investigation was that satisfaction was a function of the correspondence between the individual's needs and the reinforcer system of the job. The prediction (confirmed) was that the high need/high reinforcement group would express the most satisfaction and the high need/low reinforcement group would express the least satisfaction. The evidence in each of these areas attests to the recognition which the M.S.Q. has in the literature. Further evidence of validity is provided by Gillet and Schwab (1975) who found that the scales common to the M.S.Q. and the J.D.I. show high convergent and discriminant validity. This evidence is re-assuring since, while the J.D.I. has been described as "the most carefully developed measure of job satisfaction to date" (Vroom, 1964, p. 100), its use in the present study is precluded on technical grounds. The re-assurance rests on the fact that the M.S.Q. successfully taps the same dimensions of satisfaction tapped by the J.D.I. while overcoming the technical problems of the J.D.I. in the present situation.

In another comparative study, Dunham, et. al (1977) found that the M.S.Q. outperformed the J.D.I. in several tests of both discriminant and convergent validity. Regarding the more important discriminant validity, Dunham, et. al. found that the requirement that the heterotrait/monomethod correlations be lower than the monotrait/heteromethod correlations was met in 70% of the cases for the M.S.Q. and only 55% of the cases for the J.D.I.

One final strength of the M.S.Q. for the present purpose is the availability of extensive norm group data, including data for managers. This will allow comparison of results of the present administration with

the norm group data in addition to comparisons between groups in the present administration.

In order to preserve direct comparability with the norm data, the complete instrument was administered even though some of the twenty scales are clearly unrelated to participation. Apart from losing the opportunity of uncovering some unexpected results on these scales (which might warrant further research) the decision to include only a reduced number of scales would have involved some arbitrary choices. Furthermore, the reliability of any version of the M.S.Q. which includes a reduced number of scales is unknown. The risk of interfering with the instrument's psychometric properties should be avoided, even though shortened length of the entire questionnaire would have been desirable otherwise.

In addition to the M.S.Q., the "Faces Scale" (Kunin, 1955) was administered as a "maximally dissimilar" (Campbell and Fiske, 1959) rating method for satisfaction with job in general.⁵¹ The use of both verbal and non-verbal rating techniques allows an examination of the validity of the criterion variable, in this case job satisfaction.⁵²

Conclusion

The overall research methodology is, therefore, three phased. This enables the strongest possible conclusions to be made on the basis of the findings. The experimental phases of the study provide the evidence

⁵¹ For an examination of the psychometric properties of the Faces Scale see Locke, et.al. (1964).

⁵² The entire 100-item M.S.Q. and the Faces scale are presented in Appendices 8 and 9 respectively.

of causality in a setting with limited generalizability while the survey study phase provides correlational evidence in a more generalizable setting. The complete research strategy, and the complimentary nature of the three phases of study, is presented diagrammatically in Figure 3.

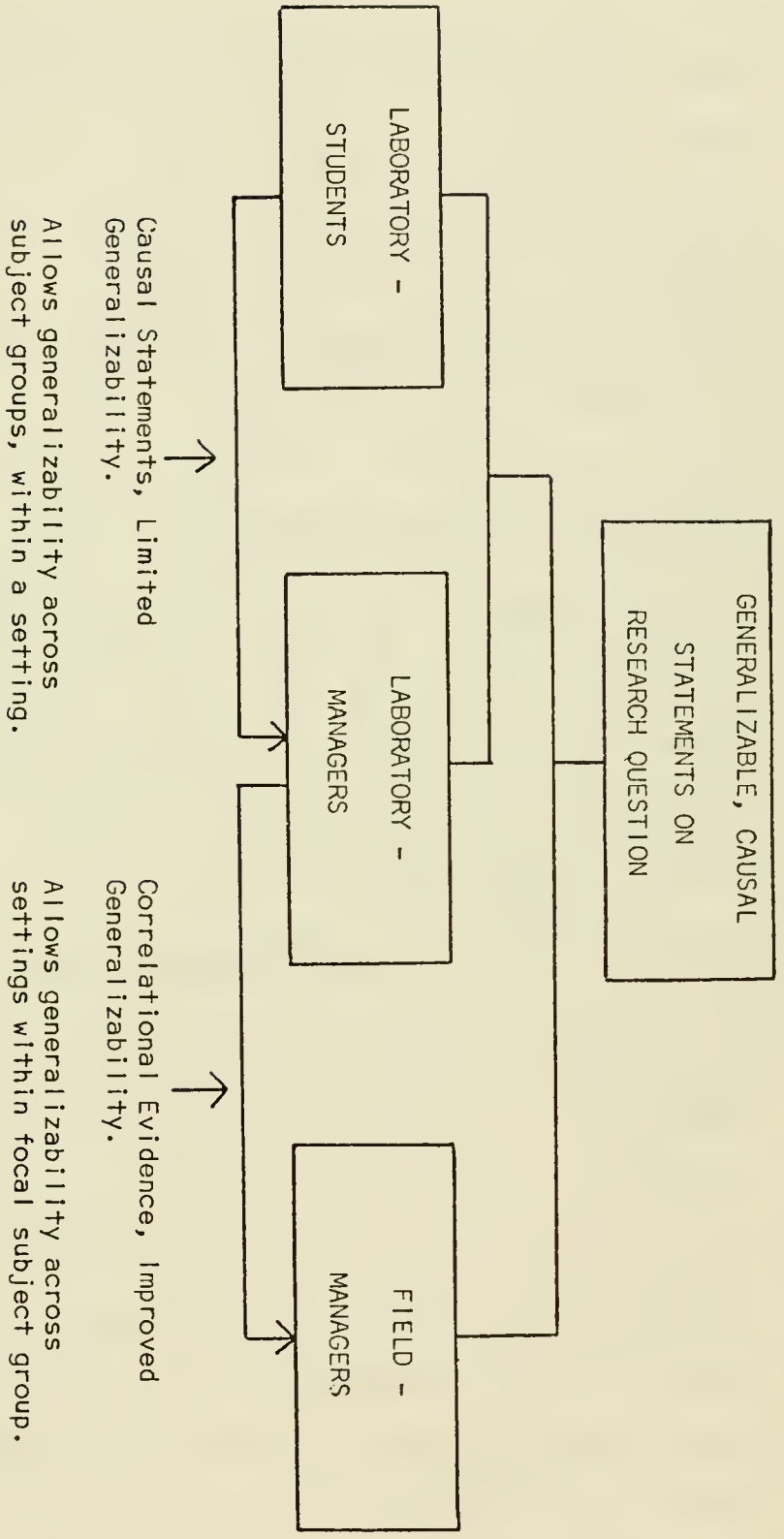


FIGURE 3
The Research Strategy In Diagrammatic Form

VI STATISTICAL CHECKS

In this section the results of a series of statistical checks on instrumentation will be presented. The main purpose of presenting these types of results in a separate section is to relieve the following section, which examines the principal statistical tests of the hypotheses, of the unnecessary burden of the check statistics and discussion to be presented in this section. The caveats which need to be recognized in interpreting the results of the next section will therefore be introduced in this section, and should be borne in mind when the final results are digested.

The section will be divided into six sub-sections, (a) through (f), and will deal with the participation manipulation check, learning effects (both in phases one and two), job satisfaction, participation and performance instrumentation (in phase three), and locus of control (all three phases), respectively.

(a) The Participation Manipulation Check - Phases One and Two.

It will be recalled that the notion of participation which is theoretically critical is the individual's perception, or felt participation. This is in contrast to some objectively observable amount of participation afforded to subordinates, as reported by, say, a supervisor. The impact of the "objective" high/low participation conditions of the experimental phases was therefore assessed with the use of questions two, four and six of the post-experimental check questionnaire (see Appendix 4). A series of mean comparison tests was conducted to assess the manipulation. The results for phases one and

two are presented in table 1.

Post-Experimental Check Questionnaire			
	Q. 2	Q. 4	Q. 6
Phase 1	t = 9.16	t = 8.87	t = 11.34
	$\alpha < 0.001$	$\alpha < 0.001$	$\alpha < 0.001$
Phase 2	t = 9.27	t = 8.44	t = 6.18
	$\alpha < 0.001$	$\alpha < 0.001$	$\alpha < 0.001$

TABLE 1

Participation Manipulation Check

These results confirm the "perceptual manipulation" and at the same time raise an interesting question. Given the theoretical centrality of "perceived participation", the scores to questions two four and six could have been substituted for the dichotomous manipulation to be used in the following section. However, this would "de-randomize" the treatment conditions destroying the true experimental form of the design and rendering it purely correlational. In the event that the dichotomous manipulation fails to produce conclusive results, however, the use of the correlational data in an "internal analysis" (Carlsmith, Ellsworth and Aronson, 1976 p. 141) is possible.

(b) Learning Effects

In order to isolate the existence of a steady-state phase of the business game (if one exists), an analysis of learning effects was conducted. Learning effects may be expressed by the simple equation

$$y = ax^{-L}$$

where y = the average budget variance

a = the variance for the first quarter

x = the cumulative number of quarters

L is a measure of learning improvement

This exponential function can be converted to a linear function by taking log-transforms which gives

$$\log y = \log a -L (\log x)$$

Estimates of a and L were then able to be derived from ordinary least squares regression. Two such models were investigated; one for budget variance and one for decision time. As expected, budget variance and decision time both improved (decreased) over the course of the game. The learning rates are presented in Table 2.

	Budget Variance	Decision Time
Phase 1	0.947	0.931
Phase 2	0.902	0.886

TABLE 2

These learning rates were considered too small to justify partialling out any data (corresponding to periods of learning) to leave only steady-state phase data subject to further analysis. It was therefore decided to include all the data in the test of the major hypotheses.

(c) Job Satisfaction

In phases one and two of the study, job satisfaction was measured

with the response to question one of the post-experimental check questionnaire.⁵³ This question was never really designed with this purpose in mind but, rather, to camouflage the intent of the entire six-item questionnaire, to assess the impact of the participation manipulation. As a consequence, discussion of the experimental results for job satisfaction should probably be carefully guarded and the testing of H_{0b} in phases one and two will therefore be discussed at a relatively low key level.

Turning to phase three, the complete 100-item Minnesota Satisfaction Questionnaire was used and this provides for a more substantive test of H_{0b} . As indicated in the previous section, the choice of measure was based, in part, on the availability of norm group data and of reliability estimates for past uses of the instrument. The purpose of this section is to attempt to assess any unusual factors affecting the administration of the M.S.Q. in the present context. Serious departures of reliability measures, for example, will create the need for careful qualifications to the results of the study.

Table 3 presents a comparison of the Hoyt Analysis of Variance reliability coefficients for each of the twenty sub-scales of the M.S.Q. and for the overall score. Three sets of data are presented. Firstly, the coefficients from the present administration of the test, secondly, the median reliability coefficients for twenty-seven norm groups, and thirdly, the coefficients for a sample of 135 managers reported by Weiss et. al. (1967). Since Weiss et. al. used the Hoyt Analysis of Variance

⁵³ See Appendix 4.

technique, the reliability coefficients derived in the present administration of the instrument were computed using the same method, to provide maximum comparability.

The rationale behind the use of this method is as follows:-

Y_{ij} , the score obtained from subject i on item j of a test, has two independent components - the true score, u_i , and a component due to measurement error, e_{ij} ($= Y_{ij} - u_i$). The technique therefore assumes:

$$Y_{ij} = u_i + e_{ij} \quad (1)$$

The variance of a population of scores can be partitioned into true and error variance by subtracting u from each side of equation (1), squaring both sides, and taking expectations over the population of subjects.

