

## EFFICACY-PERFORMANCE SPIRALS: A MULTILEVEL PERSPECTIVE

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**This article explores the possibility of efficacy-performance spirals in individuals, groups, and organizations. Spirals are deviation-amplifying loops in which the positive, cyclic relationship between perceived efficacy and performance builds upon itself. Collective efficacy is defined, and upward and downward spirals are considered. Evidence from multiple levels of analysis is presented, and factors affecting the occurrence, continuation, and stopping of spirals are proposed. In addition, we consider compositional and cross-level effects by proposing factors that will moderate the relationship between spirals at different levels of analysis. Overall, 15 propositions are presented as guidelines for future research.**

Just as sports psychologists, coaches, and athletes are aware of the mental aspects of physical performance, organizations and businesses have begun to focus attention on the effects of confidence or a "positive frame of mind" on task accomplishment. Beginning with such familiar ideas as "self-fulfilling prophecy" and "the Pygmalion effect," organizational researchers have focused on Bandura's (1977, 1982, 1986, 1991) work on the relationship between self-efficacy and performance (see Gist & Mitchell, 1992, for a recent review and theoretical extension). "The conviction that one can successfully execute the behavior required" (Bandura, 1977: 193) has been shown to have a positive effect on performance (e.g., Wood & Bandura, 1989).

The efficacy-performance relationship,<sup>1</sup> however, is a positive, cyclic one. That is, performance affects self-efficacy, which in turn affects performance, and so on. Because of the reciprocal causation, these iterative loops often become "deviation-amplifying" (Henshel, 1976; Masuch, 1985; Weick, 1979). For example, in a deviation-amplifying loop, a deviation in

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<sup>1</sup> When used in combination with performance (i.e., "efficacy-performance"), and throughout the article, we refer to perceived efficacy rather than actual capability.

one variable (decrease in self-efficacy) leads to a similar deviation in another variable (lower performance), which, in turn, continues to amplify. Thus, the cyclic nature of the self-efficacy-performance relationship can result in a downward (decreasing self-efficacy and performance) or upward (increasing self-efficacy and performance) spiral.

Because of the high interdependence between the variables, focusing on a single variable or attempting to determine unidirectional causality obscures the amplifying properties of the spiral (Weick, 1979). Each variable sequentially alternates as the cause and the effect. The important reality of the amplifying loop is the pattern of relations among the variables. A deviation in one variable is amplified by its positive relationship to another variable. One must change the relationships in order to change the loop (Weick, 1979). In this sense, it is the efficacy-performance relationship that defines a spiral.

Despite the amplifying nature of the efficacy-performance relationship, almost all the theory and research at the individual level of analysis has been focused on the determinants of self-efficacy and on how to improve self-efficacy and motivation and, consequently, performance. The little empirical evidence that is available comes from Bandura's (1977, 1986) study of pathologies such as anxiety, phobias, and depression. Intense anxiety and beliefs of inefficacy create a negative framework for interpreting new information such that inefficacy appraisals are perpetuated, often leading to debilitating behavior. Other evidence of spirals can be found by attending to data reported in the few longitudinal studies of self-efficacy. For example, Bandura and Jourden (1991) noted that some subjects experienced a "progressive deterioration" in both self-efficacy and performance. Such statements noting the amplifying nature of spirals usually are incidental to the main focus of the work.

At the organizational level of analysis, more attention has been devoted to understanding the deviation-amplifying relationships connected with organizational failure (e.g., Sutton, 1990). "Research on organizational failure generally supports the portrayal of collapse as a downward spiral" (Hambrick & D'Aveni, 1988: 1445). However, at this macrolevel of analysis, the concept of efficacy has not been explored. Likewise, at the group level of analysis, Hackman (1990) noted the tendency for groups to get caught in "self-fueling spirals." "We found considerable evidence to support the dictum, that, over time, the rich get richer and the poor get poorer" (Hackman, 1990: 481). Thus, although most of the research attention has focused on individual-level self-efficacy, there is indirect evidence that efficacy-performance spirals can occur at the group and organizational levels of analysis.

In this article, we attempt to develop a multilevel model of efficacy-performance spirals. In doing so, we hope to contribute to the literature in two ways. First, we attempt to extend the extensive literature on self-efficacy and performance by focusing on the deviation-amplifying aspects of the relationship. Second, we extend the current thinking on self-

efficacy and performance from the individual level to the collective efficacy of groups and organizations. We focus on both upward (overconfidence) as well as downward (lack of confidence) spirals as we attempt to apply the previously abstract notions of causal loops and deviation-amplifying cycles to the concrete realities of the efficacy-performance relationship.

The advantage of a multilevel perspective lies in the recognition that individuals, groups, and organizations are not separate conceptual categories, but parts of a whole, each affecting and being affected by the other. As Eulau (1969) emphasized, there is a simultaneity of individual and collective action. From a theoretical perspective, failure to consider multiple levels can result in misspecified models (Rousseau, 1985). From a practical perspective, managerial interventions at one level of analysis may be fruitless when affected by relationships at another level of analysis. Also, such interventions may have unintended cross-level consequences. The benefits of a multilevel perspective can derive from research findings at one level of analysis being applied to another level to generate testable propositions.

Development of a multilevel model requires consideration of the evidence for an efficacy-performance relationship at each level of analysis: individual, group, and organization. We begin by defining collective efficacy and considering compositional effects (Rousseau, 1985), or the extent to which the concepts of perceived efficacy are similar or isomorphic across levels. We then further specify the notion of upward and downward spirals, considering how they occur, continue, and are stopped, as well as their consequences. We suggest a future research agenda by generating propositions that are applicable to spirals at multiple levels of analysis. Finally, we consider the possible cross-level effects of each. Self-efficacy may be affected by the collective efficacy of groups and organizations, and vice versa. Thus, we propose mechanisms by which the efficacy-performance relationship at one level may affect the relationship and spirals at another level.

### COLLECTIVE EFFICACY

Despite Bandura's (1982: 144) call for a "broad and comprehensive research effort" and the development of suitable tools for measuring collective efficacy, efficacy-performance research has occurred almost exclusively at the individual level of analysis. Efficacy expectations have been shown to affect goal setting, choice of activity, amount of effort that will be expended, analytic strategies, and persistence of coping behavior (Bandura, 1977; Wood & Bandura, 1989). Several reviews and theoretical extensions of theory and research findings exist (Bandura, 1986; Gist, 1987; Gist & Mitchell, 1992; Locke & Latham, 1990; Wood & Bandura, 1989).

Although the precise definition of collective efficacy is elusive, Bandura (1982: 144) referred to "gauging groups' perceptions of their

efficacy to achieve varying levels of results." Based on his discussion, we define collective efficacy as the group's (or organization's) collective belief that it can successfully perform a specific task. We treat the group and organization as social entities, capable of acting as wholes, and propose using individuals as informants to estimate the group's or organization's collective efficacy. Although cognitions reside in the individual, the idea that groups and organizations can possess beliefs is not new (Louis & Sutton, 1991). We argue that there are certain cognitions that group and organizational members have which are quite different and distinguishable from the beliefs they experience as individuals in isolation, or in other contexts outside the group or organization. These cognitions are collective, group-based beliefs, arising from an individual's ability to cognitively consider social entities larger than himself or herself. They are emergent properties of the social system rather than the individual, and they cannot be reduced to their constituent parts.

This collective sense of efficacy emerges from common exposure of members to objective stimuli (such as outcomes of group performance) and the processes of social influence and social comparison. Without arguing that all reality is socially constructed, we assume that people interact with others to test and confirm their own perceptions of themselves and the environment. Bandura (1982) noted these social effects on individual self-efficacy judgments by including both a social influence process (verbal persuasion) and a social comparison process (vicarious imitation) in his model of self-efficacy. Just as individuals compare and discuss individual performance, they also compare and discuss group and organizational performance. Although individuals do not always agree, we hypothesize that the previously mentioned factors should lead to a consensual version of collective efficacy.

