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Threat-Rigidity Effects in Organizational Behavior: A Multilevel Analysis

Barry M. Staw, Lance E. Sandelands, and Jane E. Dutton

This paper explores the case for a general threat-rigidity effect in individual, group, and organizational behavior. Evidence from multiple levels of analysis is summarized, showing a restriction in information processing and constriction of control under threat conditions. Possible mechanisms underlying such a multiple-level effect are explored, as are its possible functional and dysfunctional consequences.*

Recent economic trends have engendered interest in how organizations cope with adversity. Some researchers have taken an evolutionary perspective on this issue, examining the life span of a large number of organizations under varying environmental conditions (e.g., Hannan and Freeman, 1977; Aldrich, 1979). Others have taken a more policy-oriented perspective, examining how specific organizations have successfully or unsuccessfully adapted to threatening environments (Argenti, 1976; Rubin, 1977; Starbuck and Hedberg, 1977). This paper will also address the question of organizational adaptation in the face of adversity. However, rather than simply concentrating upon organizational actions in a social or market context, we will focus upon how adversity affects the adaptability of multiple layers of an organizational system.

At present, sociological theory notes that organizations attempt to cope with potential sources of adversity (Thompson, 1967; Pfeffer and Salancik, 1978) by adjusting their internal structure or by taking actions to enhance their position in the environment. Many of these market strategies and buffering techniques (e.g., Thompson, 1967) have a rather anthropomorphic quality to them and could be construed as the product of a policy-making group or even a single decision maker. While it can be argued that sociological rather than psychological theories are best equipped to explain macro-level phenomena, there are, as Miller (1978) has noted, many effects that appear to generalize across levels of analysis. The reaction of entities to threat or adversity may be just such a phenomenon. The anthropomorphic quality of macro-level propositions may be the product of parallels in the effect of threat upon individual, group, and organizational behavior. Anthropomorphism may also result from the fact that organizational actions are often initiated by individual and group forces, such that social and psychological effects indirectly influence organization-level phenomena.

Not only do current models emphasize organizational and not individual or group responses to adversity, but they also take a functional stance. It is commonly assumed that methods of coping with adversity are appropriate and increase the survival prospects of the organization (Thompson, 1967; Pfeffer and Salancik, 1978) or protect local interests (Cyert and March, 1963). What is missing is the identification of maladaptive or pathological cycles of behavior (Merton, 1967; Hall, 1976). This article will therefore examine evidence for a maladaptive tendency in reacting to adversity and will examine the case for this pathology from multiple levels of analysis.

THE THREAT-RIGIDITY THESIS

Many well-publicized corporate collapses can be viewed as failures to alter response in the face of environmental change.

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The Penn Central Railroad, for example, continued paying dividends until cash flow dried up completely (Altman, 1971); Chrysler Corporation, when faced with the oil crisis and rising gasoline prices, continued large (but efficient) production runs on its largest and most fuel-inefficient cars until inventories overflowed (*Business Week*, 1979; *Fortune*, 1979); the *Saturday Evening Post* continued to raise its prices as circulation dropped (Hall, 1976). At the individual level of analysis, some of these same pathologies may also exist. When placed in a threat situation, an individual's most well-learned or dominant response may be emitted (Zajonc, 1966), but this response may be grossly inappropriate if the task or learning environment has changed. Similarly, decision-making groups may reduce their flexibility under a stress situation, sealing off new information and controlling deviant responses (Janis, 1972).

As illustrated in these several examples, there may be a general tendency for individuals, groups, and organizations to behave rigidly in threatening situations. As we will explore in the review of several disparate literatures, there may be two types of effects. First, a threat may result in restriction of information processing, such as a narrowing in the field of attention, a simplification in information codes, or a reduction in the number of channels used. Second, when a threat occurs, there may be a constriction in control, such that power and influence can become more concentrated or placed in higher levels of a hierarchy. Thus, it is hypothesized that a threat results in changes in both the information and control processes of a system, and, because of these changes, a system's behavior is predicted to become less varied or flexible.

Data bearing on the threat-rigidity thesis will be presented from studies conducted at the individual, group, and organizational levels of analysis. Throughout the discussion, we will treat threat as an environmental event that has impending negative or harmful consequences for the entity (cf. Lazarus, 1966). However, in order to bring together sufficient literature to assess the threat-rigidity effect across multiple levels of analysis, it will be necessary to consider streams of research that overlap but do not match perfectly this definition of threat. Also, although we will consider information processing and control as determinants of rigidity, operationalizations of these variables will not be isomorphic across all levels of analysis. Such slippage in definitional precision will make our review conclusions more speculative than we would like, but this ambiguity is inevitable in searching for parallel and molar effects that span levels of analysis.

As outlined in Figure 1, the general thesis we will explore in this article is that a threat to the vital interests of an entity, be it an individual, group, or organization, will lead to forms of rigidity. It is further proposed that threat-rigidity effects can be maladaptive. When the environment has changed radically, flexibility and diversity in response have survival value (Campbell, 1965; Weick, 1979). Thus, maladaptive cycles are predicted to follow from threats which encompass major environmental changes since prior, well-learned responses are inappropriate under new conditions. In contrast, when a threat does not involve major environmental change (e.g., when no basic causal relationships have been altered), rigidity in response may not be dysfunctional. A rigid, but previously successful response may

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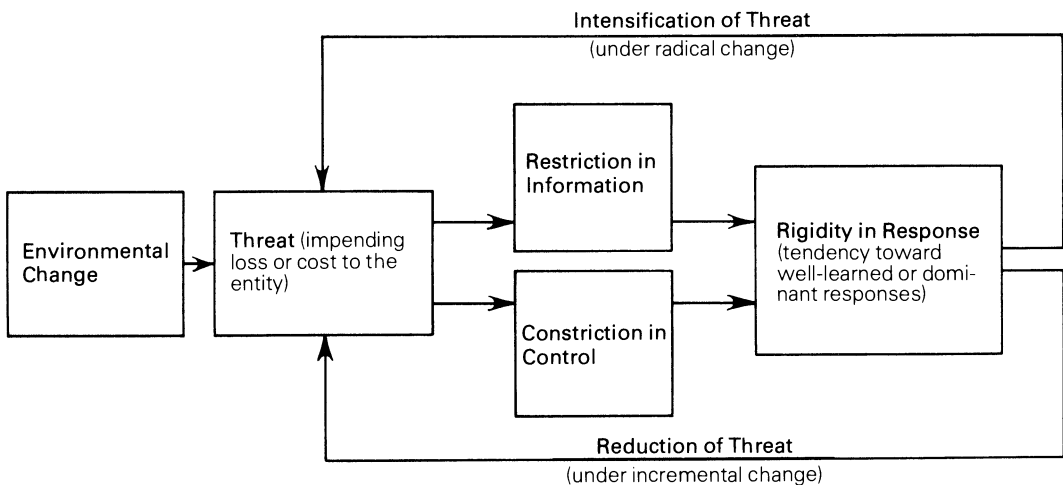


Figure 1. Threat-rigidity cycles.

in fact be appropriate to a threatening situation that does not involve major changes. After reviewing the evidence bearing on the threat-rigidity thesis, we will return to this issue of the functional versus the dysfunctional nature of threat-rigidity effects.

