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**Commitment and Active Involvement in Large Organizations:  
Direct and Indirect Effects of Size on Individual  
Attitudes and Performance**

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Abstract

Correlations between size and individual performance are well documented in organizational studies. Workers in small groups and small organizations are typically more productive, absent less often and turnover at a lower rate than those involved in large operations. Explanations for size effects focus primarily on structural and procedural correlates that impede performance or reduce motivation to perform. However, recent work in social psychology shows that size alone influences individual performance. In general, individual contributions to collective action decrease as the number of others available to respond grows. This paper reviews the direct effects of size on individual performance, suggests psychological explanations for those results, explores implications for behavior in organizations and outlines research to test this speculation. It is concluded that size alone interferes with individual commitment and active involvement in large organizations.

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Commitment and Active Involvement in Large Organizations:  
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Individual Attitudes and Performance

It is generally assumed that organization and work group size influence individual attitudes and performance through related structure and processes (James & Jones, 1976; Porter & Lawler, 1965). Indik (1965) first formalized the model suggesting that psychological responses to organizational processes associated with size mediate the size-behavior relationship. Since then correlations between size, satisfaction, absenteeism and turnover have been attributed to job specialization (Porter & Lawler, 1965), formalization, standardization and bureaucratic control (Ingham, 1970), decreased communication (Porter & Lawler, 1965; Weick, 1969) and problems of coordination (Indik, 1965) often associated with large scale operations. (See Dalton, Todor, Spendolini, Fielding, & Porter, 1980; James & Jones, 1976; and Porter & Lawler, 1965 for comprehensive reviews of structure, attitude and performance.)

Recent work in social psychology suggests that direct effects of size should be reconsidered. These studies show that individual involvement and contributions to collective endeavor are often inversely related to the number of others involved. In each case, this effect is independent of structural or procedural correlates that could account for decreased performance. Generalizations to formal organizations suggest that organizational, subunit and work group size alone can inhibit commitment and performance in work organizations.

Before reviewing this literature it is important to clarify organizational variables to which these studies are relevant. Many definitions of size appear in the organizational literature (Kimberly, 1976).

Aldrich (1972) defined size as scale of operations. Others have considered the scope of an organization and its responsibilities (Blau, 1972), level of discretionary resources, sales volume, organizational inputs and outcomes (Hall, 1982) and the number of personnel on record (Indik, 1965). As it is used here, size always refers to the number of people composing a work group, subunit or organization.

The dependent variable of interest is one of several generic forms of behavior important to organizational success. Katz & Kahn (1978) and Galbraith (1977) point out that organizational survival depends on the ability to motivate individuals to join the organization, remain in the system and perform their assigned role dependably. If minimum levels of acceptable performance are determined by survival in a given domain, an improved position depends on motivating performance beyond minimal role requirements. Thus organizational effectiveness depends, in part, on individual willingness to exceed minimum standards and, at times, perform beyond specified role requirements.

Managers cannot anticipate, specify and assign all actions necessary for effective operations. The organization depends on its members to recognize that something needs to be done and to do it even when that action lies outside formal role requirements. Being outside specified role requirements these responses are somewhat altruistic: they are self initiated, tap personal resources beyond those required to simply maintain organizational membership, performed without threat of legitimate accountability for failure to respond and probably performed without clear expectation of reward. In particular, Katz & Kahn

suggest that organizational members must react spontaneously to unexpected events, provide creative solutions to organizational problems and cooperate with those in related positions.

Study of self initiated, behavior outside specified roles has not been performed. Studies of performance have focused primarily on how to manage rewards and design jobs to influence productivity and decrease absenteeism. (Attendance might be considered performance beyond minimal requirements if the organization authorizes and subsidizes a certain level of absenteeism and attendance exceeds this, i.e., they are absent less than they could collect for.) Weiner & Gechman (1977) provide one interesting exception to the usual dependent measure in their study of elementary school teachers. To measure behaviors that exceed formal requirements, these researchers recorded the amount of personal time devoted to work-related activities beyond the required working day. In Weiner & Gechman's study behaviors were not formally required but were, for the most part, directly role related (e.g., preparing lesson plans, grading papers, attending parent-teacher conferences). While these teachers performed their jobs quite well it is not clear that they would perform activities not directly role related to contribute to organizational success. Innovation and creativity have been studied in R&D labs (Andrews, 1979), evaluations of formal suggestion systems (Hein, 1973; Tatter, 1975), and employee quality circles (Hunt, 1981; Newell, 1982) but it is important to study voluntary efforts outside legitimate role requirements in the absence of formal mechanisms encouraging these behaviors.

