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PARTICIPATION, SATISFACTION, AND PRODUCTIVITY: A META-ANALYTIC REVIEW

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This paper reports a meta-analytic literature review testing cognitive, affective, and contingency models of the effects of participation in decision making on employees' satisfaction and productivity. Contingency models received no support. Results from field studies provided some support for cognitive models, and strong support for affective models linking participative climate with worker satisfaction. Methodological variations such as research setting and type of participant were important moderators in subgroup analyses. We discuss the implications of such variations for task complexity.

I would not think of making a decision by going around the table and then deciding on the basis of how everyone felt. Of course, I like to hear everyone, but then I go off alone and decide. The decisions that are important must be made alone.
—Richard M. Nixon (Schecter, 1972:18–19)

Like Mr. Nixon, most people have strong feelings about the best way to make decisions. However, individuals often disagree about the proper decision making procedure. Should subordinates be included in decision making processes, or should managers stand alone as decision makers? Far from being limited to high national offices, the debate over the efficacy of participation in decision making exists throughout government, business, and many academic fields.

There are several reasons for the continuing disagreement on this topic. Moral reasoning regarding participation is often confounded with practical reasoning. Locke and Schweiger (1979) provided several examples of managers and academicians advocating the use of participation on moral grounds, regardless of whether or not it works. In addition, conflicting models of the mechanisms at work in the process of participation lead to confusion over the interpretation of research findings. Finally, in spite of the plethora of empirical research studies investigating participation, when reviewers of the literature draw conclusions on its effectiveness, they invariably still state

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that "it depends" (Locke & Schweiger; Lowin, 1968; Singer, 1974). Unfortunately, the question of what it depends on has never been clearly answered. To begin to answer this question, we carried out a meta-analytic review of past research on the effects of participation in decision making on satisfaction and productivity.

"ONE MORE LOOK" REVISITED

In recent years, several sets of scholars have done wide-ranging reviews of thinking and research on participation in the workplace. For example, Strauss (1982) took an international perspective on workers' participation, and Dachler and Wilpert (1978) looked at the dimensions and boundaries of the participation process. Perhaps the most comprehensive review of empirical research to date, however, is Locke and Schweiger's (1979) "one more look" at participation in decision making, which considered both moral and practical arguments for participation. They reviewed laboratory studies, correlational studies, multivariate field studies, and univariate field studies in which satisfaction and productivity were criterion variables. Locke and Schweiger concluded that little could be said about the effects of participation from multivariate field studies because too many other variables—differences in training, reward systems, education, and so forth—could account for effects often attributed to participation. They did, however, make generalizations based on correlational, laboratory, and univariate field studies.

Locke and Schweiger classified the conclusions of studies as "participation superior," "participation inferior," or "no difference or contextual" (1979: 317). Having found that the results in laboratory, correlational, and univariate field studies were remarkably consistent, they finally concluded: "(1) With respect to the productivity criterion, there is no trend in favor of participative leadership as compared to more directive styles; and (2) with respect to satisfaction, the results generally favor participative over directive methods, although nearly 40 percent of the studies did not find participation to be superior" (Locke & Schweiger, 1979: 316).

Although Locke and Schweiger's review considered well over 50 empirical research reports on participation, their final conclusions seem somewhat anticlimatic—probably for several reasons. First, they used a very gross classification system in considering effects of participation. The categories of superior, inferior, and contextual, though certainly useful, tell us nothing about the strength of participation's effects on satisfaction and productivity. Second, many studies fell into the contextual category, 56 percent for the productivity criterion and 30 percent for the satisfaction criterion. They suggested a number of contextual factors to account for the effectiveness of participation, including two individual factors, knowledge and motivation, and several organizational factors, such as task attributes, group characteristics, and leaders' attributes, but did not go back to the studies reviewed to systematically sort out these contextual effects. Finally, no attempt was made to consider systematic patterns differentiating the studies concluding that

participation was superior from those concluding that participation was inferior.

Meta-analysis (Hunter, Schmidt, & Jackson, 1982) can be employed to refine and extend Locke and Schweiger's findings. This method of cumulating results over studies allowed us to summarize numerically the effects of participation on satisfaction and productivity and to take into account artifactual and substantive sources of variance in the individual estimates of effects. Meta-analysis is an improvement over the review methods used by Locke and Schweiger on several counts. It considers the strength of effects between two variables rather than simply counting significant results or levels of probability, thus providing a more accurate representation of cumulated relationships between variables and eliminating the problem of giving a study with a strong effect the same consideration as one with a barely significant effect. Meta-analysis also provides methods for correcting for such systematic, artifactual sources of variance in the estimates of effects as measurement error and restriction in range. Finally, meta-analysis allows for the consideration of both substantive and methodological moderator variables that could account for unexplained variance in estimates of effects.

In a review considering the effect of research setting on results of studies of participation, Schweiger and Leana (1985) rejected the use of meta-analysis because of lack of consistency in the reporting of means, standard deviations, and correlations among these studies. This concern is important, especially if lack of reported statistics might lead to systematic biases in a review. However, the meta-analytic techniques used in this analysis only require estimates of sizes of effects, not means and standard deviations. The reporting of effect sizes—correlations and values for eta and *t*—has been much more frequent in the literature on participation than reporting of means and standard deviations. Thus, we decided that a meta-analysis of this literature would be useful in resolving several of the problems of earlier reviews. In the next section, we discuss the relationships of participation with satisfaction and productivity through the presentation of cognitive, affective, and contingency models of participation. Meta-analysis does not allow for direct tests of these models, but the models enable identification of substantive and methodological variables that could moderate the relationships of participation with satisfaction and productivity.

PARTICIPATION, SATISFACTION, AND PRODUCTIVITY

Theorists have advanced a variety of models to account for participation's influence on satisfaction and productivity; each proposes mechanisms through which participation has its effects. We used three types of models—cognitive, affective, and contingency—to highlight differences in these propositions. Each of the three types emphasizes a different explanatory mechanism. The three are not mutually exclusive, however, as many theorists have proposed that cognitive, affective, and contingency variables all play important roles in the participative process.

Cognitive Models of Participative Effects

Cognitive models of participative effects suggest that participation in decision making is a viable strategy because it enhances the flow and use of important information in organizations. Theorists supporting such models (Anthony, 1978; Frost, Wakely, & Ruh, 1974) propose that workers typically have more complete knowledge of their work than management; hence, if workers participate in decision making, decisions will be made with better pools of information. In addition, cognitive models suggest that if employees participate in decision making, they will know more about implementing work procedures after decisions have been made (Maier, 1963; Melcher, 1976). Other scholars (Miles & Ritchie, 1971; Ritchie & Miles, 1970), designating cognitive models as the "human resources" theory of participation, note that such a model is "primarily concerned with the meaningful utilization of subordinates' capabilities and views satisfaction as a by-product of their participation in important organizational decisions" (Ritchie & Miles, 1970: 348).