INDIVIDUAL-LEVEL EFFECTS

The individual literature most relevant to threat deals with the effects of stress, anxiety, and arousal. Because threat is so frequently associated with these individual reactions, it has been used as the means to manipulate these variables. Studies frequently employ a threatening experience to alter states of stress, anxiety, and arousal, and then the effects of these manipulations are assessed upon individual cognition and behavior. Although stress, anxiety, and arousal are no doubt the immediate consequences of threat, we will consider them as virtual manipulation checks of whether a threatening stimulus has been presented.

Psychological Stress. The effects of psychological stress on individual behavior have received much attention (for reviews, see Janis, 1958; Lazarus, 1966; Appley and Trumbell, 1967; Sarason and Spielberger, 1975; McGrath, 1976; Beer and Newman, 1978). While the construct of stress has been interpreted in many divergent ways (e.g., stressful behaviors, adverse stimuli, and aspects of the social or physical environment), the research that is most relevant to threat involves the manipulation of an experimental context. Psychological stress has been manipulated by administering performance-failure feedback on preceding experimental tasks (Postman and Bruner, 1948; Cowen, 1952a, 1952b; Osler, 1954; Smock, 1955), by excess pacing of experimental tasks and time pressure (Lazarus and Eriksen, 1952; Castaneda and Palermo, 1955; Palermo, 1957), by threats of electrical shock (Pronko and Leith, 1956), and by varying the formality, warmth, and friendliness of experimental settings (Cowen, 1952a, 1952b).

Effects of stress relevant to the threat-rigidity hypothesis can be found in three streams of research. In the area of perception, research indicates that psychological stress interferes with the ability of subjects to identify and discriminate among visual

stimuli (e.g., Postman and Bruner, 1948; Postman and Brown, 1952; Smock, 1955). Under stress, individuals perceive unfamiliar stimuli in terms of previously held "internal hypotheses" about the identity of stimulus objects, whereas persons not subjected to stress conditions are better able to identify and discriminate unfamiliar stimuli.

In the area of problem solving and learning, studies have used Luchins' (1942) water jar test to examine whether stress induces problem-solving rigidity. This test requires subjects to develop strategies for solving an arithmetic problem, and rigidity is measured by adherence to a previously learned solution, even when that solution is no longer appropriate for the problem at hand. Subjects in stress conditions have been found to be less flexible in their choice of solution methods than nonstress subjects (Cowen, 1952a, 1952b).

Finally, in the area of motor performance, research has shown an interaction between stress and training. Trained subjects in a stress condition perform better than subjects in nonstress conditions, but untrained subjects in a stress condition perform less well than nonstress subjects (e.g., Castaneda and Palermo, 1955; Pronko and Leith, 1956; Palermo, 1957). Some authors (e.g., Pronko and Leith, 1956) have concluded that psychological stress leads to behavioral-response rigidities, but, in the case of the trained subjects, the rigidified response is appropriate for task performance. These findings also support the Hull-Spence theory of motivation in which psychological stress may act to increase drive level and stimulate dominant habituated responses (cf., Taylor and Spence, 1952; Farber and Spence, 1953; Spence and Farber, 1953). Task performance is enhanced in cases in which dominant responses are performance-relevant but hindered in the cases in which dominant responses are irrelevant or detrimental.

Anxiety. The relationship between anxiety and behavior can be categorized into two substreams of research. On the one hand are correlational studies relating measured states of anxiety (e.g., Taylor's Manifest Anxiety Scale) to various performance indicators. For example, studies of visual discrimination and learning have found that highly anxious subjects are less sensitive to visual stimulation (Goldstone, 1955) and are less discriminating of visual detail (Korchin, Singer, and Ballard, 1951; Korchin and Basowitz, 1954). On the other hand, many studies of anxiety have used experimental manipulations similar to studies of stress (e.g., electric shock and performance-failure feedback). This body of research indicates that anxiety, like psychological stress, interferes with visual discrimination (Eriksen and Wechsler, 1955), motor performance involving vigilance (Wachtel, 1968), and intellectual test performance (Mandler and Sarason, 1952; Sarason, Mandler, and Craighill, 1952; Wine, 1971).¹

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The fact that psychological stress and anxiety have been identified with a common set of experimental operations suggests a problem of discriminant validity (Campbell and Fiske, 1959). However, we cite the stress and anxiety literatures separately because they are treated separately within psychology, and because we are concerned primarily with the general effects of threat rather than the distinctions between these two constructs.

Physiological Arousal. Although arousal is a physical rather than psychological state of the organism, the concepts of stress, anxiety, and arousal are complementary aspects of human functioning (Schlosberg, 1954; Duffy, 1962). During periods of threat, individuals become physiologically activated in addition to experiencing psychic stress and anxiety. In fact, it is likely that arousal is ultimately responsible for the behavioral effects observed under conditions of stress and anxiety, al-

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though there is still considerable debate about whether arousal precedes or follows from more cognitively based emotional reactions (Schachter and Singer, 1962; Zajonc, 1980).

Arousal researchers have investigated many of the same aspects of human functioning as those working in the areas of stress and anxiety. Frequently studied are the effects of arousal upon perception (Duffy, 1932, 1962; Bacon, 1974; Pallak et al., 1975), learning (Yerkes and Dodson, 1908; Berry, 1962; Obrist, 1962; Kleinsmith and Kaplan, 1963; Eysenck, 1975), and motor performance (Thorner, Gibbs, and Gibbs, 1942; Huxtable, White, and McCartor, 1946; Stennett, 1957). As summarized by Easterbrook (1959), the effect of arousal upon perception is to narrow the range of cues processed by decreasing sensitivity to peripheral cues. In terms of learning and performance, arousal may also reduce flexibility and induce responses that are well-learned or habituated (see Duffy, 1962; Broadbent, 1971; Eysenck, 1976; for reviews).