Group size and willingness to exert effort. Social psychological studies of group size and individual performance show that an individual's contribution to collective responsibility is often inversely related to the number of others involved. In each case these results are independent of structural or procedural correlates of size often found in large organizations. If these results can be generalized to certain aspects of organizational life, it appears that size alone can interfere with voluntary contributions to organizational success.

#### Group size and individual behavior

Two lines of social psychological research will be reviewed here. The first focuses on social inhibition of helping behavior, an incredibly robust finding. In emergency and nonemergency settings, in the lab and the field, for males and females, these studies show that the individual probability of helping another decreases with increases in the number of others available to respond. The second line of research focuses on the more general problem of "social loafing" in collective endeavors. As these studies show, group effectiveness is often undermined by individual tendencies to reduce personal input when others are available to respond.

#### Group size and helping behavior.

In 1964, Catherine Genovese was stabbed in front of her apartment on a New York City street. Although 38 witnesses reported hearing her scream and many actually viewed the incident, no one intervened or called the police. This incident, widely reported in the national press, created public concern about American moral demise. It also inspired systematic study of bystander intervention.

It was later discovered that group size, the number of people available to respond, is closely linked to the likelihood that any individual will help. When others are present or believed to be present an individual is less likely to assist in an epileptic seizure (Darley & Latané, 1968), answer a phone (Levy, Lundgren, Ansel, Fell & McGrath, 1972), help with a flat tire (Hurley & Allen, 1974), report a broken tape recorder (Misavage & Richardson, 1974) or help pick up pencils in an elevator (Latané & Dabbs, 1975). In Kitty Genovese's case, 38 witnesses heard her scream and recognized the urgency but no one called for help.

Group size and social loafing. Similar effects are found in formal task groups. When members of a group perform essentially the same task and group productivity is the sum of individual efforts, group effectiveness is often undermined by reductions in personal effort when others are available to respond. On physically and psychologically demanding tasks, individual effort may drop substantially.

In a study of social loafing and physical effort (Latané, Williams & Harkins, 1979), undergraduate students wearing blindfolds and sound proof headsets were asked through their earphones to shout as loudly as possible alone and in pseudogroups of two and six. In the pseudogroup conditions, students believed others also yelled when, in fact, students always shouted alone. The group size manipulation had a significant impact on individual performance. When students believed one other person also shouted, subjects produced, on the average, only 82% of their individual effort. In pseudogroups of six, 74% as much noise was produced. In a similar study, students were asked to clap alone or in

pseudopairs (Harkins, Latané & Williams, 1980). Students in pseudopairs produced only 62% of the noise produced by those who believed they always clapped alone.

Studies of social loafing and cognitive effort produce similar results; students use less cognitive effort to evaluate visual and verbal information when responsibility for that task is shared (Petty, Harkins & Williams, 1980). After viewing the videotaped performance of a counseling psychologist, subjects were asked to list their reactions. As expected, subjects working alone generated more thoughts about what they saw than students who believed others shared the evaluation task. In another experiment (Petty, Harkins & Williams, 1980, experiment II) students were asked to evaluate editorials advocating comprehensive exams as a requirement for college graduation. The essay presented either a logical argument using relevant information to support that position or an illogical argument using irrelevant information. Again, subjects who believed others participated in the evaluation exercise appeared to process this information less thoroughly. Sole evaluators gave the logical argument a more positive evaluation and the illogical essay a more negative evaluation compared to judgments made by one of ten evaluators.

