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**WORK-TEAM PERFORMANCE
MOTIVATED BY COLLECTIVE THOUGHT:
THE STRUCTURE AND FUNCTION
OF GROUP EFFICACY**

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ABSTRACT

Research demonstrates that group efficacy, a group's belief in its ability to perform, is related to group performance. However, most conceptual development of a group efficacy construct focuses on the function of the construct, as opposed to its structure. In this article, we extend extant theory and develop a motivational model of group efficacy that integrates function with structural features including collective origins, collective construction, identifiable characteristics, and recursive relationships. We conclude with a discussion of implications and future research concerning motivation in collaborative efforts.

A collective belief in the capability to achieve an objective can be a very powerful motivator in a team. Consider, for example, a team that we interviewed consisting of airline employees servicing a concourse in a major U.S. airport. The team is a working unit formed to increase integration, accountability, and performance on the concourse. It consists of customer service representatives, ramp servicemen who ready the plane for departure and guide it in on arrival, maintenance crew who repair and maintain the hardware on the plane, cabin appearance personnel who clean the interior of the plane, and cargo personnel who handle passenger baggage. Employees from the very top of the organization (e.g., station manager) on down to operations managers, supervisors and line employees are involved in the team. They are charged with goals such as on-time performance, customer satisfaction, safety, and financial performance, each of which involves sub-objectives such as management of connecting passengers, baggage handling, and controlling costs.

Our interviews with this team revealed that based on their knowledge of what each member contributes to the team, the careful processes that have been established for integration, the support received from the station manager, and the level of energy and excitement, the team had a strong and consistent belief in their capability to achieve an on-time performance target of 60%, that is, to see less than 40% of the planes leaving the gate later than the designated departure time. When asked if they can achieve this target, the team members responded that they were 100% certain they could achieve it. This is a target they value highly because it is recognized as a strong indicator of competency, and on-time performance is highly publicized through out the station. Further, the belief in their ability to achieve on-time performance is stronger than their beliefs about other domains of their work such as airline profitability. Although this belief was not as strong in the early days when the team was newly formed, and the team may not be as certain about on-time performance during future high-volume travel periods (e.g., holidays), their belief is strongly held and it motivates them to integrate their efforts and be persistent in their actions. As a result, the airline concourse team achieved its on-time target this quarter.

This example illustrates the motivational power of group efficacy, “a group's shared belief in its conjoint capabilities to organize and execute the course of action required to produce given levels of

attainments” (Bandura, 1997: 447).¹ Group efficacy is an important construct for a number of reasons. Not only does it predict performance (e.g., Gully, Joshi, & Incalcaterra, 2001, found an average relationship of $\rho = .40$ across 56 empirical studies and 159 effect sizes), it also provides insight into the collective cognition of a team. Depending on how the belief is formed, it can carry dynamic motivational force and it appears malleable representing a promising managerial tool that can be harnessed in order to initiate, direct, and maintain team behavior.

In this article, we diverge from existing conceptual and empirical work emphasizing functional relationships (e.g., high group efficacy leads to enhanced performance) and describe a conceptual model emphasizing structural features of group efficacy and how structure relates to function. To develop our model we first explore the distinction between structure and function and what we gain by considering both. Second, we briefly review extant research investigating collective cognition and group information processes (e.g., Corner, Kinicki, & Keats, 1994; Gibson, 2001a; Hinz, Tindale & Vollrath, 1997) to identify important structural features of group efficacy. Third, we review previous functional approaches to group efficacy in relation to various outcomes such as team performance. Next, we argue for the importance of considering dynamic and recursive relationships that integrate structural and functional features. Finally, we discuss the implications of our approach to group efficacy. Our model addresses aspects of group efficacy currently unexplored, provides insight into previous findings, helps move group efficacy forward as a central component in a theory of collective motivation, and develops the construct for managerial applications.

THE DISTINCTION BETWEEN STRUCTURE AND FUNCTION

Scholars have argued that a comprehensive understanding of a construct occurs when both function (causal outputs) and structure (defining properties) are identified (Morgeson & Hofmann, 1999). This is particularly true for collective constructs since they are, by definition, complex abstractions used to explain

¹Bandura used the label “collective efficacy,” and the construct has also been referred to as: group potency, group self-efficacy, group self esteem, and group confidence. Where appropriate, we make distinctions among the concepts implied by the various labels, but in general, we use the term group efficacy here to refer to all group-level performance beliefs, given that our conceptualization focuses especially on the group level of analysis (as opposed to other larger collectives such as departments, units, organizations or societies).

phenomena among interdependent combinations of entities (e.g., individuals, groups, departments or organizations).

Structure of a construct is comprised of its elements and defining properties and features of formation and operation. For example, in our airline illustration, we identified qualitatively several structural features of the most critical group efficacy belief in the team: it referred to a specific task domain (on-time performance); it was shared among nearly everyone on the team; the strength of the belief was higher (e.g., the team was 100% certain) than beliefs about other objectives and more motivating than those beliefs; travel volume likely decreased the belief, but it remained motivational because it pertained to valued outcomes that helped the team receive recognition. In addition, over time, interactions become codified and routinized (Gersick & Hackman, 1990) and group efficacy can persevere even if individuals initially involved in its creation leave the group. For example, in the airline concourse team, turnover in a certain functional area (e.g., baggage) may be high, but the belief in on-time performance may persevere if all other factors in the task environment remain relatively stable. If so, the whole team develops a reputation for on-time performance, reinforcing the group efficacy belief just as a winning college sports team maintains a reputation despite the departure of graduating seniors. However, structure does not imply that a collective construct is static; it reflects ongoing events and interactions among group members (Morgeson & Hofmann, 1999). For example, although the airline concourse team is currently 100% certain they can obtain their on-time target, they are less confident of doing so if travel volume increases.