We distinguish collective efficacy from similar group-level constructs that have been previously offered. For example, group aspiration levels (Zander & Medow, 1963) are exact statements of performance goals rather than cognitive beliefs about the group's capability. Collective esteem (Crocker & Luthanen, 1990) is a more global concept than task-specific collective efficacy, and it refers to the value of the group rather than the group's expected effectiveness. Whereas collective efficacy is task specific, potency "is meant to refer to a shared belief about general effectiveness across multiple tasks encountered by groups in complex environments" (Guzzo, Yost, Campbell, & Shea, 1993: 9).

Gist (1987) suggested three methods for assessing group efficacy. The first approach, the aggregation of perceptions of individual self-efficacy, fails to account for dynamic social and organizational processes that occur within groups. Theoretically, it fails to acknowledge the group, or organization, as an entity. Although supporters of this approach have argued that homogeneity of individual measures justifies aggregation (e.g., George & James, 1993; James, Joyce, & Slocum, 1988), a lack of agreement results in the nonexistence of the construct. Although Bandura

(1982: 143) noted that "collective efficacy is rooted in self-efficacy," he emphasized the social and organizational processes that result in an emergent, collective sense of efficacy and concluded that "perceptions of group as well as personal efficacy warrant examination." Just as an outstanding player on a poor team may have high self-efficacy, such a player may also rate the team's efficacy as low. Although situations may occur (e.g., extremely low task interdependence and interaction among group members) in which the sum of individual self-efficacy is an adequate predictor of group performance, aggregating perceptions of individual self-efficacy is inconsistent with Bandura's (1982) discussion and our conceptualization of collective efficacy.

The second measurement strategy, the averaging of individuals' own perceptions of collective efficacy, was used by Earley (1993: 329). He noted, "This procedure reflects individuals' perceptions of their group's capability rather than a group's efficacy per se." That is, respondents were asked their individual perception of collective efficacy (e.g., I feel my group can accomplish this task.). This measurement strategy is useful if we assume that individuals may not be knowledgeable of the group's collective perception, or we assume that the "collective mind" is a differentiated system in which no individual (part) has access to the collective whole (Weick & Roberts, 1993: 358). In such a case, "group mind is not indexed by within group similarity of attitudes."

Gist's (1987) third possibility, using group responses to a single questionnaire, avoids aggregation problems and theoretically treats the group as an entity, consistent with Bandura's writings. Users of this method also consider the possibility of differentiated collective mind in that it allows group members to combine parts into a consensual whole. However, such an approach may be difficult either outside the laboratory or when focusing on large groups or organizations.

Earley's (1993) subtle distinction suggests a fourth possibility: using individuals as informants to estimate the group's (or organization's) collective belief that it can perform a specific task. Although the empirical difference between this and the second method may be minor when respondents share beliefs about the group's capabilities, methods for assessing reliability differ (Glick, 1988; Klein, Dansereau, & Hall, 1994). Focusing on the group's belief, rather than the individual beliefs, avoids many of the debates and pitfalls of multilevel analysis (Glick, 1985; Klein et al., 1994; Rousseau, 1985). We endorse this fourth method when the researcher can reasonably assume that individuals have access to the collective cognitions of the group, such as via the processes we previously noted. As Weick and Roberts (1993: 358) noted, through social interaction people "often discover higher-order themes, generalizations, and ideas" that transcend any differentiated parts. Following traditional measures of individual self-efficacy, we propose interval scales measuring confidence on multi-items reflecting different levels of performance.

## SPIRALS

When considered over time, the cyclical nature of the efficacy-performance relationship suggests three possible patterns: (1) self-correcting cycle, (2) upward spiral, and (3) downward spiral. A self-correcting or deviation-counteracting (Masuch, 1985; Weick, 1979) cycle occurs when a decrease in performance and self-efficacy is followed by an increase in performance or self-efficacy (or vice versa). That is, an analysis of performance allows one to make adjustments in future efforts that reverse the previous decrease (or increase) in performance and self-efficacy. The relationship may fluctuate upward or downward over relatively short periods of time, wherein there is no discernible pattern of mutual causation.

In other instances, changes in efficacy and performance build upon each other, resulting in a deviation-amplifying loop (Masuch, 1985; Weick, 1979). Cognitive processing of positive or negative outcome information creates a level of confirmatory behavioral evidence that is reflected in subsequent task functioning and performance. The result is an upward or downward spiral. We define a *spiral* as a pattern of consecutive increases (or decreases) in both perceived efficacy and performance over a minimum of three task attempts. Although a spiral may continue for more than three task attempts, a minimum of three is necessary to establish a pattern of change (Cronbach & Furby, 1970; Nesselroade, Stigler, & Baltes, 1980). Although extended downward spirals over many consecutive trials may result in cessation of attempts, "failure" is not a necessary condition for the existence of a downward spiral. That is, we define spirals independent of ultimate success or failure.

It is possible for spirals to result from very small changes in both efficacy and performance (see the following section on task experience). However, the greater the change in performance, the greater the likelihood of an accompanying change in perceived efficacy (or vice versa). That is, a small change in performance may be viewed as a random fluctuation having little subsequent effect on perceived efficacy. Thus, the magnitude of the change will likely moderate the efficacy-performance relationship. The magnitude and rate of change also may be an indicator of the strength or intensity of the spiral. Rates of change also may fluctuate as spirals accelerate or decelerate without stopping.

Although upward spirals might seem beneficial, we do not equate them with progressive mastery of a task or a positive learning curve. We assume that learning curves are not smooth accelerations. That is, maximum, long-term learning and high performance result when failures are encountered and adjustments are made (i.e., one learns from one's mistakes). As Sitkin (1992) summarized, consistent prior success fosters decreased search and attention, increased complacency, and maladaptive homogeneity. As experimental results confirm, actors become overconfident. For example, although continual comparative success resulted in

high self-efficacy, easy triumphs also created complacent self-assurance (Bandura & Jourden, 1991). Similarly, Ashford (1989) noted that success serves as a filter for interpreting new information in such a way as to confirm previous success. Successful individuals reduce search for feedback and attention to it, because they see no reason to change strategies or standards.

We do not equate upward spirals with the positive motivational effects and increases in performance that result from positive self-expectations or expectations from others (Eden, 1984, 1990a), goal setting (Locke & Latham, 1990), or interventions aimed at increasing self-efficacy (Gist, 1987). Such interventions can be viewed as increasing the motivation for understanding the cause-and-effect relationships involved in task performance and often are accompanied by training. However, we do agree with Gist (1987) that increasing self- or collective efficacy in the absence of learning can lead to overconfidence. The difficulty is in empirically distinguishing between the positive motivational effects of confidence and the complacency of overconfidence. We propose that an *upward spiral*, defined as three consecutive increases in both efficacy perceptions and performance, will be positively related to overconfidence and complacency. Thus, we proceed with the assumption that continual success decreases the active experimentation necessary for learning (March, 1976) and that self-correcting cycles are preferable to both upward and downward spirals (Sitkin, 1992; Weick, 1979). We treat upward spirals as symmetrical or isomorphic with downward spirals and offer propositions that apply to both.

In stating a preference for self-correcting cycles over both upward and downward spirals, we are not endorsing stagnation or the status quo in performance. We are arguing that an increase in long-term performance is not achieved without occasional failure and learning from one's mistakes.<sup>2</sup> Self-correcting cycles can achieve a long-term, positive slope when accomplished by gradual, controlled increases in learning, perceived efficacy, and performance.