This gives:-

$$\sigma_y^2 = \sigma_s^2 + \sigma_e^2 \quad (2)$$

Reliability is defined as that proportion of the variance of scores which is true variance, i.e.

$$\rho_{11} = \frac{\sigma_s^2}{\sigma_y^2}, \text{ or } \frac{\sigma_s^2}{\sigma_s^2 + \sigma_e^2}$$

The components, σ_s^2 and σ_e^2 , are estimated from the mean squares of an analysis of variance which, on the basis of the sample, yield r_{11} , the sample estimate of ρ_{11} .

<u>Subscale</u>	<u>Present Study</u>	<u>Other Managers</u>	<u>27 Norm Groups</u>	<u>Correlation/ Faces</u>
Ability Utilization	.72	.92	.91	r = .4072
Achievement	.76	.73	.84	.6776
Activity	.60	.81	.86	.5420
Advancement	.68	.96	.93	.4503
Authority	.70	.91	.85	.6845
Company Policies	.71	.87	.90	.5250
Compensation	.74	.95	.91	.6174
Co-workers	.50	.67	.85	.5463
Creativity	.71	.87	.87	.3019
Independence	.74	.73	.85	.2956
Moral Values	.66	.77	.81	.4074
Recognition	.80	.96	.93	.4773
Responsibility	.77	.85	.78	.2755
Security	.66	.78	.80	.4319
Social Service	.64	.89	.89	.2921
Social Status	.63	.76	.79	.1612
Supervision - Human	.81	.90	.89	.6640
Supervision - Technical	.80	.71	.86	.4029
Variety	.70	.85	.86	.4608
Working Conditions	.77	.94	.89	.4785
General Satisfaction	.72	.85	.88	.4580

TABLE 3

Hoyt Reliability Coefficients for M.S.Q. and Correlation with Faces Scale

The pattern of results revealed by Table 3 is disappointing. In only three cases (achievement, independence and supervision - technical)

is the coefficient from the present study larger than the corresponding coefficient for either the other managers or the twenty -seven norm groups reported by Weiss, et. al. While the reliabilities are satisfactory per se, their comparisons with the Weiss et. al. statistics reveal some difficulties associated with the test administration in the present case.

The most likely cause for inconsistent responses, which result in reduced reliability coefficients, is the fact that in the present study the questionnaire phase was conducted immediately on the completion of phase two and that some fatigue had apparently set in. . It was felt that the advantages to be derived from immediate completion of the questionnaire (in particular, the avoidance of non-response bias) outweighed the potential fatigue factor and this was the basis for the decision to immediately implement the questionnaire phase, rather than allow subjects to complete and return the questionnaires later.

Overall, the pattern of reliability results is not cause for alarm, but it does suggest the need to consider subject load, leading to potential fatigue, in the design of similar studies.

Turning to the issue of construct validation, it will be recalled that the "Faces Scale" (Kunin, 1955) was administered in addition to the M.S.Q. as a simple check. Table 3 also presents the correlation between the faces scale and each of the twenty-one scales of the M.S.Q. The results reveal an overall correlation of .46 ($\alpha < 0.05$) but across the twenty subscales a wide diversity of associations has emerged. By items, the correlation ranges from $r = 0.68$ for authority to as low as $r = 0.16$ for social status. Dunham et. al. (1977) present evidence

which might cause us to suspect that the correlations would be low. They found that, in a test employing Campbell and Fiske's (1959) multi-trait multi-method matrix, only 55% of the convergent validity coefficients (multi-method, mono trait) exceeded the mono-method multi trait coefficients for the Faces scale. By contrast, the M.S.Q. satisfied this requirement of Campbell and Fiske in 70% of cases. While 70% is probably satisfactory, "the proportion of 55% for the Faces is perhaps marginal" (Dunham, et. al., p. 428).

In conclusion, the M.S.Q. administration has appeared to be satisfactory, with the possible exception of the reliability coefficients discussed above. The implications of these statistical check results are most likely to be trivial unless rejection of H_{0b} is only possible at a marginal alpha level.

(d) Participation - Phase Three Measures.

The participation measures employed in the study were the six item Milani (1975) and the single item Hofstede (1967) measures. As a validity test, the two measures were correlated $r = 0.74$ ($t = 7.318$, $\alpha < 0.005$). For such an elusive construct as participation, and for two quite dissimilar measures, this was a very pleasing result and, obviously, a very important result. Without a satisfactory measure of participation, testing of both H_{0a} and H_{0b} would be impossible.

An internal reliability check on the Milani measure is possible but its interpretation is extremely hazardous. Milani constructed the measure with a single dimensional construct in mind and, consequently

derived the overall score for a particular respondent by treating the measure as a summated - rating scale. However, it is likely that the scale taps more than a single dimension ⁵⁴ and that a substantial within-person variance of responses should be expected if this is the case. The Hoyt Analysis of Variance reliability coefficient was computed and is reported here only with casual interest. The coefficient was $r = 0.55$. If we argue that the construct is multi-dimensional, then this value is probably too large; if we argue that it is unidimensional then this value is probably too small. The truth obviously lies in the middle ground and part of the error variance instrumental in reducing the value of the coefficient is likely to be real "cross-trait" variance. In the absence of some ground-breaking research on the environmental and situational cues which map to "felt participation", more conclusive reliability statements in this section are not possible. However, as an exercise in curiosity, the matrix of intercorrelations among the six items in Milani's instrument was analyzed for principal components using a procedure which involves retaining unity in the principal diagonal. Two eigenvalues greater than unity emerge and two factors were therefore extracted. The rotated factor loadings are presented in Table 4.

	<u>Factor 1</u>	<u>Factor 2</u>
Item 1	0.824	0.166
2	0.091	0.961
3	0.736	-0.246
4	0.888	0.248
5	0.860	0.214
6	0.902	0.001

TABLE 4

Rotated Factor Loadings for Milani Instrument

⁵⁴ Refer back to Section V for a discussion of this point.

The results reveal that item 2 loads on a single factor and all the rest load on another factor. The two factor structure explains, in part, the low value for Hoyt's coefficient, and confirms the earlier call for more research in this area.

(e) Performance - Phase Three

The instrumentation chosen to measure performance was the eight-dimensional structure, together with a single global rating, developed by Mahoney et. al. (1963, 1965).⁵⁵ The testing of H_{0a} is principally based on the global rating and the first test conducted was to assess the extent to which variations in this rating can be explained by ratings on the eight separate performance dimensions. To conduct this test, the global ratings were regressed on the eight separate dimensions in a single multiple regression of the following form:-

$$P_g = \alpha + \beta_1 P_1 + \beta_2 P_2 + \dots + \beta_8 P_8 + \epsilon$$

where

P_g is the global rating

P_i is the rating on dimension i , $i = 1, 2, \dots, 8$.

The eight separate dimensions explained 60.76% of the variance in the criterion with five of the eight dimensions contributing significantly to the explained variance. Of the five, the three most important were investigating ($t = 2.55$, $\alpha < 0.001$), supervising ($t = 1.97$, $\alpha < 0.025$) and planning ($t = 1.73$, $\alpha < 0.05$). This result is consistent with Mahoney et. al.'s. developmental work where it was found that approximately 55% of the functions critical to effective performance were common to the

⁵⁵ The instrument is presented in Appendix 7.

452 managerial assignments in thirteen different companies studied, while approximately 45% were job specific (Mahoney et. al., 1965, p. 106-7) The results are also consistent with Heneman's (1974) use of the Mahoney et. al. measure. Table 6 presents simple correlations between overall performance and each of the eight separate dimensions. Unfortunately, Heneman does not provide the multiple correlation coefficient.

Simple Correlation Between Overall Performance and Dimension:

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
Present study	.57	.58	.28	.51	.42	.27	.34	.40
Heneman (1974)	.55	.41	.39	.33	.44	.36	.40	.41

TABLE 6

Comparison with Heneman's (1974) Results

These results reveal that with the possible exception of dimensions 2 (investigating) and 4 (evaluation), the set of dimensions are similarly important in explaining overall performance in both Heneman's sample of managers in a single industrial organization and the present sample.

Although the r^2 is insensitive to multi-collinearity, the validity of the simple correlations from the above regression depends on the absence of multi - collinearity or, more simply, the lack of substantial correlation among the eight functional dimensions. Two tests were made on the matrix of intercorrelations among the performance dimensions (see Appendix 10 for this matrix). As a first test of independence, a principal components analysis was conducted and eight factors were forced. The decision to force all eight factors is based on the fact that, unlike the Milani analysis above, the Mahoney et. al. instrument

is intended to tap eight separate factors. The test then takes the form of examining the rotated factor matrix to see whether particular items in the instrument load significantly on more than one factor. Ideally, the results will reveal only one item loading significantly on each factor and no two factors sharing the same item. The rotated factor matrix is presented in Table 7.

Item	Factor							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1	.0837	-.1678	-.1067	-.1814	-.1412	-.1901	<u>-.9222</u>	.1185
2	.1656	-.1142	-.1073	<u>-.9579</u>	-.0315	.0332	-.1614	.0479
3	.1208	-.1322	<u>-.9605</u>	-.1073	-.0931	-.1219	-.0961	-.0342
4	<u>.8935</u>	-.0927	-.1471	-.2043	-.1022	-.2462	-.0892	.2252
5	.0781	<u>-.9576</u>	-.1331	-.1150	.1312	-.0393	-.1509	.0669
6	.2196	-.0408	-.1330	.0381	-.1263	<u>-.9284</u>	-.1860	.1358
7	.0931	.1461	-.1041	-.0347	<u>-.9271</u>	-.1267	-.1381	.2515
8	.2065	-.0766	.0147	-.0529	-.2564	-.1382	-.1174	<u>.9210</u>

TABLE 7

Rotated Factor Loadings for Mahoney et. al. Instrument

The results of this analysis are pleasing. The circled loadings reveal that one single item dominates the structure of each factor and no two factors share the same item.

The second test involves a rule of thumb suggested by Pindyck and Rubinfeld (1976).⁵⁶ Multi-collinearity among the independent variables is likely to be a problem if the sample correlation between two variables is larger than the correlation of either or both variables

⁵⁶ Op. cit. p. 68

with the dependent variable. Of twenty-nine possible comparisons, nine intercorrelations met this criteria. The two performance dimensions which appear troublesome are co-ordinating and staffing. These two variables produced negative coefficients (neither significant) in the regression of overall performance, so the results of this second test appear consistent.

The major difficulty with this second test lies in the fact that it is increasingly unreliable as the size of the set of independent variables increases. The first test conducted above is probably more reliable as a result. However, based on both tests, the set of variables appears to conform to reasonable requirements of independence. Researchers in organizational behavior apparently remain unsatisfied with the state of measurement instrumentation for performance and work is progressing in that area.⁵⁷

(f) Locus of Control

Together with the M.S.Q., the locus of control instrument is probably the most reliable and satisfactory measure employed in the present study. Much of the discussion relevant to this point was included in section III so the emphasis here will be on a comparison of test results with past administrations to relevant respondent groups, beginning with various student samples.

Table 8 presents test data for the student subject group responding in the present study and various peer group test data.