In contrast to a structural focus, functional analysis refers to an assessment of a construct's causal outputs and the effects of it on consequent variables in an organizational system (Morgeson & Hoffman, 1999). A focus on function is a product of pragmatism arguing that proposition meaning resides in its outputs or effects (Peirce, 1940). For example, scholars have focused on whether a team that is highly confident can perform effectively. This approach is limiting because constructs with similar functions (e.g., relationship with performance) may have dissimilar structures (e.g., component parts, origins, or formation processes). In our airline concourse example, other team-held beliefs, such as identity or cohesion, may be related to on-time performance but their structure may be driven by characteristics not related to group efficacy. Further,

structure is important because any given function of a construct can be satisfied through a number of different structural means (Gresov & Drazin, 1997: 407). Failing to recognize important defining features that have differential effects may result in the loss of explanatory power or practical utility of the construct (Morgeson & Hoffman, 1999).

We do not deny the importance of function, but structure and function are not equivalent, and should be considered alongside each other. Take, for example, Tesluk and Mathieu (1999), who examined maintenance and construction crews in a state department of transportation. A crew's collective belief that it could perform effectively was related to use of the problem management strategies. The authors conceptualized the crews' performance beliefs at a very general level and they did not measure the associated structure of the belief. Therefore, we do not know how this belief was manifested across the crews, nor do we know its intensity, generalizability across tasks, or stability over time. Finally, we have no sense of the relative contribution different members' beliefs may have had on the formation of the group belief. Without a focus on structure, many issues are left unaddressed.

INTEGRATING THE STRUCTURE AND FUNCTION OF GROUP EFFICACY

In this section, we describe our model (see Figure 1) beginning with the collective origins of group efficacy, moving through the collective construction process by which the belief forms, to a discussion of the identifiable characteristics of group efficacy that result from origins and construction. Next, we review the impact of group efficacy on outcomes and discuss how group efficacy beliefs change and adapt over time.

Our selection of structural features is based on our qualitative work with a number of existing groups (including our airline concourse team) as well as an assemblage derived from the existing literature (e.g., Bandura, 1997; Fernandez-Ballesteros, Diez-Nicholas, Caprara, Barbaranelli, & Bandura, 2002). Based upon these observations and scholarly review we identified several categories of structure including: collective origins, based on collective cognition and stored memory of group members, processes and context; collective construction, or how individual cognitions are combined at a group level; identifiable characteristics, or defining characteristics including content, level, generality, sharedness and intensity; and recursive relationships, or a feedback loop that flows back into collective origins following group

performance. Our categorization scheme is best thought of as a starting point for future research since empirical verification will ultimately provide the most compelling basis for a comprehensive and definitive presentation of structure.

 Insert Figure 1 about here

Collective Origins

The first structural component of group efficacy is that it derived from collectively shared cognitions stored in a group memory, emerging from both newly incoming and stored information about past experiences. Identifying the source of information contributing to group efficacy formation is critical because as we elaborate below, different sources may be differentially related to various outcomes.

Where does the raw material for forming a group efficacy belief come from? Just like individual memory systems that store information for forming individual judgments, several theorists have suggested that groups maintain a long-term memory; these theorists are quick to point out, however, that group memory may not necessarily resemble human memory (Roberts, 1964; Sandelands & Stablein, 1987; Walsh & Ungson, 1991). Previous research suggests that group memory systems are more robust than the memory of any individual, are more widely distributed, and undoubtedly have a much greater capacity (Hinsz, Tindale, & Vollrath, 1997; Roberts, 1964). It is from a group memory system that information is gathered to develop a group efficacy belief.

The belief is formed as a result of information retrieved from a store of knowledge within a group codified by patterns of communication and a behavioral repertoire. This store of knowledge arises as members struggle together to answer several key questions. Levine and Moreland (1991) outlined three questions that constitute a long-term group memory system: (1) knowledge about other group members, including issues such as “What kind of person belongs to the group?” “What are the relationships among group members?” and “Who has knowledge or experience?” (2) knowledge about the group as a whole, including issues such as, “What makes the group different?” and “How good is the group?” and (3) knowledge about work processes, including issues such as “How should work be performed?” “Who does what tasks?” and “What does it mean to do a good job?” We suggest adding a fourth question and

corresponding category -- “What is the group's context?” This question might encompass answers to questions such as “What is valued here?” “How does our task relate to the organizational objectives?” “What does our leadership tell us about the organizational culture?” and “How does our group interact with the larger environment?” Together, these categories form a collective memory that can be sustained despite turnover in the group. Further, information is likely contained in a schema system that allows members to create shared representations that can then be used to visualize, articulate and use stored knowledge collectively to assign meaning to incoming information (Corner, Kinicki, & Keats, 1994). We discuss these four types of group knowledge in the sections that follow.

Knowledge about members. The first question refers to knowledge about team members, including team member skills, team member self efficacy, and awareness of differences among team members. An important feature about group members is information about their skills possessed appropriate to the task at hand. Awareness of one another’s task-related skills determines, in part, a group’s efficacy. As group members develop a fine-tuned set of skills applicable to a key task objective, and are aware of the skills each will contribute, a group will develop a correspondingly stronger sense of efficacy. For example, our airline concourse team did not initially have a strong belief in their ability to reach an on-time performance target. However, as they gained knowledge of how well customer service handled complaints, cargo transferred bags, and ramp conducted maintenance, their group belief was enhanced. Indirect support for the importance of knowledge of members is reflected in a study by Durham, Knight, & Locke (1997). In their analysis of student groups' task performance, they found that leader and mean follower ability influenced team performance only indirectly through effects on group efficacy. In addition to member skills, member self-efficacy is likely to contribute to group efficacy. Fernandez-Ballesteros et al. (2002) found that among a sample of 1214 Spanish participants, perceived individual efficacy contributed to a sense of group efficacy to effect social change through unified action. An alternative model in which perceived group efficacy was assigned causal primacy affecting perceived individual efficacy provided a poorer fit to the data. Thus, here we begin to see the importance of self-efficacy beliefs to the formation of group efficacy.