Disaster Research. While research on stress, anxiety, and arousal has been primarily laboratory-based, the largest source of field data related to threat comes from disaster-research studies. In the early 1950s, the U.S. government sponsored studies of communities that experienced tornadoes (Wallace, 1956), floods (Danzig, Thayer, and Galanter, 1958), major coal mining accidents (Beach and Lucas, 1963), and other disasters. While this literature provides some insight into the reactions of individuals in threat situations, the evidence is often anecdotal and speculative. Nonetheless, from the available case studies and clinical analyses of behavior in disaster situations, two themes are prevalent. First, most authors agree that the primary psychological effects of crisis are to create feelings of stress and anxiety in affected individuals (Bettelheim, 1943; Boder, 1954; Janis, 1954, 1962; Menninger, 1954; Glass, 1955; Wallace, 1956; Wolfenstein, 1957; Withey, 1962; Beach and Lucas, 1963). Second, the anxiety and stress brought on by a crisis elicits behavioral responses of withdrawal (Menninger, 1954; Glass, 1955), reductions in critical information processing (Menninger, 1952; Danzig et al., 1958), and constriction in behavioral responses (Menninger, 1952; Glass, 1955). In a review of the disaster studies, Withey (1962: 118), for example, concluded that the anxiety individuals experience in crisis situations leads to "a narrowing of the perceptual field and a limitation of the information that can or will be received" and that a more persistent threat may lead to even "greater constriction of cognition, rigidity of response, and primitive forms of reaction."

Summary of Individual Effects

We have only briefly reviewed the extensive body of research that relates to individual responses in threat situations. However, because the convergence of data across the research areas is so strong, it is possible to construct a summary model. Figure 2 depicts relationships between the theoretical constructs of stress, anxiety, physiological arousal, and cognitive and behavioral effects. Three aspects of this model are central: (1) the link between threat situations and psychological stress and anxiety; (2) the nature of cognitive manifestations of stress/anxiety/arousal; and (3) the link between cognitive man-

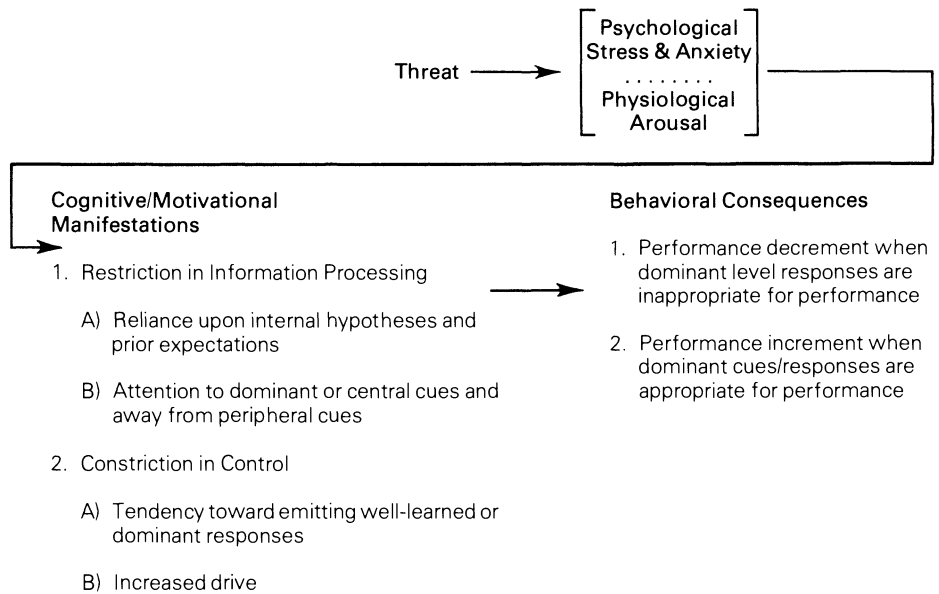


Figure 2. A model of individual response to threat.

ifestations of stress/anxiety/arousal and properties of individual behavior.

As shown in Figure 2, it is posited that threat leads to psychological stress and anxiety. This linkage is explicit in the disaster literature since symptoms of psychological stress and anxiety are found to be widespread in communities afflicted by disaster. This linkage is also implicit in the experimental literature, because manipulations such as electrical shock, failure feedback, excessive time pressure, and threatening ambience are unpleasant, personally aversive events.

A second important feature of the model depicted in Figure 2 concerns the cognitive and motivational manifestations of psychological stress, anxiety, and arousal. The effects of these factors can be delineated between information and control processes. In threat situations, restrictions in information have been shown to result from tendencies on the part of individuals to emphasize prior expectations or internal hypotheses about their environment (Postman and Bruner, 1948; Postman and Brown, 1952; Smock, 1955), and from tendencies to narrow attention to include dominant cues and exclude peripheral cues (Easterbrook, 1959; Wachtel, 1968; Wine, 1971; Eysenck, 1976). Likewise, constrictions in control correspond to the tendency of individuals to emit dominant, well-learned or habituated responses in threat situations (Beier, 1951; Cowen, 1952a, 1952b; Farber and Spence, 1953; Schaffer, 1954; Castaneda and Palermo, 1955; Eriksen and Wechsler, 1955; Pronko and Leith, 1956; Palermo, 1957; Zajonc, 1965; Pallak et al., 1975).

A final aspect of the model that bears discussion is the link between the cognitive and behavioral consequences of threat situations. In the disaster literature, anecdotal evidence has suggested that threatened individuals may fail to heed warnings or follow directions (Wolfenstein, 1957) and may even "freeze up" or fixate in their behaviors (Glass, 1955). These observations are consistent with findings from experimental

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psychology that suggest that psychological stress, anxiety, and arousal often result in poor task performance and a tendency to persevere in well-learned courses of action. Significantly, however, the psychological literature cautions that the performance effects of stress, anxiety, and arousal are not general. Whether an individual performs a task well in a threat situation depends on performance relevant cues being central in the environment (as opposed to peripheral) and on performance relevant responses being dominant for the individual. This of course means that threats resulting from common or familiar problems may induce effective coping responses from individuals, while threats arising from radical environmental change may bring on a maladaptive reaction. This also means that practice or drill may not lead to effective coping mechanisms, except when the parameters of threat situations are well known or when the drills can, in fact, train individuals for cognitive flexibility under adverse circumstances.

GROUP-LEVEL EFFECTS

Threats to the interest and purposes of groups often occur, some so severe as to cause the breakup of a collectivity or loss to each of its members. For this reason, there may be parallels between the individual-level effects of threat and effects on the group level of analysis. However, because group research has not directly investigated this issue, it is necessary to examine several seemingly divergent subareas in order to explore such parallels.