Studies of social loafing in field settings corroborate these laboratory results. Freeman, Walker, Borden & Latané (1975) studied the effects of group size on the generosity of diners in a Midwestern restaurant. After removing variation associated with the size of the bill, group size proved to be a significant predictor of average tip per diner. Individuals left almost 19% of the bill compared to 13.5%

left by those in groups of four to six. The number of members taking part in church activities is much lower in large compared to small churches (Wicker, 1969) and fewer eligible voters attend town meetings in large communities (Williams, Harkins & Latané, 1981). While many explanations for this difference could be constructed, the most plausible ones were ruled out. According to the researchers, no relationship between town size and the proportion of available seats was found, meetings were advertised extensively in all cities and all towns were relatively small so that inconvenience of access seemed unimportant. Taken together, these laboratory and field studies demonstrate that the presence of others may reduce individual input in a variety of additive group tasks.

Social impact theory. To explain the group size effect on individual performance, Latané (1981) proposes a general theory of social impact. He suggests that the impact of any social influence attempt depends on the strength (S), immediacy (I) and number (N) of people attempting the influence and the number of targeted individuals ( $N_{\text{target}}$ ). Strength and immediacy are associated with social status, interpersonal attraction, ability to reward or punish, closeness in space or time and the absence of intervening barriers or filters. When one individual stands as the target of influence, impact is predicted by the number of sources weighted by their strength and impact (Equation 1).

$$\text{Equation 1: Impact} = f(S \times I \times N^t) \text{ where } 0 < t < 1$$

The exponent,  $t$ , indicates marginally decreasing impact of adding additional influence sources; adding the 100th influence source is not expected to create as much additional impact as adding the second.

When more than one stands as the target of an influence attempt, a divisive force field operates. In this situation, the impact felt by any particular individual is assumed to be diffused by the presence of others and each individual feels less impact than if he were alone. As in the multiplicative force field marginally decreasing division of impact is expected. Impact is divided, not by the number of others targeted, but by some root of that number; in the bystander intervention and social loafing studies the sources of influence equalled one (the victim or experimenter asking the subject to perform) and the number in the targeted group varied. Strength and immediacy of the influence source were not manipulated or measured but treated as a constant across group size conditions. In this case, impact felt by any particular individual is predicted from equation 2:

$$\text{Equation 2: Impact} = q \frac{1}{N_t^t} \quad \text{or Impact} = qN_{\text{targets}}^{-t}$$

where  $0 > -t > -1$ .

When strength and immediacy are not measured, a scaling constant,  $q$ , reflects the operation of these variables in a particular situation.

Latané's psychosocial law of marginally decreasing impact as group size increases predicts behavior in the social loafing paradigm quite well. In the study of group diners, size of tip (after removing variance associated with size of bill) was best fit by the power function  $\text{Tip/person} = .184 \times N^{-.22}$ . When shouting, 93% of the variance in individual output was explained by a power function with an exponent of  $-.14$ . It appears, then, that the impact of an influence attempt decreases at a rate proportional to some root of the number of others present.



Psychological explanations.

To minimize the negative effects of group size, it is important to understand the psychological processes that underlie the mathematical model. To some extent, reduction of personal effort in collective endeavor may result from a conscious cost/benefit analysis. In the clapping and shouting experiments, subjects believed that individual output could be evaluated only when performing alone. In pseudogroups, subjects believed that individual reward and punishment was impossible and disapproval for low productivity would be shared by the group as a whole. Thus, weak effort-reward/punishment contingencies may decrease motivation to perform. This type of contingency analysis underlies several important theories of motivation and is well known in the field of organizational behavior. This expectancy approach suggests that social loafing will be reduced when accepted principles of reward system design are employed (Lawler, 1971). In fact, social loafing by shouters was eliminated by identifying individual output (Williams, Harkins & Latané, 1981).

A second conscious process may also operate. While an activity may be formally defined as a maximizing task (the group is to produce as much as possible through maximal individual efforts) in large groups Herculean effort may not seem necessary. As the number of coactors increases the perceived importance of any particular effort is diminished and the likelihood that others will compensate for personal slack is improved. Even without maximal efforts, many individuals can produce a large, and from the individual's point of view, satisfactory result.