Finally, knowledge about team member differences, such as degree of heterogeneity on demographic or cultural indicators, is likely to impact group efficacy. That is, when team members perceive diversity among one another it is likely to influence subsequent beliefs. Lewis and Gibson (2002) found that among a sample of 57 bank branch teams, collectivism heterogeneity had a curvilinear relationship with group efficacy; teams with both highest and lowest levels of collectivism heterogeneity were higher in group efficacy and teams with higher tenure heterogeneity had higher group efficacy. Thus it is important to consider the personal characteristics of group members in understanding the structure of group efficacy.

Knowledge about the group. A second category encompasses knowledge about the group, including group affect, cohesiveness, identity, and norms. Shared affect may influence group efficacy over time. The general mood or climate of a group can be directly related to group beliefs (George, 1990). Evidence from information processing research indicates that people who feel good tend to have positive material more accessible in memory (Nasby & Yando, 1982) and George (1990) has proposed that affect can be applied as a group-level phenomenon. When affective tone of a group is indeed positive, the group will focus on positive information regarding past experiences and the current situation resulting in high group efficacy beliefs.

Campion, Papper, & Medsker (1996) found that the level of team identity was a positive correlate of group efficacy beliefs. Team identity was a multidimensional concept with single-team membership (members belong to only one team) and single-team functioning (absence of subgroups or divisions) demonstrating statistically significant relationships with group efficacy. This finding parallels our airline concourse team in that prior to identifying the team as an independent work unit, team members also served on operations teams. The dual allegiance resulted in less intense beliefs about any one team's capabilities. Shamir (1990) suggested that group efficacy is influenced by group aspects such as cohesiveness, and Lee, Tinsley, & Bobko (2002) found empirical evidence that group cohesion and the strength of a group's norms were positively related to general group efficacy beliefs. The authors argued that as a group's cohesiveness and norm strength increases, the culture of the group may be characterized as "tight" (Witkin & Berry, 1975) in that it exerts a relatively strong and uniform influence across members. In turn, a group's efficacy,

transmitted across members due to cohesiveness and norms, resulted in higher effort and persistence by group members and higher performance.

Knowledge about processes. The third category of knowledge focuses on team processes, including cooperation and competition. Knowledge of cooperation and competition cue members concerning how they will interact with one another (Deutsch & Krauss, 1962; Tjosvold & Tjosvold, 1991), and this serves as input into the formation of group efficacy. In support of this, Lester, Meglino and Korsgaard (2002) found that knowledge of cooperative processes during the early stages of work group interaction was significantly related to changes in general group efficacy beliefs over time, and the group's initial task performance partially mediated this relationship. Mulvey and Ribbens (1999) found that laboratory groups engaging in intergroup competition had higher group efficacy than groups that did not.

Knowledge about context. Finally, consider the category of long-term memory that captures group members' collective knowledge about the context. We propose that context, including task characteristics, organizational attributes, or at a larger level, the cultural environment that surrounds the group, impacts group efficacy formation. Some early empirical support for the impact of task features of context on the formation of group efficacy was obtained by Parker (1994) in her study of teachers' group efficacy beliefs. She collected a separate group efficacy rating for reading achievement, language achievement, and mathematics achievement from each teacher. Actual school means on teachers' collective efficacy for mathematics were associated with school achievement levels in mathematics, but not in the other two domains. Parker (1994) suggests that this is perhaps due to the fact that mathematics is a relatively concrete and "culture free" domain as opposed to the relatively more nebulous and culture-laden domains of reading and language arts.

Durham et al. (1997) suggest the importance of task characteristics, goal difficulty in particular, as an element of context important in the formation of group efficacy. These authors found that assigned goal difficulty affected goals the team set themselves indirectly through group efficacy. In turn, team-set goal difficulty positively affected performance. In fact, contrary to their predictions, group efficacy did not have a significant direct effect on performance in the path model, but rather an indirect effect, through team-set

goal difficulty. These findings highlight the criticality of understanding the relationship between task context and group efficacy. Similarly, Gibson (2001b) found that in an investigation of 71 nursing teams, team goal-setting training -- consisting of an introduction to goal-setting and statement of values, selection of team goals and targets, and a discussion of facilitators and impediments to team effectiveness -- was positively related to subsequent group efficacy.

Organizational culture derived from outside (of the group itself) leadership likely influences the emergence of group efficacy. Leadership culture is an important element of creating a supportive context for a team (Mohrman, Cohen, & Mohrman, 1995). This was evident in our airline concourse team. When a new station manager arrived at the airport and demonstrated strong support for independent work units, it instilled confidence in the team, and increased their sense of efficacy. Research has demonstrated support for this effect. Lester et al. (2002) found that charismatic leadership was related to general group efficacy beliefs. In a sample of 86 combat units of the U.S. Army, Chen and Bliese (2002) found that leadership climate at an organizational level (e.g., the extent to which upper-level officers establish clear work objectives) was the strongest predictor of group efficacy within units. Sosik, Avolio, & Kahai (1997) found that the effect of transformational leadership (exerting influence by broadening and elevating followers' goals and providing confidence to go beyond minimally acceptable expectations) on group efficacy was positive. The effect of transformational leadership on group efficacy decreased when anonymity was introduced using an electronic group decision support system.

Multiple origins and sources. It is important to note that group efficacy estimates are likely formed based on a complex combination of knowledge in each of these categories coming from both existing and newly acquired information. We illustrate this combination in our model by separating the types of knowledge as well as existing versus new sources. Our depiction of existing versus newly acquired knowledge is critical to assess the dynamic nature of group efficacy. Yet, few studies have explored multiple bases of group efficacy. Two exceptions are studies conducted by Feltz and Lirgg (1998) and Gibson (2002). Feltz and Lirgg (1998) investigated multiple predictors of group efficacy regarding hockey competencies such as skating, checking, turnovers, and power plays among six hockey teams. Although

primarily focused on functional relation of predictors to team outcomes, they found that both prior team performance and aggregated individual player efficacy beliefs were related to the teams' efficacy beliefs in these task domains, and that the teams' beliefs were subsequently related to wins. Interestingly, prior team performance was a stronger predictor of team efficacy than were team member self-efficacy beliefs. This study is important because the authors not only looked at multiple origins (types of knowledge), they examined also two different sources (existing knowledge and newly acquired performance feedback). Gibson (2002) examined several types of existing knowledge including members' self-efficacy beliefs, group affect, status differential, and collectivism among a sample of nursing teams and simulated management teams. Self-efficacy beliefs, group affect and collectivism were significant predictors of group efficacy explaining between 27 and 49 percent of the variance across two studies.