The Effects of Threat upon Group Cohesiveness

One of the long accepted hypotheses of group behavior is that an external threat draws group members together and increases group cohesiveness. Much of the research supporting this contention comes from studies of intergroup conflict. The best known and one of the earliest illustrations of this effect was Sherif's boys' camp studies (Sherif and Sherif, 1953; Sherif et al., 1961). When two groups were placed in a competitive situation, the sociometric choices of group members shifted to an intragroup basis, with very few affective or social linkages persisting across the competitive groups. The rivalry between groups appeared to increase the liking and social bonds within each group and such positive intragroup affect was directly associated with intergroup hostility. Although some researchers (e.g., Rabbie and Wilkins, 1971; Rabbie and Huggen, 1974) have contested these findings on the grounds that they result from a relatively uncontrolled field experiment, laboratory experiments in which intergroup rivalry is manipulated also support Sherif's early conclusions (see Dion, 1979, for a review).

Although competition between groups has been found to increase intragroup cohesiveness, this does not mean that adversity always draws group members together. When two groups compete for resources, the losing group may suffer a decrease in intragroup cohesiveness, while the winners may increase their cohesion further (Wilson and Miller, 1961; Ryen and Kahn, 1975; Worchel, Lind, and Kaufman, 1975). Thus, competition that threatens the loss of resources can lead to increased cohesiveness while the *actuality* of such a loss may lead to dissension. It would seem, therefore, that intergroup

rivalry may focus attention on intragroup relationships and make group membership more salient, but it can only assure a relatively short-term increase in cohesiveness. More sustained cohesiveness may result from *successful* competition.

The literature on group problem solving also addresses the intragroup consequences of group success or failure, although these data are derived from task performance rather than competition with a rival group. A large number of studies have found success on a group task to lead to positive affect toward other members of the group while task failure reduces intragroup cohesiveness (see Shaw, 1976; Zander, 1979; for reviews). There are some exceptions to this general finding, but few studies have demonstrated that group failure leads to increased cohesion, and such increases could be viewed as a short-term reaction rather than a long-run consequence of failure.

In summary, an outside threat is posited to lead to an increase in the salience of intragroup relationships and a decrease in intergroup ties. This increased focus upon intragroup membership and processes will generally also lead to an increase in cohesiveness and liking for other group members. However, we would hypothesize that increases in cohesiveness may be short-lived if a group fails to meet outside challenges, either in terms of an intergroup rivalry or a problem facing the group. In the case of sustained and clear-cut failure, the increased focusing upon in-group process may only serve to exacerbate a loss in cohesiveness. On the other hand, a group which is successful, or at least not failing to meet an outside challenge, may sustain cohesiveness at a high level.

The Effect of Threat upon Group Leadership and Control

Although group membership by itself can be stress reducing (Schachter, 1959), an external threat facing a group would be expected to raise anxiety about the attainment of group goals and individual interests as they relate to collective achievements. One way to meet such an outside challenge or reduce the threat might be increased reliance upon a group leader.

The effect of external threat upon leadership is not straightforward. Worchel, Andreoli, and Folger (1977) found that members of competing groups identified fewer members as leaders than did members of cooperating groups, implying a centralization of authority under threat. However, in Hamblin's (1958) research, groups were exposed to an outside threat or crisis, and he observed the replacement rather than a strengthening of existing group leadership. The threat in Hamblin's study consisted of radical changes in the rules of an experimental game, making it impossible for a group to succeed on the task or even to predict what behaviors were necessary for group success. In this experiment, there was a tendency for those who were initially most influential to lose some of their power and for those who were initially second in group influence to attain the leadership role. Other research by Hollander and his associates showed that a failure experience increased the influence of an elected leader but not that of an appointed leader (Hollander, Fallon, and Edwards, 1974). However, even for elected leaders, continued failure caused a significant erosion in their influence over time.

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From existing data, it can be hypothesized that external threat focuses the attention of group members upon the actions of a leader and others high in influence. If external threat is translated into a clear-cut failure experience, the leader may be blamed and his or her influence reduced. However, replacement of the group leader does not necessarily mean a decentralization of power within the group. If anything, an external threat probably increases reliance upon those high in influence, and, as Hamblin (1958) has shown, failure may cause those who already possess substantial influence (e.g., second in power) to gain in power, while those with the least initial influence continue to rely on others.

Research on leadership and group threat appears to contradict observations that support for leaders increases under threatening situations. For example, it has been hypothesized that support for a national leader increases during times of war (Hertzler, 1940; Korten, 1962) and that the influence of labor leaders increases during a strike against management (Walton and McKersie, 1965). How are these observations reconciled with the available literature on group behavior?

Some of the confusion on this topic results from the lack of distinction between external threat and failure. In real-world settings, threat may persist for a long period of time before failure information is received, allowing a leader to take action or mobilize efforts before any negative consequences have materialized. In contrast, most laboratory experiments have manipulated failure information so that the erosion of collective goals or interests has already occurred. A second difference between laboratory studies and real-world observations has to do with the external nature of a threat. In experimental studies using failure experience, it is not often clear whether a threat to collective welfare is due to an external force or internal incompetence. The leader may therefore be justifiably blamed when a group fails or cannot solve a problem. In contrast, many of the most salient examples of threat in the real world (e.g., warfare) are clearly introduced by an external agent. Leaders are rarely blamed for provoking a war or precipitating a strike, although they are sometimes accused of not taking strong enough action to alleviate the outside threat. Thus, support for group leaders in real-world settings may stem from the external attribution of a setback as well as the anticipation of eventual goal achievement. In contrast, laboratory evidence of derogation of the leader may stem from the internal attribution of threat and the anticipation of failure.

The Effect of Threat upon Pressures toward Uniformity

Early theoretical work by Festinger (1950) posited that pressures toward uniformity arise because group members perceive uniformity as necessary to move toward a collective goal. Festinger hypothesized that groups will exert pressure upon deviants in order to reach consensus on opinions and beliefs and that pressures for uniformity will increase as a collective goal increases in importance or as group members become increasingly dependent upon the group. Thus, as a logical extension, it would seem that a threat to group interests would also heighten pressures toward uniformity.

Festinger posited that when individuals deviate on important issues the group will increase communication with and exert

pressure upon the deviant to change. However, if the deviant fails to come into line with the rest of the group, communication may become sharply reduced and he or she may become excluded from important group tasks. In an elegant empirical study, Schachter (1951) validated Festinger's predicted changes in communication with deviants and showed how pressures for uniformity can lead to exclusion of deviants from vital group functions. In a cross-cultural study, Schachter et al. (1954) also showed that pressures for uniformity increase as a group goal is threatened and that such pressures increase as the magnitude of threat or value of the goal increases.