⁵⁷ See Steers (1977) for a recent review of the state of the art.

<u>Sample</u>	<u>Mean</u>	<u>Std. Dev'n</u>	<u>N</u>	<u>Source</u>
University of California Berkeley, graduates and undergraduates	8.52	3.63	46	Present study
Ohio State University - Undergraduate psychology students	8.29	3.97	1180	Rotter (1966)
Kansas State University- Undergraduate psychology students	7.73	3.82	113	Ware (1964)
University of Connecticut- Undergraduate psychology students	9.22	3.88	303	Rotter (1966)
Florida State University- Black students; undergraduate psychology	9.05	3.66	116	Gore & Rotter (1963)
18 year old subjects from Boston Area	9.56	4.10	57	Crowne & Conn (1965)

TABLE 8

Test Scores for Locus of Control - Students

This table reveals no unusual results. Not one mean score can be separated statistically from any other, although it appears as though the present sample may have been marginally more homogeneous than some of the other groups.

Turning to a consideration of the managerial sample, data from the present study are presented in Table 9, along with the test results of

Swieringa and Moncur (1975).

<u>Sample</u>	<u>Mean</u>	<u>Std. Dev'n</u>	<u>N</u>	<u>Source</u>
Managers in a west coast oil refinery	4.75	2.94	48	Present study
Managers in 4 west coast electronics firms	6.20	3.11	136	Swieringa and Moncur (1975)

TABLE 9

Test Scores for Locus of Control - Managers

Several interesting results emerge from Table 9, and a comparison of managers with students generally. The oil refinery managers are significantly more internal than the electronics managers ($t = 2.84, \alpha < 0.01$). One possible explanation for this result is that the oil refinery managers are in a technologically certain and stable environment and the link between their decisions and the outcomes of those decisions is fairly clear. For the managers in the electronics industry, the technological characteristics of the environment may be vastly more turbulent and no predictable outcome may be necessarily associated with a particular decision. A large proportion of Swieringa and Moncur's (1975) sample was drawn from marketing and development departments⁵⁸ where this may be particularly the case. Given these two technological characterizations, it is possible to say that the situation moulds the personality, or that there exists a gravitational phenomenon which locates different personalities in more suitable

⁵⁸ op. cit. p. 37

organizational roles. The first of these views is counter to Rotter's (1966) viewpoint but is in part consistent with the attributional viewpoint of Weiner et. al. (1971). If the explanation of the results is correct, then it is likely that both viewpoints contribute to it.

A comparison of Tables 8 and 9 also reveals that managers are significantly more internal than students. Consistent with the finding of Mitchell, Smyser and Weed (1975) that managers were more internal than employees in general, we probably need to recognize that in terms of locus of control, managers are apparently quite distinct from many other groups in society.

One initial concern with the study design was that a survey conducted on personnel from a single organization might reveal substantial homogeneity of personality. It is true that the variance of Swieringa and Moncur's sample is larger than the variance of the present sample, and this might be accounted for by the inclusion of representatives of four firms in the former case. However, the difference in variances is not statistically significant ($t = 0.566$), and the variance in the present sample is certainly large enough to permit hypothesis testing.

Having provided a fairly thorough testing arena for the instrumentation used in the present study, we can proceed to the major results section armed with an awareness of the potential shortcomings of the various measures and the possible caveats which deserve mention.

VII RESULTS⁵⁹

In this section, the results of each of the three phases of the study will be reported in turn. We will begin with an analysis of the results of phase one, the experiment with student subjects, and this will be followed by presentation of the results of phase two, the experiment with manager subjects. This will be followed by a discussion of the comparison between the results of the first two phases. The analysis and discussion will then turn to the phase three, the survey phase and then a complete integration of the results of all three phases of the study, together with past evidence. In this way we will be able to empirically examine the claims presented in Figure 2 and to establish the overall contribution of the methodology to the addressing of the research question.

1. Phase One - The Experiment with Student Subjects

Initially, to test the hypothesis of interaction between locus of control and participation, affecting performance (H_{0a}) two separate ordinary least squares regressions were used as follows:-

$$Y_H = \alpha_1 + \beta_1 X + \epsilon \quad (1)$$

$$Y_L = \alpha_2 + \beta_2 X + \epsilon \quad (2)$$

where Y is performance

X is locus of control score.

Equation (1) fits a line to the observations for the high (H) participation condition subjects and equation (2) for the low (L) participation condition subjects. The hypothesis of interaction would

⁵⁹ A full presentation of statistical results is in Appendix 10.

be tested by a comparison of the slope coefficients in each of these regressions. Significant departure from zero (in the positive direction) for β_1 and significant departure from zero (in the negative direction) for β_2 will enable rejection of the hypothesis of no interaction. This situation is depicted in Figure 4.

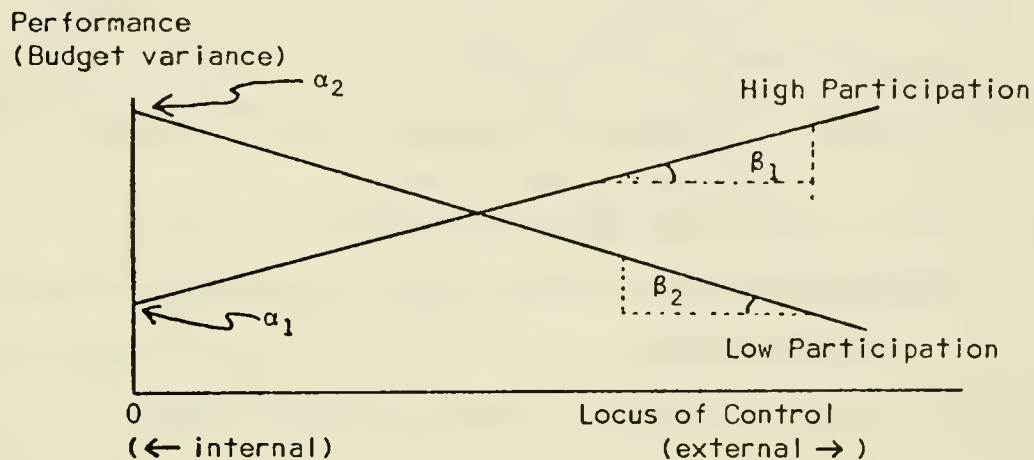


Figure 4

The Hypothesis in Diagrammatic Form

Notice also, that in order to demonstrate the absence of a "main effect" for participation, the intercept terms, α_1 , and α_2 must be different. Specifically we would need to find $\alpha_2 > \alpha_1$. The results were as predicted. β_1 was significantly greater than zero ($t = 5.18, \alpha < 0.001$) and β_2 significantly less than zero ($t = -2.31, \alpha < 0.025$). α_2 was significantly greater than zero ($t = 5.29, \alpha < 0.001$) while α_1 was not ($t = 1.18$).

Unfortunately, the error structure in each model failed to meet all the assumptions of ordinary least squares. While satisfying a test of independence,⁶⁰ the error structure of both models revealed non-constant

⁶⁰ The Durbin-Watson statistic for the high participation model was 2.13 while for the low it was 1.77. Neither of these statistics permits rejection of the hypothesis of uncorrelated error terms at $\alpha = 0.05$.

variance using two tests for the existence of heteroscedasticity.⁶¹

The analysis was therefore performed under the assumption that the correct model specification was as follows:

$$Y = \beta_3 + \beta_4 X + \gamma Z + \delta XZ + \epsilon \quad (3)^{62}$$

where Y is performance

X is locus of control score

Z is a 0/1 binary variable for high and low participation,

$$Z = \begin{cases} 0 & \text{for low participation} \\ 1 & \text{for high participation} \end{cases}$$

and XZ is the multiplicative interaction of locus of control and participation.

In order to test the hypothesis using this model we have:

$$Y_H = (\beta_3 + \gamma) + (\beta_4 + \delta)X + \epsilon \quad (4)$$

$$Y_L = \beta_3 + \beta_4 X + \epsilon \quad (5)$$

Equation (3) was performed as a multiple regression and the resulting coefficient estimations were used to test the "paired" coefficients in equation (4) and the coefficients in equation (5).

⁶¹ The Goldfeld-Quandt test revealed a larger error variance amongst internals in the low participation condition ($F = 12.05$, $\alpha < 0.01$) and a larger error variance amongst externals in the high participation condition ($F = 5.33$, $\alpha < 0.01$). This is an interesting result because the notion that internals in the low condition and externals in the high condition should both perform erratically is consistent with the principal hypothesis presently at test. Bartlett's test (a better statistic than the Goldfeld-Quandt due to the fact that, unlike the latter, it incorporates all 23 subject x 20 period observations on the dependent variable in each of the high and low participation models) also revealed heteroscedastic error structures in both the high ($\chi^2 = 23.3$, $\alpha < 0.005$) and low ($\chi^2 = 30.0$, $\alpha < 0.005$) participation models.

⁶² This model is exactly identical to the model proposed by Kmenta (1972) to specify peace-time and war-time consumption functions. See p.421

Analysis of covariance revealed that locus of control and participation were independent ($r = -0.061$). The error structure was now found homoscedastic⁶³ and the residuals uncorrelated.⁶⁴

The interesting feature of the model in equations (4) and (5) is that the least squares estimators of the regression coefficients are exactly the same as those obtained from equations (1) and (2). The slight differences in the estimators can be ignored. (See Appendix 10)

The results are unchanged apart from some changes in the level of statistical significance. $(\beta_3 + \gamma)$, the intercept coefficient for the high participation model, is not different from zero ($t = 0.63$) while $(\beta_4 + \delta)$, the slope coefficient for the high participation model, is significantly different from zero in the positive direction ($t = 2.84, \alpha < 0.005$). For the low participation model the intercept term was significantly different from zero in the positive direction ($t = 6.93, \alpha < 0.001$) and the slope significantly different in the negative direction ($t = -3.05, \alpha < 0.005$). The basic pattern of results is therefore relatively unchanged from the original estimation based on equations (1) and (2), and is well represented in Figure 4. The null hypothesis of no interaction between participation and locus of control

⁶³ Bartlett's statistic = 18.06, fails to reach significance at $\alpha = 0.05$. This was a far superior test of homoscedasticity to the two separate tests required when equations (1) and (2) were fitted. This is because, in the latter case, the variance estimation based on either sub-sample (high or low participation) does not utilize information about the variance which is contained in the other sub-sample.

⁶⁴ Durbin-Watson = 1.65, fails to reach significance at $\alpha = 0.05$.

affecting performance can therefore be rejected in favour of the alternative hypothesis which claims contingent benefits for participation.

The finding of heteroscedastic error variances using equations (1) and (2) was somewhat serendipitous. Apparently, the attempts of the internals in the low participation condition to gain control of the budget setting activity, and the attempts of externals in the high participation condition to relieve themselves of it are manifested in similar ways. In both cases, the data support the hypothesis that these subjects were diverted from attempting to deal with the (critical) price decision aspect of the game and, instead, concentrated on the (actually irrelevant) budget decision aspect. The evidence of this phenomenon is in the form of the higher error variances in these two groups than in the high participation internals and low participation externals. While this finding was not expected, it is consistent with the view that individuals who are not enjoying their preferred participation condition will suffer some "cognitive discomfort". That this should manifest itself in erratic as well as inferior performance is not at all surprising.