Taken as a whole, the findings discussed in this section suggest that group efficacy is based on knowledge in multiple categories, and we propose the following:

P1: Group efficacy beliefs are formed as a result of both previously stored and incoming information from four distinct domains: knowledge about group members, knowledge about the group, knowledge about process, and knowledge about the context.

Collective Construction

The second basic structural aspect of group efficacy refers to its combinatorial basis. Addressing collective construction requires an examination of how individual cognitions are combined to form a collective whole. This is not merely an empirical question of aggregation; the synergistic nature of group efficacy implies that the collective judgment (the group efficacy belief) is likely different from the constituent parts (individual group member beliefs). In a highly integrated group knowledge structure, member knowledge is combined such that distinctions among individual knowledge structures no longer exist. It is therefore problematic to isolate individual contributions to the collective knowledge structure.

Strong evidence concerning the importance of considering collective construction was provided by Hutchins (1991). Using a computer simulation model, Hutchins (1991) demonstrated that the beliefs of groups can differ from those of their participating members. Specifically, the simulations suggested that,

even when holding the beliefs of individuals constant, groups as a whole may display different beliefs, depending on how communication is organized within the group over time. The group beliefs were produced as a result of an interaction among individuals. Similarly, Weick and Roberts (1993) investigated the collective mental processes among crews on aircraft carriers, specifically, the patterns of interconnections among members of the crews. They found that crews who practiced purposeful, vigilant, and critical interaction had fewer errors. Importantly, however, it was the heedful interaction among members that produced “mindfulness,” not the individual attentiveness of any one individual. By having access to the cognition of the group through social interaction, group members “often discovered higher-order themes, generalizations, and ideas” that went beyond any individual deductions (Weick and Roberts, 1993: 358). These researchers suggested that the key to understanding collective cognition is recognizing that “mind” is “located” in patterns of connections among individuals and their attached weights rather than in entities or elements. Thus, group efficacy does not reside within each team member per se, though each person contributes to it, nor does it reside outside them. The group efficacy of a team may not be realizable by any single individual.

The cycle of collective cognition described by Gibson (2001a) is instructive in this regard. She argued that collective cognition is comprised of four key phases: (1) accumulation, (2) interaction, (3) examination, and (4) accommodation. Most groups enact all four processes, but time spent on each process varies across groups as does the relationship between the phases. During interaction and examination two key procedures for group efficacy formation occur: (1) social construction, negotiation, and sense-making concerning past performance, and (2) assessment of constraints or inducements. Group members share subjective impressions of what has occurred or what may occur and these impressions are used to form group efficacy. Assessment is arrived at through collective interpretations that arise out of interactions among members (Leary & Forsyth, 1987) and a given pattern of information retrieval from collective memory influences member interactions. These patterns likely develop based on roles and structure within the group, status differentials, specialized knowledge of the task, and certain aspects of the context.

For example, member status is important because it may serve a “weighting” function. Bandura (1982; 1997) and Gist and Mitchell (1992) have suggested that in the formation of self-efficacy beliefs, individuals “weight” information as to its importance in determining performance, with information that is recent often considered more heavily. At a group level of analysis, information and experiences contributed to group interactions by individuals with high status (e.g., a facilitator or a member with more tenure in the group) may be weighted more heavily than information contributed by other individuals. For example, Earley (1999) found that arithmetic aggregation of individuals’ estimates of their group efficacy did not predict performance as well as a response based on group interaction for members from a high power distance culture. He found a strong social influence attributable to a high-status team leader that influenced a group’s efficacy and performance not predicted by an averaging of members’ individual estimates of group efficacy. These findings suggest that through processes of communication and interaction, information is combined, weighted, and integrated to form a group efficacy belief. Based on this research, we propose:

P2: Group efficacy refers to shared collective cognition that does not exist separate of the entire group. That is, individual group members’ estimates of group efficacy are often not equivalent to the group’s collective belief because they do not represent fully a group’s collective cognition.

Further, at early stages of group interaction or in highly dynamic situations, this information processing likely requires a great deal of attention and focus analogous to what Shiffrin and Schneider (1977) refer to as controlled processing. Automatic processing demands less attention, can be applied to several activities simultaneously, and is difficult to alter, suppress, or ignore once learned (Gist & Mitchell, 1992; Lord & Foti, 1985). Controlled processing, however, places heavy demands on our limited capacity to pay attention, focuses on one activity at a time, and is more easily altered or reversed by participants (Lord & Foti, 1985; Shiffrin & Schneider, 1977). Similarly, group efficacy is likely codified and subject to automatic processing over time just as individual beliefs are codified. As with individual-level cognition, automatic processing continues as long as incoming information is consistent with pre-existing thought, but sudden transitions such as team membership changes or dramatic fluctuations in task demands are likely to evoke controlled processing (Gersick, 1988; Gersick & Hackman, 1990). We witnessed this in the airline

concourse team. Group efficacy for on-time performance remained fairly stable despite some membership changes, but was reexamined when travel volume increased unexpectedly during holiday periods. Based on these ideas, we propose the following:

P3: The longer a group has been in existence (the greater the average tenure in the group), the less interaction and examination of newly incoming efficacy information (the more automatic the processing), and the more reliance on existing efficacy knowledge. Only significant environmental, work group or task changes will evoke active consideration of newly incoming knowledge.