Janis' (1972) historical analysis of top-level decision-making groups can also be interpreted in terms of the effect of threat upon pressures for uniformity. Janis posited that many of the worst decisions by the U.S. government (e.g., the Bay of Pigs invasion, the decision to cross the 38th Parallel during the Korean War, and the escalation of the Vietnam War) were a product of "groupthink." As defined, groupthink is a syndrome of process characteristics present in highly cohesive policy groups. But at the heart of the groupthink syndrome are the outcroppings of pressures toward uniformity, such as direct influence upon group members whose opinions deviate from consensus beliefs, self-censorship of deviant beliefs by group members, exclusion of divergent information or possible critical input to the group, and a shared illusion of unanimity concerning central beliefs or collective judgments. While Janis (1972) portrays these processes as a product of group cohesiveness, they can be viewed simply as indications of pressures for uniformity. Moreover, in each of the cases used by Janis to illustrate groupthink, an external threat was present. Thus, it may be prudent to consider threat as the variable that initiates pressures for uniformity rather than group cohesiveness, as originally formulated by Janis. Adding some support to this position is an experiment by Flowers (1977) in which increased group cohesiveness did not adversely affect decision processes as predicted by Janis' model.

Summary of Group Effects

Figure 3 outlines some of the principal effects of an external threat upon group processes. When a threat has been attributed to an external source and it is thought likely for a group to successfully meet the threat, then increased cohesiveness, leadership support, and pressure for uniformity is predicted. The group will seek consensus and in so doing will generally support the policies or position of the existing group leadership. Reaching consensus, however, will often entail the restriction of information, ignoring divergent solutions and downplaying

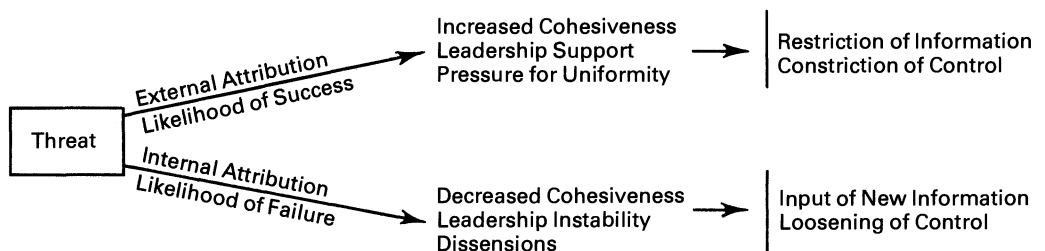


Figure 3. A model of group response to threat.

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the role of deviant positions. Consensus seeking also involves a constriction of control, such that the opinions of the dominant members may prevail and their influence may become more centralized. Such changes in information and control processes may, of course, lead to faulty group decision making.

If a threat is attributed to internal deficiencies or the group is perceived as unlikely to succeed, then neither cohesiveness nor consensus are likely to follow. Failure experiences breed dissensus and leadership instability, both of which can be viewed as providing new information or a loosening of control. What frequently follows from such instability is the appearance of new leaders or group consensus, which promises a turn-around of group fortunes and/or success against the external threat.

ORGANIZATION-LEVEL EFFECTS

The study of threat to organizational systems can draw upon several research literatures. Research on natural disasters has been extended to the analysis of organizational responses to crisis (e.g., Brouillette and Quarantelli, 1971; Turner, 1976). Likewise, political scientists have been concerned with how governmental bodies react to national threats and how crisis decision making may deviate from a rational-choice model (Snyder and Paige, 1958; Hermann, 1963; Holsti, 1971; Paige, 1972). Finally, of late there has been increasing attention devoted to decline processes in public organizations, brought on by budgetary cutbacks in universities (Rubin, 1977; Manns and March, 1978) and governmental agencies (Mitnick, 1978; Bozeman and Slusher, 1979). In the private sector, there has been a similar concern with industrial decline or retrenchment (Khandwalla, 1972; Schendel, Patton, and Riggs, 1976; Starbuck and Hedberg, 1977; Starbuck, Greve, and Hedberg, 1978; Whetten, 1980). In many cases, severe resource constraints have created a situation in which the welfare or viability of an organization is threatened.

Crisis or Threat?

Much of the organization-level work on threat has made use of the theoretical construct of crisis. The most prevalent definition is Hermann's (1963) classification in which a crisis is said to occur when three conditions are present: (1) there is a major threat to system survival; (2) there is little time to react; and (3) the threat is unanticipated. This three-part scheme has endured within this literature, even though empirical support for the scheme has been limited. For example, perceptions by U.S. State Department officials of the characteristics of a crisis did not reveal such a tripartite classification (Lentner, 1972). Notably missing from the Foreign Service officers' perceptions of crisis were opinions that a threat must be unanticipated to constitute a crisis. Even Hermann's (1965) own research did not confirm the anticipation dimension of the definition of crisis. As a result, some researchers have substituted the idea that a crisis must be ill-structured rather than unanticipated (e.g., Turner, 1976), or that a crisis is perceived when there is a disruption for which no specific plans have been made (Billings, Milburn, and Schaalman, 1980). Meanwhile, other researchers have attached the crisis label to a range of phenomena such as information overload (Meier, 1962) and financial adversity (Rubin, 1977; Starbuck and Hedberg, 1977). For simplicity, we will

avoid any syndrome-like definition of crisis and will instead deal with the effects of threat. In our view, threat is probably the driving force behind most of the events that the term *crisis* attempts to explain. Although time pressure or anticipation may interact with threat in affecting actions, most research has shown a simple, direct effect of the extent of potential loss upon the perception of a crisis (e.g., Lentner, 1972; Billings, Milburn, and Schaalman, 1980).

The Effect of Threat upon Informational Processes

In research on decision making during international conflicts it has been posited that a threat to security results in a restriction of the number of alternatives considered by policy makers (Snyder and Paige, 1958; North et al., 1963; Holsti, 1964). The reason for a restriction in alternatives is not yet clear. Smart and Vertinsky (1977) suggested that fewer sources of information are consulted in a crisis, which explains why there are fewer alternatives available. In contrast, Williams (1957) proposed that new information that cannot be easily assimilated to information already possessed is assigned a low value. The net effect of this tendency is to restrict alternatives to those that are similar to information that the organization already possesses and, as Paige (1972) observed, for decision makers to rely heavily on past experience or prior knowledge.