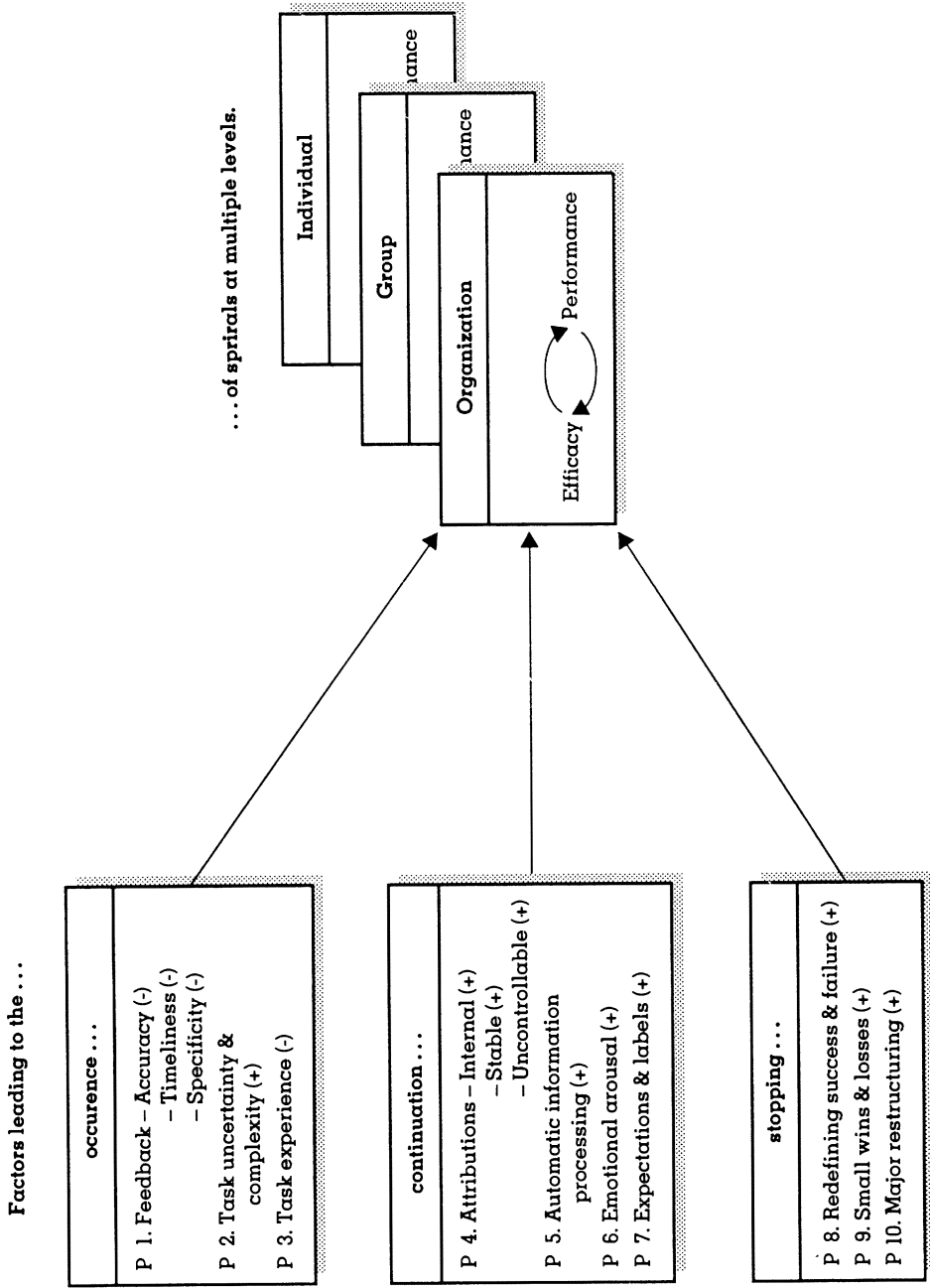
## OCCURRENCE OF SPIRALS

Figure 1 presents a conceptual summary of the factors that contribute to the deviation-amplifying properties of spirals. We focus on amplifying relationships that define a spiral and the factors that contribute to and continue the efficacy-performance relationship over multiple task attempts. Although many different factors may trigger a spiral at different levels of analysis (i.e., anything that affects a change in perceived

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<sup>2</sup> As much of the research by Bandura and others has demonstrated, people can learn through the effects of vicarious imitation (modeling). Thus, actors can, and often do, learn by observing others' mistakes.

**FIGURE 1**  
**Conceptual Framework for Multilevel Spiral Propositions**





efficacy or performance), we focus on variables that are isomorphic across all three levels of analysis.

We begin with an actor's (individual, group, or organization) estimation of the specific task requirements in relation to the actor's abilities and various situational resources and constraints (Bandura, 1977; Gist & Mitchell, 1992). The resulting efficacy judgment must be at a level that leads to an attempt to perform the task. Once the task is attempted and success or failure ascertained, performance accomplishment begins to play a primary role in determining judgments of efficacy.

### Task Feedback

The key to self-correcting adjustment and avoiding deviation-amplifying spirals is acquiring high-quality performance feedback (Weick, 1979). Simple success/failure information is not sufficient. Rather, accurate, timely, specific feedback regarding an understanding of the cause-and-effect relationships involved in performing the task is necessary (Ashford, 1989; Farr, 1993). Inattention to, or filtering of, disconfirming feedback may be a prime contributor to individual-level spirals (Swann, 1983). When feedback is delayed or inaccurate, actors may continue to employ inappropriate strategies or effort. Although it is possible for accurate feedback to trigger a spiral, the probability of self-correction is increased by understanding the cause-and-effect relationships.

Evidence of the relationship between upward group spirals and feedback is present in the classic literature on *groupthink* (Janis, 1982). Collectively constructing rationalizations and applying social pressure in order to discount warnings and avoid negative possibilities or feedback prevents any adjustments based on feedback. Self-censorship and the illusion of unanimity perpetuate the upward spiral until disastrous consequences are encountered. However, some caution is warranted because aspects of the groupthink model have been questioned (Aldag & Fuller, 1993).

At the organizational level of analysis, the interpretation of environmental feedback is crucial to organizational survival (Daft & Weick, 1984). The onset of organizational decline is often thought to occur as a result of a mismatch between the organization and feedback from the environment (Zammuto & Cameron, 1985). Feedback on initial performance decreases may be delayed, mishandled, undetected, or ignored. Weitzel and Jonsen (1989) characterized this stage in a downward spiral as *blinded* (a failure to anticipate or detect performance declines) and periods of *inaction* (failure to take action once decline is noted). Both are contingent on accurate, specific, and timely feedback.

The evidence at all three levels of analysis suggests the following proposition:

*Proposition 1: The probability of the occurrence of spirals will be negatively related to the accuracy, specificity,*

*and timeliness of performance feedback about the cause-and-effect task relationships.*

### **Task Uncertainty and Complexity**

Quality feedback can be obtained only when the causal relationships involved in task accomplishment are well understood. When task uncertainty is high (causal links in task performance are unknown, ambiguous, or unpredictable), feedback leading to corrective action is less likely to occur (Ashford, 1989; Masuch, 1985). When the number of different causal links increases (task complexity), a full understanding of all relationships becomes more difficult. As complexity increases, the chances of successful trial-and-error learning decreases (Masuch, 1985). When compared to routine, standardized tasks (Wood, 1986), complexity may increase attention and performance. However, because cause-and-effect relationships are well understood, we do not expect spirals to occur during routine tasks. Thus, we suggest the following proposition for individuals, groups, and organizations:

*Proposition 2: The probability of the occurrence of spirals will be positively related to task uncertainty and complexity.*

### **Task Experience**

Success or failure on early, initial task attempts may be particularly important. Because task experience is limited, the effect of an initial task performance failure may be offset by encouragement via verbal persuasion. However, emotional arousal (see Proposition 6) is typically high during initial attempts, and a complete understanding of the behavior needed to accomplish the task is usually lower than when task experience has accumulated over time (Kanfer, 1991). This lack of understanding may create incorrect attributions and/or faulty adjustments, which feed the spiral rather than result in self-correcting cycles. Although relatively large increases in learning typically occur early in task experience, the magnitude of the performance change is likely to evoke a corresponding change in perceived efficacy.

After repeated trials, the effects of one or two consecutive failures or successes can be offset by the large number of previous experiences on the task, thereby having little effect on perceived efficacy. However, when previous experience is minimal, initial consecutive failures or successes compose the totality (or a very high percentage) of experience. Primacy and recency overlap and can have a major effect on perceived efficacy. Lepper, Ross, and Lau (1986) found that initial success or failure had a strong, persistent effect on individuals' beliefs about their capabilities. Ashford (1989) noted that early task performance provides individuals with hypotheses about themselves that serve as a filter for

subsequent feedback. This filter reduces the accuracy of feedback as individuals see what they expect.