Identifiable Characteristics

The third structural feature we propose pertains to the defining characteristics of group efficacy. As a result of the first two features playing out in the model (collectively accumulating knowledge that comprises the origin of the belief, and then constructing it by interacting, examining, and integrating the knowledge) a group efficacy belief is formed. The beliefs will be characterized by a number of specific dimensions arising from knowledge content (existing and newly acquired) and construction. Specifically, group efficacy beliefs vary according to content, level, intensity, generality and sharedness. As with our other structural features, these specific dimensions were derived from our qualitative observations with a number of ongoing teams as well as a review of the extant literature on teams and group efficacy.

Content. An important identifiable characteristic captures the domain of activity for a group efficacy belief. The airline concourse team held beliefs about on-time and financial performance among other task domains. Groups hold cognitions that are organized into categories, and subsequently into smaller bundles (Gibson, 2001a). Such collective structures have been referred to as frames (Shirvastava & Schneider, 1984), team schema (Rentsch, Heffner, & Duffy, 1994), or team mental models (Klimoski & Mohammed, 1994). It is likely that a separate group efficacy belief forms for each “bundle” of activities in which a group engages and, parallel to theorizing from social cognition (Wyer & Srull, 1980), these bundles may be based on outcomes or processes. For example, a group of sales people may have a general sales performance belief, or they may have a belief regarding retaining a specific client, a belief with regard to their ability to locate a new type of clientele, and/or a belief that pertains to a technique for increasing profit

margins. Several researchers (e.g., Gibson, 1999; Little & Madigan, 1997; Parker, 1994;) have argued that beliefs with different content can be contrasted in terms of implications for the consistency of beliefs over time or relationships with performance, but none has examined this in any detail. For example, Little and Madigan (1997) noted that clear differences among teams were obtained for beliefs regarding ability to do their job; little difference was observed in beliefs about technical ability, and disagreement was found regarding beliefs in their social skills. Likewise, beliefs about process may be differentiated from beliefs about outcomes.

Level. A second dimension of group efficacy beliefs captures the level of challenge for a given task target. A target may be easy, moderately difficult, or extremely challenging to achieve, and level represents this difficulty (Bandura, 1997: 42). In our airline concourse team, for example, the content of the task domain was on-time performance, but desired level of on-time performance was 60%. This was deemed a challenging, yet achievable level of performance. In measuring self efficacy, level has also been referred to as “magnitude” (Locke, Frederick, Lee & Bobko, 1984) and is measured using a “yes” or “no” in response to the question, “Can you achieve level X?” Magnitude of self efficacy measures the level of task difficulty that a person believes he or she is capable of executing (Stajkovic and Sommer, 2000: 716). Magnitude ratings used in isolation of other characteristics (e.g., certainty, described below) have not been common in the self-efficacy research due to measurement difficulties and operationalization issues (Bandura, 1991).

Intensity. The next identifiable characteristic captures the motivational force of a group efficacy belief. We argue that intensity is comprised of three elements that likely interact to determine the impact of the belief on performance. The first aspect of intensity is Bandura’s concept of *strength* and it reflects the degree of certainty concerning a group efficacy belief. One of the earliest empirical assessments using a scale designed to assess strength is presented in Locke, Frederick, Lee and Bobko’s (1984) study of goal setting and self efficacy. Since that period, scales that capture strength (operationalized as the degree of certainty) are included in most investigations of self efficacy and in many empirical studies of group efficacy (e.g., Feltz & Lirgg, 1998; Gibson 1999, 2001b, 2002; Lee et al., 2002). Strength establishes a metric that can be used to compare across groups as well as assess changes in the same group across time. For example,

the airline concourse team was asked how certain it was, on a 100 percent certainty scale, that it can achieve on-time performance. The team responded that it was 100 percent certain, and this reflects high group efficacy. But a set of teams could also be compared as to their relative ranking on group efficacy, with one group in the set being ranked first in terms of its level of group efficacy and others being ranked second or third. Most researchers use the former method, although the latter seems to be useful in examining the performances among teams. To our knowledge, no one has used a relative ranking approach generated from the groups themselves (e.g., estimation of group efficacy relative to other groups). For example, in the NCAA basketball tournament one might look at each team's ranked efficacy relative to other teams in the final four (e.g., how high is each team's confidence to win the national championship relative to the confidence of the other three teams?) separate from an assessment of confidence to win the tournament.

A second aspect of intensity is *salience* and it captures the relative intensity of the belief based on temporal proximity and manifested awareness. Recall that our airline concourse team's belief regarding on-time performance was more salient than beliefs regarding financial performance, so the on-time performance belief had more motivational power for the team. However, if environmental changes alter the relative salience of financial performance (e.g., airline faces bankruptcy as a result of terrorism and decreased travel demand) the intensity of efficacy beliefs regarding financial performance increases. Salience differs from strength inasmuch as it captures relative commitment to a given performance target. One can imagine a group that is 100% certain that it can accomplish a quarterly sales goal, but if this belief has low salience, it may have little or no explanatory power for actual performance. Salience is determined based on temporal ranking of beliefs and by its proximity to action.

A third element of intensity, *valence*, captures the utility (to team members) of the objective to which the belief refers. In contrast with expectancy theory (Steers & Porter, 1991; Vroom, 1967), Bandura argued that self efficacy encompasses a broader set of self-regulatory effects, including thought processes, level, persistency of motivation and affective states (1997: 39). He further argued that "people act on their beliefs about what they can do, as well as their beliefs about the likely effects of various actions" and that "in activities in which outcomes depend on quality of performances, efficacy beliefs determine the types of

outcomes that are foreseen” (1997: 126). He thus suggested that self efficacy likely incorporates a valence dimension (e.g., individual efficacy beliefs reflect both “Can I do it?” as well as “What’s it worth to me?”). A similar point was made by Garland (1985) who argued that performance targets themselves may shape a person’s perceived valence. That is, highly challenging goals may be perceived as more desirable than easier ones, in part, because they are challenging. This suggests that characteristics such as strength and valence are not completely independent and likely interact with one another. At a group level, this remains an unresolved issue. Our airline concourse team valued on-time performance, primarily because it resulted in recognition within the station. This increased the intensity of the belief and its motivational force. However, the team may value customer service less, and so even if they are 100% certain they can achieve a customer satisfaction target, this belief will not be as motivating.