As we noted in our discussion of individual-level effects, there is a tendency for individuals to identify a dominant and familiar precept in a threat situation and then to assimilate new information into it. This tendency has also been observed by researchers who have sought to understand governmental decision making under threat. Holsti (1971), for example, noted that policy makers tend to adopt a single approach to problem solving and then supplement this mode of problem solving by collecting objective information supporting it. He further noted the tendency for policy makers, confronted by threat, to simplify and stereotype assessments of the situation. In a similar vein, Lasswell et al. (1949) found an effect of external threat upon the simplification of language. By content analyzing editorials in prominent newspapers from various countries, he found that when these countries were confronted with serious international threats, the editorial content of newspapers tended to become simplified and repetitious. Suedfeld and Tetlock (1977), in a content analysis of public speeches and diplomatic communications, also found a reduction in cognitive complexity in conflict situations leading to the outbreak of war.

Although an external threat appears to produce simplification and a reduction in alternatives considered by policy makers, it does not appear to reduce search behavior. The available data on search activity indicate that search for information follows a wave pattern over time. Initially, at the detection of a threat, more information is sought to confirm the presence of the threat. This tendency was vividly illustrated by officials at Pearl Harbor prior to the Japanese attack. When these officials first learned of the possibility of an attack, they searched intensively for information to confirm the existence of the threat (Wholstetter, 1962; Paige, 1972). However, as the threat became a reality, the search for information appeared to decrease. This reduction in search could have been due to the overloading of communication channels that often occurs at

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the onset of threat. Holsti (1964), for example, found evidence of information overload in the crisis preceding World War I. The central decision units were physically overloaded, and, hence, information search attempts were blocked. North et al. (1963) found a similar occurrence in their study of the crisis preceding World War I, as did Williams (1957) in his study of communication patterns in a natural disaster.

Search for information may reintensify as soon as a decision has been made on how to cope with a threat. However, the type of information sought is not information on alternatives nor information about the threat, but instead is support information confirming policy choices that have already been made. For example, Paige (1972), in his study of Korean and Cuban decisions, found that when confronted with crisis decisions, decision makers solicited advice from subordinates, presumably only to confirm their decision outcomes or preferences. Similarly, Rubin (1977) found an increased search for information by members of university departments who were faced with severe financial-cutback decisions. She attributed the increase in information search to both the decreased tolerance for error in cutback decisions and the need to justify decisions, once they are made. One might interpret the behavior of the secretary of state during the Cuban missile crisis in a similar way. Larson (1963), for example, noted that the U.S. secretary of state communicated with over 75 governments during the Cuban missile crisis, and these communication efforts may have been intended to collect information supporting the U.S. position.

The preceding discussion suggests that an external threat can have a somewhat paradoxical impact on information processes within an organization. As we have noted, search for information may change as a threat develops, from an initial flurry when a threat is recognized, to a low point as channels become overloaded, and on to a second peak as decisions are confirmed or implemented. However, throughout these changes in information search, the number of genuinely new or novel alternatives considered by the organization may still be relatively low. Even when search is increased, information received is likely to be similar to that of the past, due to heavy reliance on standard operating procedures, previous ways of understanding, or communication that is low in complexity (Starbuck, Greve, and Hedberg, 1978).

Control Processes

A second major effect of threat appears to be a mechanistic shift (Burns and Stalker, 1961) in which there is increased centralization of authority, more extensive formalization, and standardization of procedures. Although many researchers have noted these organizational reactions to threat (Hermann, 1965; Smart and Vertinsky, 1977; Bozeman and Slusher, 1979), very limited attention has been paid to why the effects have been observed. It seems logical that when threat confronts an organization, a major concern would be the enhancement of control and coordination of organizational action. In general, as the importance of decisions increases, they are made at progressively higher levels within an organizational hierarchy, presumably because top-level decision making is less likely to differ from the core values or goals of the organization (Kanter,

1977). Similarly, increased formalization and standardization of procedures can insure coordination of organizational action when lower-level participants must carry out the decisions of others (Katz and Kahn, 1978). Thus, because threat makes salient the possibility of substantial error or loss, we should expect increases in both organizational coordination and control.

The centralization of authority in response to crisis is the most widely acknowledged aspect of the mechanistic shift. Hermann (1963) argued that increased centralization is manifested by contraction in authority, reduction in the number of decision participants, and decision making at higher levels of the organization. In his simulation studies, he found no actual reduction in the number of decision makers during a crisis decision (although contraction possibilities were limited in his experimental groups of five persons), but he did find a perceived reduction in the number of participants. In case studies of international crises, Paige (1972) and Holsti (1971) did find a reduction in the size of decision bodies during times of threat. Likewise, the data of Starbuck, Greve, and Hedberg (1978) in a case study of a declining firm, Rubin's (1977) research on responses to budget cutbacks in universities, and Khandwalla's (1972) research on organizational response to malevolent environments all show increasing centralization in times of threat. Pfeffer and Leblebici (1973) found that a stressful environment with a high degree of market competition, coupled with a rapid degree of environmental change, was associated with taller organizational structures and increased review and control of decision making.

An interesting exception to the centralization effect was found by Brouillette and Quarantelli (1971) in their investigation of how organizations deal with natural disasters. They found that divisions or units of public-work organizations became more autonomous during a threat period, decisions being made without consultation with higher officials. However, within each of these autonomous units an informal administrative core emerged to make decisions, suggesting that debureaucratization may be accompanied by increased centralization *within* each of the units. The key point may be that the centralization may vary according to whether the threat affects a subunit or an entire organization.

As an extension of the Brouillette and Quarantelli findings, one might hypothesize that a threat may force a control response that results in the strengthening of tightly coupled links within organizations and the dissolution of weak links. Therefore, in a diversified or decentralized organization, a threat may induce a control response that dissolves weak links to the top while strengthening intraunit links, giving the appearance of a debureaucratization process. In contrast, within a functional or traditionally structured organization, threat may stimulate a control response that strengthens links to the top while dissolving weak links between departments or units, producing a more obviously centralized structure. This hypothesized strengthening of strong links and weakening of loose links between departments and levels of an organization would be analogous to the observed dominant-response effect (Zajonc, 1965) at the individual level of analysis.

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Other indications of a mechanistic shift in response to threat include an increased use of formalized procedures and greater standardization of activities. In Rubin's (1977) study of responses of a university to budget cutbacks, departments tended to use more explicit decision-making criteria and systemized their allocation criteria. Similarly, in a study of corporate turnaround strategies (Schendel, Patton, and Riggs, 1976), firms made profit responsibilities more explicit in response to profit decline. Also, Khandwalla (1972) found that organizations, when faced with adverse environmental conditions, increased the use of standardized and routinized practices. Finally, a laboratory simulation by Bourgeois, McAllister, and Mitchell (1978) showed that business students actually preferred mechanistic over organic structures when acting as a manager facing turbulent environments.

Thus, threat appears to be accompanied by a change in organizational structure that resembles a mechanistic shift. This change is evident in increased centralization, formalization, standardization and routinization. From available evidence at the organizational level, the shift to a more rigid structure seems to be due to decision makers' attempts to enhance control so as to insure that organizational members act in a concerted way in meeting a threat situation.

