# Developing a Performance-Maintenance (PM) Theory of Leadership

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*Abstract*

*Beginning from a replication of an experimental study conducted in the United States, the PM Theory of Leadership has developed in Japan as an extensive interdisciplinary and international approach to leadership. The present paper describes the current state of the research program and provides a detailed summary of several key studies that have addressed major issues confronted in the research. In general, the research has endeavored to understand the Performance (P) and Maintenance (M) group functions as they are fulfilled through the actions of leaders. A complete summary of the experimental and field studies of PM leadership is also provided through tables describing each study, its basic design, and its results. Current developments and future plans for the research program, especially those involving comparative international research and the role of specific circumstantial characteristics, are also described. In general, research conducted in many work and non-work settings in several countries suggests that the P and M functions interact in promoting constructive group processes, performance norms, and employee attitudes.*

During the past 30 years, an interdisciplinary research program developing and testing a "Performance-Maintenance" or "PM" Theory of Leadership has been conducted at Kyushu University and Osaka University. The present review is designed to provide a comprehensive interpretive overview of all the studies conducted as part of this research program. Although detailed reports of many PM studies (Misumi, 1985) and a review addressing U. S. leadership research issues (Misumi & Peterson, 1985) are available in English, no previous review focuses primarily and in depth on the research program itself. This research program has dealt with many of the groups and organizations in Japanese society that have been significant in Japan's post-war development.

The performance-oriented and maintenance-oriented leadership concepts have been derived from ideas about the basic functions which leadership must fulfill in all social settings (Cartwright & Zander, 1968). The "performance" function is leadership which followers experience as being directly oriented toward forming and reaching group goals, while the "maintenance" function involves leadership experienced as directed toward preserving group social stability. These leadership concepts are closely linked to basic social psychological theory developed in the U. S. and Europe (e. g., Lewin, 1951; Bales, 1950; Cartwright & Zander, 1968).

PM Leadership Theory has a number of characteristics that distinguish it from U. S. leadership theories that use similar concepts. (e.g., Stogdill & Coons, 1957, Fiedler, 1967). Three characteristics of the PM Leadership program can provide an initial basis for distinguishing it from other leadership research. One of the important characteristics of the PM research program has been its interdisciplinary orientation. A goal of the program has been to develop a basic theory of leader-follower interactions which can be meaningfully applied to such diverse settings as industrial organizations, government administration, political processes, classroom teaching, intercollegiate sports, and parent-child relations. The intent has been to develop both a unifying leadership theory and a theory which does not obscure important differences among particular expressions of basic leadership functions in different settings.

A second important characteristic of the research program has been its origin in experimental research stimulated by the Lewin, Lippitt and White (1939) studies of democratic, autocratic and laissez-faire leadership. This experimental basis has resulted in conceptualizing leadership types in a way which is most readily reflected as experimental conditions and is secondarily researchable in field settings.

A third important characteristic is the cultural and historical circumstances surrounding the researcher. The research has been conducted in post-war Japan and thus implicitly bears characteristics of Japan during a period of great change, characteristics which are difficult to identify or interpret. Although these cultural circumstances probably have bearing on the structure of the research program and the content of the PM Leadership Theory, they may have considerable significance for the results obtained as will be discussed.

Four interrelated themes have been pursued in developing the PM research

| Dimension | Situational Generalizability | |
|---|---|---|
| | General (Universal) | Specific (Contingent) |
| Morphology (Basic Forms) | General leadership morphology | Specific leadership morphology |
| Dynamics (Causal Process) | General leadership dynamics | Specific leadership dynamics |

Taken from Misumi, 1985, p. 8

**Figure 1** Paradigm for the Study of Leadership Behavior

program. These four themes are shown in Figure 1. One distinction among these four themes is a separation between the "morphology" or forms of leadership and the "dynamics" or causal processes surrounding leaderhip. A second distinction is between "general" or universal characteristics and "specific" or situationally contingent aspects of the morphology and dynamics of leadership. In practice, these themes are not absolutely distinct since the result of every study reflects both forms and causal processes involving leadership, as well as the general qualities of leadership and the characteristics specific to a particular study. Instead, these themes represent different intended emphases or goals of different concrete studies. Selected studies will be described in some detail from several of these perspectives while the results of others will be briefly summarized. Although the greatest interest among people who learn about PM research is often in the field studies of organizations, it is important to recognize that the basic PM perspective was influenced by experimental social psychology. Consequently, the important experimental studies that determined the early development of PM research must be understood first.

*Early Experimental Studies*

Some of the first leadership studies done in post-war Japan were studies of primary education systems. Establishing a new education system was a critical government priority, and school systems were generally open to social science research. The study which became known as the first major scientific study of leadership in the United States also had a very direct formative influence on PM Theory. This was a study of leadership provided for children by Lewin, Lippitt and White (1939) concerning autocratic, democratic, and laissez-faire leadership. An interest in conducting parallel studies in Japan grew out of a frequent criticism that the original finding in the U. S. that children responded positively to democratic leadership was culture-bound (Krech & Crutchfield, 1948 ; Newcomb, 1950 ; Young, 1944). Consequently two experiments were designed to refine Lippitt and White's basic experimental leadership conditions and assess their effects on various aspects of group morale and performance in groups composed (separately) of fifth-grade boys and girls. Among the important findings were:

1. that differences in group performance and group member attitudes toward one another and toward their work varied depending on leadership type with "laissez-faire" leadership consistently being the least effective ;

2. that group performance and group member attitudes could be changed dramatically when a leader using one behavioral style was replaced by a leader showing a different behavioral style ;

3. that the relative effectiveness of democratic and autocratic leadership varied according to task difficulty and the particular criterion against which effectiveness is

evaluated (e.g., in relatively easy tasks, democratic groups were found to be more effective than autocratic and laissez-faire while in relatively difficult tasks, autocratic groups were found to be the most effective, followed by democratic and laissez-faire groups).

The results of the U. S. and the Japanese studies are somewhat difficult to compare. The play-related activities studied in the U. S. project probably have greater intrinsic appeal than the schoolwork-related tasks of the Japanese studies. In addition, children's willingness to accept adult intervention may be greater in school tasks than in play tasks.

The results, particularly those which suggested that the effects of leadership differed depending on differences in initial motivation and in task difficulty, had important consequences for the further development of the PM leadership program. Of even greater significance, however, were other lessons about conducting research learned as the studies were being carried out and disseminated. In particular, it became apparent that such heavily value-laden and politically meaningful concepts as "democratic", "autocratic" and "laissez-faire" were both very difficult to represent operationally and very difficult to work with and communicate in a non-emotional manner. Recent exprience in international comparative research has again demonstrated the difficulty in maintaining a scientific approach to basic concepts.

However, it also became evident that meaningful experimental conditions could be produced by teaching research assistants to give guidance or no guidance and to express personal concern or no personal concern to subjects. In the next experimental study in the research program, these two lessons resulted in the use of four leadership types as experimental conditions.

The second of the experimental studies was conducted by Misumi and Shirakashi and has been published in English in the journal *Human Relations* in 1966. In brief, the study involved establishing experimental conditions in which the effects of leadership by first-level supervisors could be studied over the moderately long period of 13 daily sessions each lasting for a half hour. Five groups each consisting of three postal trainees were given the relatively simple, monotonous task of quickly and accurately counting holes in IBM cards. The subjects' immediate supervisors in the task were graduate students trained to provide either performance-oriented (P), maintenance-oriented (M), or a combination of performance-and-maintenance oriented (PM) leadership. In order to express P leadership, supervisors spoke a few words at about one minute intervals such as "Hurry up ! Hurry up !", "Don't make mistakes", "Do as much as you can". M leadership was expressed through such remarks as "Enjoy the work !", "Take it easy", "Be relaxed", "You must be tired", "Thank you for doing the work". The PM-type supervisors combined the emphasis on both kinds of behavior while the P-type and M-type supervisors provided only one of the two.

Similarly, instructions read to the subjects by their immediate supervisors were designed to represent leadership by a second-level supervisor which was of either P, M, or PM type. (In subsequent studies to be described below, pm-type leadership was expressed by simply describing the experimental procedure and making no further comments as the tasks were carried out.).

Although the conclusiveness of the study was limited by the relatively small number of individuals and groups involved, some of the results served to guide subsequent research. Sufficient evidence was obtained to indicate that the intended experimental conditions were successfully induced for first-level but not second-level supervisors in a way which is reflected with reasonable clarity in the reports of observers and subjects. The consistent convergence in this and subsequent experimental studies between experimentally induced leadership conditions and both observers' ratings and questionnaire descriptions of leadership by subordinates (e. g., Fujita, 1975; Misumi & Seki, 1971) also suggests that meaningful data concerning leadership can be collected using carefully designed questionnaires. The results of the postal trainee study indicated that productivity measured by the number of IBM cards whose wholes were accurately counted was greatest and several attitudinal criteria (e. g., satisfaction with supervisor) were most positive under PM-type immediate supervisors followed by P-type and M-type supervisors. Less distinct differences were found based on the leadership type of second-line supervisors. Rather than assume that the experimental results could be applied to field settings, survey studies were conducted.

In addition to the results indicating an order in the effectivenss of PM types, the postal trainee experiment has significant consequences for the design of subsequent field studies of leadership. The idea of conceptually distinct P and M dimensions and the anticipation of empirically independent P and M factors continued to be pursued. However, following the experimental conditions, the two leadership functions were always studied in their interactive combination rather than with one dimension abstracted from the other. This interactive emphasis coming out of the initial establishment of experimental leadership conditions lends the PM Theory its unique perspective.

*A Japanese Coal Mining Study*

The next study testing PM Leadership Theory involved a company in a segment of Japanese industry that was critical to national development during the 1950s and 1960s - coal mining. This was the first PM survey study, and it served to test whether PM Theory could be applied outside the laboratory. Field survey measures were designed so that questions were asked about the leader behaviors used to produce the experimental conditions.