H_{0b} stated the expectation that this same basic relationship would hold in the case of satisfaction. In actual fact, this hypothesis was developed on the basis of a post-hoc test conducted in phase one of the study. A colleague, Gregory J. Tully, suggested using the response to question 1 of the post-experimental check questionnaire ⁶⁵ as a

⁶⁵ see Appendix 1.

surrogate for job satisfaction. This item in the check questionnaire was not designed with any notion of satisfaction in mind, but its prima facie association with some concept of satisfaction warranted some test of the hypothesis. Equation (3) was used to estimate the coefficients and δ was significantly non-zero in the negative direction, as predicted ($t = -1.71$, $\alpha < 0.05$). Notice that when estimating equation (3) for the performance data, δ was significantly positive. The change of sign is due to the fact that the directionality of the performance scores is reversed. Higher values (budget variance) indicate lower performance. At least on the basis of the operationalization of job satisfaction used presently, rejection of H_{0b} is permitted.

2. Phase Two - The Experiment with Manager Subjects

Having established the statistical suitability of equation (3), it was decided to employ this same model in the test of the phase two data. Again running equation (3) and using the coefficient estimates derived from this regression, together with the variance/covariance matrix of the estimated coefficients, the "paired" coefficients of equation (4) were estimated.

$(\beta_3 + \gamma)$, the intercept coefficient for the high participation model, was significantly different from zero ($t = 2.23$, $\alpha < 0.025$) while $(\beta_4 + \delta)$, the slope coefficient for the high participation model is also significantly different from zero in the predicted positive direction ($t = 2.39$, $\alpha < 0.025$). For the low participation model, the intercept term, β_3 was significantly different from zero ($t = 7.00$, $\alpha < 0.001$) while the slope coefficient was significantly negative, as predicted ($t = -2.93$, $\alpha < 0.005$).

Since the error structure created by performing equation (3) was found to be homoscedastic ⁶⁶ and without serial correlation, ⁶⁷ the results were viewed as directly comparable to the results from phase one.

In comparing the results from the first two phases, one difference which emerges concerns the significant intercept term for the high participation model in phase two. In phase one, this term was not significantly different from zero. Let us look more closely at these two coefficients. In phase one, $(\beta_3 + \gamma)$ was estimated at 423.92 ($\sigma = 669.26$) while the intercept term for the low participation model, β_3 took an estimated value of 4899.46 ($\sigma = 707.48$). These are significantly different. In phase two, $(\beta_3 + \gamma)$ was estimated at 2067.37 ($\sigma = 927.11$) while β_3 was 5846.64 ($\sigma = 834.67$). Both of these coefficients are significantly non-zero in the positive direction but an additional test was required to investigate whether they were significantly different from each other. Recall from the results of phase one that in order to demonstrate a disordinal interaction, or the absence of a "main effect" for participation, β_3 must be significantly greater than $(\beta_3 + \gamma)$. Testing γ for departure from zero is analagous to this test and the result was statistically significant ($t = -3.03$, $\alpha < 0.005$).

However, the intercept terms in both models for the manager group in phase two are higher than the corresponding intercepts for the

⁶⁶ Bartlett's test, $\chi^2 = 17.34$, n.s.

⁶⁷ Durbin-Watson statistic = 1.71, n.s.

student group in phase one. This suggests that, on average, students performed better in the business game than did the managers, and this is confirmed by an examination of the means of the dependent variable. The mean budget variance for the students was 2535.43 while for the managers was 3898.67. This difference is statistically significant ($t = 3.183$, $\alpha < 0.005$).

In terms of explained variation, the two subject groups were slightly different. r^2 for the student version of equation (3) was 0.335 while for the managers, it was 0.246. The reduced explanatory power of the model in the case of the managers is possibly due to a much wider variation of skills relevant to the task in their case than in the case of the students. In addition, the students were probably better matched in terms of past practical business experience (none in almost all cases) than were the managers. This suggests the importance of this variable as a possible omission in the manager model while identical past experience of the students would, of course, explain no additional variance if past experience was included as an explanatory variable.

It is important to recognize in this context that r^2 is not a critical consideration. The hypotheses at test do not concern the relative importance of the included variables but, rather, the nature of their interrelationship.

From these results we can safely conclude that the experimental realization of participation, as operationalized, had a predicted causal effect on performance, as operationalized, for both students and managers. With reference to Figure 3, the experimental effect has generalized to the sample of the population of ultimate interest,

managers. At least as far as phases one and two are concerned, then, H_{0a} is rejected in favour of the alternative hypothesis of interaction.

Turning to H_{0b} , the satisfaction hypothesis, the results again reflect the same basic pattern as in phase one. The coefficients of equation (3) were again estimated and δ , the interaction coefficient, was significantly different from zero in the negative direction ($t = -1.95, \alpha < 0.05$) An interesting result emerges, however, when we use the coefficients from equation (3) to estimate the paired coefficients in equation (4) and test those for significance. The slope coefficient for the high participation model (equation (4)) is not significantly different from zero in either phase one or phase two, while for the low participation model (equation 5)), it is significantly different from zero in the predicted direction ($t = 1.77, \alpha < 0.05$, for phase one and $t = 2.51, \alpha < 0.01$, for phase two). This result is consistent with rejection of H_{0b} , but it is slightly different to the results used to test H_{0a} . Apparently, high participation has no differential effect on satisfaction for internals compared with externals. Low participation, on the other hand is distinctly preferred by externals and disliked by internals. The pattern of results of testing H_{0b} for both phases can be represented diagrammatically as in Figure 5.

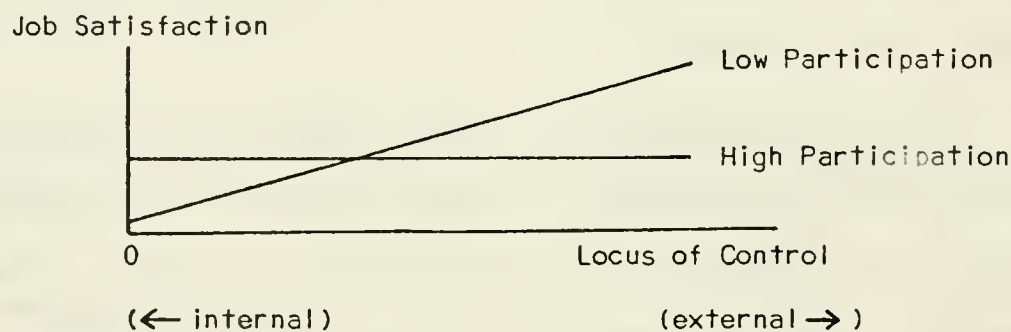


Figure 5

Diagrammatic Results of Test for H_{0b}

For internals, high participation seems to assume the role of a "hygiene factor" (Herzberg, 1966), while low participation is distinctly dissatisfying. For externals, high participation does not seem to be "dissatisfying", as it was predicted it would be, while low participation is clearly a "motivator" for them.

In spite of this minor departure from the prediction of section IV, the hypothesis concerning satisfaction (H_{0b}) is clearly rejected in favour of the alternative hypothesis of interaction.

3. Phase Three - The Survey with Manager Respondents

The statistical analysis employed to test H_{0a} and H_{0b} in phase three differ slightly from the approach used in phases one and two. This is due to the fact that participation is measured in a more or less continuous fashion in phase three (scores from the Milani instrument) while it was manipulated dichotomously in phases one and two (the "high" or "low" participation treatment conditions). Decomposition of equation (3) into equations (4) and (5) is therefore not possible and the basic form of the hypothesis test involves examination of the coefficient δ , the interaction term in equation (3), for significant departure from zero. Notice that for the rejection of H_{0a} and H_{0b} , δ must not only be significant but in the predicted direction. Large values for locus of control (externals) combined with large values for participation should be associated with small values for the criterion variable (performance in H_{0a} and job satisfaction in H_{0b}) according to the thesis of this study. Holding locus of control constant at some large value (external) and varying participation from large values toward small values (high participation toward low participation) reduces the size of the

interaction term and should increase the size of the criterion variable. In other words, δ should be negative. The results were as predicted. δ was equal to -0.0142 ($t = -2.33$, $\alpha < 0.025$) confirming the hypothesis for H_{0a} . An interesting result emerged from this analysis, however. The coefficient for participation, γ , was also significant ($\gamma = 0.12$, $t = 3.31$, $\alpha < 0.001$) indicating that participation alone explains a substantial amount of the variance in performance.⁶⁸ This result is more consistent with the historical view of the effect of participation on performance but it remains the case that this effect is better understood when personality is introduced as a moderating influence.

Breaking this overall result down by the eight dimensions of performance addressed in the Mahoney et. al. instrument, some interesting results emerge. Significant interaction terms (δ) emerged in the regression on planning ($t = -1.68$, $\alpha < 0.05$), coordinating ($t = -1.32$, $\alpha < 0.10$) and staffing ($t = -2.07$, $\alpha < 0.025$). In each of these cases, γ , the coefficient for participation, was also significant, results consistent with the principal test of H_{0a} . It will be useful to return to these results after discussion of the test of H_{0b} .

The main test of H_{0b} in phase three was based on the composite total score for job satisfaction from the M.S.Q. Equation (3) was again used and the results were again as predicted. δ , the coefficient for the interaction term, was equal to -0.045 ($t = -2.25$, $\alpha < 0.025$) but

⁶⁸ Tests for homoscedasticity (Goldfeld-Quandt, $F = 1.27$, not significant at $\alpha = 0.05$) and autocorrelation (Durbin-Watson = 1.82, not significant at $\alpha = 0.05$) revealed that equation (3) was of suitable form.

none of the other terms from the equation (apart from the intercept) was significant.⁶⁹ These results permit rejection of H_{0b} .

The different role played by participation in affecting performance compared with job satisfaction is interesting. We can view job satisfaction as a cognitive variable, a set of affective orientations towards various job facets. Participation alone does not appear to assume a major role in influencing these orientations. Only combined with personality differences along the locus of control dimension does participation have an influence. When we move from job satisfaction to job behavior, or performance, a behavioral variable, participation emerges more strongly as an influence in its own right. It is true, of course, that an individual's cognitive orientation will contribute to the explanation of some related behavioral manifestation. But the psychological literature is replete with evidence of the failure of attitudes as significant predictors of behavior (Calder and Ross, 1973, provide an excellent summary of this literature). Situational factors are thought to share the limelight with cognitive factors in this regard.

In the context of the present study, it is illuminating to examine the results dealing with performance by separate dimension. Recall that planning and co-ordinating were two dimensions of performance which revealed very strong effects of participation. We should expect that in an organization which is decentralized or divisionalized, such as the

⁶⁹ Equation (3) proved satisfactory statistically. Goldfeld-Quandt $F = 1.19$, not significant, indicated homoscedasticity, and Durbin-Watson = 2.19, not significant, indicated uncorrelated error structure.

one under study, these two critical aspects of performance should depend on a high level of participation to provide the communication channels necessary to integrate the productive effort toward the output of one or a few end products. These results are consistent with the theoretical exhortations of Thompson (1967) and Galbraith (1977) and with the empirical evidence of Lawrence and Lorsch (1967) and Bruns and Waterhouse (1975).

What these results suggest, in summary, is that while participation, taken alone, assumes a relatively unimportant role in affecting job satisfaction, it is implicitly recognized as a critical ingredient in achieving a high level of performance of the members of the organization under study. This suggests a weak association between job satisfaction and performance and this was the case ($r = 0.26$) although the relationship was significant ($t = 1.79$, $\alpha < 0.05$).