In situations where coactors are physically present a third process may operate. The presence of others can divert attention away from the self so that a sense of personal responsibility for performing and self regulation of behavior is impaired. At any particular time, conscious attention may be focused on the environment to process information about one's surroundings or towards the self as a social object (Wicklund, 1980). Distracting events (such as visual & auditory stimuli), unanticipated environmental outcomes and involving activities often produce outward focus of attention. Stimuli that focus attention toward the self are typically symbols of the self or information that calls attention to personal attributes. In the laboratory, one's own image in a mirror or on a TV monitor, biographical questionnaires and tape recordings of an individual's voice have all been shown to create self focused attention. In this self focused state, personal characteristics, attitudes, values and behavioral standards become salient and one's own capabilities and social responsibilities come more readily to mind. When self focused, behavior is more likely to conform to these standards (Diener, 1980; Scheier & Carver, 1980). For instance, self focused individuals are more likely to help an unfairly penalized victim (Wegner & Schaeffer, 1978), less likely to take more than their share from a candy bowl (Beaman, Klentz, Diener & Svanum, 1979) and less likely to cheat on a test (Diener & Wallbom, 1976). Conversely, when self focused attention is prevented, social transgressions and disinhibited behavior increase (Diener, 1980; Diener & Kasprzyk, 1978).

Of particular interest here, several studies demonstrate that self focused attention enhances a sense of personal responsibility and

willingness to contribute personal resources to help another. When asked to attribute responsibility for various events, self aware subjects took more credit for positive outcomes and more blame for negative outcomes than non-self aware subjects (Duval & Wicklund, 1973). After viewing a videotaped documentary of problems associated with contracting sexually transmitted disease, self focused subjects accepted greater responsibility for the victims' welfare and indicated greater willingness to contribute time and money to help (Duval, Duval & Neely, 1979). In a conceptual replication, subjects reported more personal responsibility and greater willingness to help poverty stricken Latin Americans (Duval et al, 1979, experiment II).

Similarly, self focused attention influences productivity on a tedious task. Wicklund and Duval (1971) asked undergraduates to copy pages of German prose and found self focused students significantly more productive than their non-self aware counterparts. Liebling and Shaver (1973) replicated this effect with Swedish literature. Wicklund and Ickes (1972) found that self focused subjects asked for more decision relevant information when choosing between two college majors. Self awareness was believed to have made personal beliefs about strategies for wise decision making more salient.

Thus objective self awareness is an important determinant of conscientious task performance, attribution of personal responsibility and willingness to invest personal resources to help needy others. When attention is focused on the self personal attitudes and previously learned social norms are salient, responsibility for outcomes is associated with the self and behavior in accordance with this behavioral

code is more likely to occur. The importance of self awareness in self regulation of behavior should be stressed; the mere existence of desirable social standards does not guarantee self regulation. When attention is diverted from the self, behavioral standards are less salient and self regulation of behavior is less likely.

The presence of others is a source of distraction that can interfere with self focused attention. The physical presence of others often creates a state of generalized physiological arousal that interferes with cognitive processing (Zajonc, 1980). Just as the mere presence of others interferes with learning unfamiliar tasks (Hunt & Hellery, 1972) the presence of others may divert attention from processing relevant behavioral standards.

The Gestalt figure-ground principle of perception is probably also involved in diverting attention from the self. When the social field is divided into two subgroups attention tends to focus on the smaller (Wegner & Schaeffer, 1978). Those in the larger group shift attention from themselves to those in the smaller and those in the small group focus on themselves. Diffusion of responsibility in social loafing and bystander non-intervention is probably associated with this pattern of attention. Wegner and Schaefer (1978) demonstrated that bystander intervention can be enhanced by manipulating the size of each subgroup. With one victim and three bystanders social inhibition of helping was observed. When the number of victims equalled the number of bystanders (either 1,1 or 3,3), more help is received and bystanders are equally helpful. Victims received the most help when the usual bystander intervention manipulation was reversed. With three victims and one bystander

attention should be focused on the bystander creating pressure to conform. Since several plausible explanations for this reversal exist, Wegner and Schaefer also ran a simulation of this experiment asking subjects where their attention is likely to focus under the four group size conditions. Results of the simulation support a focus of attention explanation.