Taken as a whole, the aspects of intensity are important because they help us to understand the myriad of ways how group efficacy might differ across groups. Further, these aspects interact with one another. For example, the desirability of an outcome distorts its perceived attainability (Bazerman, 1990; Bazerman & Neale, 1983; Garland, 1985). Knowing something about these key characteristics of group efficacy also helps us to understand why certain beliefs will impact group behavior. The following proposition captures our expectations about the dimensions of intensity:

P4: Characteristics of group efficacy intensity (strength, salience, and valence) are interactively related to group effectiveness.

Generality. Group efficacy beliefs can be viewed in terms of *generality*, or whether beliefs about performance on one task are related to other ones held by the same group (Bandura, 1997; Little & Madigan, 1997; Parker, 1994). Bandura (1997: 49) proposed that efficacy beliefs can be distinguished based on three levels of generality. The most specific level measures efficacy for a specific performance under a specific set of conditions. The intermediate level measures perceived efficacy for a class of performances within the same activity domain under a class of conditions sharing common properties. And finally, the most general and global level measures belief in efficacy without specifying the activities or the conditions under which they must be performed. Bandura (1997) reviews substantial evidence that undifferentiated, context-free

measures of efficacy have weak predictive value. He argues that the optimal level of generality varies depending on what one seeks to predict and the degree of foreknowledge of the situational demands. For example, beliefs held by a group of architects about designing a new office building are likely related to beliefs about designing a housing complex, but may be unrelated to beliefs about performance in the company softball tournament. The situational demands differ. Thus, if performance on the office building design is of interest then a general belief that focuses on omnibus performance beliefs is undesirable. However, there are circumstances for which a more general level of assessment is useful. For example, an employer may wish to assess a team's potential to handle a wide variety of management challenges. Assessing very specific management challenges may be misleading as to the team's overall capability. Very few of the previous investigations of group efficacy have addressed varying levels of generality. The work of Parker (1994), Bandura (2001), and Gibson and her colleagues (2000) are notable exceptions. We argue that this characteristic is an important consideration for fully understanding the operation and impact of group efficacy beliefs.

Sharedness. A fourth identifiable characteristic captures the degree of agreement among group members about their group's efficacy. Unlike the prior characteristics, sharedness cannot be applied at an individual-level of analysis. This characteristic is referred to as realized coverage (Walsh, Henderson & Deighton, 1988), degree of overlap (Cannon-Bowers, Salas, & Converse, 1993), or diffuseness (Klimoski & Mohammed, 1994). Bandura (1997: 479) argued that "perceived collective efficacy is not a monolithic group attribute...individuals occupying different positions or serving different functions within the same social system may differ somewhat in how they view their group's collective efficacy." Other researchers have taken similar views suggesting that the degree of sharedness, or variability among individual members' group efficacy beliefs, is an important characteristic of the belief that must be considered (Bandura, 1997; Earley, 1999; Rousseau, 1985).

Operationally, there are many statistical methods to measure within-group agreement (e.g., inter-class correlation, analysis of variance, r_{wg} , average deviation index). Beyond statistical operationalizations lie important conceptual questions. How much agreement is necessary to constitute "shared"? What are the

implications of heterogeneity of beliefs for team outcomes? Does heterogeneity of team members relate to heterogeneity of beliefs and subsequent group dynamics? For example, Earley and Mosakowski (2000) found that high heterogeneity led international teams to create a hybrid culture consisting of mutually agreed upon rules and practices, and that the social construction of these rules and norm development provided an important impetus integrating the team. Perhaps high heterogeneity of group efficacy beliefs has a similar beneficial effect in teams. This leads to the following proposition:

P5: Teams having members with highly diverse group efficacy beliefs will, over time, integrate their perspectives into a common perspective. Further, this process of integration will result in more effective team performance than teams not having this intensive interaction.

By way of summary, we argue generally that identifiable characteristics will be determined by formation processes. For example, Gibson (2001a) contrasted teams that engage in all four phases of collective cognition (i.e., accumulation, interaction, examination, and accommodation) with teams that fail to truly process information internally (i.e., moving directly from accumulation to accommodation of knowledge). Such variations in the process of constructing a group efficacy belief likely impact the nature of the belief. We propose:

P6: The more comprehensive the process of collective cognition (e.g., the group engages in all four phases) the more intense, specific, and shared the group efficacy belief.

Relationships with Outcomes

Progressing through the sequence outlined in Figure 1, we turn now from a discussion of the structural features of group efficacy that captures its collective origins, construction and characteristics to a review of the functional nature of the construct -- the outcomes and consequences of group efficacy. In conducting this review, we highlight potential gaps in the literature based on our structural model. We review the functionalist approaches, contrasting them in terms of the level of outcomes examined (group versus individual outcomes), generality of outcomes (general versus specific), and the role of group efficacy (direct effect versus moderator).