At the group level of analysis, both Hackman (1990) and Ancona (1993) noted that self-fueling spirals occurred early in the group's life. Habitual routines are established very quickly and early in the group's experience (Gersick, 1989; Ginnett, 1990). Inertia sets in, and members seldom question routines, even in the face of negative feedback (Gersick & Hackman, 1990). For example, Cohen and Denison (1990) offered a rich example of a flight attendant team that never recovered from an early loss.

Just as previous task experience provides cognitive "slack" for individuals, well-established organizations may be able to buffer themselves against temporary performance decreases (Bourgeois, 1980). However, new organizations with limited resources may not be able to withstand even temporary fluctuations. This *liability of newness* phenomenon (Perrow, 1979; Singh, Tucker, & House, 1986) notes the importance of initial task experience. Overall, the evidence suggests the following proposition:

*Proposition 3: The probability of the occurrence of spirals will be negatively related to task experience.*

The emphasis on task experience is not meant to suggest that spirals cannot occur when tasks are well learned. Evidence from professional athletes and teams suggests that spirals can occur even at the highest levels of performance. However, in such situations, consecutive changes in perceived efficacy and performance may be very slight, creating a very flat spiral.

## CONTINUATION OF SPIRALS

### Attributions

At the individual level of analysis, Gist and Mitchell (1992) have extended Bandura's model by noting the mediating effects of attributions on the efficacy-performance relationship. That is, the link between efficacy judgments and performance is not automatic as people seek to understand why a particular performance level occurred. Attributions will be accurate to the extent that the task requirements are understood and performance feedback is timely and informative. Accurate attributions allow for corrective action and help both individuals and groups avoid the occurrence of spirals.

One pervasive attribution error found in individuals (Kelly & Michela, 1980), groups (Crocker & Luhtanen, 1990), and organizations (Clapham & Schwenk, 1991; Staw, McKechnie, & Puffer, 1983) is the tendency to attribute success to internal causes and failures to external causes. In either case (success or failure), this common error reduces the search for complete and more accurate information (Ashford, 1989). When these attributions are correct (e.g., temporary fluctuation in environmental resources

that will eventually regress to the mean), inaction and failure to search for information may be the most appropriate strategy. However, when these attributions are incorrect, inaction contributes to a downward spiral (Weitzel & Jonsson, 1989). Hence, applying the same reasoning supporting Proposition 2, the occurrence of spirals will be negatively related to the accuracy of attributions concerning performance.

In addition to the accuracy of attributions, we believe that a particular combination of attributions will be associated with spirals. We base our analysis on Weiner's (1985) categories of locus of causality (internal/external), variability, and controllability. First, an attribution of stability is likely. This follows not only from the definition of spirals involving three consecutive increases or decreases in performance and perceived efficacy over time, but also from the notion that an attribution of instability (i.e., not enough effort or the wrong strategy) may have little effect on perceptions of efficacy. Indeed, Anderson (1983) found that individuals were less discouraged following performance failure when attributions were variable rather than stable.

Second, an internal attribution will likely be present during the occurrence of a spiral. In order to affect self-efficacy, actors must believe that they are the cause of the performance change, rather than some external factor. For example, the previously noted self-serving bias may be a way to protect self-efficacy. Thus, external attributions following decreases in performance will not incur concomitant decreases in perceived efficacy.

Third, spirals are likely to involve attributions of uncontrollability. An attribution of control fosters actions aimed at self-correction, whereas a perceived lack of control may result in frustration, anxiety, and feelings of helplessness (Mikulincer & Nizan, 1988), thereby fueling a spiral. Although an internal attribution often is associated with control, the particular combination of internal, stable, and uncontrollable attributions will likely be associated with the occurrence of a spiral. Although this combination is easily applied to downward spirals, we believe it also occurs during upward spirals (e.g., "I'm just naturally good at this.").

Evidence for this relationship can be gleaned from the descriptions of the downward spirals associated with phobias, depression, and anxiety disorders (Bandura, 1977, 1986). For example, all three disorders are accompanied by a heightened self-awareness and internal attributions. Likewise, Storms and McCall (1976) found that insomniacs decreased their emotional arousal and fell asleep more quickly when allowed to make external attributions. Researchers (Averill, 1973; Miller, 1979) also have found that people who are led to believe they can exercise some control over aversive events display less automatic arousal and performance impairment than those who believe they have no personal control. Feelings of uncontrollability can stabilize over time, with debilitating results such as learned helplessness (Peterson, Maier, & Seligman, 1993).

In this case, individuals expend less effort and eventually withdraw from activities (Kent & Gibbons, 1987).

A similar lack of effort and withdrawal by groups was noted by Hackman (1990), who identified the importance of group attributions<sup>3</sup> in self-fueling downward spirals. Groups that performed poorly turned their attention inward. In the case of upward spirals, internal, stable, uncontrollable attributions may be inferred from groupthink symptoms, such as illusion of invulnerability and morality (Janis, 1982).

Top level managers may initially attribute organizational decline to external, unstable factors. However, continued decline turns attention from others inward, and poor performance is attributed to poor management decisions (Weitzel & Jonsson, 1989). As the downward spiral continues, reductions in the workforce are viewed collectively as unpredictable and uncontrollable (Sutton, 1990).

Thus, for all three levels of analysis we propose the following:

*Proposition 4: The probability of the continuation of spirals will be positively related to the extent to which internal, stable, and uncontrollable attributions occur.*

### **Automatic Information Processing**

As trials increase, attributions of stability and uncontrollability become fixed. Repeated performance outcomes (either increases or decreases) foster a quicker, more superficial, routinized form of information processing, referred to as automatic (Daft & Lengel, 1986). Rigorous, in-depth analysis of feedback (controlled information processing) is abandoned as actors "give up" in the case of a downward spiral, or they refuse to investigate for fear of disrupting their upward spiral. Thus, as information processing becomes automatic, attributions become fixed, feedback is ignored, and the active exploration and learning needed to understand cause-and-effect relationships are minimized (Louis & Sutton, 1991).

In task-performing groups, habitual routines are established very quickly and very early in the group's experience, and they are characterized by automatic rather than controlled information processing (Gersick & Hackman, 1990; Ginnett, 1990). Once established, groups automatically process new or novel information as similar to that requiring the same group responses. Members seldom question the routines, even when performance feedback is increasingly negative. The possibility of corrective action is minimized when feedback is ignored (Proposition 1) and habitual routines continue.

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<sup>3</sup> Similar to collective efficacy, we propose that collective attributions arise from the sense making of social interaction and the individual's ability to cognitively consider social entities larger than himself or herself.

Similar processes, inertial forces, and the inability to adapt to changing environments have been documented at the organizational level of analysis (Hannan & Freeman, 1984; Louis & Sutton, 1991). The need for legitimization may leave little room for change because of the limited range of possible institutionalized structures (Meyer & Rowan, 1977; Zucker, 1977). Strategic failures have been associated with automatic information processing (Starbuck, 1982), and the value of controlled information processing has been equated with organizational learning and has been generally endorsed (Argyris & Schön, 1978; Fiol & Lyles, 1985). In the case of upward spirals, automatic information processing may result from a history of success, creating a sense of invulnerability (Starbuck, Greve, & Hedberg, 1978). Thus,

*Proposition 5: The probability of the continuation of spirals will be positively related to the extent to which automatic information processing occurs.*

### **Emotional Arousal**

As noted previously, attributions may affect emotional arousal, which has been shown to affect efficacy (Bandura, 1986). Internal attributions may create pressure and anxiety by accentuating the focus on the actor. Attributions of stability may lead to discouragement, and uncontrollability may cause frustration and anxiety. Inefficacy beliefs and concomitant mood states create a negative framework for interpreting new information, so that distorted efficacy appraisals are perpetuated (Kavanagh & Bower, 1985). Heightened arousal becomes a fear-provoking signal of anticipated failure. Reactions to fear generate fear-provoking cognitions, which can generate further arousal in an escalating spiral of distress (Bandura, Reese, & Adams, 1982; Barrios, 1983; Kent & Gibbons, 1987). Even when arousal is positive (excitement, eagerness), it may interfere with performance feedback and corrective action. Consequently, spirals are more likely to occur when emotional arousal is high.