The Chuko Coal Company arranged the cooperation of 215 miners from 8 work

groups. These 8 work groups were the ones where the clearest distinction could be made between effective and ineffective groups. The three performance indices used to identify more effective and ineffective groups were: (1) coal output during the preceding year, (2) attendance rate during the preceding year, and (3) work efficiency as rated by the sub-section chief and manager. Performance (P) and maintenance (M) leadership were measured using questionnaires administered to the miners. The eight items concerning the P dimension covered such topics as encouraging rule observance, asking about work progress and providing guidance in solving work problems. The eight items concerning M leadership covered such topics as listening to subordinate opinions, showing concern for subordinates' feelings, and not imposing opinions on subordinates. These questionnaires also included four attitudinal items designed to reflect job satisfaction, group cohesiveness, satisfaction with supervisors, and confidence in supervisors. These attitude items were included to determine whether or not differences in general work attitudes between high and low producing groups might explain any differences found between supervisory types in the high and low producing groups.

Miners indicated the degree to which both their first-level supervisors and second-level supervisors fulfilled the Performance (P) and Maintenance (M) functions. In order to construct the four PM types, some criterion was needed to identify a "high" and "low" level of emphasis on each function. The decision was made to treat the average level of behavioral emphasis on each function as the criterion. This criterion was selected because of the nature and meaning of survey measures. Survey measures do not indicate "behavior" in a way that is abstracted from employee expectations, norms and organization culture. Instead, questions and responses scales are interpreted by respondents in relation to their expectations of what typically occurs or what can be expected. The average leadership scores given throughout a company since they are affected by expectations about what can be typically expected, provides a reasonable criterion for identifying high and low levels of the P and M functions. Using company averages of P and M leadership as the criteria, a supervisor was identified as a PM-type leader when most respondents gave him above average P and M scores and as a pm-type leader when respondents gave him below average P and M scores. P-type and M-type leaders were indentified when workers gave above average scores for just one dimension but not the other. The PM types of both first and second levels supervisors were determined for each work group.

The results showing differences in leadership behavior between the high-producing and low-producing groups are shown in Table 1. The high producing groups are A, B, C, and D While the low producing groups are A′, B′, C′, and D′. In three of the four high producing groups, either the first-level or second-level superviser was described as a PM-type supervisor. No P-type supervisors are found at either the first-or second-

**Table 1** Subordinate Descriptions of First-Line and Second-Line Supervisors' P and M Behavior in Highly Productive and Less Productive Coal Mining Groups

| Supervisor | | Subordinate Description of Supervisor's Behavior | work group[1] A | A′ | B | B′ | C | C′ | D | D′ |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | pm | pm | pm | p | PM | P | PM | P |
| Second-line (Kakari-in) | P | Percentage of workers who gave more than the mean P score | 20.6 | 58.8 | 53.1 | 92.3** | 68.9* | 75.0* | 72.4* | 75.0* |
| | | Percentage of workers who gave less than the mean P score | 79.4 | 41.2 | 46.9 | 7.7 | 31.1 | 25.0 | 23.6 | 25.0 |
| | M | Percentage of workers who gave more than the mean M score | 58.6 | 25.2 | 65.6 | 53.8 | 68.9* | 45.0 | 76.4* | 25.0 |
| | | Percentage of workers who gave less than the mean M score | 41.4 | 64.8 | 34.4 | 46.2 | 31.1 | 55.0 | 23.6 | 75.0 |
| | | | M | pm | PM | P | M | P | pm | P |
| First-line (Seki-nin) | P | Percentage of workers who gave more than the mean P score | 31.0 | 41.2 | 75.0* | 69.2* | 41.3 | 75.0* | 41.1 | 75.0* |
| | | Percentage of workers who gave less than the mean P score | 69.0 | 58.8 | 25.0 | 30.8 | 58.7 | 25.0 | 58.9 | 25.0 |
| | M | Percentage of workers who gave more than the mean M score | 72.4* | 64.8 | 68.7* | 61.5 | 75.8* | 40.0 | 11.7 | 0.0 |
| | | Percentage of workers who gave less than the mean M score | 27.6 | 35.2 | 31.3 | 38.5 | 24.2 | 60.0 | 88.3 | 100.0 |

Student T-test significance: * $p < .05$ ** $p < .01$

[1]A, B, C, and D are the higher producing groups at each work site; A′, B′, C′, and D′ are the lower producing groups.

Taken from Misumi, 1985, p. 29.

level in any of the high producing groups. In three of the four low-producing groups, both the first and second level supervisors were described as P-type leaders. In other respects, the combination of first-level and second-level supervisor types varied more among the high producing groups than among the low producing groups. The results served to confirm the particular value of PM-type leadership in coal mines and to indicate that in a work setting where direct contact with a second-level supervisor was possible, a deficiency in the leadership at one level of supervision could be replaced by leadership from another level.

One exception to the general pattern of results was found. The leadership patterns of the first-level and second-level supervisors at the first workplace differed for both the high producing group (A) and the low producing group (A') from the high and low producing groups at other work sites. Both first-level and second-level supervisors in the low producing group at this site and the second-level supervisors in the high producing group provided pm-type leadership. The characteristic distinguishing supervision in the high producing group was M-type leadership by the first-level supervisor. Thus while the presence of a PM-type leader was ordinarily associated with the highest levels of effectiveness, one of the work groups responded especially well to M-type leadership. This one exception to the general pattern of results indicates the possible presence in a field setting of the kind of "specific" or contingent dynamics of leadership considered in later experimental studies.

The coal mining study further supported the usefulness of building a general morphology of leadership around the four PM leadership types. Differences simply in work attitudes could not be used to account for differences between the effective and ineffective groups because not all attitude differences between these groups were significant and not all reflected more positive attitudes in the more effective groups. The working hypothesis about the effectiveness of the PM types following the coal mining study was that while an emphasis on the P function in the absence of the M function was destructive to productivity, the presence of M leadership when joined with P leadership catalyzes the performance promoting potential of P leadership. The performance-facilitating effect of M leadership in catalyzing P leadership is a hypothesis which is neither tested by studies which put the P and M functions at extremes of one pole nor by studies which treat the P and M dimensions by abstractly and separately studying their separate and additive relationships to criteria.

Another inference from the coal mining study was that the difference in importance of the leadership provided by first-level and second-level supervisors might not be as distinct in some field settings as it appeared to be in the laboratory. The need for further research also became evident at this point to determine why P-type leadership not supported by an emphasis on group maintenance was associated with lower levels of performance compared to other leadership types under field conditions

than it was in the laboratory.

*Designing Measures for Field Application*

Since the time of the coal mining study, survey measures have been designed for a large number of organization types and levels. However, many of these surveys have maintained a consistent base in many of the items used. The process of selecting and refining measures has gone through a series of iterations. The first involved a sample of 400 from the 5200 work organization employees surveyed between August 1968 and January 1969. The results of an analysis using recent data is shown in Table 2. Although this common core of questions is now ordinarily used in work organization research, specific items adapted to particular work conditions are also used. Distinct survey forms are available for six organization levels and for hospitals, educational organizations and public organizations (Misumi, 1985).

Factor analysis results for the 24 questions originally used to measure leadership in work organizations are presented in Table 2. A group principal axis method was used on 6 items concerning pressure to perform well (# 1, 2, 4, 5, 6, 7), 5 items concerning planning-oriented leadership (# 3, 8, 9, 11, 12), and 11 items concerning maintenance-oriented leadership (# 14-24). The items representing these pressure-P (Group I), planning-P (Group II), and M (Group III) factors were selected based on a prior principal components factor analysis with varimax rotation. The resulting composite variables are reasonably homogenous (*alphas* of .77, .78, and .92 respectively). The pressure-P composite is largely independent of the M measure ($r=.073$). However, planning-P is correlated both with pressure-P ($r=.294$) and with M ($r=.537$). Because of the low correlation between pressure-P and the finding that planning-P is represented adequately for research purposes as a combination of pressure-P and M, six out of eight P items used for hypothesis testing and feedback were pressure-P items (Misumi & Peterson, 1985).

One of the hurdles to overcome in the field tests of the PM Leadership Theory was to determine whether the meaning of each PM type was comparable from one setting to another. Because the PM types in each setting were constructed by comparing descriptions of a particular leader with the averages of P and M leadership at that work place, one issue in determining comparability was the issue of whether or not results could be compared when different averages were used to determine high and low levels on each dimension at different work places. This question was answered by conducting several surveys involving sufficient respondents so that data could be analyzed by dividing the P and M dimensions into four parts each to represent a total of 16 PM subtypes. Taking such an approach in several data sets also helps determine whether or not so much information is lost in other studies by dichotomously dividing the continuous leadership dimensions to reflect the four

**Table 2** Results of Group Principal Axis Analysis Using Eight P Items and Eight M Items

| Items | Group Weighting | | | Factor Structure | | |
|---|---|---|---|---|---|---|
| | I | II | III | I | II | III |
| 1. Is your superior strict about observing regulations? | 1 | 0 | 0 | .701 | .208 | −.016 |
| 2. To what extent does your superior give you instructions and orders? | 1 | 0 | 0 | .617 | .463 | .256 |
| 3. When your superior gives you assignments, does he set clear time limis for completing the work? | 0 | 1 | 0 | .312 | .774 | .409 |
| 4. Is your superior strict about the amount of work that you do? | 1 | 0 | 0 | .763 | .162 | −.104 |
| 5. Does your superior urge you to complete your task by the time he has specified? | 1 | 0 | 0 | .722 | .278 | .122 |
| 6. Does your superior try to make you work to your maximum capacity? | 1 | 0 | 0 | .689 | .005 | −.010 |
| 7. When you do an inadequate job, does your superior focus on the inadequate way the job is done instead of your personality? | 1 | 0 | 0 | .582 | .103 | .080 |
| 8. Does your superior know anything the machinery and equipment you operate? | 0 | 1 | 0 | .306 | .682 | .390 |
| 9. Does your superior let you know about the plans concerning the work you are to do each day? | 0 | 1 | 0 | .213 | .735 | .383 |
| 10. Does your superior ask for reports about the progress of your work? | 0 | 0 | 0 | .339 | .372 | .345 |
| 11. Are there times when your working time is wasted because of inadequate planning and organization on the part of your superior? | 0 | 1 | 0 | .029 | .671 | .447 |
| 12. How precisely does your superior work out plans for goal achievement each month? | 0 | 1 | 0 | .201 | .769 | .336 |
| 13. When an unpleasant atmosphere develops in the workplace, does your superior do anything to remove it? | 0 | 0 | 0 | .204 | .523 | .569 |