Cognitive models predict a definite pattern of results in empirical research investigating participation, satisfaction, and productivity. First, because these models consider information to be crucial, increases in productivity are expected to be stronger where workers have good information about decisions to be made. For instance, such models would predict a stronger effect for participation in job design than for participation in company-wide policy decisions or experimental discussions. Second, such models do not predict immediate increases in satisfaction as a result of participation in decision making, as it is essentially a knowledge of results that is hypothesized to lead to eventual increases in satisfaction. Third, they do not predict increases in workers' productivity and satisfaction simply from their working in participative work climates or for nondirective leaders. According to cognitive models, increases in productivity and satisfaction are attributable to specific inputs from subordinates on issues in which they are interested and knowledgeable.

Affective Models of Participative Effects

There are several models linking participation to productivity and satisfaction through affective mechanisms. Followers of the "human relations"[1] school of management (Blake & Mouton, 1964; Likert, 1967; McGregor, 1960) adamantly espouse these models, in which the most crucial link is that between participation and workers' satisfaction. These theorists propose that participation will lead to greater attainment of high-order needs, such as self-expression, respect, independence, and equality, which will in turn increase morale and satisfaction. Ritchie and Miles stated that "managers who hold the Human Relations theory of participation believe simply in involvement for the sake of involvement, arguing that as long as subordi-

[1] Ritchie and Miles (1970: 348) coined this term in regard to participation in decision making.

nates feel they are participating and are being consulted, their ego needs will be satisfied and they will be more cooperative" (1970: 348).

The link between participation and productivity in affective models is less straightforward than that between participation and satisfaction. Essentially, this school proposes that participation will enhance productivity through intervening motivational processes: participation fulfills needs, fulfilled needs lead to satisfaction, satisfaction strengthens motivation, and increased motivation improves workers' productivity. According to French, Israel, and As (1960):

> One effect of a high degree of participation by workers in decisions concerning their own work will be to strengthen their motivation to carry out these decisions. This is the major rationale for expecting a relation between participation and production. When management accords the workers participation in any important decision, it implies that workers are intelligent, competent, and valued partners. Thus, participation directly affects such aspects of worker-management relations as the perception of being valued, the perception of common goals, and cooperation. It satisfies such important social needs as the need for recognition and appreciation and the need for independence. These satisfactions and in addition the improvements in their jobs that are introduced through participation lead to higher job satisfaction (1960: 5).

Although several theorists (Locke & Schweiger, 1979; Ritchie & Miles, 1970) feel strongly that scholarly and practical emphasis should be placed on the cognitive effects of participation, researchers in the tradition of McGregor (1960), Likert (1967), and Coch and French (1948) still hold strongly to the importance of participation in providing affective changes in workers. Thus, it is important to consider the predictions of affective models as to the effects of participation on satisfaction and productivity. First, they predict that participation will affect satisfaction in a wide variety of situations. Participation need not be centered on issues of which employees are particularly knowledgeable, for it is the act, not the informational content, of participation that is the crucial mechanism. Second, such models do not predict increases in productivity without initial increases in workers' satisfaction. Finally, affective models suggest that participation will more strongly influence lower-level employees, because managers' higher-order ego needs may well be fulfilled by other aspects of their work.

Contingency Models of Participative Effects

Several theorists suggest that it is not possible to develop models of participative effects that will hold across a wide variety of individuals and situations. Rather, they suggest that participation will affect satisfaction and productivity differently for different people and situations. Scholars have offered a variety of contingency theories centering on personality, particular decision situations, relationships between superiors and subordinates, job levels, and values.

Vroom (1960) was the first to propose that personality might mediate the effects of participation on satisfaction and productivity. Specifically, he suggested that participation will positively influence only employees having personalities with low authoritarianism and high needs for independence. Vroom found some support for his hypotheses, and his work has stimulated other research. However, further studies have provided mixed support for his hypotheses (Abdel-Halim, 1983; Tosi, 1970; Vroom & Mann, 1960).

Vroom was also involved in the major theoretical statement of situational influences on the participation process. Vroom and Yetton (1973), building on the work of Tannenbaum and Schmidt (1958), considered different decision situations and provided rules for deciding the optimal level of participation in decision making. They proposed both rules to protect the quality of decisions and rules to protect their acceptance. Most of the research on this model has been descriptive, drawing on self-reports about how managers behave in different decision situations. However, several normative tests (Vroom & Jago, 1978) have indicated that decisions made within participative modes specified by these rules were more effective than other decisions. Vroom and Yetton's work moves toward an integration of cognitive and affective models of participation. Their contingency rules for protecting the quality of decisions deal with the cognitive portion of participation, and their rules for protecting the acceptance of decisions address its affective components.

Several other theorists have proposed additional variables as intervening in the process of participation. For example, Vroom and Deci (1960) suggested that the types of problems dealt with at various organizational levels influence the appropriateness of participation; it may be less appropriate at low levels, where jobs are routine, and more appropriate at high levels, where jobs involve addressing complex problems. Several scholars (Hulin, 1971; Singer, 1974) have suggested that values mediate the relationship between participation and outcomes, specifically, that many workers may not value participation to the extent that academicians do. Singer further commented, "While the necessity for determining a 'one best' leadership style for the 'composite worker' is understandable from a financial and expediency standpoint, to assume that *all* workers desire participation opportunities is to lack sensitivity to *individual* needs—the antithesis of the humanization that ardent proponents of participation advocate" (1974: 359). Thus, these scholars predicted that participation may only be effective for employees in certain types of organizations—such as research or service organizations, rather than manufacturing organizations—or only for middle- or upper-level employees.

Overview

In sum, *cognitive* models of participation propose that participation leads to increases in productivity through bringing high-quality information to decisions and through increasing knowledge at times of implementation. Such models predict that: (1) The effects of participation on an individual's

productivity will be the strongest for decisions that draw on the individual's expertise. (2) There will not be a direct influence of participation on job satisfaction. Rather, the effect of participation on productivity will mediate this effect. (3) Participation in specific decisions is necessary for increases in productivity and satisfaction; working in a participative climate is not adequate.