Dominance of Efficiency Concerns

There is some support for the predominance of efficiency concerns in organizations during times of threat. Efficiency concerns are manifested in the tightening of available budgets, increased emphasis on cost cutting, and intensification of efforts to insure accountability. These effects are often brought about by a severe decline in performance and a reduction in slack resources within the organization. For example, Starbuck and Hedberg's (1977) case study data indicate that decline is accompanied by a high premium placed upon efficiency measures. The two companies in their sample used temporary expedients such as cost cutting, budget tightening and the restriction of marginal activities to deal with severe financial adversity. Similarly, Schendel, Patton, and Riggs (1976) documented the increased use of firings and greater budget and cost control as measures employed by companies faced by persistent decline in market performance. Rubin's (1977) study of universities plagued by budget cutbacks indicates a similar tendency with respect to the dominance of efficiency concerns. In universities faced with financial constraints, allocation criteria for resource distribution become highly salient. Finally, Bozeman and Slusher (1979) noted that in times of sustained resource scarcity in the public sector there is increased technological efficiency and increased pressures for accountability which may, in turn, eliminate the use of creative or novel strategies in decision making.

Summary of Organized Effects

Figure 4 summarizes the predicted effects of threat on organization-level phenomena. As shown in the figure, threat has generally been conceived as a result of an adverse condition in the environment, such as resource scarcity, competition, or reduction in the size of the market. The consequences of threat on the organization can be placed in three groups. First, due to an overload of communication channels, reliance on prior

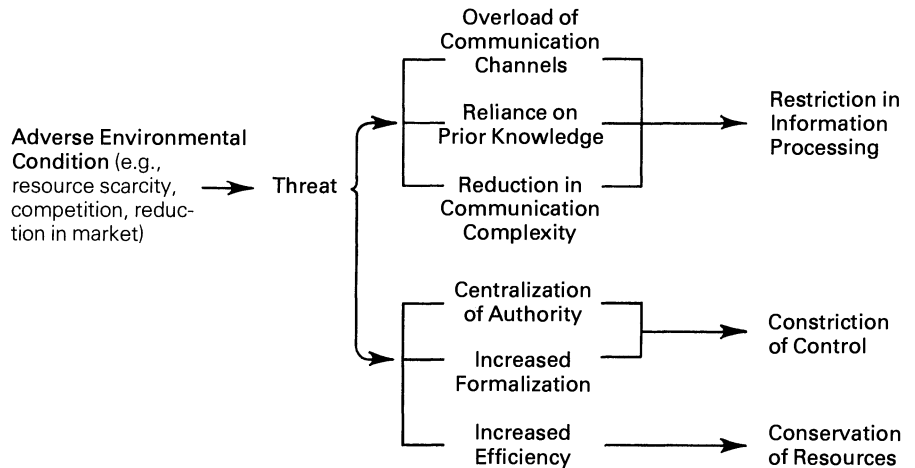


Figure 4. A model of organizational response to threat.

knowledge, and a reduction in communication complexity, there may be a restriction in the information-processing capacity of the organization. Second, due to a centralization of authority and increased formalization of procedures, there may be a constriction in control. Finally, there may be increased efforts to conserve resources within the system through cost-cutting and efforts for greater efficiency.

TOWARD A MULTILEVEL THEORY

In a review of the evidence, the threat-rigidity thesis finds support at multiple levels of analysis. At the individual level, there are strong indications of constrictions in information processing and behavioral response in the face of threat. At the group level, there is evidence of similar effects when a threat is perceived as external to the group and when there is some expectation of successfully resisting the threat. Finally, at the organization level, there is evidence of a mechanistic shift, restricting information and moving control to higher levels in the system. Although the concepts and operationalization of effects vary both within and especially between levels of analysis, it does appear possible to draw some generalizations from the data.

At present, most of the evidence underlying the threat-rigidity thesis is interpreted in psychological or sociological theories at either micro- or macro-levels of analysis. For example, there are delimited or "middle-range" theories (Merton, 1967) about how individuals react to stress, how groups deal with failure experiences, and how organizations cope with adversity. The advantage of these delimited models is that they allow a rather fine-grained analysis of a particular subject group and capitalize on preexisting disciplinary boundaries. The primary disadvantage of these delimited models is that they are level-specific and tend to restrict our ability to see general patterns across social entities.

A Systems Approach

Given the generality of threat-rigidity effects, a systems-theory explanation would seem appealing. One could treat each entity, be it an individual, group, or organization, as a relatively autonomous system attempting to cope with its own idiosyncratic

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environment. The relatively consistent findings at the three levels of analysis would thus support a general explanation of reactions to threat, in language that is devoid of psychological or sociological terms but is instead translated into the description of general social systems (e.g., Miller, 1978).

As an example of a systems explanation, one could utilize a fundamental principle of cybernetics to show how rigidity can result from threat. First, as outlined by Weiner (1948) and Ashby (1956), the number of output discriminations of a system (i.e., its behavioral repertoire) is limited by the variety of information inherent in its input. Second, as is well known (e.g., Arrow, 1974), there are costs associated with the gathering, use, and maintenance of information by a system. Thus, under a threat situation, a system is likely to economize in information processing by decreasing the use of nonessential peripheral channels and by reducing the number and complexity of information codes employed. Such a reduction in complexity and variety of input may, therefore, lead to a concomitant reduction in system response capability or a narrowing in the behavioral repertoire.

Using the systems metaphor, it can also be seen how the effect of threat upon internal control mechanisms may induce system rigidity. Under threat, the necessity of system response is great, and input processes may be subordinated to output and control processes. Information channels and codes that are normally used for inputting information from the environment may become occupied by signals aimed at controlling and coordinating the behavior of system subunits. Again, the effect of increased control may be to decrease discriminability and thereby narrow the behavioral repertoire.

By mixing the systems approach with a social-evolutionary perspective (e.g., Campbell, 1965; Weick, 1979), it is easy to see how pathological responses can develop in the face of environmental change. When a threat occurs, the entity focuses attention on the source of danger, economizing on nonrelevant input and processing functions and responding with well-learned or salient behavioral responses. While such a response pattern works well for threats of a known or repeated nature (for which a well-learned response is likely to be correct), it is less appropriate for threats of unknown dimensions. A change in the basic patterning or cause-effect relations in an environment requires diversity in input mechanisms and variety in response. For example, when market parameters change or task and learning environments are radically different, the entity cannot adapt by narrowing its input and response repertoire. As noted by advocates of social-evolutionary models (e.g., Campbell, 1965; Weick, 1979; Aldrich, 1979), only variety in input and diversity in response insures survival under conditions of radical change.