Emotional arousal also has been shown to interfere with effective performance at the group level of analysis (Denison & Sutton, 1990; Gladstein & Reilly, 1985; Guzzo & Waters, 1982). In the case of the upward group spiral, Janis (1982) noted that the stress brought on by a crisis is a key antecedent to groupthink. Additionally, increased group anxiety, accompanied by dysfunctional intragroup conflict, has been documented during organizational decline (Krantz, 1985).

Many of the analyses of organizational decline focus on the role of strategic decision making and the deleterious effects of emotional arousal. As organizational performance decreases, signaling the onset of a downward spiral, a threat to survival is perceived, confusion and conflict develop, and a crisis situation engulfs top management, employees, and external constituents. Stress and anxiety interfere with top level decision making, causing "flawed perceptions, constriction of informa-

tion flows, and erratic choices" (Hambrick & D'Aveni, 1992: 1445). When threatened, decision makers lower their sensitivity to feedback (Proposition 1), experience difficulty in processing complex information (Proposition 2), and may rely more heavily on previously established routines (Proposition 5) unsuitable for handling the crisis (Staw, Sandelands, & Dutton, 1981; Zajonc, 1965). Rigidity in both decision making and internal structural changes perpetuate the decline (Sutton, 1990).

Response to the threat may take the form of cost-cutting measures such as layoffs and conservation of resources. Both measures provide threatening signals to employees and may evoke "collective psychological reactions" (Sutton, 1990: 207). This deteriorating morale fuels the collective sense of insecurity and anxiety of the survivors of layoffs (Brockner, 1988; Greenhalgh, 1982). Thus, we predict the following:

*Proposition 6: The probability of the continuation of spirals will be positively related to emotional arousal.*

### **Expectations and Labels**

Verbal persuasion and vicarious experience may be particularly important in instigating corrective adjustments and avoiding spirals. Both are external to the actor and, therefore, may be used to counteract performance outcomes. For example, performance failures may be moderated by encouragement and feedback or viewing others' performance successes, thereby maintaining efficacy judgments. However, both verbal persuasion and vicarious experience may confirm and exacerbate performance outcomes. Watching others fail at a task or hearing discouraging remarks (e.g., "You're never going to get this right.") following a failure may contribute to the occurrence of a downward spiral. As others' expectations become consistent with spiral performance, the Pygmalion effect occurs (Eden, 1984, 1990a). Expected poor performers continued their downward spiral (e.g., the Golem effect; Oz & Eden, 1994), whereas expectations of high performance can fuel upward spirals. As spiraling performance continues, actors may label themselves as winners or losers. Such labels are consistent with the previously mentioned internal, stable attributions (Proposition 4) and automatic information processing (Proposition 5). In addition to self-labeling, identification and labeling by others leads to reinforcement of the internal attribution.

Hackman (1990) and Ancona (1993) identified the importance of group attributions and labels that can sustain both negative and positive spirals. Once a group is labeled (or labels itself) as a good group or a bad group, it tends to initiate a self-fulfilling prophecy, whereby, regardless of its performance, the group's beliefs may generate reality that confirms its expectations. Likewise, Eden (1990b) has demonstrated the Pygmalion effect on entire groups. The self-fulfilling prophecy reinforces the acceptance of the label and, consequently, the level of effort the group expends. Eventually, members of a bad group who are caught in a negative spiral accept the validity of the label and stop trying (Hackman, 1990).

Hackman (1990) also noted that process interventions often confirm members' worst fears about the group and, thereby, have an effect opposite to the one intended. For example, he noted that leaders' interventions following several unsuccessful group performances had little effect in reversing downward spirals. Hackman argued that this process approach may create group anxiety (Proposition 6) that fuels the spiral. It may expose collective inefficacy beliefs that, in turn, create a negative framework for interpreting new information. Lindsley and Mathieu (1993) found that survey feedback to workgroups produced similar effects. The highly rated supervisors subsequently increased their performance, whereas the lower rated supervisors performed more poorly over time. Likewise, Graen's work on leader-subordinate dyads (Graen & Scandura, 1987) can be viewed as evidence of both upward and downward spirals in the case of subordinates being labeled as *in-group* and *out-group*.

Expectations and labels also contribute to organizational-level spirals. As resources shrink during downward decline, the best performers at all levels of the organization may seek and find employment elsewhere, thus exacerbating the decline. Such exits provide a negative signal to both internal and external constituents (Hambrick & D'Aveni, 1992), confirming expectations and labels. For example, when organizational decline is apparent, suppliers may tighten credit or demand cash payment, and customers may look for other sources. Members of boards of directors may resign, thereby decreasing supplemental information and perspectives, as well as external links to needed resources (Hambrick & D'Aveni, 1992). The organization and any remaining executives may be labeled as *failures*—a stigma that further contributes to the downward efficacy-performance spiral. External reactions serve to confirm internal collective feelings of inefficacy (Sutton, 1990).

The opposite effects may occur in the case of upward organizational spirals. Expectations of success can fuel stock prices as companies are labeled as *fast track* and *rapid growth* by the business media. In such cases, suppliers extend credit limits and buyers increase orders. Accelerated success can lead to a false sense of security and little motivation to question cause-and-effect relationships (Abolafia & Kilduff, 1988).

External legitimization, in the form of expectations and labels, is a key element in institutional theory (Zucker, 1977). Institutional roles and structures function as myths (Meyer & Rowan, 1977), which organizations incorporate often at the expense of efficiency. These institutionalized structures prevent change and may perpetuate spirals.

Thus, evidence from all three levels of analysis suggests the following proposition:

*Proposition 7: The probability of the continuation of spirals will be positively related to the extent to which expectations and labels are consistent with performance outcomes and attributions.*



## STOPPING SPIRALS

Avoiding spirals may be much easier than stopping them or changing their direction once they have begun. Consecutive increases (or decreases) in performance and perceived efficacy heighten emotional arousal (either exultation or anxiety and depression), which may interfere with an actor's ability to absorb informative, self-correcting feedback. Feedback may be totally ignored during an upward spiral ("If it ain't broken, don't fix it.") or a downward spiral ("Nothing we do will make any difference.").

As consecutive outcomes accumulate, personal experience becomes the primary influence on efficacy judgments, and possible counteracting influences such as verbal persuasion and vicarious experience lose their potency (Bandura, 1986). For example, encouragement may be less credible after several consecutive failures. Observing others' successful performance may only deepen an actor's frustration when the latter has had consecutive nonproductive outcomes. Likewise, as trials increase, attributions of stability and uncontrollability become fixed, and information processing becomes automatic. As Hackman noted, expectations and labels are extremely potent, and "a negative spiral can be very hard to change once it becomes established" (1990: 483).

Although we proposed that spirals were more likely to occur when task experience was limited (Proposition 3), the possibility of interrupting a spiral when a task is novel is also highest. More rigorous analyses and attention to feedback occur during the first few trials of a task. When people are new to a job or an organization, they are more open to disconfirming information and feedback (Ashford, 1989). Thus, as most people assume, initial experiences are crucial. Work by Gersick (1989) at the group level of analysis suggests that midpoint transitions also may provoke controlled information processing.

How then can a spiral be stopped? Halting upward spirals is less problematic than stopping downward ones. In upward spirals few attempts are made because consecutive increases in performance and efficacy are viewed as positive. However, as a result of minimal learning, many potential upward spirals correct themselves because the probability of continual success in the absence of maximum understanding is low. That is, a lack of motivation to understand the causes of continued success may lead to faulty attributions (often seen as superstitious behavior), which lead to eventual performance failure. Without an experience of failure, *ceiling effects* will ultimately stop an upward spiral.

More problematic is the aftermath of a halted upward spiral. Because the causes of success during an upward spiral may not be well understood, actors are left without the tools to correct for the initial failure once the spiral is stopped. Thus, it is likely that the initial failure after stopping an upward spiral will be followed by another failure. Without the ability to self-correct, upward spirals are more likely to be followed by downward

spirals than by self-correcting cycles. Evidence for this conclusion can be found at the individual (Hofmann, Jacobs, & Baratta, 1993) and organizational (Greenhalgh, Lawrence, & Sutton, 1988) levels of analysis.