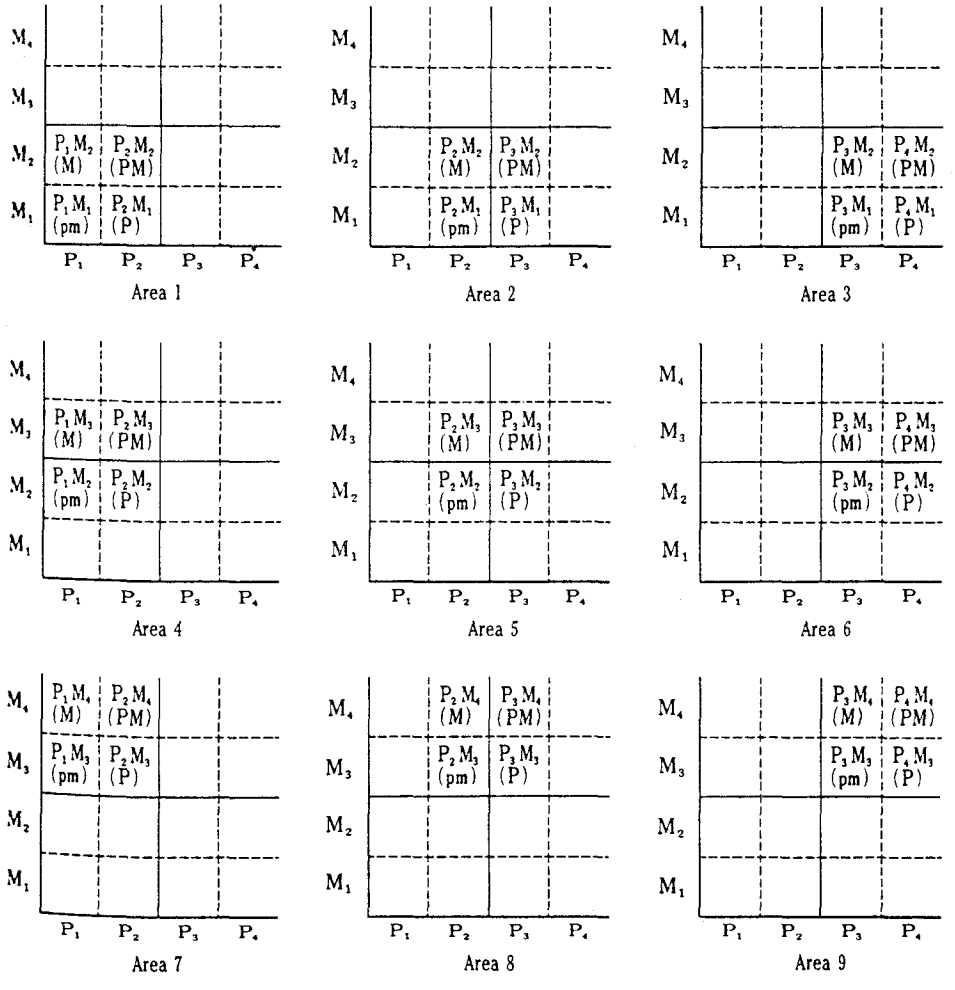
| Items | Group Weighting | | | Factor Structure | | |
|---|---|---|---|---|---|---|
| | I | II | III | I | II | III |
| 14. Can you talk freely with your superior about your work? | 0 | 0 | 1 | −.021 | .347 | .718 |
| 15. When you ask your superior to improve the facilities needed for your work, does he try to fulfill your request? | 0 | 0 | 1 | .134 | .516 | .719 |
| 16. Generally, does your superior support you? | 0 | 0 | 1 | .088 | .427 | .821 |
| 17. Is your superior concerned about your personal problems? | 0 | 0 | 1 | .128 | .426 | .722 |
| 18. Do you think your superior trusts you? | 0 | 0 | 1 | .052 | .317 | .772 |
| 19. Does your superior give recognition when you do your job well? | 0 | 0 | 1 | .043 | .385 | .701 |
| 20. When a problem arises in your workplace, does your superior ask your opinion about how to solve it? | 0 | 0 | 1 | .064 | .366 | .649 |
| 21. Does your superior try to understand your viewpoint? | 0 | 0 | 1 | .061 | .522 | .816 |
| 22. Is your superior concerned about your future benefits like promotions and pay raises? | 0 | 0 | 1 | .116 | .431 | .734 |
| 23. Does your superior treat you fairly? | 0 | 0 | 1 | −.135 | .347 | .707 |
| 24. Is your superior friendly to you? | 0 | 0 | 1 | .056 | .283 | .760 |
| Eigenvalue | | | | 2.790 | 2.647 | 6.018 |
| Percentage of variance explained (in group items) | | | | 46.5 | 52.9 | 54.7 |
| $\alpha$-Coefficient | | | | .770 | .778 | .917 |

Taken from Misumi, Seki and Shinohara, 1974.

analogous experimental conditions that the results are of little value.

Two studies using 16 leadership subtypes can be described as examples (Misumi, Kurokawa & Shinohara, 1973). One treats data from 1309 employees of a steel mill at the individual level of analysis while the second considers data at the group level of analysis from 2486 groups of between 3 and 13 employees working in 16 banks. Questionnaire measures of various attitudes toward the employer and the union were used as criteria.

When 16 PM subtypes are constructed, a matrix results as illustrated by the matrices shown in Figure 2. The data concerning the PM subtypes are analyzed in




Taken from Misumi, 1985, p. 53.

**Figure 2** Areas Within the 16 PM Subtypes

each study comparing adjoining sets of four subtypes in the nine areas indicated in Figure 2. Each area represents the four PM types which would be formed if scores on the P and M dimensions had different means and different ranges. Area 1, for example, represents the PM types which would be formed if the average P and M scores were quite low in a particular study while Area 9 repressents the four types which would be formed in an organization where the average levels of P and M leadership are especially high. Sets of the 16 PM subtypes which correspond to the four basic PM types are represented by Area 1 (pm-type), Area 3 (P-type), Area 7 (M-type) and Area 9 (PM-type).

The frequencies of three orders of the four PM subtypes are shown in Table 3. In "Order A" the ranking of a set of four subtypes in relation to a criterion is PM> M> P> pm. In "Order B" the ranking is PM>P>M>pm. Any other ranking, that is, those in which either PM is not highest or pm is not lowest, is referred to as "Order C".

**Table 3** Number of Areas Showing the Rank of A, B, C, and A+B

| Criterion Variable | Rank Order | | | | |
|---|---|---|---|---|---|
| | A | B | C | A+B | Total |
| Steel Mill Study | | | | | |
| Teamwork | 4 | 4 | 1 | 8 | 9 |
| Willingness to work | 5 | 3 | 1 | 8 | 9 |
| Belonging to company | 4 | 3 | 2 | 7 | 9 |
| Belonging to labor union | 2 | 1 | 6 | 3 | 9 |
| Group meeting quality | 7 | 0 | 2 | 7 | 9 |
| Total | 22 | 11 | 12 | 33 | 45 |
| Bank Study | | | | | |
| Willingness to work | 5 | 1 | 3 | 6 | 9 |
| Satisfaction with salary | 2 | 0 | 7 | 2 | 9 |
| Satisfaction with company | 7 | 2 | 0 | 9 | 9 |
| Teamwork | 7 | 0 | 2 | 7 | 9 |
| Group meeting quality | 7 | 2 | 0 | 9 | 9 |
| Communication adequacy | 5 | 2 | 2 | 7 | 9 |
| Mental health | 3 | 0 | 6 | 3 | 9 |
| Performance norms | 5 | 4 | 0 | 9 | 9 |
| Total | 41 | 11 | 20 | 52 | 72 |

Note: The types of rank order are as follows:
Order A·····PM>M>P>pm
Order B·····PM>P>M>pm
Order C·····Other than Order A or B
Order A+B·····PM first and pm last
Taken from Misumi, 1985, pp. 59, 61.

Descriptions by the 1309 steel mill employees of their supervisors' P and M leadership were each separated into four approximately equal groups by dividing their scores at the mean for each dimension and at the point .67 standard deviations above and below the mean. The rank order of the resulting 16 PM subtypes was determined for five attitudinal criteria: teamwork adequacy, willingness to work, sense of belonging to company, sense of belonging to union, the PM-type ranked first and the pm-type last in either 7 or 8 of the 9 areas. Order A in which the M-type rather than the P-type followed the PM-type as second most effective was the single most frequent order.

Similar results were found for the data from 2489 bank work groups (Table 3). Scores on the P and M dimensions each were divided into four categories as before to form the 16 PM subtypes, except that work group averages were used in place of the scores of individuals. Order A reflects the ranking of the PM subtypes in seven of the nine areas for satisfaction with company, teamwork, and group meeting quality and is the ranking in five areas for willingness to work, communication adequacy, and performance norms. Orders other than those in which PM ranks first and pm last (Order C) are found in seven areas for satisfaction with salary and in six areas for mental health. Thus the order found most often for the four main PM types in field studies (Order A) is found in a majority of the areas represented by four subtypes for seven of the nine attitudinal criteria in bank work groups.

Viewing both of these studies together, the approach taken to splitting the continuous P and M measures at the mean appears to be reasonably robust and largely unaffected by the precise point at which the splits are made. Regardless of the specific field setting, the Japanese field studies show that the PM-type ordinarily ranks first and the pm-type last for many attitude criteria as well as objective criterion measures (cf., Table 4) where these have been available. Most often, M-type leadership ranks second and P-type ranks third, although the reverse is sometimes found for a few criteria (e. g., performance norms) and settings (e. g., engineering project groups).

*The Specific Morphology of Leadership*

Leadership researchers are easily tempted by the motive to "insure" comparability between studies by using inflexible measures that ignore important differences between different social settings. The earliest Ohio State leadership studies effectively avoided this problem by designing separate forms for military, educational, and several kinds of industrial settings (Halpin & Winer, 1957). However, the distinctive qualities of particular social settings tend to be given less emphasis in reviews during the 1970s (e. g., Kerr & Schriesheim, 1974). As the basic P and M measures were being designed, the PM research group wanted to avoid the temptation to assume that these questionnaire items were being interpreted in exactly the same way in all applica-

tions. Consequently, a process was frequently carried out of inductively designing new leadership measures for particular uses and interpreting the specific indices that emerged in relation to the basic theoretical P and M concepts.