In comparing these results with those of Milani, a clear difference emerges. Only in the case of his cognitive variables (attitude toward the job and attitude toward the company) did Milani discover a directly observable effect of participation, while in the present case this result emerges only for performance. Some reconciliation of Milani's results for his attitude measures and the present results for job satisfaction can be achieved through an examination of the results for the sub-scales of the M.S.Q. Separate testing of each of the twenty sub-scales was made possible, recall, by the use of the complete 100-item version of the M.S.Q. There are several sub-scales for which the result concerning participation alone appears stronger than the results for the interaction. These are creativity (t for participation

= 2.49, $\alpha < 0.01$, t for interaction = -1.31, $\alpha < 0.10$), variety ($t = 1.92$, $\alpha < 0.05$; $t = -0.86$, not significant), ability utilization ($t = 3.13$, $\alpha < 0.005$; $t = -2.21$, $\alpha < 0.025$), social status ($t = 1.40$, $\alpha < 0.10$; $t = 0.36$, not significant), advancement ($t = 1.79$, $\alpha < 0.05$; $t = -1.56$, $\alpha < 0.10$), technical supervision ($t = 1.67$, $\alpha < 0.10$; $t = -0.92$, not significant) and activity ($t = 2.45$, $\alpha < 0.01$; $t = -1.68$, $\alpha < 0.10$). It is likely that some significant overlap exists between the cognitive dimensions tapped by Milani's measures and these facets of satisfaction. We can conclude, therefore, that, at least in part, the results are consistent with Milani's.

One interesting contrast between the results of the present study and a finding from previous literature concerns the study of Mitchell, Smyser and Weed (1975). They found that locus of control and participation interacted significantly in their effect on satisfaction with supervision. The M.S.Q. taps two sub-scales relevant to this finding, the first of which is technical supervision mentioned above. The second is human relations supervision for which the results are insignificant. Neither participation alone ($t = 0.62$), nor the more important interaction ($t = -0.93$) contribute significantly to explained variance. Mitchell, Smyser and Weed's results are not confirmed by the present study.

To provide a means of comparing Hofstede's (1967) results with those of the present study, equation (3) was fitted substituting Hofstede's participation measure for Milani's. Recall that the correlation between the two measures was high ($r = 0.741$) which might suggest little change in the pattern of results. However, the results

show some increase in the importance of participation ($t = 1.48, \alpha < 0.10$) with little change in the coefficient for the interaction, or its standard error ($t = -1.98, \alpha < 0.05$). This is consistent with Hofstede's result for participation in technical standard setting. That locus of control should continue to moderate the relationship is not surprising. Hofstede suggested that participation would be satisfying only where individuals felt they had a valid input to make to the budgeting process (the existence of "external reference points" (Hofstede, p. 176)). It is the basic position of this author that externals generally feel they have no valid contribution to make and are consequently more satisfied with low levels of participation. The parallel between Hofstede's "external reference points" and locus of control is therefore useful in the present context as both appear to operate in a similar fashion.

Viewing the results of the study overall, it is useful to return to Figure 3 (on page 74). In the experimental phases of the investigation, it was not surprising that participation alone exerted a small influence. The business game was structured carefully to avoid a situation in which participation, as operationalized, was instrumental in achieving high performance. This constrained the source of variation in criterion and enabled us to focus more clearly on the interaction between participation and locus of control. By contrast, phase three, due to its correlational nature, did not permit the use of this type of control and, at least as far as H_{0a} is concerned, participation was found to be significantly associated with performance.

This evidence does not overthrow the basic result that locus of control is an important moderating variable, a result emerging in both the causal and correlational phases of the inquiry and allowing as safe as possible a rejection of H_{0a} and H_{0b} , the null hypotheses of no interaction. The results are sufficiently strong to reject the view that they are solely an artifact of some measurement problems which might have been suggested by the previous section.

VIII CONCLUSIONS

In assessing the implications of these results, two differing perspectives will be pursued here. These will be labeled a job re-design perspective and a personnel selection and placement perspective and will be discussed in turn.

If we argue that an organization or organizational sub-unit has some discretion over the level or type of participation which can be afforded to its members then it is not inconceivable that personality variables, such as locus of control, be incorporated in the collection variables used to characterize a role description in an organization or sub-unit. This is especially true in situations where groupings of personality scores around a particular mean value characterize the personnel in a particular organization or sub-unit. Recalling the discussion relating to Table 9 in Section VI, one result of the present study suggests that significant differences in personality type exist between the present sample of executives and the sample of Swieringa and Moncur (1975), possibly as a function of industry type.

Whether such an approach of "designing the job to fit the individual" is feasible or not depends on the output of a great deal of research which remains to be conducted. Such research will need to demonstrate the generalizability of the present results to other, still different groups of organizational members, and, also, such research will hopefully uncover more personality variables useful in the present context.

Turning to the second perspective suggested above, namely personnel

selection and placement, a polar type of idea is suggested. It is entirely possible that an organization or sub-unit of an organization has very little discretion over the amount of budgetary participation which can be afforded its members. Following the suggestions from the early part of the literature review in Section II, environmental conditions, technology and task uncertainty facing the organization or sub-unit may be such as to require particular levels of participation. This suggests Miles' (1965) distinction between the "human relations" and "human resources" views of the benefits of participation. Indeed, the present study found that participation taken without regard to personality was a much more powerful explanation for performance than for job satisfaction, suggesting the human resources view point. The benefits of participation have almost always been couched in motivational or job satisfying terms and the extension of this view to performance has been based on the non-trivial leap from cognition to behavior. One only has to briefly review Locke's (1976) summary of the literature in job satisfaction to discover the parade of results revealing the absence of a simple relationship between job satisfaction and performance.

Given the existence of optimal role descriptions which embrace characterizations of budgetary participation conditions the personnel selection and placement view point suggests the potential for "fitting the individual to the job". In terms of the available literature, this is the more widely accepted alternative of the two discussed in the present analysis.

Figler (1977), for example, proposes thirteen steps viewed as

critical in personnel selection. Among the most important of these, he suggests, is the need to create the desired "chemistry" between a role incumbent's personality and the role characteristics. Rawls and Rawls (1974) suggest that recent advances in the theory of personnel selection are increasingly giving attention to the interaction of individual variables and job characteristics. However, Dunnette (1966) in closing his book offers the last word on this matter in most cogent fashion:

"Our major theme in this book has been that wise personnel decisions demand evidence about the individuality of people, the special requirements of jobs, and interactions between the two."⁷⁰

Turning, finally, to issues of scope and generalizability, let us return to the present study's findings. Equipped with as full as possible an awareness of the importance of the moderating effects of locus of control, we can return to Figure 2 in Section I. It will be recalled that in that section it was argued that at least four sets of variables contain members which will likely moderate the effect of budgetary participation on any of several criterion variables. The evidence presented in this study should be placed in its proper perspective by recognizing that not only was the focus of this study directed at just one of these sets of variables (individual level variables), but, indeed, at just one member of this set.

The narrow focus of the study is justified on grounds of empirical tractability. While it is the case that many writers exhort the need to

⁷⁰ Dunnette, M.D. Personnel Selection and Placement, Belmont, California: Wadsworth, 1966, p. 223, emphasis added.

view organizational phenomena from an "open systems" perspective (Thompson, 1967; Heller, 1971; Galbraith, 1973, 1977), empirical expediency forces some form of premature closure on the system. The means of opening the system and approaching the real world complexity of variable interrelationships unfortunately do not lie with several broad focused studies; they lie with many narrowly focused studies which permit sufficient attention to methodological detail. The task of integrating such a set of studies lies even further removed. Until we can be satisfied with our understanding of the nature of the relationships between small groups of variables, we cannot embark on the integrative exercise. Indeed, the bulk of the effort needed to reach this point lies ahead of us.

The call for research aimed at expanding the body of evidence that can be used to test the framework of figure two is directed very broadly. Accounting research alone will not fill the void. In particular, the efforts of researchers in organizational behavior and, more particularly those working in the area of instrument development and validation, will contribute to the advancement of knowledge. The tools we are working with (particularly survey research tools) are primitive and the apparent fetish of the present author for the detailed statistical checks built into the design and discussed in section VI of this study must be taken seriously. Without satisfactory instrumentation we can proceed only a very short distance. However armed with well conceived research hypotheses, careful designs and careful instrumentation choices, the future holds much promise.

APPENDIX 1

INSTRUCTIONS FOR BUSINESS GAME PARTICIPANTS

Introduction

The purpose of your participation in this game is to provide a means of testing the business game so that it can be refined and improved for future use. Your contribution will be most valuable if you take the task very seriously and attempt to perform as well as possible.

Procedure

After carefully reading these instructions you will be directed to one of the stations in the laboratory where the entire game will be conducted via the computer terminal located at the station. The game will begin immediately upon your arrival at the station and you will be advised of its completion via the computer terminal.

The Business Game

The first stage of the game involves a questionnaire comprising of a series of pairs of statements. You will be required to endorse one or other statement in each pair; the one with which you agree more strongly.

You make your choice between the two statements in each pair by hitting "A" if you agree more strongly with statement A and "B" if you agree more strongly with Statement B. You need not hit "RETURN" after hitting "A" or "B"; the computer will automatically proceed to the next item.

This questionnaire is not related to the business game proper and is included only to assist us in interpreting your evaluation of the game. When you have completed the questionnaire the game itself will begin.

In the game you are to assume the role of one of four senior managers and you have various responsibilities. The firm for which you work manufactures and sells a single product for which demand fluctuates highly from quarter to quarter. The game will run for a series of quarters and at the beginning of each quarter you (and the other three managers) will be required to make and/or contribute to the making of two major decisions.

Decision 1 - Budget Formulation

The first major decision which must be made is the decision for the sales budget for the forthcoming quarter. You and the other three managers jointly contribute to the decision by submitting your own recommendations for the budget to top management which, after considering each recommendation, makes a final determination of which you are informed.

Appendix 1 - Continued

This decision is critical to the profitability of your firm. This is so because the single product produced and sold by your firm is perishable in nature which means no inventories held between quarters are possible. Due to the perishable nature of the product, the firm produces precisely the quantity of product it anticipates selling. This means that the decision for the sales budget is doubly critical in that it also represents the decision on quantity to produce during the quarter.

When you are requested to input your recommendation for the sales budget you will proceed to do so, then hit the "RETURN" key which will prompt the following enquiry from the computer (suppose your recommendation was 20,000 units):-

"IS 20,000 CORRECT? (Y/N)."

This gives you an opportunity to revise your decision (hit "N" and the computer will re-request your recommendation) or confirm it (hit "Y" and the game will proceed).

Your recommendation for the budget must be a multiple of 100 and lie in the range of 10,000 to 40,000 units.

After confirming your recommendation, the recommendations of the other three managers will be displayed.

When the final determination on the sales budget is made by top management you will be given a statement of the percentage deviation of each of the four recommendations (yours and the other three managers') from the final decision of top management. The game will then proceed with the task of making operating decisions for the quarter.

Decision 2 - Operating Decisions; Price and Advertising

At this juncture you will be informed of the decision of the marketing department for the advertising expenditure to be undertaken for the quarter. You play no part in making this decision. Next, is the second decision you are required to make - price. You, alone, are responsible for this decision. You must aim to make a decision for price which, together with the advertising expenditure, will generate demand (actual sales) which EXACTLY (i.e. no excess production and no unfilled orders) exhausts the available supply of product which, recall, is equal to the sales budget already established.