Affective models suggest that participation will satisfy higher-order needs of workers and that, as these needs are satisfied, workers will be more satisfied with their jobs. Such models predict that: (1) Working in a participative climate is adequate for increasing workers' productivity. It is not necessary that workers participate in decisions on which they have special knowledge. (2) There is no direct link between participation and productivity. Rather, improved attitudes reduce resistance to change and increase motivation through the satisfaction of needs. (3) Participation may provide more noticeable increases in satisfaction for employees who are not having higher-order needs fulfilled from other aspects of their jobs.

Contingency models of participation suggest that no single model of participation is appropriate for all employees in all organizations. Instead, various contingency models predict that: (1) Employees with high needs for independence and personalities with low authoritarianism will be the most positively influenced by participation. (2) Some decisions are more appropriate for participation than others. Appropriateness depends on requirements for the quality or acceptance of a decision (Vroom & Yetton, 1973), or on its complexity. (3) Employees who value participation will be the most positively influenced by it, and these are likely to be higher-level employees, or individuals working in research or service industries.

Methodological Moderators

In addition to the substantive moderators suggested by the cognitive, affective, and contingency models, several methodological moderators might explain variance in findings about the relationships between participation and satisfaction and productivity. According to Schweiger and Leana, "One potential contextual factor that has not been adequately addressed in previous reviews of the PDM [participation in decision making] literature concerns the research environment in which participation has been examined. Just as PDM may be effective for some subordinates and not for others, consistent findings concerning the effects of PDM may depend, at least in part, on the research setting in which PDM is being investigated" (1985: 148). These authors compared studies conducted in laboratory settings with those conducted in field settings. Locke and Schweiger (1979) considered laboratory, correlational, multivariate, and univariate field studies. Neither of these reviews found that research settings moderated the effect of participation on satisfaction and productivity. Schweiger and Leana concluded that "the laboratory is capable of producing findings that are generalizable to the field" (1985: 18). However, both of these reviews used counting or narrative

techniques to assess the differences among research reports. It is quite possible that the more stringent requirements of meta-analysis could reveal effects for research setting that were not apparent in these reviews.

Measurement is a second methodological variable that might moderate findings about participative effects. There are many conceptualizations of participation, ranging from delegation, through representative systems, to joint decision making by superiors and subordinates. Following Locke and Schweiger (1979), we defined participation as joint decision making, a definition that does not specify the precise form or content of the participative process, but does exclude delegation. However, this conceptual definition embraces a wide range of operational definitions of participation. Similarly, the concepts of satisfaction and productivity take on many meanings in different research efforts. It is quite possible that this wide range of conceptual and operational definitions has resulted in varying strengths of relationships between participation and satisfaction and productivity.

METHODS

Our literature search for relevant research on the effects of participation on satisfaction and productivity included journals in the areas of social psychology, management, organizational behavior, and communication, and several relevant social citation indices. We restricted it to the published literature and to English language journals and books, excluding dissertations and other unpublished research. It is possible that this led us to include more studies with significant results and fewer with nonsignificant results. However, Hunter, Schmidt, and Jackson (1982) did not see this as a serious problem, noting that it is likely that nonsignificant dissertation results may well be attenuated owing to methodological problems. They further stated that, typically, only a very large number of lost studies will make a substantive difference in a meta-analysis.

This literature search identified 106 articles and book chapters on participation. However, many of these were not appropriate for meta-analysis. We eliminated literature reviews and essays that were not based on data (12 articles), 13 data-based articles without quantifiable effect sizes, 5 studies in which participation was the dependent variable, 6 studies whose dependent variables were not appropriate for this meta-analysis, 15 studies lacking clear measures of participation, and 7 studies in which methodological problems[2] posed serious questions about an estimation of effects or whose

[2] The category of methodological problems included a number of studies in which confounding variables or unusual methods made accurate estimation of effects impossible. For instance, the overtime study of Lawler and Hackman (1969) included an outlying data point that made interpretation difficult. In addition, the nonparticipative group in this study had much lower attendance than the participative group to begin with, limiting our confidence in the results. A second example of a methodological problem is Ivancevich's (1976) investigation of goal setting in which both participative and assigned groups went through extensive and active training sessions. In all ways except the actual goal setting, both groups had high levels of participation.

data came from another study included in the meta-analysis. Table 1 lists the studies excluded from this meta-analysis, years of publication, sources, and reasons for exclusion.

Several classic organizational studies were eliminated because of confounding variables or methodological problems. For example, results of the Hawthorne studies (Roethlisberger & Dickson, 1939) have often been attributed to increased participation and interaction. However, several commentaries (Carey, 1967; Lawler, 1975) have provided strong evidence that those reported effects can be more reasonably attributed to rest pauses, reduced work hours, and personnel replacements. Coch and French (1948), the classic study that stimulated interest and research in participation, is also plagued by methodological problems. Bartlem and Locke (1981) pointed out that the increases in productivity and morale in the Coch and French study should probably be attributed to improved training techniques rather than participation. Also, the extraordinarily small within-group variance in this study, possibly the result of group conformity, made the effect size computed from it misleading. Finally, we did not use the productivity estimate in the often-cited Morse and Reimer (1956) field study because the only way productivity could be increased was through the elimination of employees. Not surprisingly, the participative group was unwilling to do this, and productivity increases were much higher in the hierarchical division of the company.

From this process of literature search and elimination, we found 47 studies that contained quantifiable estimates of the relationship between participation in decision making and satisfaction or productivity. Of these, 9 studies were experimental or quasi-experimental studies with subjects who were not organizational members, 13 were field experiments in which participation was manipulated in an organization, and the rest were correlational. Many studies contained estimates of the effect of participation on both satisfaction and productivity, and several included more than one estimate from multiple samples. In total, 41 estimates of the effect of participation on satisfaction and 25 estimates of the effect of participation on productivity were available. Tables 2 and 3 list the studies included in the analysis, years of publication, sample sizes, and estimates of effect sizes.

Meta-analysis involves the computation of the size of effects between the variables of interest for each study. After individual effect sizes are computed, they are cumulated for an estimate of the effect over a large number of studies. This estimate can be corrected for statistical sources of variance, and the variance due to hypothesized moderating variables can be estimated.