The research process ordinarily involves asking experienced "practitioners" (e. g., teachers and students in a recent education organization study) to describe their "formal leader's behavior" in short descriptions of a sentence or two. These descriptions are then sorted to identify common themes and overlaps in descriptions, but without any reference to P or M concepts. Questionnaire items are then designed so that items are interpretable, not double-barrelled, discrete in content, etc. The items are then used in a survey, and the results are subjected to factor analysis extracting as many factors as can be meaningfully interpreted. These factors are then understood in relation to the P and M functions, and items are selected to represent the four PM types.

Figure 3 provides an overview of some of the leadership measures developed in studies of the specific morphology of leadership behavior. As is evident from the

| Kinds of Organizations or Groups | Factors Pertaining to P Leadership | Factors Pertaining to M Leadership |
|---|---|---|
| Private Enterprises (The 1st-line Supervisors) | * Planning<br>* Pressure | * Group Maintenance |
| Private Enterprises (Middle managers) | * Planning<br>* Execution<br>* Initiation<br>* Guidance<br>* Strictness<br>* Coordination | * Consideration<br>* Fairness<br>* Self Righteousness |
| Local Government Offices (Sub-section Chiefs) | * Plan Execution<br>* Discipline Guidance<br>* Observance of Rules | * Group Maintenance |
| Local Government Offices (Section Chiefs) | * Planning and Coordination<br>* Discipline Guidance and Plan Execution<br>* Observance of Rules | * Group Maintenance |
| Classroom (Teachers of the Fifth or Sixth Grade Students) | * Discipline and Training Concerning Life and Learning<br>* Discipline and Training Concerning the Sense of Community and Morality | * Consideration for Pupils<br>* Friendliness toward Pupils<br>* Easing Tension in the Class |
| Family (Parents of the Sixth Grade Students) | * Performance | * Maintenance |
| Sports Groups (College) Students' Sports (Clubs) | * Control<br>* Rigor of Training | * Consideration<br>* Club Maintenance |

Adapted from Misumi & Peterson, 1985.

**Figure 3** Factors Identified in Studies of Specific Leadership Morphology

settings studied, this research has been designed to cover a very broad range of social leadership situations, situations among which many theorists might contend that there is no basis for comparison. In addition to the factors noted above for private enterprises, the supervisor's own observance of regulations and ethical requirements was an additional P factor found to be especially important in government organizations. For middle managers in an automotive products company, several specific aspects of P were found depending on the particular kind of work the manager did. The combined skill-related and ethical emphasis of educating children is reflected in the separate P factors for teachers concerning guidance in "life and learning" and in "the sense of community morality. "A general performance factor appears in studies of parental leadership while a P factor involving the degree of control a team captain has over athletes and a rigor of training factor somewhat paralleling the factor of pressure in industrial organizations are found in intercollegiate athletic groups.

Most studies identify a basic M function, although specific varieties and subfactors of M leadership occassionally appear. Elementary school students are able to differentiate among some reasonably discrete maintenance behaviors by teachers—being considerate, expressing personal friendship, and acting to ease tension. In sports groups, leader maintenance and concern is found to be expressed by personally seeking resources and new recruits for the club. In the study of automotive products company middle managers, a negative form of M involving defensive, arrogant, or "self-righteous" behavior was found.

The theme of the specific morphology of leadership is now being pursued in a new way while the kind of factor analytic studies noted in Table 3 also continue to be conducted. This approach involves assessing the relationship between basic P and M measures and specific leader actions that may be interpreted differently under different circumstances (Smith et al., 1986). In general, the specific morphology studies help emphasize the difference between leader behaviors and the functions that they fulfill when they are experienced by subordinates. The unifying theme in PM research has been leadership functions as experienced by subordinates.

The results concerning relationships between PM types and various criteria found in the other field studies which have been conducted as part of the PM leadership research program are summarized in Table 4. Field studies have been conducted in a variety of work organizations including production, service, and governmental organizations. Field studies have also considered the leadership images of political candidates, leadership provided for children by parents and teachers, and sports leadership provided by student leaders (team captains). With considerable consistency, the results of these correlational field studies are consistent with the causal findings of laboratory studies which indicate that PM-type leadership is associated with high levels on perfomance and attitudinal criteria while pm-type leadership is associated

**Table 4** Field Studies of PM Leadership Types

| *Authors* | *Setting* | *Criteria* | *Results* |
|---|---|---|---|
| Misumi, Takeda & Seki, 1967 | Banks (901 employees, 2 banks, 79 branches) | Productivity (capital growth of branch) | PM highest, pm lowest |
| Misumi, 1984, (pp. 164-165) | Ball bearing company (1356 employees, 92 groups); tire company (62 groups) | Independently rated performance | PM highest, pm lowest |
| Misumi & Shinohara, 1967 | Bus drivers (949) | Accident rate (pretest, change, posttest, 3 year interval) | (Low to high) PM>M>P>pm |
| Misumi, 1984, (pp. 172-178) | Engineering projects (490 managers) | Described most and least effective superior | PM>P>M>pm (short projects with changing memberships) |
| Misumi, Shinohara & Sugiman, 1977 | Local government administraters (920 employees) | Attitudes: job satisfaction, compensation satisfaction, teamwork, meeting quality, communication, mental health, performance norms | PM>M>P>pm (performance norms-- PM>P>M>pm |
| Kidosaki, 1973 | Scientific apparatus manufacturing (1301 employees, 207 supervisors) | Performance norms/ work group tension | Only for above average M, P is correlated with performance norms |
| Tasaki & Misumi, 1976 | Bank 681 employees | Performance norms/ work-group tension | P is more highly correlated with performance norms for above average than for below average M |
| Tasaki & Misumi, 1976 | Bank (as above) | Leader performance norm deviance from group average | PM deviate less than P, M or pm |
| Misumi & Sugiman, 1985 (in Misumi, 1985, pp. 415-419) | Production company 1370 workers | Power base used | PM—greatest expert power<br>P—greatest reward and coercive power<br>M—greatest referent power<br>pm—greatest legitimate power |
| Misumi & Kurokawa, 1972, 1973 | Politics | Voting, Conservative/ Progressive party of candidate | (1) Voted for PM<br>(2) conservatives emphasized "P" of conservatives; Progressive emphasized "M" of progressives |

| *Authors* | *Setting* | *Criteria* | *Results* |
|---|---|---|---|
| Misumi, Yoshizaki, & Shinohara, 1977 | Fifth and Sixth grade students (3007, 83 teachers) | Children's Attitudes | PM>M>P>pm (for dissatisfaction with school, pm>P) |
| Furukawa, Misumi & Shinohara, 1969 | 211 10-11 yr. old children | Children's Attitudes about Parents | Parental self-reports: PM, P>M, pm<br>*Children's reports*: PM, M>P, pm |
| Misumi, 1984 | College sports groups<br>(1) 761<br>(2) 5,251 | Attitudes | PM> M> P> pm |
| Sakamaki, 1974 | Banks (2) 254 people described 1st line, 85 described 2nd line (Longitudinal surveys at one-year intervals—3 in one bank, 4 in the other) | | Stability: first line<br>P, r= .35<br>M, r= .53<br>second line<br>P, r= .74<br>M, r= .59 |
| Misumi & Kurokawa, 1971 | 698 units<br>Steel (4418 people) and<br>Chemical companies, (1379 people, 305 units) | Group size | *Steel*:<br>PM-no effect<br>P-increases<br>M-drops at 7 members<br>pm-increases above 10 members<br>*Chemical*:<br>PM-declines<br>P-increases at 7<br>M-no effect |
| Kidosaki, 1975 | Unspecified company; 60 first-level supervisors | PM type, stability of type, and LPC score | Correspondence between relatively constant pm-type and low LPC score |
| Misumi, Sugiman, Kubota & Kameishi, 1979 | Middle managers (foremen through headquarters managers) of an auto emissions equipment manufacturing plant (533 described plant managers or above, 1,040 described lower clerical managers, 273 described lower manufacturing managers) | Attitudes (motivation to work, compensation satisfaction, company satisfaction teamwork, meeting quality, communication, mental health, performance norms) | PM>pm for all three groups, all criteria; order of other leadership type pairs depends on criterion and group (e, g., for meeting quality, P>M; for work motivation, M>P). |

with low levels on these criteria.

The most varying result concerns the order of P-type and M-type leadership among the four leadership types. The findings suggest that P-type leadership may be more successful in promoting productivity in initial leader-member exchanges or when group composition changes often as in large scale engineering projects. Results from other settings suggest that P-type leadership may, however, decrease in value over time relative to M-type leadership as psychological resistance increases on the part of group members.

In general, the interaction effects between the P and M leadership functions have been inferred from the results for many criterion variables in many particular settings. Studies testing for statistical interaction effects in relation to performance norms have succesfully shown an interaction between the P and M functions (Kidosaki, 1973; Tasaki & Misumi, 1976). This finding is consistent with Fujita's experimental research described below indicating that M-oriented behavior facilitates or catalyzes the positive effect of P-oriented behavior perhaps by promoting a follower's acceptance of P-oriented behavior.

Several other variables associated with leadership types have also been identified. In another study of performance norms, Tasaki and Misumi (1976) found that the performance norms of PM-type leaders deviated less from those of group members than was true for other types of leaders. Misumi and Sugiman (in Misumi 1985) found PM-type leadership to be associated with a greater perceived reliance on expert and referentp ower than on legitimate, coercive or reward power among production company workers. In the area of the images of political leaders, Misumi and Kurokawa (1972, 1973) found a relationship between voting for a candidate and perceiving the candidate as a PM-type leader. They also found that supporters of conservative candidates particularly emphasized the "P" leadership of their candidate while progressive candidate supporters emphasized the "M" image of their chosen candidate.