#### Group size and organizational performance

Generalizing the results of these social psychological studies to work organizations suggests that size may inhibit personal involvement in organizational affairs. There is, in fact, evidence that individuals in small organizations and small work groups perform better than those in large. Many studies show unfavorable correlations between size, individual productivity, absenteeism and turnover. Three of these focused explicitly on direct vs. indirect effects of size.

Two provide qualified support for the direct effects on individual performance. Studying 200 groups in two production plants, Marriott (1949) found an inverse relationship between workgroup size and productivity. Although other factors could account for the size-performance relationship, Marriott does say that "the different sized groups were well distributed throughout Factory A and, though less so in Factory B, there was sufficient 'spread' to minimize to some extent any effects which might result from different supervisors and types of work (p. 54)." Hewitt and Parfit (1953) provide a similar post-hoc analysis in a study of group size and absenteeism. After adjusting the absence rate for demographic influences, a positive relationship between size and

absenteeism was found. Considering factors that could account for this relationship, the authors conclude "There is, in fact, no reason to suppose that any systematic factor other than room [group] size can have influenced the results (p. 40-41)." Individuals in groups were not required to cooperate, there was no difference in the proportion of skilled to unskilled workers in the different size groups, there was no difference in the amount of noise or spacing of workers across group size and adjustments for demographics should have eliminated biases due to differences in skills and responsibility that were associated with group size. Thus, these two studies provide qualified support for the direct effect of work group size on individual performance. Organizational processes that could be correlated with size were not strictly controlled but only discounted as plausible explanations for the size-behavior relationship after the fact.

Indik (1965) addressed the question of direct vs. indirect effects with partial correlations. He hypothesized that organizational size would be correlated with the extent of communication among members, task specialization, impersonal control and lack of coordination. As a result, dissatisfaction with work activities, low group cohesiveness and felt inflexibility would reduce member participation in large organizations. Studying delivery companies and volunteer organizations, Indik found an inverse relationship between organizational size and attendance. After removing variance explained by the intervening variables, the correlation dropped from  $-.53$  to  $.08$  for delivery organizations. In volunteer organizations, only communication among members was associated with size and absenteeism. Removing variance associated

with communication changed the correlation between size and attendance from  $-.42$  to  $-.33$ , a correlation still significant at the  $.05$  level.

It is not clear that Indik's data can be used to assess size, diffusion of responsibility and social loafing in work organizations. In large organizations with hierarchical subdivision, work group size seems a more appropriate predictor when in-role performance, absenteeism and contributions to work group effectiveness serve as measures of diffused responsibility. From the individual's point of view, it is the work group that defines the number of others who share responsibility for accomplishing a given task and determines the number of others available to compensate for personal slack. If the dependent variable represents contributions to broader organizational purpose rather than the work group's assigned task organizational size might be the appropriate level of analysis. If work groups within the delivery organizations were assigned different responsibilities and work group size is not correlated with organizational size, Indik's test does not preclude direct effects of work group size. If the volunteer organizations were not broken down into subgroups with different responsibilities and other factors could be ruled out, the partial correlation between size and attendance could be interpreted as support.

Taken together, these three studies provide only limited support for direct effects of size on diffusion of responsibility and social loafing in work organizations. Alternative explanations and confusion about appropriate size measures present problems and dependent variables were limited to absenteeism and in-role performance. A sense of personal responsibility assumed to mediate social loafing and self initiated behavior were not assessed.

Organizational commitment. To finish discussion of felt responsibility, willingness to exert effort and social loafing in work organizations a line of research bearing conceptual similarities should be discussed. Organizational commitment as an attitude or affective state involves a psychological bond between people and organizations (Buchanan, 1974; Porter, Steers, Mowday & Boulian, 1974; Steers, 1977). Porter et al define commitment as the strength of identification and involvement in a particular organization and feel commitment is characterized by at least three factors--a strong belief in and acceptance of the organization's goals and values, a strong desire to maintain membership and a willingness to exert considerable effort on the organization's behalf. Commitment is measured with self reports of organizational identification, psychological immersion in the activities of one's work role and loyalty, affection and attachment to the organization. It is expected that committed employees will be high performers, will be less likely to leave the organization and will attend regularly.