Although the rationale is similar, a different effect occurs when a downward spiral bottoms out (performance cannot get any worse). The lack of ability to self-correct during the downward spiral also makes any self-correction (increase in efficacy or performance) at this point unlikely. Thus, actors stagnate in an extremely low efficacy-performance cycle. Although no further decreases in perceived efficacy or performance occur, no increases occur either. Attributions of internal/stable/uncontrollable causes lead to decreased aspirations and apathy. Continuation at this level eventually causes the actor to quit.

Suggestions for avoiding or stopping spirals may be derived from our previous propositions. In addition, we offer three strategies for breaking the deviation-amplifying loops: (a) redefining success and failure, (b) encouraging small wins and small losses, and (c) major restructuring.

### **Redefining Success and Failure**

Recognizing the existence of spirals and understanding their deviation-amplifying aspects may be the best method of avoiding their onset. For example, throughout the article we have noted the importance of performance feedback in understanding cause-and-effect relationships. As previously noted, simple information regarding success or failure is insufficient. Emphasis must be placed on the task process and learning through active experimentation (Campbell, 1969; March, 1976). The challenge is to redefine success and failure in terms of instructive feedback and learning. That is, success is not based on the outcome, but it comes from the information gained via the task attempt. Thus, an informative *failure* is viewed as a success if information about the cause-and-effect relationship (what not to do) is obtained. Conversely, a success is not informative if it merely replicates previous successful attempts. Such redefinition encourages active experimentation and accurate, specific, and timely feedback, while alleviating emotional arousal and discouraging automatic information processing. Negative outcome feedback can be provided without threatening the actor's ego (Ashford, 1989) or decreasing efficacy perceptions. Likewise, positive outcomes do not necessarily foster inattention to feedback. Continued success, following a successful outcome, occurs only when actors focus on "what went wrong," thus obtaining information that leads to improvement. Focusing on the mistakes of a success prevents actors' perceived efficacy from leaping to overconfidence and any upward spiral.<sup>4</sup> Most importantly redefinition fosters self-correction and interrupts the spiral. Accordingly,

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<sup>4</sup> It is possible that focusing on one's mistakes following a successful outcome may increase, rather than maintain or decrease, an actor's perceived efficacy. If this pattern could be maintained over three consecutive task attempts, it would meet our definition of an

*Proposition 8: Redefining success and failure will be positively related to stopping spirals.*

### **Encouraging Small Wins and Small Losses**

Sitkin (1992) outlined key characteristics of *intelligent failure* or what we have suggested by redefining success. He suggested short-term, small scale, thoughtfully planned actions that have uncertain outcomes, which are executed in a familiar domain. As also suggested by Weick (1984), scaling down the task can be a particularly effective strategy. Breaking the task into component parts may be necessary for experimentation when failure on the overall task results in drastic outcomes. For example, NASA can experiment to determine the freezing point of O-rings, but it cannot experiment with the overall task of launching a spacecraft with astronauts on board. Subdividing the task can decrease task complexity, information overload, emotional arousal, and the time delay between performance and feedback. It also may interrupt automatic information processing. Other methods for provoking controlled information processing have been suggested by Louis and Sutton (1991) and Gist and Mitchell (1992).

*Proposition 9: Subdividing the task to promote small wins and small losses will be positively related to stopping spirals.*

### **Major Restructuring**

At the group level, Hackman (1990) recommended reforming the structure of the group, the organizational context, or the group's external environment to halt downward spirals. With a redefined structure, the team should be set up to experience a successful task attempt, thereby reversing a downward spiral. Reforming may be required to break the established structure (e.g., norms, roles) to allow the group to break out of the *bad group label*, and to increase the likelihood of success.

A major restructuring also may be required to stop organizational-level spirals. Tushman, Newman, and Romanelli (1986) suggested a major reorientation in strategy, structure, and control may be needed. They referred to this reorientation as a *second-order* or *frame-breaking* change involving substantial change in products, services, or technologies. Reversing the spiral may require total replacement of top management teams, divestment of failing products or divisions, or diversification (Schendel, Patton, & Riggs, 1976). Such action may symbolically signal

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upward spiral, but it would not result in overconfidence. Rather, it would represent a smoothly accelerating positive learning curve. Although this is possible, we hypothesize that it is unlikely.

change to stakeholders and interrupt escalating anxiety and attributions of uncontrollability.

Although frame-breaking change results in discontinuation of automatic information processing, major reorientations do not necessarily halt the downward spiral. For example, the reorientation may not be successful or its impact may not be realized for some time. Operating under stress, poorly performing organizations tend to take more risky action to signal a dramatic change to stakeholders (Singh, 1986). However, such wild fluctuations are seldom successful (Hambrick & D'Aveni, 1988; Meyer, 1982). Similarly, fast-growing organizations are susceptible to impulsive, reckless decisions (Miller & Friesen, 1980), increasing the probability of inappropriate, if not ineffective, action. In this case, upward spirals may be closely followed by downward spirals.

*Proposition 10: Major restructuring will be positively related to stopping spirals.*

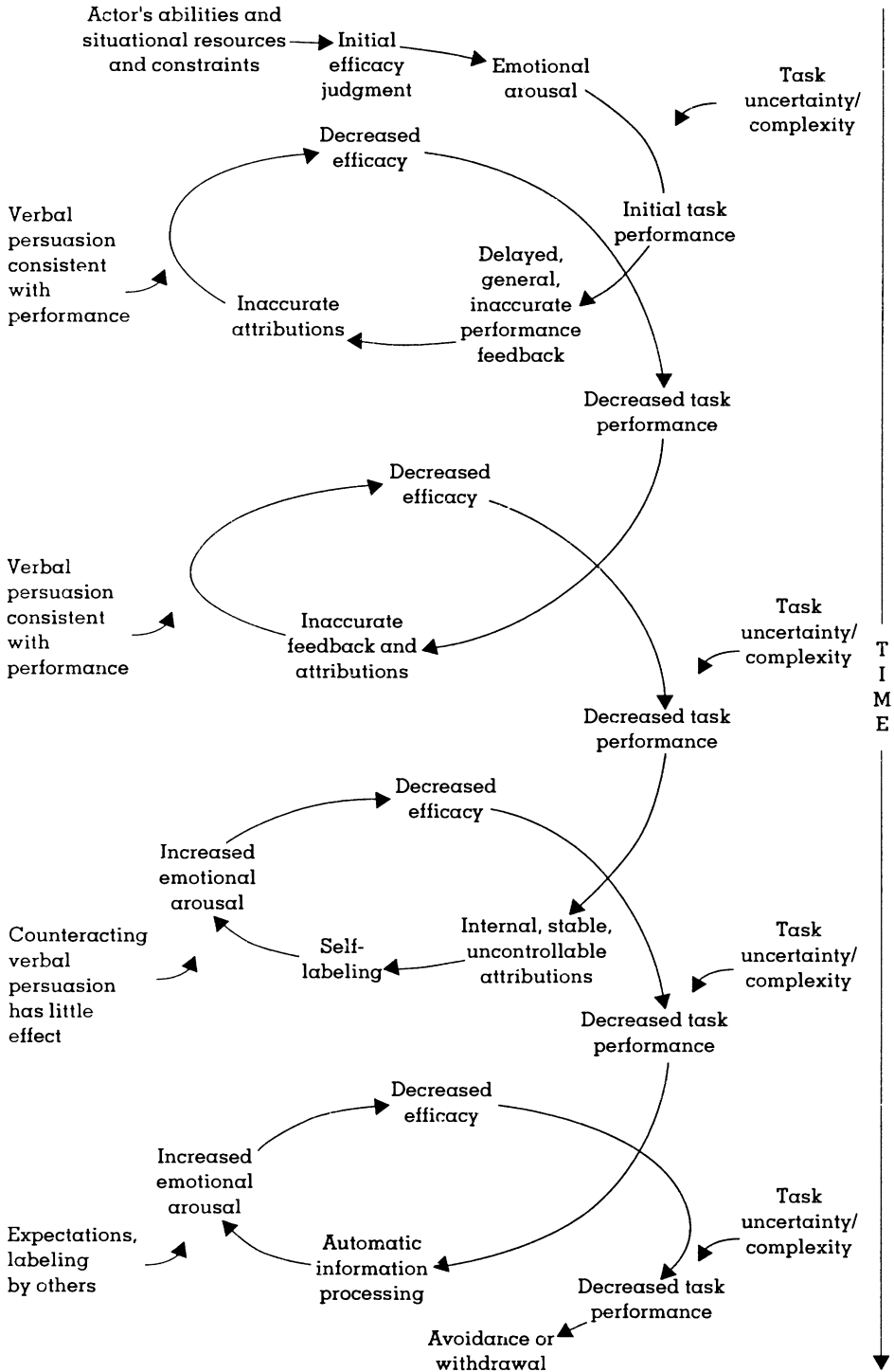
### Summary

Figure 2 presents a summary model of the propositions in an illustration of a downward spiral. One of the valuable outcomes of multilevel thinking is that it may generate testable hypotheses at one level of analysis that are suggested by empirical results or theory at another level of analysis. As Miller (1978) argued, many more isomorphic relationships may exist across levels of analysis than commonly thought. Thus, although there is no specific evidence to support Figures 1 or 2 at all levels of analysis, they may provide fuel for generating further hypotheses across different levels.