The first step in this analysis was the computation of an effect size for each study. Two estimates were available: d, recommended by Glass, McGaw, and Smith (1981); and r, recommended by Hunter and colleagues (1982). These statistics are direct transformations of each other, but we chose r because it provides several advantages: (1) the correlation coefficient has a well-known finite metric ranging from -1.00 to $+1.00$; (2) it is used in related

TABLE 1
Studies Excluded from the Meta-Analysis Organized by the Seven Reasons for Exclusion

Articles	Journals
Reviews and essays excluded	
Dachler & Wilpert (1978)	*Administrative Science Quarterly*
Derber (1963)	*Industrial Relations*
Keeley (1984)	*Administrative Science Quarterly*
Lammers (1967)	*American Sociological Review*
Locke & Schweiger (1979)	*Research in Organizational Behavior*
Lowin (1968)	*Organizational Behavior & Human Performance*
Melcher (1976)	*Human Resource Management*
Mulder (1971)	*Administrative Science Quarterly*
Rosenfeld & Smith (1967)	*Personnel Journal*
Singer (1974)	*Sociology of Work & Occupations*
Strauss (1982)	*Research in Organizational Behavior*
Wood (1973)	*Psychological Bulletin*
No quantifiable effect size available	
Carroll & Tosi (1970)	*Administrative Science Quarterly*
Chaney & Teel (1972)	*Personnel*
Dill, Hoffman, Leavitt, & O'Mara (1961)	*California Management Review*
Fleishman (1965)	*Personnel Psychology*
Ivancevich (1979)	*Academy of Management Journal*
Latham & Yukl (1975)	*Journal of Applied Psychology*
McCurdy & Eber (1953)	*Journal of Personality*
Miles & Ritchie (1971)	*California Management Review*
Powell & Schlacter (1971)	*Academy of Management Journal*
Schuler (1977)	*Academy of Management Journal*
Stagner (1969)	*Journal of Applied Psychology*
Vroom & Jago (1978)	*Journal of Applied Psychology*
Vroom & Yetton (1973)	*Leadership & Decision Making*
Participation as dependent variable	
Alutto & Belasco (1972)	*Administrative Science Quarterly*
Dickson (1980)	*Journal of Applied Psychology*
Heller & Yukl (1969)	*Organizational Behavior & Human Performance*
Long (1979)	*Academy of Management Journal*
Tannenbaum & Schmidt (1958)	*Human Behavior Research*
Productivity or satisfaction not dependent variable	
Hrebiniak (1974)	*Academy of Management Journal*
Maier (1953)	*Human Relations*
Mitchell (1973)	*Academy of Management Journal*
Ruh, White, & Wood (1975)	*Academy of Management Journal*
Searfoss & Monczka (1973)	*Academy of Management Journal*
Siegel & Ruh (1973)	*Organizational Behavior & Human Performance*
Participation not clearly measured/manipulated	
Argyle, Gardner, & Cioffi (1958)	*Human Relations*
Calvin, Hoffman, & Harden (1957)	*Journal of Social Psychology*
Foa (1957)	*Personnel Psychology*
Hoffman, Harburg, & Maier (1962)	*Journal of Abnormal and Social Psychology*
Levine & Butler (1952)	*Journal of Applied Psychology*

TABLE 1 (continued)
Studies Excluded from the Meta-Analysis Organized by the Seven Reasons for Exclusion

Articles	Journals
Participation not clearly measured/manipulated (continued)	
Mahoney (1967)	*Management Science*
Maier & Sashkin (1971)	*Personnel Psychology*
Miner (1979)	*Academy of Management Journal*
Mulder (1959)	*Acta Psychologica*
Mullen (1965)	*Academy of Management Journal*
Oldham (1976)	*Organizational and Human Performance*
Pelz (1956)	*Administrative Science Quarterly*
Sadler (1970)	*Journal of Applied Behavioral Science*
Shaw & Blum (1966)	*Journal of Personality and Social Psychology*
Weschler, Kahane, & Tannenbaum (1952)	*Occupational Psychology*
Methodological problems	
Bragg & Andrew (1973)	*Journal of Applied Behavioral Science*
Coch & French (1948)	*Human Relations*
Ivancevich (1976)	*Journal of Applied Psychology*
Kidd & Christy (1961)	*Journal of Applied Psychology*
Lawler & Hackman (1969)	*Journal of Applied Psychology*
Roethlisberger & Dickson (1939)	*Management and the Worker*
Scheflen, Lawler, & Hackman (1971)	*Journal of Applied Psychology*
Data included through other study	
Baumgartel (1957)	*Administrative Science Quarterly*

analyses like path analysis and multiple regression; and (3) it permits the identification of variance due to statistical artifacts such as sampling error, measurement error, and restriction in range. After r was computed for each study, the coefficient was corrected for measurement error, if estimates of reliability were available. Unfortunately, less than half the studies under consideration included such estimates. Further, no studies included information that would allow for correction for restriction in range. Thus, the correlation coefficients were cumulated after correcting only for attenuation due to measurement error.

Separate analyses were performed for each dependent variable. We cumulated effect sizes and computed a weighted-average effect size. We then computed the variance in that estimate and subtracted variance expected from sampling error from the actual variance. This resulted in an estimate of true variance in the correlation coefficients. If the true variance estimate was larger than 0, statistically testable through chi-square, we considered moderating variables. The procedure above was repeated until it became clear that all possible variance had been accounted for.

A variety of moderating variables were considered for subgroup analysis. These were: (1) the types of jobs held by a study's participants—managers,

TABLE 2
Summary Statistics for Studies, Satisfaction as Dependent Variable

Subgroups[a]	N	r	σ^2_r	σ^2_e	σ^2_ρ	χ^2
Nonorganizational	**328**	**+.3787**	**.0041**	**.0134**	**.0000**	**0.00**
Fox (1957)	72	.46				
Gibb (1951)	20	.50				
Katzell et al. (1970)	76	.37				
Shaw (1955)	48	.36				
Veen (1972)	40	.37				
Wexley et al. (1973)	72	.29				
Actual participation	**1,691**	**+.1561**	**.0083**	**.0047**	**.0035**	**8.19**
French et al. (1960)	33	.05				
Ivancevich (1977)	107	−.11				
Latham & Yukl (1976)	41	.02				
Lischeron & Wall (1975)	237	.01				
Morse & Reimer (1956)	201	.22				
Obradovic (1970, 1st estimate)	200	.29				
Obradovic (1970, 2nd estimate)	195	.19				
Obradovic (1970, 3rd estimate)	142	.12				
Obradovic et al. (1970)	520	.20				
Seeborg (1978)	15	.11				
Specific issue	**787**	**+.2119**	**.0067**	**.0058**	**.0009**	**0.78**
Alutto & Acito (1974)	75	.27				
Alutto & Vrendenburgh (1977)	197	.15				
Jenkins & Lawler (1981)	58	.34				
Lischeron & Wall (1974)	127	.35				
Ritchie & Miles (1970)	330	.16				
Multiple issue	**3,532**	**+.4617**	**.0191**	**.0035**	**.0156**	**88.50**
Abdel-Halim (1983)	229	.43				
Abdel-Halim & Rowland (1976)	106	.32				
Baumgartel (1956)	180	.17				
Falcione (1974)	145	.23				
Fiman (1973)	170	.32				
House & Dessler (1974, 1st estimate)	82	.40				
House & Dressler (1974, 2nd estimate)	69	.53				
Mitchell et al. (1975)	131	.62				
Roberts et al. (1968)	6	.47				
Runyon (1973)	54	.36				
Schuler (1976)	353	.36				
Schuler (1980, 1st estimate)	382	.55				
Schuler (1980, 2nd estimate)	429	.50				
Schuler & Kim (1978)	409	.55				
Tosi (1970)	488	.64				
Vroom (1960)	108	.52				
Vroom & Mann (1960, 1st estimate)	28	.54				
Vroom & Mann (1960, 2nd estimate)	24	.31				
Yukl & Kanuk (1979, 1st estimate)	98	.31				
Yukl & Kanuk (1979, 2nd estimate)	41	.12				