Morris and Steers (1980) assessed the relationship between organizational structure and organization commitment. While decentralization, functional dependence and formalization were significant predictors of organizational commitment, work group size was not. Given the conceptual similarity of felt responsibility, social loafing and willingness to exert effort as an aspect of commitment this result may cast doubt on direct effects of size on willingness to perform. However, several considerations suggest judgment be reserved.

First, marginally decreasing diffusion of responsibility produces largest differences in behavior when individuals are compared to groups.



Comparing larger groups produces less dramatic results. I don't know if Morris and Steers included individuals in their sample. Second, the measure of organizational commitment focuses primarily on loyalty and identification. Only two of the 15 items appear to measure willingness to exert effort. And, third, expected correlations between commitment and actual behavior are weak or unsupported. While turnover is consistently related to commitment (Mowday, Steers & Porter, 1979), absenteeism and productivity are not. Steers (1977) found a significant relationship between commitment and absenteeism for a sample of scientists and engineers but not for a group of hospital workers. Commitment and performance were not related in either sample. In six retail stores studied by Terborg, Lee, Smith, Davis and Turbin (1982) commitment was related to absenteeism in only one.

Several factors may account for these inconsistent results. In Steers' study the near zero correlation between performance and commitment might be due to the non-profit nature of the organization where loyal, security minded employees tend to remain but high performers seek challenge elsewhere (Steers, 1977). Or low correlations might be due to the complexity of job performance. Many factors besides willingness to work hard can determine actual productivity. Failure to predict absenteeism is not as easily explained. While uncontrollable factors sometimes influence attendance, absenteeism is generally considered more influenceable.

Terborg et al (1982) attributed insignificant correlations between commitment and absenteeism to measurement problems. Unreliability of the predictor or criterion variable, restriction of range, criterion

contamination, predictor deficiency (when explaining a complex behavior) or small sample size can all obscure relationships that truly exist. As Terborg et al point out, failure to replicate significant correlations could be due to differential operation of these statistical artifacts. After adjusting for measurement problems in the six retail samples, Terborg et al suggest that the relationship between commitment and absenteeism is, in fact, stable. However, as these authors note, "The possibility that situational factors contribute to the existence of statistical artifacts implies that when we control for such things as differences in reliability and range restriction we might actually be controlling for differences in the situation. Thus, there is only the appearance of no situational effect (p. 447)."

It would be interesting to test a sense of personal responsibility as a moderator of the commitment-attendance relationship. Steers (1977) alluded to something similar when discussing the behavior of the hospital workers, scientists and engineers. He suggests distinguishing between "passive" and "active" commitment where passive commitment is an affective response to the organization and active commitment is affect associated with high performance. An important problem, then, is linking affect to behavior. Felt personal responsibility for organizational success might be that link.

To account for Terborg et al's analysis, felt responsibility must be correlated with psychometric properties of different samples. Felt responsibility could be linked to sample size and restriction of range when participation in the survey is voluntary and could be related to unreliability of the commitment measure. Given the need to resolve

this issue, tests of felt personal responsibility as a moderator should be performed.

If felt responsibility proves to be a crucial link between affect and behavior, commitment should be redefined as a sense of personal responsibility for organizational success. This definition is quite consistent with standard English use. Webster's (1971) dictionary defines commitment as "an agreement or pledge to do something in the future" or "an engagement to assume an obligation (p. 167)." Loyalty, identification and involvement would be considered conceptually distinct affective responses that may or may not be related to commitment. Commitment as felt responsibility should be related to intentions to exert effort and, given favorable conditions, performance beyond minimal role requirements. Self-initiated performance outside legitimate role requirements would be a strong indication of commitment.

Self regulation vs. external behavior control. Committed organization members are expected to be valuable employees. A sense of personal responsibility for organizational success should be associated with regular attendance, willingness to exert effort on assigned tasks and performance beyond specified role requirements. To induce a sense of personal responsibility, the organization should encourage self focused attention and minimize factors inhibiting a sense of self. An environment that focuses attention on the self encourages self regulation of behavior in two ways. First, responsibility for a particular outcome tends to be attributed to the most salient plausible cause. When attention is focused on the self, personal responsibility for environmental outcomes is enhanced. Second, self focused attention brings relevant

behavioral standards more readily to mind. Since personal standards are acquired from previous social encounters (e.g., modeling and experience with others reinforcement contingencies, Bandura, 1976), successful anticipatory and organizational socialization should instill appropriate standards.