A few studies presented in Table 4 have also been conducted to identify variables which may tend to bring about PM-type leadership in industrial settings. In order to obtain an overall impression of the stability of a leader's PM Type, Sakamaki (1974) obtained stability coefficients for the leadership of first- and second-level supervisors in banks. Correlations at one year intervals of between $\gamma = .35$ and $\gamma = .74$ suggest that the leadership experienced by subordinates has some stability, but also changes somewhat. Misumi and Kurokawa (1971) found differences in the effects of group size on leadership behavior between a steel and a chemical company. The only consistent effect of size was that the proportion of P-type leadership tends to increase with size. Otherwise, further research is needed to specify interactive consequences of industry and group size on leadership. As part of a series of studies concerning the relationship between PM Theory and Fiedler's (1967) Contingency Theory, Kidosaki (1973) found a relationship between having a low LPC score and being described as a pm-type leader. In general, reseach concerning the determinants of PM leadership types has lagged somewhat behind research concerning its correlates and consequences. As change programs designed to promote PM-type leadership continue to be developed, basic research concerning the causes of leadership behavior and potential obstacles to leadership change will become increasingly important.

*Leadership Dynamics and the Einstellung Effect*

In addition to the studies of leadership morphology designed to establish the validity of the four PM types by showing their association with important criteria in both experimental and field settings, other studies have been designed to explain the causal processes or the "dynamics" through which the PM types are associated with various criteria. Some of these studies have been important in testing the proposition that interactive rather than additive explanations of the effects of P and M leadership are necessary, The first in this group is a study by Misumi and Seki (1971) published in English 15 years ago. The second is a study concerning the "Einstellung effect". "Einstellung" is a term introduced in Gestalt psychology which refers to the process by which a particular approach to problem-solving is developed (English & English, 1958). Experimental research in social psychology indicates that under some conditions, subjects become fixated on one particular method of approaching a specific type of problem and continue to try to use that method even for similar problems that are better solved in another way. When suth a rigid, uncreative approach to problem solving occurs, a "fixed set" or "Einstellung" has developed.

Luchins (1942, 1951, 1961) conducted a series of studies concerning the Einstellung effect using the "water jar problem" as an experimental task. The "water jar problem" is an experimental task in which subjects are asked to draw a specified amount of water using three jars of different sizes. For example, the subjects might be given jar "A" having a 21 ounce capacity, jar "B" having a 127 ounce capacity and jar "C" having a 3 ounce capacity. Using these jars, subjects would be asked how to draw exactly 100 ounces of water in the fewest possible steps. The solution in this case is to first use jar "B" to draw 127 ounces, then use jar "A" to remove 21 ounces leaving 106 ounces, and finally to use jar "C" twice to remove 6 ounces to leave 100 ounces.

Luchins' use of the "water jar problem" to identify Einstellung effects involves assigning a sequence of ten experimental tasks. The first five of these tasks are solved using the same basic strategy as the example described above, that is, jar "B" minus jar "A" minus twice jar "C". These first five tasks are used to encourage subjects to form a fixed problem solving or Einstellung method. The other five tasks are test tasks, four of which can be solved by the method noted, but which can also be solved using some simpler method. The remaining task in the set of five test tasks (the third) cannot be solved using the Einstellung method. The percentage of subjects who used the Einstellung method to solve the four tasks which could be solved more simply and the percentage who failed to solve the third task are used to quantify the presence of an Einstellung effect.

Various of Luchins studies suggest that leadership type might have implications

for the probability that a strong Einstellung will develop (e. g., Luchins, 1951, 1961). If such a relationship could be demonstrated, it could help explain why some types of leadership are more effective than others for leading subordinates whose work requires creative thought. Prior studies in the PM leadership research program had indicated that P leadership behavior involving pressure and planning produces higher psychophysical indication of stress than does any other leadership type (Kawazu, Misumi & Ogawa, 1972). Fujita thus hypothesized (Hypothesis 1) that subjects under a P-type leader would show a stronger Einstellung effect than would subjects under PM, M, or pm-type leaders. Fujita also postulated that subjects' internal anxiety level might interact with the leadership types because anxiety is likely to bring about an Einstellung effect apart from the externally induced pressure of P-type leadership. Thus, Fujita hypothesized that the Einstellung effect would be stronger for anxious subjects under pm than under M ladership (Hypothesis 2), and that subjects with a high anxiety level would show a stronger Einstellung effect under pm-type leaders than would subjects with a low anxiety level (Hypothesis 3).

The experimental conditions representing PM, P, and M leadership were induced by research assistants in the same way that they were in the study of postal trainees described above (Misumi & Shirakashi, 1966). The pm supervisors simply explained the procedures to the subjects. Also, in each experimental condition, the supervisors said "now" every three minutes indicating that the subjects were to complete answering a problem. A questionnaire designed to serve as an experimental manipulation check indicated that the experimental conditions had been succesfully induced. Subjects were recruited from a women's college in Fukuoka. The 111 subjects were distributed into experimental conditions as follows: PM-25, M-30, P-28, pm-24.

The percent of subjects showing a strong Einstellung effect in each of the experimental leadership conditions was as follows: PM-type-24%, P-type-64%, M-type-35%, pm-type-46%. Thus, the order of the four PM types with respect to their induction of an Einstellung effect is: P>pm>M>PM. Tests of statistical significance (two-way analysis of variance) which control for anxiety categories (based on Manifest Anxiety Scale scores) indicated that P-type leadership showed a significantly greater Einstellung effect than did either PM or M leadership. Thus, Hypothesis 1 suggesting that P-type leadership will produce stronger Einstellung effects than any other type of leadership is supported. The presence or absense of M leadership appears to be particularly critical to the appearance of Einstellung effect in the group of subjects as a whole.

Table 5 present the results of data analyzed within the high anxiety and low anxiety groups. Significant differences in Einstellung effect are found between high and low levels of M leadership in both the high anxiety group ($x^2=3.87$, $p<.05$) and the low anxiety group ($x^2=3.79$, $p<.10$). However, in the low anxiety group,

**Table 5**

| | High Anxiety Subjects | | | |
|---|---|---|---|---|
| | SS | df | $x^2$ | |
| P behavior (A) | 32.62 | 1 | | n. s. |
| M behavior (B) | 248.76 | 1 | 3.87 | $p<.05$ |
| A×B | 75.81 | 1 | 1.18 | n. s. |
| Total between groups | 357.19 | 3 | 5.56 | n. s. |
| Within groups | | $w^2=64.24$ | | |
| | Low Anxiety Subjects | | | |
| | SS | df | $x^2$ | |
| P behavior (A) | 0.91 | 1 | | n. s. |
| M behavior (B) | 217.56 | 1 | 3.79 | $p<.10$ |
| A×B | 678.61 | 1 | 11.81 | $p<.01$ |
| Total between groups | 897.07 | 3 | 15.64 | $p<.01$ |
| Within groups | | $w^2=57.47$ | | |

Taken from Fujita, 1975

a significant interaction term ($x^2=11.81$, $p<.01$) indicates that the development of an Einstellung effect depends jointly on the combined levels of P and M leadership. The order of the PM types in the low anxiety condition is P>M>pm>PM with the P-type producing a significantly greater Einstellung effect than the pm- or PM-type. This order indicates that when a high degree of M behavior is provided to low anxiety subjects, P behavior serves to *reduce* the Einstellung effect. However, when a low degree of M leadership is provided to these subjects, P behavior serves to *increase* the Einstellung effect. This result supports Hypothesis 2 which suggests that M behavior is only useful for reducing Einstellung effects when either internal tension such as a high initial anxiety level or external tension such as a high level of P leadership is present. The third hypothesis suggesting that pm-type leadership would produce a greater Einstellung effect for high-anxiety subjects than for low-anxiety subjects was not confirmed.

The results of this study can be applied by considering differences in the consequences different types of leadership might have depending on whether or not subordinates are experiencing pressure from some source other than the leader. For subordinates who are already anxious, it will be particularly important to provide M leadership in order to avoid the development of non-creative thinking. For subordinates who are not anxious, a combination of high emphasis on P and on M leader-

ship may be especially useful while a high emphasis on P leadership alone may be especially problematic.

The main theoretical implication of the Misumi and Seki and Fujita studies is that the intereractivive combination of P and M leadership may have more important consequence than their additive combination. Although each of these studies was intended to seek a generally applicable principle for explaining some of the positive consequences of PM-type leadership, they also provided some "specific" or contingent information. In Fujita's study, for example, whereas PM-type leadership is particularly important for subjects with low internal anxiety, M-type and PM-type leadership are virtually indisguishable for high anxiety subjects. Thus, "general" studies in the PM leadership research program have been found to have "specific" implications just as some "specific" studies have been found to have "general" implications.

*Other Experimental Studies*

Other experimental studies in the PM research program are summarized in Table 6. Most involve manipulations of leadership types similar to those used in the Misumi and Shirakashi (1966) and Fujita (1975) studies. Minor modifications are also used in each experimental setting to take into account specific characteristics of different tasks and subjects. In most cases, leadership questionnaires were distributed to allow subjects to describe their perceptions of leadership. These manipulation checks consistently support the success of the experimental conditions.

One series of studies considers the effect of leadership type one perceptual-motor learning and paired-associates learning. The studies are relevant to both traditional educational leadership practices and to industrial situations in which learning is critical to task performance. In general, these studies suggest that PM-type leadership contributes to reminiscence following a brief rest after either massed or distributed practice sessions. In the distributed practice experiment (Misumi, Yoshido & Sato, 1969), significant reminiscence was only found when the P-oriented behavior was provided during the learning periods and M-oriented behavior during rest periods. The results for pre-rest learning are mixed. However, for subjects who scored high on the Manifest Anxiety Scale, Yamauchi and Yamaguchi (1973) found that M-type leadership leadership produces better learning than P-type or PM-type leadership. Some other internal source of arousal in these subjects may fulfill the "P" function. This finding is consistent with the results of the Misumi and Seki (1971), and Fujita (1975) studies which show that individual characteristics sometimes reduce the need for an external P function.