[a] See the tree diagram in Figure 1 for the successive partition of all studies into the subgroups listed in this table.

TABLE 3
Summary Statistics for Studies, Productivity as Dependent Variable

Subgroups[a]	*N*	*r*	σ^2_r	σ^2_e	σ^2_ρ	χ^2
Goal setting	**376**	**+.1130**	**.0154**	**.0181**	**.0000**	**0.00**
Dossett et al. (1979, 1st estimate)	40	−.07				
Dossett et al. (1979, 2nd estimate)	28	.24				
Ivancevich (1977)	113	.24				
Latham et al. (1978)	76	.11				
Latham & Marshall (1982)	38	.10				
Latham & Saari (1979)	40	−.12				
Latham & Yukl (1976)	41	.10				
Field setting	**1,193**	**+.2727**	**.0044**	**.0072**	**.0000**	**0.00**
Abdel-Halim (1983)	229	.29				
Abdel-Halim & Rowland (1976)	106	.28				
Fiman (1973)	170	.12				
Jenkins & Lawler (1981)	58	.28				
Neider (1980)	67	.30				
Roberts et al. (1968)	6	.47				
Schuler & Kim (1978)	383	.31				
Veen (1972)	40	.33				
Vroom (1960)	108	.26				
Yukl & Kanuk (1979)	26	.37				
Authoritarian vs. participative leadership manipulation	**209**	**−.3333**	**.0292**	**.0151**	**.0141**	**3.73**
Ivancevich (1974)	64	−.54				
Katzell et al. (1970)	76	−.21				
McCurdy & Lambert (1952)	21	−.02				
Shaw (1955)	48	−.39				
Assigned vs. participative group manipulation	**204**	**−.0114**	**.0025**	**.0196**	**.0000**	**0.00**
French et al. (1960)	92	.01				
Lanzetta & Roby (1960)	18	.10				
Latham & Steele (1983)	72	−.07				
Torrance (1953)	22	.00				

[a] See the tree diagram in Figure 2 for the successive partition of all studies into the subgroups listed in this table.

production workers, professionals, clerical and technical workers, or mixed groups; (2) the type of organization in a study—manufacturing, service, utility, drug, engineering, research, or military; (3) the object of participation—general participation, appraisal interviews, job redesign, goals, training tasks, financial decisions, or experimental tasks; (4) the study design involved—laboratory experiment, field experiment, or correlational study; (5) the manipulation or measurement of participation—leadership style, type of group tasks, leadership behavior, general participation, decisional deprivation, actual participation, representative participation, or observational coding; (6) the type of satisfaction measured—overall satisfaction, work satisfaction, attitude toward job, satisfaction with supervision, intrinsic satisfaction, attitude toward experimental task—and whether a well-known scale such as the Job Descriptive

Index (JDI) (Smith, Kendall, & Hulin, 1969) or an instrument designed specifically for an individual study was used; (7) the measurement of productivity—time scores, error scores, costs, sales, managers' performance ratings, unit production per time, or perceived productivity.

RESULTS

Satisfaction

Forty-one estimates of the relationship between participation and satisfaction were considered. After cumulation of estimates of effects, the weighted mean correlation was .34, and the true variance was .0301. A chi-square test showed this variance to be statistically different from 0 ($\chi^2 = 244.27$, $df = 40$, $p < .01$), indicating that moderator variables would reduce the variance in estimates. We first looked at substantive moderators like organizational type, job level, and type of decision. None of these subgroupings proved useful in reducing variance or in differentiating among effect sizes. Hence, we considered methodological moderators.

The first moderator variable that was effective in reducing subgroup variance was type of respondent. We divided the studies into those conducted with nonorganizational participants (students) and those conducted with organizational respondents. The mean weighted correlation for the nonorganizational studies was .38; the true variance among these estimates was negative, hence considered to be 0. The variance in the organizational studies was still significant, so we considered additional moderators.