Type your recommendation for price carefully. The price you choose must be in the range \$2 to \$20. For exact dollar amounts it is sufficient to type "6" (\$6) or "14" (\$14), etc. It is not necessary to type "6.00" or "14.00", for example. If you desire to choose a price of \$7.95 hit "7.95", etc. NOTE that if you desire to choose \$5.50, for example, you must type "5.50". If you type "5.5" the computer will read \$5.05. It is not necessary to type a \$ (dollar) sign.

Appendix 1 - Continued

As before, you will be given the opportunity to revise or confirm your decision.

The decision on the sales budget and the decision on price are therefore very much co-ordinated. Your performance will be evaluated on the basis of the variance from budget. To overcharge for the product will result in actual sales falling short of the budget. This is highly undesirable since the excess product must be dumped. Conversely to undercharge will lead to actual sales equalling the budget BUT will also result in the generation of unfilled orders. The firm wants no dumped product and no unfilled orders, if at all possible.

When all the decisions are completed you will receive a performance report for the quarter just ended. Two examples follow:-

Example 1: Unfilled Orders ReceivedPERFORMANCE REPORT FOR QUARTER #1

PRICE CHARGED DURING QUARTER (\$)	-----	10.75
ADVERTISING EXPENDITURE (\$)	-----	10,000
SALES BUDGET (UNITS)	-----	21,500
ACTUAL SALES PLUS UNFILLED ORDERS (UNITS)	-	23,500
UNFILLED ORDERS (UNITS)	-----	2,000
VARIANCE (UNITS)	-----	2,000

In this case we note that the price (\$10.75) was too low. Combined with advertising expenditure (\$10,000), 23,500 units of demand were generated. Since we were able to sell only the budgeted quantity of 21,500, the variance of 2,000 units represents unfilled orders, or simply lost revenue.

Example 2: Actual Sales Fell Short of BudgetPERFORMANCE REPORT FOR QUARTER #2

PRICE CHARGED DURING QUARTER (\$)	-----	17.25
ADVERTISING EXPENDITURE (\$)	-----	17,800
SALES BUDGET (UNITS)	-----	16,800
ACTUAL SALES PLUS UNFILLED ORDERS (UNITS)	-	14,400
UNFILLED ORDERS (UNITS)	-----	0
VARIANCE (UNITS)	-----	2,400

In this case we note that the price (\$17.25) was too high. Combined with advertising expenditure (\$17,800), only 14,400 units of demand were

Appendix 1 - Continued

generated. All were able to be met since the budget (and therefore production) was 16,800. Hence the variance of 2,400 in this case represents dumped product which is very costly to your firm.

These performance reports are purely illustrative; they bear no relation to the game. To give you some guidance in making decisions in early quarters of the game you will be provided with the previous four quarters' results. Their format will be as illustrated above.

Your objective is therefore to minimize the "variance" (either type as shown above).

Please work carefully but do not waste time. If the computer is awaiting your response and you delay too long, it will prompt you. This is mainly in case you are waiting for it when in fact it is waiting for you!

Please inform the supervisor when you fully understand these instructions. Do not hesitate to ask questions at this point. No questions may be asked once you begin work at your assigned station.

APPENDIX 2

The Locus of Control Instrument (Rotter, 1966)

As mentioned in the instructions which you have just finished reading, we begin by asking you a series of questions. Each question is comprised of two statements; A and B. At the end of the second statement in each question, the computer will inquire: Response (A/B)? Please type A or B indicating which of the two statements you more strongly believe to be the case as far as you are concerned. Be sure to select the one which you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. Your response represents your personal belief; there are no 'right' or 'wrong' answers.

Please answer these items carefully but do not spend too much time on any one item. In some instances you may discover that you believe both statements or neither one. In such cases, be sure to select the one you more strongly believe to be the case as far as you are concerned. Also, try to respond to each item independently when making your choice; do not be influenced by your previous choices.

We are ready to begin.

1. a. Children get into trouble because their parents punish them too much.
b. The trouble with most children nowadays is that their parents are too easy on them.
2. a. Many of the unhappy things in peoples' lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.

Appendix 2 - Continued

8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they're like.
9. a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.
10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work; luck has little or nothing to do with it.
b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans I am almost certain that I can make them work.
b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyway.
14. a. There are certain people who are just no good.
b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
b. Getting people to do the right thing depends upon ability; luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
b. There really is no such thing as "luck".
19. a. One should always be willing to admit mistakes.
b. It is usually best to cover up one's mistakes.

Appendix 2 - Continued

- 20 a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.
- 21 a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness, or all three.
- 22 a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.
- 23 a. Sometimes I can't understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.
- 24 a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.
- 25 a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.
- 26 a. People are lonely because they don't try to be friendly.
b. There's not much use in trying too hard to please people; if they like you, they like you.
- 27 a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.
- 28 a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
b. In the long run the people are responsible for bad government on a national as well as on a local level.

APPENDIX 3

Example of a Performance Report

PERFORMANCE REPORT FOR QUARTER #1

PRICE CHARGED DURING QUARTER (\$)	-----	13.95
ADVERTISING EXPENDITURE (\$)	-----	10,600
SALES BUDGET (UNITS)	-----	19,500
ACTUAL SALES PLUS UNFILLED ORDERS (UNITS)	-	17,400
UNFILLED ORDERS (UNITS)	-----	0
VARIANCE (UNITS)	-----	2,100

APPENDIX 4

Post-Experimental Check Questionnaire

The following set of questions is intended to elicit your opinions and impressions of the business game in general. Each question is responded to by circling the number on the scale which corresponds to the point which you feel best indicates your belief. It is important that you carefully consider your responses since they will be taken into consideration in the improvement of the game for future use.

1. Indicate the extent to which you enjoyed playing the game. .

1	2	3	4	5	6	7
Minimal Enjoyment			Moderate Enjoyment			Great Enjoyment

2. Indicate the extent to which you felt your input to the BUDGET formulation influenced top management in their final determinations on the budget.

1	2	3	4	5	6	7
Great Influence			Moderate Influence			Minimal Influence

3. Indicate the extent to which you felt confident about the decisions for PRODUCT PRICE which you were required to make during the game.

1	2	3	4	5	6	7
Great Confidence			Moderate Confidence			Minimal Confidence

4. Indicate the extent to which you felt that your recommendations for the BUDGET were reflected in the final determinations of top management.

1	2	3	4	5	6	7
Minimal Reflection			Moderate Reflection			Great Reflection

5. Indicate the extent to which you felt that your PRICE decisions had an impact on the demand for product.

1	2	3	4	5	6	7
Great Impact			Moderate Impact			Minimal Impact

Appendix 4 - Continued

6. Indicate the extent to which you feel that your recommendations for the BUDGET dominated those of the other managers.

1	2	3	4	5	6	7
Minimal Dominance			Moderate Dominance			Great Dominance

APPENDIX 5

Hofstede Participation Instrument (Hofstede, 1967)

Consider the influence and involvement you have in budgetary matters in general. In the following scale, please circle the number from 1 to 8 which best characterizes your influence and involvement in budgetary matters. Be sure to read each item thoroughly before choosing the appropriate number. Be sure to select only ONE number.

- (a) Decision taken by me without consultation8
- (b) Proposal by me, followed by consultation, with my opinion generally prevailing7
- (c) Proposal by me, decision made jointly6
- (d) Proposal sometimes by superior, sometimes by me, with decision made jointly5
- (e) Proposal by superior, my opinion is asked and it generally carries a lot of weight4
- (f) Proposal by superior, my opinion is asked and it generally carries little weight3
- (g) My opinion not asked, but decision is explained to me2
- (h) My opinion not asked, decision is not explained to me1

APPENDIX 6

Milani Participation Instrument (Milani, 1975)

The following items can be used to describe the role which you play in the development of the budget for your division. Please respond by circling a number from 1 to 7 on the scale for each of the following items.

(a) Which category below best describes your activity when the budget is being set? I am involved in setting:-

1 2 3 4 5 6 7

All of the
Budget

None of the
Budget

(b) Which category below best describes the reasoning provided by your superior when budget revisions are made? The reasoning is:-

1 2 3 4 5 6 7

Very Sound
and/or Logical

Very Arbitrary
and/or Illogical

(c) How often do you state your requests, opinions and/or suggestions about the budget to your superior without being asked?

1 2 3 4 5 6 7

Very
Frequently

Never

(d) How much influence do you feel you have on the final budget?

1 2 3 4 5 6 7

Very High
Amount

None

(e) How do you view your contribution to the budget? My contribution is:-

1 2 3 4 5 6 7

Very
Important

Very
Unimportant

(f) How often does your superior seek your requests, opinions and/or suggestions when the budget is being set?

1 2 3 4 5 6 7

Very
Frequently

Never

APPENDIX 7

Mahoney et. al. Performance Measure (Mahoney et. al., 1963, 1965)

Effective managerial performance may be regarded as depending on competence in the areas of managerial activity listed on the following page. For each area of activity, please rate your own recent performance in each area.

Please respond by placing a number from 1 to 9 in the appropriate space to rate your own recent performance in each area. The following scale should be used for reference:-

PERFORMANCE

<u>Below Average</u> <u>Performance</u>			<u>Average</u> <u>Performance</u>			<u>Above Average</u> <u>Performance</u>		
1	2	3	4	5	6	7	8	9

Please turn over

Appendix 7 - Continued

		PERFORMANCE
		(number from 1 to 9)
1.	<u>Planning</u> Determining goals, policies and courses of action; work scheduling, budgeting, setting up procedures, programming	_____
2.	<u>Investigating</u> Collecting and preparing information for records, reports and accounts; measuring output; inventorying, job analysis	_____
3.	<u>Coordinating</u> Exchanging information with people in other organizational units in order to relate and adjust programs; advising other departments, liason with other managers	_____
4.	<u>Evaluating</u> Assessment and appraisal of proposals or of reported or observed performance; employee appraisals, judging output records, judging financial reports; product inspection	_____
5.	<u>Supervising</u> Directing, leading and developing your subordinates; counseling, training and explaining work rules to subordinates; assigning work and handling complaints	_____
6.	<u>Staffing</u> Maintaining the work force of your unit; recruiting, interviewing and selecting new employees; placing, promoting and transferring employees	_____
7.	<u>Negotiating</u> Purchasing, selling or contracting for goods or services, contacting suppliers, dealing with sales representatives; collective bargaining	_____
8.	<u>Representing</u> Attending conventions, consultation with other firms, business club meetings, public speeches, community drives; advancing the general interests of your organization	_____
9.	<u>Overall Performance</u>	_____

APPENDIX 8

Minnesota Satisfaction Questionnaire (Weiss, et. al. 1967)

The following set of items is used to allow you to indicate how you feel about your present job. Read each item carefully and decide how satisfied you feel about the aspect of your job described by the statement.