Other sets of experiments concerning the effects of leadership on physiological processes and group social processes are summarized in Table 6. Both detailed descriptions (Misumi, 1985) and reviews (Misumi & Peterson, 1985) of these studies

**Table 6** Experimental Studies of PM Leadership Types

| *Author/Year* | *Subjects* | *Task/Site* | *Independent Variables* | *Independent Variables* | *Results* |
|---|---|---|---|---|---|
| 1. Learning studies | | | | | |
| Sato, 1968<br>Misumi & Sato, 1968<br>Misumi, Yoshida & Sato, 1969 | 80 female high school students | Inverted Chinese alphabet printing | Four PM types | (1) Pre-rest learning<br>(2) Post-rest reminiscence | (1) Learning performance: PM>P>M>pm<br>(2) Reminiscence: PM>P>M>pm |
| Misumi, Yoshida, & Sato, 1969 | 357 male high school students | Inverted "hiragana" printing (distributed practice) | Four PM types; leader comments during work vs. during rest | (1) Pre-rest learning<br>(2) Post-rest reminiscence | (1) Learning performance: no differences<br>(2) Reminiscence only occured when P provided during work and M during rest |
| Misumi, Sato, & Yoshida, 1970<br>Sato, 1972 | 834 female high school students | Inverted "hiragana" printing (massed practice) | Four PM types; number of pre-test trials | (1) Pre-rest learning<br>(2) Post-rest reminiscence | (1) Learning performance: no significant difference among leadership types.<br>(2) Reminiscence: PM>P>M>pm (increased under PM-type as number of trials increased) |
| Misumi, Shinohara, & Sato, 1974 | Reanalysis of 87 subjects with 40 pre-test trials from the above study of 834 female high school students | | Four PM types; sets of pre-rest trials (3 sets) | (1) Pre-rest learning<br>(2) Post-rest reminiscence | *Learning*: significant main effect of trials (more learning); P leadership promoted learning in early trials, PM in late trials |
| Yamauchi, Yamaguchi, 1973; Misumi, Ikeda & Yamaguchi, 1971 | 313 students of girl's senior high | PM, P, and M-types, easy and difficult learning tasks; high and low anxiety subjects | | Correct answers | No overall differences among leadership types; low anxiety subjects: PM>P>M; high anxiety subjects: M>P>PM. Based on perceived leadership: PM>P, M>pm (significant interaction with trial also) |
| 2. Psychophysiological studies | | | | | |
| Misumi & Kawazu, 1970 | 4 female students | count holes in IBM cards | P-type<br>M-type | plethysmogram (pulse-volume amplitude) | Pulse volume amplitude: decreased under P (heightened arousal); increased under M. |

| *Author/Year* | *Subjects* | *Task/Site* | *Independent Variables* | *Independent Variables* | *Results* |
|---|---|---|---|---|---|
| Osato, Ogawa, Misumi & Nishino, 1971 | 16 senior high girls | mirror drawing | P-type<br>M-type | Drawing performance, blood pressure | Blood pressure increase: P>M<br>Performance speed: P>M Accuracy: M>P |
| Misumi, Ogawa & Kawazu, 1971 | 19 male psychology students | count holes in IBM cards | P-type<br>M-type | Plethysmogram<br>Heart rate | Increase in pulse volume amplitude: PM>P;heart rate: no difference; work quality: P>PM; accuracy: PM>P. |
| Kawazu, Misumi & Ogawa, 1972 | 58 junior high boys | count holes in IBM cards | P, M, PM-types | Galvanic skin response, heart rate, performance, attitudes | Arousal (SR and HR): P>PM>M<br>No difference in performance.<br>Varying attitude differences. |
| Kawazu, Misumi & Ogawa, 1978 | 25 female students | count black dots | work during noise periods; work during quiet periods | Plethysmogram | HR: work during noise>work without noise |
| Kawazu, Misumi, Ogawa, Osato & Miyamoto, 1973 | 40 college students | mirror drawing | Placebo and leadership: (Stimulant-P, Depressant-P, Stimulant-M, Depressant-M) | Heart rate, task performance | No heart rate differences; performance best under depressant-P, worst under depressant-M. |
| Kawazu, Ogawa & Misumi, 1974 | 74 female university students | mirror drawing | Placebo and leadership (as above; S-P, D-P, S-M, D-M) | Heart rate, performance | *Heart rate*: S-P>S-M, D-M>D-P, D-M>S-M *Performance*: S-M>D-M |
| 3. Group Processes | | | | | |
| Sasaki & Yamaguchi, 1971 | 160 2nd year junior high students (16 groups of 5 boys, 16 of 5 girls) | cut out geometric figures | Four leadership types | Performance, survey attitude measures (return potential model) of performance norms for peers and supervisors | Productivity:<br>First half-PM, P>M,<br>Second half-PM>P>pm>M<br>Performance norms: PM>P, pm |

| *Author/Year* | *Subjects* | *Task/Site* | *Independent Variables* | *Independent Variables* | *Results* |
|---|---|---|---|---|---|
| Misumi & Seki, 1971 | 40 junior high students (10same-sex groups of 4) | See below | High, medium, and low n-ach under PM- and M-types; high and medium n-ach under P-type; high and low n-ach under pm-type | See below | Described as being similar to those below. |
| Misumi & Seki, 1971 | Students of a women's college; 8 groups of 3 | Count holes in IBM cards | TAT-based n-ach scores; four PM types | Group productivity; survey of group atmosphere | *Productivity*: for high n-ach—PM> P>M>pm; for low n-ach—P>PM, M, pm<br>*Satisfaction*: for high n-ach—PM> M>P>pm; for low-ach—PM>pm> M>P<br>(lesser differences in cohesion and hostility) |
| 4. Emergency evacuation and maze escape | | | | | |
| Sugiman, Misumi & Sako, 1983 | 42 male city employees | Escape to one of two exists in a simulated emergency in an underground shopping market | "Follow-me" leadership, and "Follow direction" leadership | Number of subjects who followed each leader to an exit | More people followed the "Follow me" leader and escaped more quickly than for the "Follow direction" leader. |
| Sugiman and Misumi, 1984 | 90 college students (14 male, 2 male in each of 5 groups) | Escape in a simulated emergency in a dark basement | "Follow-me" leadership, and "Follow direction" leadership; two or four leaders (2×2), plus a fifth condition with two leaders using each method ("mixed method") | Speed of evacuation; number of evacuees who followed the leader (compared to those who left through a different exit) | "Follow me" method was more effective with four than with two leaders; "Follow direction" method was more effective with two than with four leaders; two leader "mixed method" was the most effective two—leader condition. |

| *Author/Year* | *Subjects* | *Task/Site* | *Independent Variables* | *Independent Variables* | *Results* |
|---|---|---|---|---|---|
| Kugihara & Misumi, 1984 | 66 male college students (11 in each of 6 conditions) | Escape from a simulated maze projected onto a video screen to resemble the perspective from inside the maze | P, PM, and M leadership types (in the first two P behavior involved Pressure-P; Fear (threat of electric shock) and non-fear conditions (eight trials for all subjects | Number of"steps"; repetition of wrong turns, perceived pressure-P planning P, and M; perceived unreasonable pressure; experienced tension | More experienced tension under fear than under non-fear condition. Tension: for perceived P, P>PM; for perceived M, M>PM>P. Number of steps: fear condition—PM<P, M; non-fear condition—*n. s.* Repeated wrong turns: fear condition—PM<P, M; non-fear condition—*n. s.* Perceived planning: fear condition—PM>M>P; non-fear condition—PM, P>P>M. Unreasonable Pressure—P>PM, P>M |
| Misumi & Sako, 1982 | 155 male college students in 31 groups | Subjects controlled dots on a video monitor. The leader's dot could be followed to an exit | (1) P function only;<br>(2) P function with M function at the beginning of the trial;<br>(3) P function with M at middle of trial;<br>(4) Control condition | (1) How closely the leader was followed;<br>(2) distance among followers | Subjects followed most closely and showed the least dispersion in the second condition, and followed least closely and showed most dispersion in the control condition. The other conditions were intermediate. |
| Sato, Kugihara, and Shigeoka, 1984 | 372 college students in 62 same-sex groups of 6 | Escape in an emergency situation | Four PM types (PM, planning-P, pressure-P, M) introduced either immediately or after 30 seconds delay. | Proportion of subjects who escaped; degree of "jamming" at exits | Succesful escape: PM> planning-P> M>pressure-P. |

1 "Mirror drawing" tasks involve copying inverted Chinese alphabet figures.

2 "Nonsense syllable" tasks involve learning Japanese symbol pairs ("hiragana"—"katakana").

3 "Stimulant" (S) and "Depressant" (D) placebo conditions involve giving subjects a placebo pill and describing it as either a stimulant or a depressant.

are available in English. In general, these studies suggest that the M-fuction catalyzes P-function effects by reducing excessive arousal and promoting acceptance of high performance norms and goals.

A newer set of studies concerning leadership promoting escape behavior is also summarized in Table 6. Some of these studies followed the established pattern of assessing differences among PM types in escape behavior (Kugihara & Misumi, 1984; Sato et al., 1984). These studies showed stronger effects of the PM types when subjects were "aroused" through threat of an electric shock than when they were not. For the two performance measures, PM-type leadership promoted more effective escape than P-type or M-type leadership.

The other two studies (Sugiman, Misumi & Sako, 1983, Sugiman & Misumi, 1984) were conducted with some reference to PM Theory, but are not designed to be explicit tests of PM Theory. However, their results suggest that two specific ways of providing leadership in the emergent social structure produced by a crisis situation can affect successful escape. These field studies indicate that when there are many "leaders", evacuation may be more successful when each leader walks to an exit while directly providing leadership for only a few people. However, when there are few leaders, speaking loudly to the group and pointing to an exit may be the more effective evacuation approach.

*Leader Behavior in Laboratory and Field studies*

In laboratory research, the correspondence between "actual" and "experienced" behavior is less problematic than is the case in field research. That does not mean that actual and experienced behavior are more nearly equivalent in a rationalistic sense in laboratory than in field settings. However, those factors affecting how actual actions are interpreted which depend on the history of a particular leader-follower relationship and the tasks and task experiences which affect how performance-oriented leadership is experienced are more constant and better controlled in the laboratory than in the field. Even in laboratory research, differences among subjects are sometimes found in how leader actions are interpreted and experienced. The uncertainty about exactly what actions, under what circumstances, and to what kinds of subordinates produce what experienced leadership type is much greater in field than in laboratory work.