Self regulation has many advantages over external control of organizational behavior. Reward and coercive control are most successful when desired behavior can be clearly specified, closely monitored, accurately measured and performance is directly tied to valued outcomes. Inability to meet these conditions or costs of administering control systems often limit their effectiveness. Even when many desired behaviors can be externally controlled, heavy reliance on rewards and punishment may interfere with self regulation of unanticipated behavioral requirements. When valued rewards are highly visible and contingent on performance, performance tends to be attributed to those rewards inhibiting performance when reward contingencies are weak. When spontaneous, innovative performance is required a sense of personal responsibility for organizational success is clearly advantageous.

Future research. Research to test relationships between size, felt anonymity/identifiability, self awareness, commitment as felt responsibility, willingness to exert effort, productivity, absenteeism and spontaneous performance outside legitimate role requirements should be performed. The appropriate measure of size would be determined by the particular situation and dependent variable under study but should capture individual perceptions of who shares responsibility for a given

outcome. A measure of identifiability/anonymity would have to be developed but self awareness could be measured with a variation on Carver and Scheier's (1978) Dispositional Self Consciousness Scale and a measure of felt responsibility could be modeled after that scale in the Job Diagnostic Survey (Hackman & Oldham, 1975). As a measure of in-role performance, absenteeism might be preferred to productivity since in many cases attendance is more directly controlled. Operationalizations of performance beyond legitimate role requirements would be situation specific but should fit these guidelines: performance is outside legitimate role requirements when both the actor and his superior agree that failure to perform could not be legitimately punished, the activity was self initiated and the action is compatible with organizational goals. Factors other than size that might enhance self awareness, felt responsibility and self regulation of behavior might also be investigated. Depersonalization of organizational procedures, deindividualization of the work environment, autonomy, job satisfaction or felt inequity might all be important.

Psychological disadvantages of scale. It is time to re-evaluate advantages and disadvantages of large organizations. Advantages are associated with specialization of labor, machinery, supervision and management possible in large scale operations. Specialization decreases training costs and costs of moving labor from task to task and is expected to enhance effectiveness due to vast experience with a limited specialty. Large scale operations also offer advantages of large scale management, distribution and buying. However, at some point, increased specialization and size are no longer advantageous and, after leveling

off the average cost curve may begin to rise. Disadvantages of size recognized by economists are associated with inflexibility and increased communication and coordination costs.

Behavioral scientists have long recognized psychological diseconomies of scale, the negative effects of size on individual performance. For the organization, psychological diseconomies of scale may be inability to motivate high performance and personal involvement in psychological affairs. Decreased involvement is partly due to indirect effects of size. Psychological responses to formalization, work fragmentation, and simplification often associated with large scale production (Hall, 1982; Scott, 1981) produce dissatisfaction, absenteeism and lower productivity (Hackman & Oldham, 1976; 1979). And now it appears that organizational and work group size alone can diffuse personal responsibility for organizational success.

A few economists now include psychology in economic theory (Leibenstein, 1980; Maital, 1982). In this micro-micro economics the individual becomes the unit of analysis and individual decisions to consume or produce are important to consider. As Leibenstein (1980) notes, "A common place to anyone who observes the creation of goods is that it takes [individual] effort, yet effort is not a key notion of contemporary analysis (p. x)." Leibenstein introduces the problem of non-economic efficiency with an excerpt from Tolstoy's (1942) War and Peace:

military science assumes the strength of an army to be identical with its numbers. Military science says that the more troops the greater the strength. Les gros bataillons ont toujours raison (Large battalions are always victorious)...

In military affairs the strength of an army is the product of its mass and some unknown X...

That unknown quantity is the spirit of the army,...

The spirit of an army is the factor which multiplied by the mass gives the resulting force. To define and express the significance of this unknown factor--the spirit of an army--is a problem for science.

Unfortunately, psychological analysis suggests that size and spirit are inversely related.

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