One set of studies examines group-level general outcomes such as performance or productivity and what precipitated those outcomes (Campion et al. 1993; Campion, Papper & Medsker, 1996; Hackman, 1990; Guzzo, Yost, Campbell, & Shea, 1993; Kirkman & Rosen, 1999; Lee, Tinsley & Bobko, 2002; Lester, Meglino & Korsgaard, 2002; Lewis-Tyran & Gibson, 2002; Little & Madigan, 1997; Prussia & Knicki, 1996; Sosik, Avolio & Kahai, 1997; Tesluk & Mathieu, 1999). For example, Campion et al. (1993) investigated 80 work groups, correlating group effectiveness with nineteen different work group characteristics. Of the nineteen characteristics, the stronger predictor of effectiveness was a measure of general group beliefs in their capability to perform. Although these functionalist approaches help us understand the relation of the belief to group-level outcomes, many important structural features have gone unexamined, including the content of the belief, its generality and intensity, and the collective origins and construction processes. As a case in point, Kirkman and Rosen (1999) define group potency as “the collective belief of a team that it can be effective” (1999: 59). While they make a point to differentiate group level beliefs from self-efficacy, they do not elaborate on the content, origins, or formation processes of the belief. They describe group potency as one of four dimensions of group empowerment, alongside meaningfulness, autonomy and impact. A major limitation of this approach is that any one of these four “dimensions” may have the same functional impact on performance while consisting of dramatically different structural features. Indeed all four dimensions of empowerment were significantly and positively related to eight different measures of team outcomes. However, group beliefs about performance capability (i.e., potency) have very different structural features than perceptions of meaningfulness or autonomy.

A second set of studies identifies differences in group-level specific outcomes such as performance on a specific trial of a psychomotor task or scoring points in a given match, and then evokes group efficacy to explain them (Chen et al., 2002; Durham, Knight & Locke, 1997; Feltz & Lirgg, 1998; Greenlees, Nunn, Graydon & Maynard, 1999; Klein & Mulvey, 1995; Lee et al., 2002; Mulvey & Ribbens, 1999; Mulvey & Klein, 1998; Parker, 1994; Silver & Bufanio, 1996; Zander & Medow, 1963). For example, Parker (1994) focused on a very specific outcome: average performance on standardized achievement tests within different schools. She found that teachers' beliefs that their department would perform well, measured as aggregated

individual cognitions about multiple levels of performance, were strong predictors of actual test performance. These approaches still focus primarily on functional outcomes but with the addition of multiple performance levels they more fully addressed *identifiable characteristics* of group efficacy (e.g., content, level, strength of the beliefs, and generality).

A third set of studies emphasizes individual level outcomes such as personal evaluations of the group, capacity to adjust within a group, and individual effectiveness, as a result of individual-level cognitions about the group's capability (Bandura, 1982, 1997, 2001; Crocker & Luhtanen, 1990; Erez & Earley, 1993; James, Lovato, & Khoo, 1994; Larson & LaFasto, 1989; Riggs & Knight, 1994; Schaubroeck, Lam & Xie, 2000; Shamir, 1990). For example, in a study of 79 work groups across three diverse settings, Riggs and Knight (1994) found that group efficacy was related to group members' individual-level satisfaction and organizational commitment. Although intriguing and important, the approaches in this set do not allow us to draw conclusions about structural characteristics of group efficacy such as the collective origins and construction nor do they fully examine the identifiable characteristics.

A final set of studies focuses on group efficacy as a moderator in the relation of various group inputs to outcomes (Jex & Bliese, 1999; Lindsley, Brass, & Thomas, 1995). Jex & Beliese (1999) examined survey data collected from 36 U.S. Army companies and found that both self and group efficacy moderated the relationship between overload and job satisfaction. Job satisfaction remained high when individuals were in units with high group efficacy regardless of the level of work load. When group efficacy was low, in contrast, job satisfaction decreased as work overload increased. Although this approach begins to address some of the issues of formation, like those in the previous set, it fails to address the important structural features of collective origins and many of the identifiable characteristics.

In summary, consistent with a functionalist approach, previous studies on group efficacy have focused on predictive capacity, demonstrating relationships with general and specific group outcomes as well as individual level outcomes. Reviewing these studies suggests that researchers have primarily represented only three of our identifiable characteristics -- content, intensity (strength primarily) and generality -- and

these were often only implicitly addressed rather than explicitly measured. Further, an element that was frequently missing is the dynamic nature of group efficacy beliefs, which we address in the next section.

Recursive Relationships

Beyond collective origins, collective construction, and identifiable characteristics, a final feature of our model captures the recursive nature of group efficacy following group performances. Group efficacy changes over time because a group is an evolving entity that itself changes as members interact with each other and with their environment. Hackman and his colleagues emphasized that “temporal phenomena were everywhere in the groups we studied and they significantly affected what happened within them” (1990: 480). The earliest experiences of the groups, together with time limits, cycles, and rhythms, affect how groups go about their work, as well as the climate and the quality of members' experiences (Gersick, 1988). Likewise, McGrath and Kelly (1986) discussed the importance of temporal effects on individual and group processes. Elevating the importance of the dynamic nature of group efficacy is a key component that distinguishes a structural approach from a functional approach because it helps us understand how interactions give rise to and reinforce group efficacy.

Changes from an initial assessment of group efficacy to a later assessment were obtained in longitudinal studies (e.g., Gibson, 2001b; Lee et al., 2002; Lester et al., 2002; Prussia & Kinicki, 1996; Sosik et al. 1997). A possible explanation lies in the group's receipt of feedback about performance. Lindsley et al. (1995) theorized about performance spirals defined as escalating poor performance. They proposed that group efficacy beliefs are central to performance spirals, moderating the impact of previous performances on subsequent performance. Riggs and Knight (1994) found that previous experiences of group successes and failures were significant and strong positive predictors of group efficacy. Successes and failures were operationalized as the group members' perceptions of demonstrated ability to perform behaviors essential to the group function. Langfield-Smith (1992) examined a fire protection brigade and found that group efficacy emerged during group interaction, and that through successive discussions, shared beliefs further developed and subsequently changed over the lifetime of the brigade as it experienced successes and failures. Silver and Bufanio (1996) examined the relationship between past performance and group efficacy and found a

significant positive correlation. Group efficacy contributed unique predictive variance in subsequent performance after controlling for past performance. Finally, Feltz and Lirgg (1998) found that group efficacy of the hockey teams significantly increased after a win and significantly decreased after a loss. However, if we return to our earlier discussion of structure and knowledge, a more complex picture emerges. Prior performance will only impact subsequent group efficacy if the newly acquired knowledge about the group, processes and context is incorporated by the team and this is most likely at the early stages of group interaction, at times of crisis, or punctuated equilibria (Gersick, 1988). For groups having a long and stable history, performance feedback is likely to be ignored or discounted. Thus at a general level, we propose:

P7: Previous successes are positively related to level of group efficacy; previous failures are negatively related to level of group efficacy. This influence is ameliorated over time and experience unless a crisis or major transformation confronts the team.