Keeping the statement in mind:-

- If you feel that you are very satisfied with the aspect of your job described by the statement, check the space under "VS" (Very Satisfied)
- If you feel that you are satisfied with the aspect of your job described by the statement, check the space under "S" (Satisfied)
- If you cannot make up your mind whether you are satisfied or dissatisfied with the aspect of your job described by the statement, check the space under "N" (Neither Satisfied nor Dissatisfied)
- If you feel that you are dissatisfied with the aspect of your job described by the statement, check the space under "DS" (Dissatisfied)
- If you feel that you are very dissatisfied with the aspect of your job described by the statement, check the space under "VDS" (Very Dissatisfied)

Example

On my present job this is how I feel about

VDS DS N S VS

(a) The chance to become wealthy[/] [] [] [] []

Please take care to answer each item and to be as frank and honest as possible.

Appendix 8 - Continued

On my present job, this is how I feel about	<u>VDS</u>	<u>DS</u>	<u>N</u>	<u>S</u>	<u>VS</u>
1. The chance to be of service to others	[]	[]	[]	[]	[]
2. The chance to try out some of my own ideas ...	[]	[]	[]	[]	[]
3. Being able to do the job without feeling it is morally wrong	[]	[]	[]	[]	[]
4. The chance to work by myself	[]	[]	[]	[]	[]
5. The variety in my work	[]	[]	[]	[]	[]
6. The chance to have other workers look to me for direction	[]	[]	[]	[]	[]
7. The chance to do the kind of work that I do best	[]	[]	[]	[]	[]
8. The social position in the community that goes with the job	[]	[]	[]	[]	[]
9. The policies and practices toward employees of this company	[]	[]	[]	[]	[]
10. The way my supervisor and I understand each other	[]	[]	[]	[]	[]
11. My job security	[]	[]	[]	[]	[]
12. The amount of pay for the work I do	[]	[]	[]	[]	[]
13. The working conditions (heating, lighting, ventilation, etc.) on this job	[]	[]	[]	[]	[]
14. The opportunities for advancement on this job	[]	[]	[]	[]	[]
15. The technical "know-how" of my supervisor	[]	[]	[]	[]	[]
16. The spirit of cooperation among my co-workers	[]	[]	[]	[]	[]
17. The chance to be responsible for planning my work	[]	[]	[]	[]	[]
18. The way I am noticed when I do a good job	[]	[]	[]	[]	[]
19. Being able to see the results of the work I do	[]	[]	[]	[]	[]
20. The chance to be active much of the time	[]	[]	[]	[]	[]
21. The chance to be of service to people	[]	[]	[]	[]	[]

Appendix 8 - Continued

On my present job, this is how I feel about		<u>VDS</u>	<u>DS</u>	<u>N</u>	<u>S</u>	<u>VS</u>
22.	The chance to do new and original things on my own	[]	[]	[]	[]	[]
23.	Being able to do things that don't go against my religious beliefs	[]	[]	[]	[]	[]
24.	The chance to work alone on the job	[]	[]	[]	[]	[]
25.	The chance to do different things from time to time	[]	[]	[]	[]	[]
26.	The chance to tell other workers how to do things	[]	[]	[]	[]	[]
27.	The chance to do work that is well suited to my abilities	[]	[]	[]	[]	[]
28.	The chance to be "somebody" in the community ..	[]	[]	[]	[]	[]
29.	Company policies and the way in which they are administered	[]	[]	[]	[]	[]
30.	The way my boss handles his men	[]	[]	[]	[]	[]
31.	The way my job provides for a secure future ..	[]	[]	[]	[]	[]
32.	The chance to make as much money as my friends	[]	[]	[]	[]	[]
33.	The physical surroundings where I work	[]	[]	[]	[]	[]
34.	The chances of getting ahead on this job	[]	[]	[]	[]	[]
35.	The competence of my supervisor in making decisions	[]	[]	[]	[]	[]
36.	The chance to develop close friendships with my co-workers	[]	[]	[]	[]	[]
37.	The chance to make decisions on my own	[]	[]	[]	[]	[]
38.	The way I get full credit for the work I do ..	[]	[]	[]	[]	[]
39.	Being able to take pride in a job well done ..	[]	[]	[]	[]	[]
40.	Being able to do something much of the time ..	[]	[]	[]	[]	[]
41.	The chance to help people	[]	[]	[]	[]	[]
42.	The chance to try something different	[]	[]	[]	[]	[]
43.	Being able to do things that don't go against my conscience	[]	[]	[]	[]	[]

Appendix 8 - Continued

On my present job, this is how I feel about

	<u>VDS</u>	<u>DS</u>	<u>N</u>	<u>S</u>	<u>VS</u>
44. The chance to be alone on the job	[]	[]	[]	[]	[]
45. The routine in my work	[]	[]	[]	[]	[]
46. The chance to supervise other people	[]	[]	[]	[]	[]
47. The chance to make use of my best abilities ..	[]	[]	[]	[]	[]
48. The chance to "rub elbows" with important people	[]	[]	[]	[]	[]
49. The way employees are informed about company policies	[]	[]	[]	[]	[]
50. The way my boss backs his men up (with top management)	[]	[]	[]	[]	[]
51. The way my job provides for steady employment.	[]	[]	[]	[]	[]
52. How my pay compares with that for similar jobs in other companies	[]	[]	[]	[]	[]
53. The pleasantness of the working conditions ...	[]	[]	[]	[]	[]
54. The way promotions are given out on this job .	[]	[]	[]	[]	[]
55. The way my boss delegates work to others	[]	[]	[]	[]	[]
56. The friendliness of my co-workers	[]	[]	[]	[]	[]
57. The chance to be responsible for the work of others	[]	[]	[]	[]	[]
58. The recognition I get for the work I do	[]	[]	[]	[]	[]
59. Being able to do something worthwhile	[]	[]	[]	[]	[]
60. Being able to stay busy	[]	[]	[]	[]	[]
61. The chance to do things for other people	[]	[]	[]	[]	[]
62. The chance to develop new and better ways to do the job	[]	[]	[]	[]	[]
63. The chance to do things that don't harm other people	[]	[]	[]	[]	[]
64. The chance to work independently of others ...	[]	[]	[]	[]	[]
65. The chance to do something different every day	[]	[]	[]	[]	[]
66. The chance to tell people what to do	[]	[]	[]	[]	[]

Appendix 8 - Continued

Ony my present job, this is how I feel about

	<u>VDS</u>	<u>DS</u>	<u>N</u>	<u>S</u>	<u>VS</u>
67. The chance to do something that makes use of my abilities	[]	[]	[]	[]	[]
68. The chance to be important in the eyes of others	[]	[]	[]	[]	[]
69. The way company policies are put into practice	[]	[]	[]	[]	[]
70. The way my boss takes care of complaints brought to him by his men	[]	[]	[]	[]	[]
71. How steady my job is	[]	[]	[]	[]	[]
72. My pay and the amount of work I do	[]	[]	[]	[]	[]
73. The physical working conditions of the job ...	[]	[]	[]	[]	[]
74. The chances for advancement on this job	[]	[]	[]	[]	[]
75. The way my boss provides help on hard problems	[]	[]	[]	[]	[]
76. The way my co-workers are easy to make friends with	[]	[]	[]	[]	[]
77. The freedom to use my own judgement	[]	[]	[]	[]	[]
78. The way they usually tell me when I do my job well	[]	[]	[]	[]	[]
79. The chance to do my best at all times	[]	[]	[]	[]	[]
80. The chance to be "on the go" all the time ...	[]	[]	[]	[]	[]
81. The chance to be of some small service to other people	[]	[]	[]	[]	[]
82. The chance to try my own methods of doing the job	[]	[]	[]	[]	[]
83. The chance to do the job without feeling I am cheating anyone	[]	[]	[]	[]	[]
84. The chance to work away from others	[]	[]	[]	[]	[]
85. The chance to do many different things on the job	[]	[]	[]	[]	[]
86. The chance to tell others what to do	[]	[]	[]	[]	[]
87. The chance to make use of my abilities and skills	[]	[]	[]	[]	[]

Appendix 8 - Continued

On my present job, this is how I feel about.....

	<u>VDS</u>	<u>DS</u>	<u>N</u>	<u>S</u>	<u>VS</u>
88. The chance to have a definite place in the community	[]	[]	[]	[]	[]
89. The way the company treats its employees	[]	[]	[]	[]	[]
90. The personal relationship between my boss and his men	[]	[]	[]	[]	[]
91. The way layoffs and transfers are avoided in my job	[]	[]	[]	[]	[]
92. How my pay compares with that of other workers	[]	[]	[]	[]	[]
93. The working conditions	[]	[]	[]	[]	[]
94. My chances for advancement	[]	[]	[]	[]	[]
95. The way my boss trains his men	[]	[]	[]	[]	[]
96. The way my co-workers get along with each other	[]	[]	[]	[]	[]
97. The responsibility of my job	[]	[]	[]	[]	[]
98. The praise I get for doing a good job	[]	[]	[]	[]	[]
99. The feeling of accomplishment I get from the job	[]	[]	[]	[]	[]
100. Being able to keep busy all the time	[]	[]	[]	[]	[]

APPENDIX 9

Faces Scale (Kunin, 1955)

Circle the number under the face that best expresses your overall job satisfaction.



1



2



3



4



5



6



7

APPENDIX 10

Statistical Appendix⁷¹

A. PHASE ONE - EXPERIMENT WITH STUDENTS

Performance

$$(i) \quad Y_H = \alpha_1 + \beta_1 X + \varepsilon \quad (1)$$

$$Y_L = \alpha_2 + \beta_2 X + \varepsilon \quad (2)$$

Coefficient	Value	Std. Error	t - statistic	Significance
α_1	430.74	363.74	1.18	N.S.
α_2	4893.55	924.99	5.29	<0.001
β_1	208.28	40.18	5.18	<0.001
β_2	-226.92	98.05	-2.31	<0.025

$$r^2 = 0.561, 0.203$$

$$df = 21, 21$$

Serial correlation among error terms:

Durbin-Watson statistic: high model 2.13) not significant at $\alpha = 0.05$
 low model 1.77)

Homoscedasticity:

Goldfeld-Quandt test: high (internals < externals) $F = 5.33, \alpha < 0.01$
 low (internals > externals) $F = 12.05, \alpha < 0.01$

Bartlett's test: high $\chi^2 = 23.3, \alpha < 0.005$
 low $\chi^2 = 30.0, \alpha < 0.005$

$$(ii) \quad Y = \beta_3 + \beta_4 X + \gamma Z + \delta XZ + \varepsilon \quad (3)$$

and hence,

$$Y_H = (\beta_3 + \gamma) + (\beta_4 + \delta)X + \varepsilon \quad (4)$$

$$Y_L = \beta_3 + \beta_4 X + \varepsilon \quad (5)$$

⁷¹ Rounding of coefficient estimates and their standard errors explains the slight differences between their quotients and the reported t-statistics.