A portion of the differences in what leader actions are interpreted as fulfilling the P and M functions is reflected in the studies of specific leadership morphology. For example, some of the specific behaviors addressing the P function are found to be different in private enterprises than in families. Professor Peter Smith, who is working on the United Kingdom data collection in a comparative leadership study, has designed a new approach to understanding the relationship between observable

actions and experienced functions. Following this approach, specific actions like the amount of time a superior spends at work compared to subordinates, are being analyzed in relation to the PM functions.

*Ongoing Projects Outside Japan*

PM research has followed th pattern of Japan's development one step further in recent years. With Japan's increased internationalization, PM research has begun to be conducted in collaboration with researchers in other countries. The exact use made of the PM framework has been adapted to the situations of other countries. For example, in a project being carried out with collaborators in the United States, England, and Hong Kong, specific actions that leaders take to convey the P and M functions in different countries are being investigated (Smith et al., 1986). This project is also providing a preliminary basis for comparing PM field measures with commonly used Western leadership measures, and for understanding the implications of the PM types for aspects of individual employee performance that are considered important in countries besides Japan. The PM survey and feedback process is being adopted to the situation in China by the Institute of Psychology of the Chinese Academy of Sciences (Xu, Long, Deng & Xue, 1985). This adaptation includes the addition of a moral "Character" factor, an aspect of community commitment and national loyalty considered to be especially important in current Chinese culture. The development of PM research is intended to continue the pattern of working on Japan's distinctive leadership problems while maintaining a pattern of learning from other countries and contributing to the development of an international social science.

*Implications of the PM Theory of Leadership for the Leadership Research Fiela*

Some of the approaches to the study of leadership which have been found beneficial in the PM leadership research program may be useful for solving some of the problems and handling some of the issues being raised elsewhere in the leadership field. For example, the approach taken to understanding conditioning effects of situational variables on the consequences of leadership types has emphasized laboratory research. While exceptions to the general pattern of the relative effectiveness of leadership types —PM>M>P>pm— have occasionally been found, little emphasis has been placed on identifying the particular variables which have produced these exceptions. Beginning to identify the causes of such exceptions by measuring situational "moderator" variables as has been done, for example, in testing the "path-goal" theory of leadership (Evans, 1970 ; House, 1971 ; House & Mitchell, 1974) was expected to be very difficult and potentially very frustrating because of the complex causal dynamics operating on established social systems. Instead, important contingency

hypotheses such as the idea described above that subordinate anxiety level influences the effects of leadership types have been tested in the laboratory. Incidentally, the hypothesis of path-goal theory which suggests that subordinate need for achievement will moderate the effects of leadership has been confirmed in PM leadership research (Misumi & Seki, 1971). Once a more complete picture of variables which condition the effects of leadership is available from laboratory study it may be possible to identify similar phenomena as "moderating effects" in field research.

*Summary*

In conclusion, the aim of the present paper is to provide an overview of a leadership program which has previously been relatively inaccessible to non-Japanese readers. The research program has been built around a conceptualization of four leadership types based on combinations of leaders' emphasis on fulfilling the Performance (P) and Maintenance (M) functions of groups. The PM Leadership Theory is consistent with the emphasis on a combined use of laboratory and field research methods (Sashkin & Garland, 1979) and the concern about both individual and group consequences of leadership (Dansereau, Alutto, Markham & Dumas, 1982). The PM Theory is somewhat unique in its origins in laboratory research and the resulting emphasis it places on interactions of the P and M leadership dimensions. Hopefully, the idea of an interactive combination of two main leadership functions which gives the research its unity and permits coherence in studies of many social settings will be found helpful by many other researchers contributing to the growth of the leadership field.

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**References**


Bales, R. F. *Interaction process analysis.* Mass.: Addison-Wesley, 1950.

Blake, R. R. & Mouton, J. S. *The managerial grid.* Houston: Gulf, 1964.

Bowers, D. G. & Seashore, S. E. Predicting organizational effectiveness with a four-factor theory of leadership. *Administrative Science Quarterly,* 1966, **11**, 238-263.

Cartwright, D. & Zander, A. (Eds) *Group dynamics: Research and theory* (3rd ed.). New York: Harper and Row, 1968.

Dansereau, F., Alutto, J. A., Markham, S. E. & Dumas, M. Multiplexed supervision and leadership: An application of within and between analysis. In J. G. Hunt, U. Sekaran, & C. A. Schriesheim (Eds.), *Leadership: Beyond establishment views.* Carbondale: Southern Illinois Univ., 1982, pp. 81-103.

English, H. B. & English, A. C. *A comprehensive dictionary of psychological and psychoanalytical terms.* Longmans, 1958.

Evans, M. G. The effects of supervisory behavior on the path-goal relationship. *Organizational Behavior and Human Performance,* 1970, 5, 277-298.

Farris, G. F. & Lim, F. G. Effects of performance on leadership, cohesiveness, influene, satisfaction, and subsequent performance. *Journal of Applied Psychology,* 1968, **53**, 490-497.

Fiedler, F. E. *A theory of leadership effectiveness.* New York: McGraw-Hill, 1967.

Fujita, M. The influence of PM leadership types on concept formation. Unpublished master thesis, Faculty of Education, Kyushu University, 1970 (In Japanese).

Fujita, M. The influences of PM leadership types on the Einstellung effect in problem solving processes. *Japanese Journal of Experimental Social Psychology,* 1975, **15,** 116-128 (In Japanese with English abstract).

Furukawa, A., Misumi, J. & Shinohara, H. Measurement of PM parental leadership. Proceedings of the 33rd Annual Meeting of the Japanese Psychological Association, 1969, 293. (In Japanese).

Green, S. G. & Mitchell, T. R. Attributional processes of leaders in leader-member interactions. *Organizational Behavior and Human Performance,* 1979, **23,** 42-458.

Halpin, A. W, & Winsr, B. J. A factorial study of ths leader behavior description. In R. M. Stogdill & A. E. Coons (Eds.), *Leader behavior: its description and measurement.* Columbus: Ohio State University, Bureau of Business Research.

House, R. J. A path-goal theory of leader effectiveness. *Administrative Science Quarterly,* 1971, **16,** 321-338.

House, R. J. & Mitchell, T. R. Path-goal Theory of leadership. Some *post hoc* and *a priori* tests. In J. G. Hunt & L. L. Larson (Eds.), *Contingency approaches to leadership.* Carbondale, III.: Southern Illinois Univ., 1974.

House, R. J. & Mitchell, T. R. Path-goal Theory of leadership. *Journal of Contemporary Business,* 1974, **3** (4), 81-97.

Katz, D. & Kahn, R. L. *The social psychology of organizations* (2nd ed.). New York: John Wiley & Sons, 1978.

Katz, D., Maccoby, E. & Morse, N. C. *Productivity, supervision, and morale in an office situation.* Ann Arbor: Institute for Social Research, University of Michigan, 1950.

Kawazu, Y., Misumi, J. & Ogawa, N. A psychological study of the features of P, M, and PM type leader behaviors in the PM Leadership Theory. *Japanese Journal of Experimental Social Psychology,* 1972, **12,** 11-19 (In Japanese).

Kawazu, Y., Misumi, J., Ogawa, N., Osato, E. & Miyamoto, M. The interaction between the placebo effects and leadership effects. *Japanese Journal of Experimental Social Psychology,* 1973, **13,** 22-30 (in Japanese with English abstract).

Kawazu, Y., Ogawa, N. & Misumi, J. A psychophysiological study of leadership conditions: The interaction between the placebo effects and leadership effects. Proceedings of the 38th Annual Meeting of the Japanese Psychological Association, 1974, pp. 816-817. (In Japanese).

Kerlinger, F. N. & Pedhazur, E. J. *Multiple regression in behavioral research.* N. Y.: Holt, Rinehart & Winston, 1973.

Kerr, S. & Jermier, J. M. Substitutes for leadership: Their meaning and measurement. *Organizational Behavior and Human Performance,* 1978, **22,** 375-403.

Kerr, S. & Schriesheim, C. Comsideration, initiating structure, and organizational criteria: an update of Korman's 1966 review. *Personnel Psychology,* 1974, **27,** 555-568.

Kidosaki, M. The influence of need for achievement on supervisory methods and group performance norms. *Japanese Journal of Experimental Social Psychology,* 1973, **12,** 108-112. (In Japanese with English abstract).

Krech, D. & Crutchfield, R. S. *Theory and problems of social psychology.* New York: McGraw-Hill, 1948.

Kugihara, N. & Misumi, J. An experimental study of the effect of leadership type on follower's escaping behavior in a fearful emergency maze situation. *Japanese Journal of Psychology,* 1984, **55,** 14-21. (In Japanese with English abstract)

Lewin, K. *Field theory in social science.* Cartwright, D. (ed.), New York: Harper, 1951.

Lewin, K., Lippitt, R. & White, R. K. Patterns of aggressive behavior in experimentally created climates. *Journal of Social Psychology,* 1939, **10,** 271-299.

Lowin, A. & Craig, J. R. The influence of level of performance on managerial style: An experimental object-lesson in the ambiguity of correlational data. *Organizational Behavior and Human Performance*, 1968, **3**, 440-458.

Luchins, A. S. Mechanization in problem-solving. *Psychological Monographs*, 1942, **54** (6), 1-95.

Luchins, A. S. On recent usage of the Einstellung effect as a test of rigidity. *Journal of Consulting and Clinical Psychology*, 1951, **15**, 89-94.

Luchins, A. S. On conformity with judgement of a majority or an authority. *Journal of Social Psychology*, 1961, **53**, 303-316.

Mintzberg, H. *The nature of managerial work*. New York: Harper & Row, 1973.

Misumi, J. Action research on the development of leadership, decision making processes and organizational performance in a Japanese shipyard. *Psychologia*, 1975, **18**, 187-193.

Misumi, J. *The behavioral science of leadership* (2nd ed.). Tokyo: Yuhikaku Publishing Co., 1984. (English Edition, M. F. Peterson, ed., Ann Arbor: Michigan University Press, 1985).

Misumi, J. The effects of organizational climate variables, particularly leadership variable and group decision on accident prevention. Paper presented at the 19th International Congress of Applied Psychology, Munich, 1978.