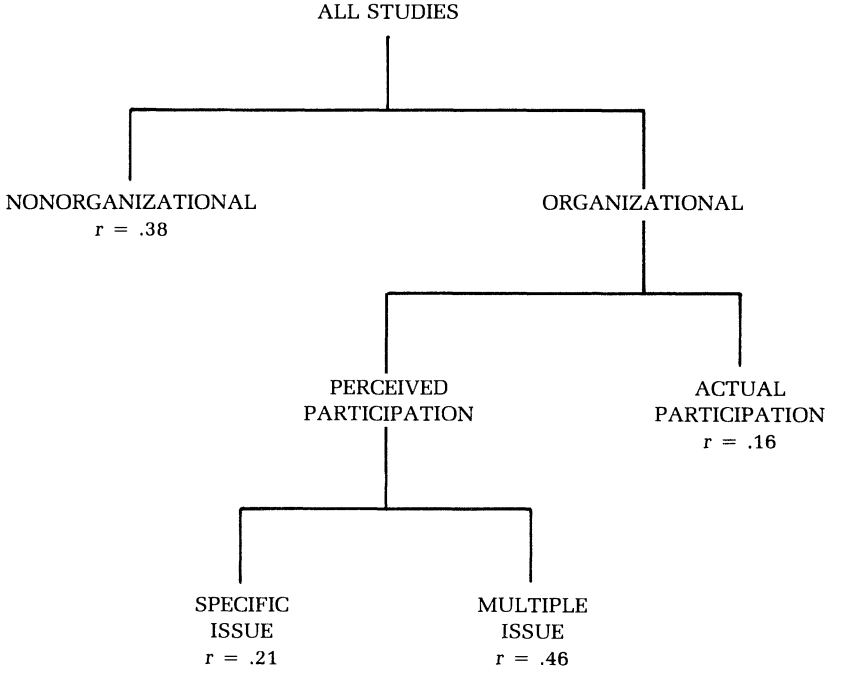
The organizational studies were divided into those that measured actual participation and those that measured perceived participation. The mean weighted correlation for studies of actual participation was .16; the variance among these estimates was .0035, which is not significantly different from 0 ($\chi^2 = 8.19$, $df = 10$, $p > .05$). However, the variance in studies investigating perceived participation was still significant. We considered one additional moderator to eliminate the remaining variance: whether perceived participation was in reference to specific issues, such as goals, pay plans, or job redesign, or in reference to multiple issues or a general participative climate, evaluated by a question like "In general, how much do you participate in decision making on your job?" The mean weighted correlation for studies concerned with specific issues was .21; the variance among these estimates was .0009. This variance was not significant ($\chi^2 = .78$, $df = 4$, $p > .05$). The mean weighted correlation for studies concerned with multiple issues was .46. The variance among these effect size estimates was .0156. This variance is still significant ($\chi^2 = 88.5$, $df = 19$, $p < .01$). Several other variables (measurement, job level, and organizational type) were considered for further reducing the variance among effect sizes. However, no other moderater variables reduced the variance within subgroups, so the analysis of studies in which satisfaction was the dependent variable ended at this point.

Table 2 presents information regarding the satisfaction subgroups in which variance was reduced to the greatest extent possible. These groups

include (1) nonorganizational studies, (2) studies of actual participation, (3) studies of perceived participation in relation to specific issues, and (4) studies of perceived participation in relation to multiple issues. The table provides the studies included in each subgroup, the mean weighted correlations, the observed variance among estimates of effect sizes, the variance among estimates expected from sampling error, the true variance among estimates, and the chi-square value testing whether the variance is statistically different from 0. Figure 1 is a tree diagram of analyses performed with satisfaction as the dependent variable.

All of the subgroup estimates for satisfaction differ significantly from 0, but there is substantial variation in the magnitudes of effects. The strongest effects of participation on satisfaction are found in studies of perceived participation focusing on multiple issues and in the nonorganizational studies. Much smaller effects are found in the studies of perceived participation focusing on single issues and in the studies of actual participation. In three out of four subgroups, the variance has been reduced to what would be expected from sampling error. Because of the reduction in variance and the sharp differences among subgroups in sizes of effects, it appears that the

FIGURE 1
Tree Diagram of Studies in the Meta-Analysis for Satisfaction as Dependent Variable



analyses were successful in partitioning the studies into appropriate subgroups.

Productivity

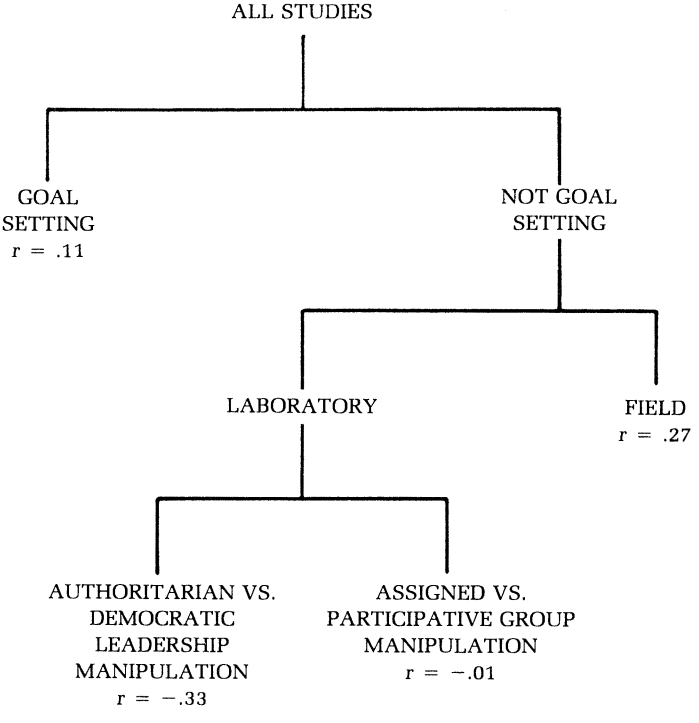
Twenty-five studies containing estimates of the relationship between participation and productivity were analyzed. After cumulation of effect estimates, the weighted mean correlation was .15, and the true variance was .0334. A chi-square test showed this variance differed significantly from 0 ($\chi^2 = 69.47$, $df = 25$, $p < .01$), so we considered moderator variables. Again, substantive moderator variables were considered first. Of these variables, the objects of participation proved to be useful for subgroup analysis. Seven studies investigated the effects of participation in goal setting on productivity. The cumulated mean weighted correlation for studies of goal setting was .11, and the variance among these estimates was 0. However, the variance among other studies was still significant, so we sought additional moderators. Because other substantive moderators did not prove useful, we evaluated methodological moderators. The first methodological moderator used was research setting. The mean weighted correlation for the nine field studies was .27; the variance among these estimates was 0. Hence, no further analyses were necessary on this subgroup. The variance among estimates for the laboratory studies was significant, so we analyzed these further.

The final moderator considered for studies in which productivity was the dependent variable was the manipulation used in the laboratory studies. Four of the studies manipulated leadership style; a research assistant or member of the experimental group had been instructed to be leader and to behave in an authoritarian or democratic style. The correlation between participation and productivity in the studies manipulating leadership style was −.33; the variance among these estimates was .014. This variance was not significant ($\chi^2 = 3.73$, $df = 3$, $p > .05$). The other four studies manipulated the nature of the tasks the groups performed, by placing subjects in assigned or participative task groups. The correlation between participation and productivity in these studies was −.01; the variance among the estimates was 0.

Table 3 presents information regarding the subgroups of studies investigating productivity in which variance was reduced to the greatest extent possible. These groups are (1) studies concerned with participation in goal setting, (2) field studies, (3) laboratory studies in which leadership style was manipulated, and (4) laboratory studies in which the nature of a task was manipulated. The table provides the studies in each subgroup, the mean weighted correlations, the observed variance among estimates of effect sizes, the variance among estimates expected from sampling error, the true variance among estimates, and the chi-square value testing whether the variance differs statistically from 0. Figure 2 is a tree diagram of subgroup analyses performed with productivity as the dependent variable.