Appendix 10 - Continued

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	4899.46	707.48	6.93	<0.001
β_4	-228.37	74.99	-3.05	<0.005
$(\beta_3 + \gamma)$	423.92	669.26	0.63	N.S
$(\beta_4 + \delta)$	209.92	73.93	2.84	<0.005

$$r^2 = 0.335$$

$$df = 42$$

Serial correlation among error terms:

Durbin-Watson statistic: 1.65 - not significant at $\alpha = 0.05$

Homoscedasticity:

Bartlett's test: $\chi^2 = 18.06$ - not significant at $\alpha = 0.05$

Analysis of Covariance:

Locus of control and participation were correlated -0.061. Mean locus of control score was not significantly different between high and low participation groups ($t = -0.403$)

Job Satisfaction

$$S = \beta_3 + \beta_4X + \gamma Z + \delta XZ + \epsilon \quad (6)$$

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	3.95	0.64	6.17	<0.001
β_4	0.12	0.07	1.77	<0.05
γ	1.23	0.88	1.40	<0.10
δ	-0.16	0.09	-1.71	<0.05
$(\beta_3 + \gamma)$	5.18	0.61	8.49	<0.001
$(\beta_4 + \delta)$	-0.04	0.07	-0.60	N.S.

$$r^2 = 0.083$$

$$df = 42$$

Appendix 10 - ContinuedSerial correlation among error terms:

Durbin-Watson statistic: 2.15 not significant at $\alpha = 0.05$

B. PHASE TWO - EXPERIMENT WITH MANAGERSPerformance

$$Y = \beta_3 + \beta_4 X + \gamma Z + \delta XZ + \epsilon \quad (3)$$

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	5846.64	834.67	7.00	<0.001
β_4	-439.45	150.01	-2.93	<0.005
γ	-3779.27	1247.48	-3.03	<0.005
δ	832.44	222.74	3.74	<0.001
$(\beta_3 + \gamma)$	2067.37	927.11	2.23	<0.025
$(\beta_4 + \delta)$	392.98	164.64	2.39	<0.025

$$r^2 = 0.246$$

$$df = 44$$

Serial correlation among error terms:

Durbin-Watson statistic: 1.71, not significant at $\alpha = 0.05$

Homoscedasticity:

Bartlett's test: $\chi^2 = 17.34$ - not significant at $\alpha = 0.05$

Analysis of Covariance:

Locus of control and participation were correlated 0.042.

Appendix 10 - ContinuedJob Satisfaction

$$S = \beta_3 + \beta_4X + \gamma Z + \delta XZ + \epsilon$$

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	3.39	0.49	6.93	<0.001
β_4	0.22	0.09	2.51	<0.01
γ	1.31	0.73	1.79	<0.05
δ	-0.25	0.13	-1.95	<0.05
$(\beta_3 + \gamma)$	4.70	0.54	8.64	<0.001
$(\beta_4 + \delta)$	0.03	0.10	0.35	N.S.

$$r^2 = 0.129$$

$$df = 44$$

Serial correlation among error terms:

Durbin-Watson statistic: 1.92, not significant at $\alpha = 0.05$

C. PHASE THREE - SURVEY WITH MANAGERSPerformance - Overall

$$Y = \beta_3 + \beta_4X + \gamma Z + \delta XZ + \epsilon$$

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	3.75	0.95	3.94	<0.001
β_4	0.23	0.18	1.25	N.S.
γ	0.12	0.04	3.31	<0.001
δ	-0.014	0.006	-2.33	<0.025

$$r^2 = 0.25$$

$$df = 42$$

Appendix 10 - ContinuedSerial correlation among error terms:

Durbin-Watson statistic: 1.82, not significant at $\alpha = 0.05$

Homoscedasticity:

Goldfeld-Quandt test: $F = 1.27$, not significant at $\alpha = 0.05$

Analysis of Covariance

Locus of control and participation were correlated 0.07

Performance - By dimension: t - statistics and significance

Dimension	β_4	γ	δ
Planning	1.38, 0.10	2.65, 0.01	-1.68, 0.05
Investigating	0.17, N.S.	0.67, N.S.	-0.24, N.S.
Coordinating	1.02, N.S.	1.77, 0.05	-1.32, 0.10
Evaluating	0.86, N.S.	0.43, N.S.	0.54, N.S.
Supervising	-0.20, N.S.	0.42, N.S.	0.01, N.S.
Staffing	1.84, 0.05	2.47, 0.01	-2.07, 0.025
Negotiating	0.98, N.S.	2.24, 0.025	-0.76, N.S.
Representing	1.36, 0.10	2.55, 0.01	-1.02, N.S.

Job Satisfaction - Overall using Milani measure

$$S = \beta_3 + \beta_4X + \gamma Z + \delta XZ + \epsilon$$

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	76.48	5.78	13.22	<0.001
β_4	-0.05	0.13	-0.35	N.S.
γ	0.25	0.25	1.01	N.S.
δ	-0.045	0.02	-2.25	<0.025

$$r^2 = 0.095$$

$$df = 43$$

Appendix 10 - ContinuedSerial correlation among error terms:Durbin-Watson statistic: 2.19 not significant at $\alpha = 0.05$ Homoscedasticity:-Goldfeld - Quandt test: $F = 1.19$, not significant at $\alpha = 0.05$ Job Satisfaction - By Sub-scale; t - statistics and significance

Sub-scale	β_4	γ	δ
Social Service	-0.17, N.S.	1.12, N.S.	-1.30, N.S.
Creativity	0.10, N.S.	2.49, 0.01	-1.31, 0.10
Moral Values	-1.30, N.S.	1.03, N.S.	-0.42, N.S.
Independence	-1.42, 0.10	0.94, N.S.	-0.50, N.S.
Variety	1.66, 0.10	1.92, 0.05	-0.86, N.S.
Authority	0.59, N.S.	1.47, 0.10	-1.01, N.S.
Ability Utilization	-0.74, N.S.	3.13, 0.005	-2.21, 0.025
Social Status	-0.35, N.S.	1.40, 0.10	0.36, N.S.
Company Policies	0.31, N.S.	0.54, N.S.	-1.37, 0.10
Supervision - Human Relations	-0.15, N.S.	0.62, N.S.	-0.93, N.S.
Security	-0.62, N.S.	1.25, N.S.	-1.73, 0.05
Compensation	-0.90, N.S.	0.98, N.S.	-1.25, N.S.
Working conditions	-1.34, 0.10	1.11, N.S.	-1.95, 0.05
Advancement	0.16, N.S.	1.79, 0.05	-1.56, 0.10
Supervision - Technical	-0.18, N.S.	1.67, 0.10	-0.92, N.S.
Co-workers	-0.19, N.S.	2.87, 0.005	-4.48, 0.001
Responsibility	0.93, N.S.	2.54, 0.01	-2.01, 0.05
Recognition	-0.11, N.S.	2.38, 0.025	-1.52, 0.10
Achievement	-0.23, N.S.	1.35, 0.10	-1.10, N.S.
Activity	-0.05, N.S.	2.45, 0.01	-1.68, 0.10

Appendix 10 - ContinuedJob Satisfaction - Overall using Hofstede measure

Coefficient	Value	Std. Error	t - statistic	Significance
β_3	87.41	8.66	10.09	<0.001
β_4	-0.23	0.57	-0.40	N.S.
γ	0.37	0.25	1.48	<0.10
δ	-0.06	0.03	-1.98	<0.05

$$r^2 = 0.11$$

$$df = 43$$

Appendix 10 - ContinuedSURVEY RESULTS - SUMMARY STATISTICS

(i) Locus of Control (Rotter, 1966)

	<u>Mean</u>	<u>Std. Dev'n</u>	<u>Theoretical Range</u>	<u>Actual Range</u>	<u>N</u>
Students	8.52	3.63	0-23	1-17	46
Managers	4.78	2.94	0-23	0-13	48

(ii) Participation Measure (Milani, 1975)

	<u>Mean</u>	<u>Std. Dev'n</u>	<u>Theoretical Range</u>	<u>Actual Range</u>	<u>N</u>
Item 1	4.27	1.81	1-7	1-7	46
Item 2	2.77	1.41	1-7	1-5	46
Item 3	3.96	1.71	1-7	1-7	46
Item 4	4.40	1.80	1-7	1-7	46
Item 5	3.75	1.55	1-7	1-7	46
Item 6	3.81	1.76	1-7	1-7	46
TOTAL	25.13	7.36	7-42	9-39	46

(iii) Participation Measure (Hofstede, 1967)

	<u>Mean</u>	<u>Std. Dev'n</u>	<u>Theoretical Range</u>	<u>Actual Range</u>	<u>N</u>
SCORE	4.33	1.75	1-8	1-7	46

(iv) Faces Scale (Kunin, 1955)

	<u>Mean</u>	<u>Std. Dev'n</u>	<u>Theoretical Range</u>	<u>Actual Range</u>	<u>N</u>
SCORE	5.74	1.25	1-7	4-7	46

Appendix 10 - Continued

(v) Performance (Mahoney, et. al., 1963, 1965)

	<u>Mean</u>	<u>Std. Dev'n</u>	<u>Theoretical Range</u>	<u>Actual Range</u>	<u>N</u>
Planning	6.52	1.44	1-9	2-9	46
Investigating	6.48	1.56	1-9	2-8	46
Coordinating	6.98	1.37	1-9	3-9	46
Evaluating	6.54	1.43	1-9	3-9	46
Supervising	7.46	1.00	1-9	5-9	46
Staffing	6.41	1.45	1-9	3-9	46
Negotiating	4.91	2.07	1-9	1-9	46
Representing	4.13	2.39	1-9	1-9	46
OVERALL	6.85	0.97	1-9	5-8	46

Matrix of Intercorrelations Among the Eight Dimensions of the Mahoney et.al. Instrument

	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1	1.000							
2	0.371	1.000						
3	0.275	0.254	1.000					
Item 4	0.313	0.390	0.324	1.000				
5	0.338	0.267	0.281	0.226	1.000			
6	0.414	0.029	0.294	0.500	0.127	1.000		
7	0.313	0.102	0.202	0.287	-0.194	0.322	1.000	
8	0.315	0.156	0.021	0.474	0.141	0.349	0.509	1.000

Item

- 1 Planning
- 2 Investigating
- 3 Coordinating
- 4 Evaluating
- 5 Supervising
- 6 Staffing
- 7 Negotiating
- 8 Representing

Appendix 10 - Continued

(vi) Minnesota Satisfaction Questionnaire (Weiss, et.al. 1967)

Theoretical Range for all scores (except total) is 5-25. For the total score, the theoretical range is 20-100. The sample size is 46.

Sub Scale	Mean		Std. Dev'n		Act. Range
	Managers in present study N = 46	Peer group of managers in Weiss study N = 135	Managers in present study N = 46	Peer group of managers in Weiss study N = 135	
Ability					
Utilization	19.59	20.93	2.64	3.03	12-25
Achievement	20.59	21.35	3.10	2.70	10-25
Activity	20.87	21.79	2.55	2.22	16-25
Advancement	18.43	19.18	2.20	4.38	15-23
Authority	20.04	20.65	2.37	2.99	11-25
Company					
Policies	20.15	19.48	1.97	4.02	16-25
Compensation	20.13	17.77	2.46	4.86	13-25
Co-workers	17.78	20.90	2.11	2.76	14-22
Creativity	18.65	21.40	3.59	2.93	7-25
Independence	19.17	20.67	4.01	2.67	10-25
Moral Values	21.57	22.08	2.68	2.46	17-25
Recognition	19.00	19.50	3.66	3.79	10-25
Responsibility	19.33	21.26	3.40	2.65	5-25
Security	18.74	21.59	3.60	2.81	9-25
Social Service	19.70	21.39	3.44	2.78	11-25
Social Status	19.63	19.68	2.72	2.94	11-25
Supervision -					
Human	20.96	20.55	2.19	3.54	15-25
Supervision -					
Technical	18.52	20.22	4.07	3.29	7-25
Variety	20.85	21.21	2.52	2.72	12-25
Working conditions	20.61	20.22	2.62	4.23	10-25
OVERALL	78.34	82.37	7.93	9.34	58-94

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