Misumi, J., Ikeda, S. & Yamaguchi, H. A psychological study of the experimenter effect on memory learning. *Proceedings of the 35th Annual Meeting of the Japanese Psychological Association*, 1971, 461-462.

Misumi, J. & Iwai, N. An empirical study on persistence and change in leadership behavior. *Japanese Journal of Experimental Social Psychology*, 1986, **25**, 95-106. (In Japanese with English abstract)

Misumi, J. & Kawazu, Y. A psychophysiological study of the features of P and M type leader behavior in PM leadership theory. *Japanese Journal of Educational and Social Psychology*, 1970, **9**, 79-86 (In Japanese).

Misumi, J. & Kurokawa, M. A study of the effect of work group size upon the leadership functions of the group, members' allegiance, and morale. *Japanese Journal of Educational and Social Psychology*, 1971, **10**, 169-181. (In Japanese).

Misumi, J. & Kurokawa, M. An empirical study of political leadership (I). *Bulletin of the Institute for Industry and Labor*, Kyushu University, 1972, 57. (In Japanese).

Misumi, J. & Kurokawa, M. An empirical study of political leadership (II). In Hiroshima Sociology Society (Ed.), Festschrift in commemoration of Dr. T. Noguchi's sixtieth birthday, 1973. (In Japanese).

Misumi, J., Kurokawa, M. & Shinohara, H. Studies on the validity of 16 PM leadership patterns (I), (II), (III). *Proceedings of the 37th Annual Meeting of the Japanese Psychological Association*, 1973, 32-37.

Misumi, J. & Mannari, N. A longitudinal study of PM leadership effectiveness. In J. Misumi, *The behavioral science of leadership* (2nd ed.), 439-457. Tokyo: Yuhikaku Publishing Co., 1984.

Misumi, J., Ogawa, N. & Kawazu, Y. A psychophysiological study of the features of P and PM type leader behaviors in the PM leadership theory. *Japanese Journal of Educational and Social Psychology*, 1971, **10**, 1-10. (In Japanese).

Misumi, J. & Peterson, M. F. The Performance-Maintenance (PM) Theory of Leadership: Review of a Japanese research program. *Administrative Science Quarterly*, 1985, **30**, 198-223.

Misumi, J. & Sako, H. An experimental study of the effect of leadership behavior on followers' behavior of following after the leader in a simulated emergency situation. *Japanese Journal of Experimental Social Psychology*, 1982, **22**, 49-60. (In Japanese with English abstract)

Misumi, J. & Sato, S. An experimental study of the effects of PM leadership practices upon

task performance and reminiscence processes. *Japanese Journal of Educational and Social Psychology*, 1968, 8, 12-23 (In Japanese).

Misumi, J., Sato, S. & Yoshida, M. The effect of PM leadership type upon performance and reminiscence in perceptual motor learning (III): Reminiscence as a function of amount of pre-rest practice. *Japanese Journal of Educational and Social Psychology*, 1970, 9, 1-16. (In Japanese)

Misumi, J. & Seki, F. The effects of achievement motivation on the effectiveness of leadership patterns. *Administrative Science Quarterly*, 1971, **16**, 51-59.

Misumi, J. & Shinohara, H. The atmosphere of work space and accidents. In Y. Tsujimura & J. Misumi (Eds.), *Psychology of accident and rehabilitation.* Asakurashoten, 1967, 35-64.

Misumi, J., Shinohara, H., & Sato, S. Effect of PM leadership bahavior patterns upon performance factors in perceptual-motor learning (I). *Japanese Journal of Experimental Social Psychology*, 1974, **14**, 31-47. (In Japanese with English abstract)

Misumi, J., Shinohara, H. & Sugiman, T. Measurement of leadership behavior of administrative managers and supervisors in local government offices. *Japanese Journal of Experimental Social Psychology*, 1977, **16**, 77-98. (In Japanese with English abstract)

Misumi, J. & Shirakashi, S. An experimental study of the effects of supervisory behavior on productivity and morale in a hierarchical organization. *Human Relations*, 1966, **19**, 297-307.

Misumi, J., Sugiman, T., Kubota, Y. & Kameishi, K. Empirical studies on leadership of middle management in private organizations. *Japanese Journal of Experimental Social Psychology*, 1979, **19**, 1-14. (In Japanese with English abstract)

Misumi, J., Takeda, T. & Seki, F. An empirical study of the effects of managerial and PM pattern of supervisory behavior on productivity and morale, particularly need for achievement, in a hierarchical organization. *Japanese Journal of Educational and Social Psychology*, **7**, 27-42. (In Japanese with English abstract)

Misumi, J., Yoshida, M. & Sato, S. The effect of PM leadership type upon performance and reminiscence in perceptual-motor learing (II) : The experimental study of distributed learning. *Japanese Journal of Educational and Social Psychology*, 1969, 8, 147-158. (In Japanese with English abstract)

Misumi, J., Yoshizaki, S. & Shinohara, S. The study on teacher's leadership: its measurement and validity. *Japanese Journal of Educational Psychology*, 1977, **25**, 157-166. (In Japanese with English abstract)

Nebeker, D. M. & Mitchell, T. R. Leader behavior: An expectancy theory approach. *Organizational Behavior and Human Performance*, 1974, **11**, 355-367.

Newcomb, T. M. *Social psychology.* Dryden, 1950.

Onodera, T. & Misumi, J. A study about two M behaviors in PM leadership. *The Japanese Journal of Experimental Social Psychology*, 1986, **26**, 77-88. (In Japanese with English abstract)

Osato, E., Ogawa, N., Misumi, J. & Nishino, I. Differential effects of experimenter instructions based on PM leadership theory on subjects' psychomotor performance and blood pressure. *Japanese Journal of Experimental Social Psychology*, 1971, **11**, 57-66. (in Japanese with English Abstract).

Ouchi, W. *Theory Z.* Mass., Addison-Wesley, 1981

Peterson, M. F. A model of problem-appropriate leadership applied to leadership behavior antecedents. *JSAS Catalogue of Selected Documents in Psychology*, 1091, **11**, MS 2296, 53.

Sakamaki, Y. The effects of the factors of group structure and level of task performance on group members' perceptions of group functions. *Japanese Journal of Experimental Social Psychology*, 1974, **14**, 139-146. (In Japanese with English abstract).

Sasaki, K. & Yamaguchi, M. An experimental study of the effect of leadership on the for-

mation of group norms. *Bulletin of the Faculty of Sociology*, Kwansei Gakuin University, 1971, **22**, 209-226, (In Japanese).

Sashkin, M. & Garland, H. Laboratory and field research on leadership: Integrating divergent streams. In J. G. Hunt & L. L. Larson (Eds.), *Crosscurrents in leadership*. Carbondale: Southern Illinois Univ., 1979.

Sato, S. The effect of motivation on performance and reminiscence: The effect of PM type of supervisory behavior. *Japanese Journal of Educational and Social Psychology*, 1968, **7**, 159-167. (In Japanese with English abstract)

Sato, S. The effects of experimenter's supervisory behavior patterns upon performance and reminiscence in perceptual-motor learning. *Japanese Psychological Research*, 1972, **14**, 120-132.

Sato, S., Kugihara, N., Misumi, J. & Shigeoka, K. Experimental Study of escape behavior in a simulated panic situation (III): Effect of the PM Leadership conditions. *Japanese Journal of Experimental Social Psychology*, 1984, **24** (1), 83-92. (In Japanese with English abstract)

Schriesheim, C. A. & Stogdill, R. M. Differences in factor structure across three versions of the Ohio state leadership scales. *Personnel Psychology*, 1975, **28**, 189-206

Seashore, S., Lawler, E. E. III. Mirvis, P. A. & Cammann (Eds.), *Observing and measuring organizational change: A guide to practice*. New York: Wiley-Interscience, 1983.

Smith, P., Peterson, M., Tayeb, M., Bond, M. & Misumi, J. Supervisory leadership styles: A comparison from three continents. Paper presented at the International Congress of Applied Psychology, Jerusalem, July, 1986.

Stogdill, R. M. *Manual for the leader behavior description questionnaire-Form XII*. Columbus: The Ohio State University, Brueau of Business Research, 1963.

Stogdill, R. M. & Coons, A. E. (Eds.), *Leader Behavior: Its description and measurement*. Columbus: Ohio State university, Bureau of Business Research, 1957.

Sugiman, T., Misumi, J. & Sako, H. Action research on evacuation method in emergent situation (I): Comparison between follow-direction method and follow me method. *Japanese Journal of Experimental Social Psychology*, 1983, **22**, 95-98. (In Japanese with English abstract)

Sugiman, T., Misumi, J. & Sako, H. Action research on evacuation method in emergent situation (II): Effects of leader-evacuee ratio on efficiency of follow-direction method. and follow me method. *Japanese Journal of Experimental Social Psychology*, 1984, **23**, 107-116. (In Japanese with English abstract)

Tasaki, T. & Misumi, J. A study of the effect of leadership behavior on group norms in the job situation of an industrial organization. *Japanese Journal of Experimental Social Psychology*, 1976, **16**, 1-7. (In Japanese with English abstract)

Taylor, F. W. *The principles of scientific management*. New York: Harper, 1923.

Taylor, J. C. & Bowers, D. G. *Survey of organizations*. Ann Arbor, Mich.: Institute for Social Research, University of Michigan, 1972.

Weber, M. *The theory of social and economic organization*. New York: Oxford University, 1947.

Xu, L., Long, C., Deng, W. & Xue, A. The role of psychology in enterprise management. *Acta Psychologica Sinica*, 1985, **4**, 339-345.

Yamada, Y. The interaction effect of type-P and type-M leadership behavior on the number of tappings and percent correct detection of the target. *Japanese Journal of Psychology*, 1986, **57** (4), 193-199. (In Japanese with English abstract)

Yamauchi, M. & Yamaguchi, H. The effects of anxiety (drive) level, task difficulty and experimenter's supervisory behavior patterns on paired-associates learning. *Bulletin of the Faculty of Education*, Kyushu University, 1973, **17**, 9-17 (In Japanese).

Young, K. *Social Psychology*. New York: Appleton Century Crofts, Inc. 1944.