As with the satisfaction studies, the mean weighted correlations of the different subgroups differ substantially. The laboratory studies that manipulated the nature of a task show essentially no correlation, and the studies

FIGURE 2
Tree Diagram of Studies in the Meta-Analysis for Productivity as Dependent Variable



concerned with goal setting exhibit a significant, but small, positive correlation. The field studies show a relatively strong positive correlation, and the studies of leadership style exhibit a relatively strong negative correlation. The variance among estimates in these subgroups has been reduced to that attributable to sampling error. The substantially different effect sizes and the reduction in subgroup variance suggest that our partitioning efforts were appropriate and successful.

DISCUSSION

Contingency Models of Participation

This meta-analysis provided no support for any of the contingency predictions discussed. We considered both job type and organizational type as possible moderator variables at all stages of analysis, but there was no reduction of variance in effect sizes through subgroupings on the basis of these variables. Thus, it does not appear that participation is more effective

for managers than for lower-level employees, or vice versa. There is also no evidence that research, service, and manufacturing organizations differ in terms of the effectiveness of participation. It was not possible to provide a test of contingency predictions referring to personality, because very few studies provided subgroup analyses considering individuals with different personality types. As mentioned earlier, studies that have considered authoritarianism and need for independence have provided conflicting conclusions.

Finally, it should be noted that the variance in studies of participation in goal setting was reduced to that accountable to sampling error. The correlation between participation in goal setting and productivity was significant, but small ($r = .11$). This result should come as little surprise to those researching goal setting, most of whom have now concluded (e.g., Latham & Marshall, 1982; Latham & Steele, 1983) that participation may have an effect on the levels of goals set, but that it has no effect on productivity if the levels of goals stay the same. Cumulating these results over a variety of research settings adds credence to the generalizability of this conclusion.

Cognitive Versus Affective Models of Participation

This meta-analysis provided several tests of the efficacy of cognitive and affective models of participation. First, the findings can be considered in terms of contrasting the effects of participation on satisfaction with the effects of participation on productivity. Affective models predict that participation will have a stronger effect on satisfaction than on productivity, and cognitive models predict the opposite. Second, cognitive models predict that participation will have a stronger influence on productivity and satisfaction for decisions about which employees have specific knowledge. In contrast, affective models predict that working in a participative climate will have the most beneficial effects on workers' attitudes and productivity.

The studies investigating effects of participation other than goal setting on *productivity* exhibited a stronger influence of participation ($r = .27$) than the studies of satisfaction investigating actual participation ($r = .16$) or perceived participation for a single variable ($r = .21$). Of course, comparisons of these effects for different dependent variables should be made with caution, and the differences here are not substantial. However, even the fact that there is a moderately strong effect size for field studies investigating the influence of participation on productivity indicates that cognitive models have some plausibility. Further, the relatively low, but significant, correlations between actual participation and satisfaction and between participation and satisfaction in studies of single issues might lessen confidence in affective models of participation.

However, the data seem more consistent with an affective explanation when we consider studies of participation involving multiple issues. These studies investigated perceived participation and typically used such items as "In general, how participative is your workplace?" or "How much do you generally share in decision making with your supervisor?" After subgroup analysis, some unexplained variance remained in this subgroup, but the

mean weighted effect size was .46, much larger than the average correlations in other subgroups of field studies. It appears that working in a participative climate is strongly related to satisfaction at work. This result is in keeping with the human relations school of organizational behavior and with current interest in work climates. In particular, it supports the idea that microclimates (Schneider, 1981), such as a climate for variety, a climate for innovation, or a climate for participation, are related to individual attitudes. However, it is important to consider the structure of this relationship. Does a participative climate cause workers' satisfaction? Does workers' satisfaction help develop a participative climate? Or are these two variables redundant indicators of the same concept? LaFollette and Sims (1975), discussing Johannesson (1973), summarized this dilemma well:

> If it appears as if perceptual climate research is converging upon any domain, job satisfaction seems the likely candidate. Indeed it is hard to imagine how this possibly could have been avoided. Even if researchers had taken the pains to create new items and had adopted different item formats (which they have not) there remains the psychological problem of divorcing description from feelings. Since descriptions of work situations have been operationally defined as indices of job satisfaction it seems redundant at best to also term such descriptions organizational climate (1975: 257).

Climate has traditionally been defined as a descriptive construct and satisfaction as an affective construct. However, these definitions get muddied operationally if satisfaction is measured through descriptors, as it is in the JDI, or if scales measuring climate include items on attitude. This problem probably is not crucial for the studies in this meta-analysis, because participation involves a specific microclimate, rather than omnibus organizational climate. Thus, it is not likely that measures of participative climate and overall work satisfaction are redundant. In addition, all of these studies considered descriptions of participation rather than attitudes toward participation as the independent variable. Finally, with the exception of studies using the JDI, measures of satisfaction were purely affective. Moreover, results of studies using the JDI were not systematically different from those of studies using other measures of satisfaction.

The question of causality remains: does participation cause satisfaction or does satisfaction cause participation? All of the studies in the multiple-issue subgrouping were correlational, so we cannot answer this question with full confidence. However, we can bring evidence from the literature on climate to bear on this issue. Laboratory research investigating experimentally created social climates (Litwin & Stringer, 1968) found that manipulated climate had an effect on satisfaction. Hand, Richards, and Slocum (1973) found a positive relationship between initial perceptions of climate and subsequent acceptance of self and others. Taylor and Bowers's (1972)[3] cross-lagged panel study of over 284 work groups in 15 different organizations

[3] LaFollette and Sims (1975) cited this study.

found that "organization climate shows evidence of being more the cause of, than caused by, satisfaction" (1972: 89).

Several concluding comments about the comparison between cognitive, affective, and contingency models of participation are in order. First, there was little support for contingency models of participation, though the lack of measures for several contingency variables could have affected findings. Second, this meta-analysis did not allow for a complete test of the models presented, as we lacked data on several intervening variables in these models, such as upward and downward sharing of information and satisfaction of higher-order ego needs. We would encourage researchers to measure these variables in future investigations of participation. Despite this limitation, some evidence to support both cognitive and affective models of participation emerged. The relatively large correlation between participation and productivity in field studies somewhat supports cognitive models. However, the largest subgroup correlation, between perceived participation and satisfaction, provides greater support for affective models of participation.