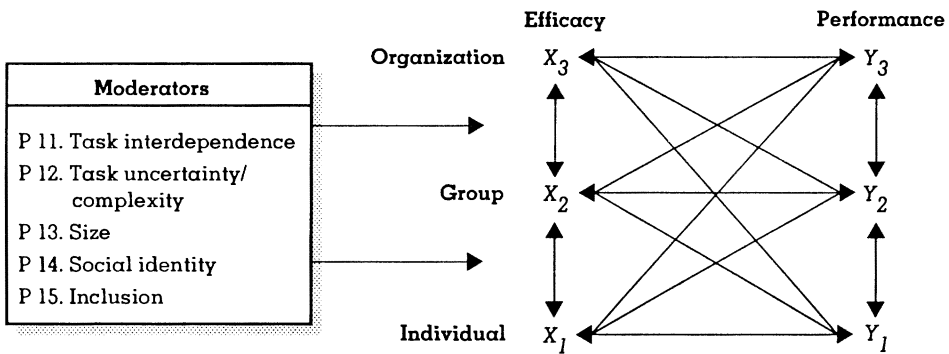
### COMPOSITIONAL AND CROSS-LEVEL EFFECTS

Individuals are embedded within the context of groups, and groups are embedded within organizations. Thus, it is important to understand how perceived efficacy and performance and consequent spirals at one level of analysis affect these variables at other levels of analysis. In Figure 3, the spirals are represented by the horizontal arrows at the individual, group, and organizational levels of analysis. When this multilevel model is developed, it is important to consider explicitly both the compositional effects (represented by the vertical arrows in Figure 3) and the cross-level effects (represented by the diagonal arrows in Figure 3). The compositional effects specify the relationships between functionally similar variables at different levels of analysis (Rousseau, 1985) (i.e., the relationships among individual-, group-, and organizational-level efficacy). Following Eulau (1969), these bi-directional arrows represent a simultaneity of individual and collective action. The cross-level effects represent the relationships between performance at one level of analysis and perceived efficacy at a different level of analysis. These diagonal arrows

**FIGURE 2**  
**Summary Model Illustrating a Downward Spiral**



**FIGURE 3**  
**Moderators of Compositional and Cross-level Effects**



are also bi-directional, because we view these relationships as mutually reciprocal, representing bi-directional causality over time.

Because perceptions of efficacy and performance are related at each level of analysis (horizontal arrows in Figure 3), we cannot delineate the relationships between collective and individual efficacy (compositional effects) without also noting the cross-level relationships between performance at one level of analysis and perceived efficacy at another level of analysis. In doing so, we assume that individual task performance contributes to group performance and that group performance contributes to organizational performance. Without these assumptions, we have no basis for assuming any relationships between the efficacy judgments relating to those tasks or, ultimately, to efficacy-performance spirals at different levels of analysis.

We consider five factors that will affect the strength of the relationship among efficacy judgments at different levels of analysis: task interdependence, task uncertainty and complexity, size, social identity, and inclusion. Consequently, these factors also moderate the relationships among efficacy-performance spirals at different levels of analysis.

### **Task Interdependence**

The manner in which individual contributions combine to affect group performance is dependent on the degree of task interdependence among the individual tasks. When individual tasks are totally independent, each one is unaffected by the others, and group performance is simply the sum of the individual performances. Similarly, collective efficacy will approximate the sum of individual self-efficacies under conditions of low task interdependencies.

However, in this case of minimal task interdependence, it is easy for individuals to separate their own performance from the performance of the group. Thus, the relationships between individual and collective (i.e., group or organization) performance and individual efficacy and collective

efficacy will be weak. In addition, the cross-level relationships (e.g., group performance and individual efficacy, and individual performance and collective efficacy) also will be minimal.

As task interdependence increases, the relationship between individual and group performance becomes more complex. As is typically the case in organizations, group performance is not the sum of individual performances. As task interdependence increases, cognitively separating one's own performance from that of the group becomes more difficult. For example, the simultaneous interdependence involved in cutting down a tree using a "two-man" saw makes it difficult to access the individual contribution of each worker. Each person's self-efficacy is dependent on the completion of the group task (successfully felling the tree). Thus, we would expect individual performance and group performance and individual efficacy and collective efficacy to be highly related. Likewise, we expect the diagonal, cross-level relationships (e.g., group performance and self-efficacy and group efficacy and individual performance) to be strong. The relationship between individual and group spirals will be similar.

Although we have addressed the individual and group levels of analysis in the previous explanation, we expect the same effects of task interdependence on the higher level relationships between group and organizational performance and efficacy. We phrase the following proposition in general terms to include the cross-level relationships among individual, group, and organizational levels of analysis. We use the term *strengthen* to indicate a specific form of moderation defined by nonintersecting regression lines.

*Proposition 11: Task interdependence will strengthen the relationship between higher and lower level spirals.*

### **Task Uncertainty and Complexity**

A similar logic can be applied to explain how task uncertainty or complexity also will moderate the relationships between higher and lower level spirals. It is easier to cognitively separate the parts of a task from the whole task when the cause-and-effect relationships involved in task performance are well understood, or when there are few such relationships. Thus, as task uncertainty or complexity increases, individuals rely more heavily on group performance, and groups rely on organizational performance when arriving at efficacy judgments. As with task interdependence, we expect the compositional and cross-level relationships to be stronger under conditions of high task uncertainty or complexity than under conditions of low task uncertainty or complexity. Extrapolating to efficacy-performance spirals, we propose the following:

*Proposition 12: Task uncertainty and complexity will strengthen the relationship between higher and lower level spirals.*

## Size

As the number of individuals in a group or the number of groups in an organization increases, the relative contribution of the lower level unit decreases. Thus, as the size of the group increases, the relationship between individual efficacy and collective efficacy will decrease. It follows that the relationship between individual efficacy and group efficacy will be stronger than the relationship between individual efficacy and organizational efficacy. When stated as a general multilevel principle, relationships between variables at adjacent levels of analysis will be stronger than relationships between those same variables at nonadjacent levels of analysis. Thus,

*Proposition 13: Decreasing size will strengthen the relationship between higher and lower level spirals.*

## Social Identity

Social identity theory (Ashforth & Mael, 1989; Tajfel & Turner, 1985) posits that individuals' self-evaluations are partly a function of their group membership. According to this theory, people define themselves and others through a relational, comparative categorization process. Categories, such as age, race, or group membership, enable the individuals both to segment and order the social environment and to locate themselves within that environment. In noting similarities and contrasts, individuals define themselves on the basis of, or socially identify with, membership in categories ("I am a woman." "I am a professor." "I am an employee of IBM.").