Cross-Level Effects

As we have noted, disciplinary theories (e.g., psychological or sociological models of stress and coping) can provide an in-depth analysis of single-level phenomena, while a systems approach can address generalities that appear across levels of analysis. What is missing in both these perspectives, however, is an understanding of effects that cross levels of analysis. Are there, for example, individual effects that affect group processes under threat or group processes that affect organiza-

tional responses to threat? Such questions are difficult to answer but may in fact explain much of the consistency of threat-rigidity effects that appear to cross levels of analysis.

Individual-Level Effects in Group Settings

When individuals are brought together to reach a decision about an issue (e.g., in a policy-making group), the inputs or knowledge brought to the decision are, in large part, the cognitions and information of individuals. Although group interaction may become a new input of its own, the abilities and skills of group members are crucial to group performance (Shaw, 1976). Even some of the group processes themselves may depend on the array of individual characteristics brought into the group setting. Polarization effects, for example, depend upon the diversity and extremity of opinion before a group is convened, rather than upon a processing feature such as strength of argumentation or diffusion of responsibility (Lamm and Myers, 1978). Therefore, if individuals restrict their cognitions and narrow their response repertoire in threat situations, we should expect similar group-level effects. Rather than treating group rigidities as created only by social process, at least some of this apparent group-level effect may thus be explained by cognitive changes in the individuals composing the group.

Group Effects in Organizational Settings

Janis (1972), in his work on "groupthink," has characterized many decisions and actions in organizations as the product of policy-making groups. For top governmental decision making, there are formal groups (e.g., The National Security Council) ready for use in threat situations, and there are many similar counterparts in industry (e.g., weekly meetings of the president and executive vice presidents). Given the increase in affiliative tendencies in threat situations (Schacter, 1959) and the objective need to coordinate policy, it is likely that groups will be convened to deal with a threat situation. Thus, any rigidities generated by group process under threat may also be manifested in organizational actions.

Individual Effects in Organizational Settings

Although groups are often convened to deal with a crisis situation, many major decisions still originate with administrators acting alone or in consultation with very few others. For example, when organizations seek control in threat situations, individual actors are the ones who clamor for influence, and they are the ones who refer crucial decisions up the hierarchy. A serious threat to an entire organization also challenges the interests of individual actors and may exacerbate the power differential between subunits and the administrators who head them. Such a threat may result in more centralized control, not because of an organizational process or formation of a particular coalition, but because top level administrators demand more control in coping with the situation.

Organizational members can be viewed as having central or peripheral interests in the welfare of an organization and the subunit in which they are employed. Members who tie their own personal welfare to that of the organization can therefore be expected to act for the organization in relatively the same way as they would for their own idiosyncratic interests. Immersed in their roles as agents of the organization, some top

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administrators may even act to defend the interests of the collectivity when their own personal welfare is not immediately obvious. In contrast, middle-level administrators frequently express more loyalty to the organizational subunit or work group, while the interests of the lowest-level members of the organization are often peripheral to the organization. Thus, by viewing organizational action as a function of the welfare of individual actors (cf. Olson, 1968), it is easy to see why macro-organizational behavior often so closely resembles individual coping responses. Organizational actions in the environment (e.g., reduction of uncertainty and threat) are predicated upon the interests of top-level administrators, which are, in turn, nearly isomorphic with the welfare of the organization as a collectivity. Because lower-level personnel have more heterogeneous interests, it is also easy to see why a threat situation instills greater coordination and control. Unreliable or divergent behavior is viewed as something to be avoided by top-level administrators whose interests are more directly threatened.

The Dual Nature of Threat-Rigidity Effects

Throughout our discussion of the effects of threat, we have focused on possible maladaptive reactions by individuals, groups, and organizations. We have emphasized that restrictions in information and control may hinder adaptation to new environmental conditions, thereby bringing more substantial losses to the entity. However, it can be argued that the maladaptive nature of threat-rigidity effects are limited. For example, dysfunctions may be most graphically demonstrated in laboratory settings since, in those situations, experimenters can abruptly change causal rules so that prior behavior is no longer appropriate. In other environments, because causal relationships are more stable, it may be functional to rely on well-learned theories and action sequences that have been reinforced in the past.

The key to whether a threat-rigidity effect is functional or not may rest on the nature of the threat itself. In order to accumulate evidence, we necessarily treated threat as a broad construct that included any impending negative consequences for an entity. However, it may be important to distinguish between cases in which the level of known variables has changed and those in which basic causal relationships have been altered. As shown in Figure 1, either incremental or radical environmental change can cause a threat to an entity. But, depending on the source of threat, response rigidities can serve to either reduce or intensify the threat. The net results, of course, can be either a functional adaptation to the environment or a maladaptive cycle of threat-rigidity effects.

As an example of the dual nature of threat-rigidity effects, it is interesting to reconsider what happens to organizations in times of resource scarcity (Staw and Sz wajkowski, 1975). The general reaction of organizations to increase efficiency and control (Whetten, 1980) would certainly be functional when the parameters of the environment are well known and coping mechanisms clear. However, when adversity results from a radical change in the environment, it may be dysfunctional for an organization to tighten controls and press efficiency. In their discussion of the reaction of public agencies to budget re-

straints, Bozeman and Slusher (1979: 346) well summarized the problem:

Scarcity-induced stress causes organizations to behave as if complex, dynamic and interrelated environments are in fact simple, static and unrelated. These behaviors include narrower domain definitions, reductions in labor intensive technology, increasing specializations of technologies and more mechanistic structures with tighter administrative control. The public organization's turbulent environment is essentially demanding an increased domain. However, the organization's response is to constrict its domain.

Therefore, although an organization's reaction to scarcity can insulate it against immediate failure, increased efficiency and control can prove maladaptive when scarcity is symptomatic of more fundamental change. In essence, doing better at what one already knows is, at best, a mixed blessing.

CONCLUSION

We have attempted in this article to bring some widely varied literature to bear on a rather simple but important problem. Although threat-rigidity effects are not always dysfunctional, many systemic breakdowns (Hall, 1976) do appear to fit a threat-rigidity cycle. In a sense, threat-rigidity effects may be a two-edged mechanism in which both the survival and extinction potentials of organizations are amplified. Thus, there is a clear need for research that can specify conditions under which restrictions in information and constriction of control will prove functional or dysfunctional. There is also room for much more research on the specification of individual, group, and organizational effects of threat, as well as on effects that may cross levels of analysis. Our integration of prior findings and theoretical speculations, therefore, should be viewed as simply a starting point rather than a summary of work on this topic.

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