Estimates of the effect of participation on *both* satisfaction and productivity appeared in 13 studies. An examination of these studies sheds some light on the relative efficacy of cognitive and affective models: (1) the relationship between participation and satisfaction was stronger than that between participation and productivity in 4 studies (Katzell, Miller, Rotter, & Venet, 1970; Schuler & Kim, 1978; Shaw, 1955; Vroom, 1960), (2) the relationship between participation and productivity was stronger in one study (Ivancevich, 1977), and (3) no significant difference emerged in the other 8 studies. These studies provide somewhat stronger evidence for the relationship between participation and satisfaction than for that between participation and productivity. However, the large number of insignificant differences in this subset precludes our suggesting that this comparison provides strong evidence for either cognitive or affective models.

Research Setting as a Moderator

Several of the strongest moderators were methodological variables; in particular, research setting and type of subject played important roles. For the studies concerned with satisfaction, the variance was zero among investigations involving nonorganizational subjects, all but one of which (Veen, 1972) had a laboratory setting. The weighted correlation for these studies was relatively high ($r = .38$). This effect size was considerably higher than that in studies involving actual participation in organizations ($r = .16$) or perceived participation in reference to a specific issue ($r = .21$).

There are two clear explanations for these results. First, an explanation in terms of internal validity suggests that the high degree of control in laboratories over extraneous variables would make the higher correlation a better indicator of the true relationship between participation and satisfaction. However, an explanation in terms of external validity suggests that college students and laboratory tasks have little in common with real organizational life; hence, field estimates of the effect between participation and satisfaction

would be more meaningful. Both arguments undoubtedly have merit. This meta-analysis seems to indicate that there is a relatively high pure effect of participation on satisfaction, but that a host of other organizational influences dilute this effect in field studies investigating actual participation or perceived participation in relation to specific issues.

The effect of research setting in the productivity studies is also striking. Among studies not investigating goal setting, field studies showed a moderately high positive correlation ($r = .27$), and laboratory studies yielded either no correlation (assigned versus participative task manipulation, $r = -.01$) or negative correlations (authoritarian versus democratic leadership manipulation, $r = -.33$). The points of interest here are the sharp differences between laboratory and field studies and the differences in effect sizes for different manipulations.

The substantial difference between field and laboratory studies can probably be attributed to the tasks typically performed in these settings. The laboratory studies typically involved a simple and well-defined manipulated task like turning switches on a control panel or a game of twenty questions; the field studies typically involved participation in naturally occurring, more complex activities, such as pay incentive plans or job design, or participation over a wide gamut of organizational issues. In the laboratory, there usually was a correct answer; there are rarely such guarantees in organizations. Finally, organizational members in field studies had more at stake in the decisions that were made than students in a laboratory.

All of these factors contributed to a higher level of complexity for the organizational participative tasks than for the laboratory participative tasks. Research on small group behavior (Cartwright & Zander, 1960) has suggested that different types of leadership and structure are appropriate for different types of task; specifically, that authoritarian leadership and centralized group structure are most appropriate for simple tasks. The studies in this meta-analysis investigating leadership behavior bear this out. Most of the tasks were simple, and authoritarian leadership was more effective in eliciting high levels of productivity. In contrast, the field studies involving complex problems benefited more from participative processes. The lack of effects in the laboratory studies that manipulated the nature of a task is more difficult to interpret. It could be that in laboratory groups without defined leaders, such typical manipulations as assigned or participative groups are not strong enough to elicit effects on productivity.

Limitations

Though the results of this meta-analysis are relatively clear, our procedure had several limitations. First, this analysis dealt entirely with published research. It has long been argued that published studies have larger effect sizes than unpublished studies, and there is some evidence for this claim (Smith & Glass, 1977). However, as Hunter, Schmidt, and Jackson pointed out, unpublished effect sizes may be smaller because of methodological quality, and "if attenuation effects were properly corrected for, differences

might disappear" (1982: 30). Second, it has been argued that meta-analysis gives the same weight to good studies as to bad ones. We dealt with this problem in two ways, (1) by eliminating studies with severe methodological problems or interpretative difficulties, and (2) by attempting throughout the analysis to account for variance through the use of methodological moderators. If the quality of studies' designs or measurements accounted for differences in effect sizes, the meta-analytic techniques employed should have accounted for the differences.

Finally, it should be noted that our techniques allowed for the assessment of bivariate relationships. In this case, the relationships investigated were participation and satisfaction, and participation and productivity. However, the affective, cognitive, and contingency models under examination were much more complex than the simple bivariate relationships examined in the meta-analysis. Thus, although the meta-analysis produced important information that provided varying levels of support for the models, it did not provide the information necessary to test one model or another completely.

CONCLUSIONS AND FUTURE DIRECTIONS

In spite of these limitations, this research supports some current wisdom about the effects of participation and extends our knowledge of the participative process in organizations in important ways. First, the meta-analysis provides some support for the conclusions reached by Locke and Schweiger (1979). Participation has an effect on both satisfaction and productivity, and its effect on satisfaction is somewhat stronger than its effect on productivity. This meta-analysis allowed us to be more explicit about these effects. As Figures 1 and 2 demonstrate, we can now make quite precise statements about the *magnitude* of the effect of participation on satisfaction and productivity. In addition, strong evidence exists for a consistent and substantial effect of research setting in these studies, because consideration of this methodological variable considerably reduces the variance among studies. Finally, our analysis indicates specific organizational factors that may enhance or constrain the effect of participation. For example, there is evidence that participative climate has a more substantial effect on workers' satisfaction than participation in specific decisions, and it appears that participation in goal setting does not have a strong effect on productivity.

These conclusions provide some clear avenues for future research. It is important for organizational scholars to conduct research that can specifically test the relationships in the cognitive and affective models. For instance, research contrasting the effects of both participative climate and participation in relation to specific issues on both satisfaction and productivity could lead to an important clarification of the cognitive and the affective processes at work in participative situations. Researchers should also extend our consideration of contingency variables to areas this meta-analysis highlights. For example, the contrast between studies of participative climate and studies of participation in relation to specific issues suggests that organizations with

formal systems of participation may differ greatly from organizations in which participativeness is an informal managerial norm. Our investigation (Miller & Monge, 1986) of the Scanlon plan of participative management suggests that this might be the case. Future research could also usefully consider the development of participative systems and norms in organizations over time. Longitudinal research of this nature could help clarify the causal structure of the relationships among participation, satisfaction, and productivity. Finally, the meta-analytic procedure itself could be usefully extended to allow for the testing of relationships that go beyond the simple bivariate level.

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ANNOUNCEMENTS

National Academy

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