Of particular interest is the tendency for those who identify with a group to personally experience the successes and failures of the group. "The organization's successes are my successes" is an example of one of the items developed by Mael to measure an individual's identification with an organization (Ashforth & Mael, 1989: 23). It therefore follows that the relationship between individual and collective efficacy and the relationship between group performance and individual efficacy will increase as identification with the group increases. Hence,

*Proposition 14: Social identification with a higher level unit will strengthen the relationships between individual spirals and higher level spirals.*

In addition, the antecedents of social identification—(a) assignment to a group; (b) distinctiveness; (c) prestige of the group; (d) salience of the out-group, including competition or outside threat; and (e) group formation factors such as interaction, similarity, liking, proximity, or shared goals (Ashforth & Mael, 1989)—will strengthen the relationship between individual spirals and higher level spirals to the extent that these factors affect identification with the group (or organization). Because identification fosters commitment to and internalization of group values and norms,



we expect a shared sense of collective efficacy to be higher when identification is high.

Because of self-serving attributions, individuals may identify more with successful groups than they do with unsuccessful groups. In order to protect self-efficacy, individuals may attribute failing group performance to external factors such as the group itself, thereby weakening the relationship between self-efficacy and collective efficacy. Successful group performance may enhance self-efficacy because individuals prefer to identify with prestigious groups.

### **Inclusion**

Although groups in organizations rarely have multiple organizational affiliations, individuals often have multiple group affiliations, such as committees or task forces. Involvement in multiple higher level units (e.g., groups) will lessen the impact of any one higher level unit on the lower level unit (individual). If an individual performs similar tasks within two or more groups, the effects of one group's task performance (or collective efficacy) on the individual's task performance (or self-efficacy) will be diluted by the other groups' task performance (or collective efficacy). As Ashforth and Mael (1989) noted, an individual may identify with multiple groups, thereby decreasing the impact of any one group on him or her.

The principle of partial inclusion may extend to interactions (or even psychological inclusion as in the case of social identity) as well as membership. Individuals whose role relations or social networks extend beyond group or organizational boundaries will be less affected by (and have less effect on) the collective efficacy or performance of the group or organization than individuals whose role relations are contained within the group or organizational boundary.

*Proposition 15: The extent of inclusion of the lower level units in the higher level unit will strengthen the relationship between lower level spirals and higher level spirals.*

The cross-level effects are complex. Individuals must not only assess self-efficacy and collective efficacy, but also must sort out the attributions and effects of individual and collective performance. Higher level units can either dampen or enhance the effects of lower level actors. Tetlock (1985) noted the dampening effects of accountability. Basic to this thesis is the individual motivation to protect and enhance one's social image through the approval and respect of others. Likewise, Shepperd (1993) provided a detailed review of social loafing (including free-riding and sucker effects), in which individuals exert less effort when their efforts are combined with others. Social loafing may counteract upward group spirals while contributing to downward spirals.

However, the synergistic effects of group interaction also can amplify

individual propensities as in the case of social facilitation (Zajonc, 1965). Group discussion tends to amplify a dominant initial tendency (cf. Lamm & Myers, 1978; Shaw, 1976); group goals have been shown to be higher than the sum of individual goals (Matsui, Kakuyama, & Onglatco, 1987), and group performance has been found to exceed the additive effects of members or the performance of the most competent group member (e.g., Tziner & Eden, 1985; Watson, Michaelsen, & Sharp, 1991).

In the case of efficacy judgments and spirals, we suspect that isolated minority opinions or spirals are absorbed by the group such that they have little effect. However, the enhancement of individual judgments or spirals may follow a pattern similar to the S-shaped curve of diffusion studies (Rogers & Rogers, 1976). As individual judgments or spirals accumulate, they may build upon each other, leading to *bandwagon* effects. These synergistic effects may be particularly likely when the efficacy judgments or spirals of leaders, CEOs, or top management teams are considered. Because of their power and status, and the symbolic, sense-making activities associated with leadership positions (Pfeffer, 1981; Thomas, Clark, & Gioia, 1993; Weick, 1979), leaders and top management teams have a disproportionately large impact on groups and organizations (Hambrick & Finkelstein, 1987; Staw, 1991). Because they are credible sources in ambiguous situations, leader positions play important roles in the social construction of shared meanings such as collective efficacy. However, the spirals of leaders and top management teams are strongly related to the group and organizational spirals, as the research by Hambrick and D'Aveni (1992) indicated. The results of these authors showed that the deterioration of management teams coincides with the downward spirals of corporate failures.

In summary, we emphasize the simultaneity of microphenomena and macrophenomena. Even though individual spirals may have contagious effects, we also propose that organizational-level spirals can have centripetal effects on groups and individuals. A downward spiral at the organizational level may cause similar downward spirals at the group or individual level. The effect of such an alignment could be exacerbating, as suggested in the reports of organizational decline—as organizational performance declines, anxiety and emotional arousal spread through groups and individuals (Sutton, 1990).

## CONCLUSION

Throughout this article, we have focused on the similarities or isomorphisms across levels of analysis. However, we also should note some possible differences among individual-, group-, and organizational-level spirals. For example, it is possible that higher level spirals are more difficult to stop than lower level spirals. Assuming greater complexity and uncertainty at higher levels would support the above possibility (higher unit tasks are composed of lower unit tasks). Likewise, because

the nature of the task cycle is longer at higher levels, feedback is often delayed. Also, inertial forces may be greater at higher levels of analysis. Gersick (1991) noted the tenacity of initial choices because of the network of system interdependencies. Incremental changes in system parts may not be able to alter the whole, because the organization (or group) may be able to pull any group (or individual) deviation back into line (Gersick, 1991). Thus, initial task experiences may be even more important at the group and organizational levels of analysis. Inertial forces and habitual routines may inhibit spirals when groups or organizations "get off to a good start," but these preventative effects may occur only in highly stable environments. The dynamic nature of most contexts makes habitual actions ineffective, and it emphasizes the value of controlled information processing and active experimentation.

We also have noted similar propositions for both upward and downward spirals, although the evidence for upward spirals is limited. Indeed, Gilovich, Vallone, and Tversky (1985) suggested that the "hot hand" is more illusion (based on a general misconception of random sequences) than real. In addition, proposing negative outcomes for upward spirals seemingly contradicts much of the research showing the positive aspects of increased self-efficacy. Although we have distinguished upward spirals from the positive learning associated with increased motivation, the propositions regarding upward spirals remain subject to empirical testing.

Other questions remain. For example, is there a threshold beyond which spirals cannot be interrupted or stopped (Masuch, 1985)? What are the within-level and across-level cumulative effects of upward versus downward spirals? Are spirals across levels of analysis cumulative, suggesting the presence of a "grand organizational spiral"? Do higher level spirals hide, distract attention from, and/or cancel lower level spirals? Overall, there is a clear and pressing need for empirical research that specifies how to detect, control, and redirect spirals.

The interest in efficacy and its importance to the study of organizational behavior rests in its relationship to individual, group, and organizational performance. At the individual level, Gist (1987) has linked self-efficacy to such research topics as motivation, training, leadership, and performance appraisal. The possible amplifying properties of the efficacy-performance relationship provides additional implications for research on performance over time at all three levels of analysis. For example, training, performance appraisal, and the role of leadership in providing feedback may be enhanced by promoting active experimentation and redefining success and failure. Individual and group job-enrichment efforts may be more successful when attention is directed to initial task experiences, emotional arousal, task complexity and uncertainty, and small wins and small losses. Leaders of groups and organizations may counteract both upward and downward spirals effectively by counterbalancing their feedback, attributions, and constructions of

reality with group and organizational performance. Researchers of the interpretation of strategic issues may benefit from considering the contextual effects of spirals. Clearly, further refining the role of spirals in organizational learning and decline would be fruitful endeavors for researchers.

We have generated 15 testable propositions to guide future research on the efficacy-performance relationships within and across levels of analysis. Guiding these propositions is the basic premise that timely, specific, and accurate feedback leads to the ability to understand cause-and-effect relationships involved in task performance. This understanding, in turn, prevents the occurrence, as well as the continuation, of spirals. The knowledge that comes from this feedback, whether it follows success or failure experiences, can change the positive, amplifying relationships between efficacy and performance. In proposing his social cognitive theory of human behavior, Bandura (1991) has continually stressed the self-regulatory nature of human action. The cyclic nature of the efficacy-performance relationship may be a critical link to understanding and managing the factors that have an impact on the performance of individuals, groups, and organizations, and, thus, their self-regulation.

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