That groups have a collective sense of efficacy derived, in part, from past experience appears irrefutable; what remains indeterminate is what types of endogenous or exogenous shocks are required to shift a group from automatic to controlled processing of group efficacy. We argue that task knowledge impacts the consistency of group efficacy beliefs over time. It is also likely that many of the identifiable characteristics of group efficacy are related to consistency over time. For example, generality of beliefs, or constellation of component beliefs, likely has important implications for their perseverance across various task domains. For example, if a team has a number of interlocked, specific, facet beliefs that underlie a higher-order belief, it is likely that they will endure despite failure feedback, or performance difficulties on one element since their beliefs are collaterally supported by strongly held, interlocking beliefs. Analogous to attitude change, it is more difficult to change a person's attitude if it is based on highly interlocking beliefs, many of which are strongly held, than if an attitude is based on loosely coupled beliefs (Bandura, 1997). We expect such an effect may be stronger for certain tasks, such as those which are high in component or dynamic complexity (Wood, 1986) and thus require knowledge from a variety of sources on an on-going basis for high performance. The following proposition captures these ideas:

P8: The less dynamically complex the task, and the more general the group efficacy belief, the more

stable the group efficacy belief over time.

We also argue that the predictive validity of group efficacy will depend upon the ability of a group to process and integrate new incoming information with previously stored information. Bandura (1997: 61-63) discussed sources of “discordance between efficacy judgments and action” at the individual level, primarily citing inadequate information about the task or previous performance. We argue that for group efficacy, this effect may be exacerbated, limiting the relationships with performance, and in the extreme, resulting in a negative relationship with performance. In contrast, most previous scholars have taken a “more is better” perspective, assuming that high group efficacy is desirable. Realistically, however, due to possible vagaries in the formation process, group efficacy may reflect optimal rather than maximum levels for effective teams.

An example drawn from our airline concourse team is illuminating. When a union crisis upset the normal processes in the concourse, the team failed to adjust its belief in on-time performance capabilities. They were somewhat disillusioned and subsequently unmotivated when they were unable to meet the target. A more thorough environmental scan, leading to a more realistic degree of certainty, would have been useful and the team would have been less shocked by the missed performance target. This example illustrates the danger of unrealistically high efficacy beliefs. Gibson (1999) demonstrated such an effect for individualistic nursing teams in her sample. For these teams, extremely high group efficacy was negatively related to team performance. A structural approach suggests that these findings may occur when certain collective cognitive processes are at play in groups during efficacy formation, such as narrow information search, discussion biased by high status (but perhaps ill-informed) members, or routinization of cognitive processes without consideration of new incoming information. Based on this research, we propose the following:

P9: The strength of group efficacy (degree of certainty) has a curvilinear (inverted U-shape) relationship with team outcomes, such that efficacy beliefs that are extremely high or low are negatively related to team outcomes.

IMPLICATIONS

To move group efficacy theory forward, we see as critical the investigation of group efficacy in a manner that more readily and comprehensively incorporates these structural features of the construct,

integrating structure with function. We summarize here what we see as the most critical issues for future research.

Content and generality. We were somewhat discouraged at the trend to examine very general efficacy beliefs and would instead encourage researchers to examine varying levels of specificity and content. Capturing general beliefs of a group's capability is less helpful for understanding the factors leading to specific outcomes. The interlocking nature of efficacy beliefs in a variety of domains is an important topic for future research. Individuals appear to develop self-efficacy estimates in one domain at least partly based on efficacy beliefs in other domains (Gist & Mitchell, 1992). That is, self-efficacy beliefs across domains tend to be correlated and are modestly related to an overall level of performance competency (Bandura, 1997). This may be less likely in teams given that members incompletely share knowledge of self, others and context. Group efficacy beliefs developed for one domain may be unrelated to efficacy beliefs in another domain. This may be particularly true as groups spend less time interacting face-to-face (Gibson & Cohen, 2003). Sosik et al. (1997) suggested research examining efficacy-performance relationships in computer-mediated groups as a contrast with traditional face-to-face teams. We encourage this avenue, and further argue that the nature of virtual work more broadly (e.g., geographically dispersed members who are electronically dependent and cross-cultural differences) is likely to bring about interesting factors that impact the emergence of group efficacy.

Sharedness and collective construction. We argued earlier that the degree of group member agreement is an important feature of group efficacy. This point is analogous to the discussion of culture by cross-cultural researchers (e.g., Erez & Earley, 1993; Rohner, 1984) who describe culture as meanings imperfectly shared across an interactive set of individuals. As we posited earlier, it may not be advantageous for a group to have high homogeneity with regard to their efficacy beliefs. Inconsistency and disagreement may well provide important seeds to grow subsequent commitment for action by stimulating group members to question and integrate their diverse perspectives.

How might collective construction be represented and assessed? There are several approaches that have been used in the literature. One common method used provides a group with a rating scale to use in

forming a single response obtained through open discussion (e.g., Feltz & Lirgg, 1998; Gibson, 1999, 2001b, 2002; Lee et al., 2002; Silver & Bufanio, 1996; Zander & Medow, 1963). This approach has been utilized successfully with a variety of different contexts (e.g., nursing teams (Gibson, 1999, 2001b, 2002), sports teams (Greenlees, Nunn, Graydon, & Maynard, 1999), and manufacturing teams (Kirkman, Tesluk, & Rosen, 2001). It eliminates the calculation of statistical indicators of inter-member agreement by focusing on direct interaction within the group, and thus begins to address collective origins and construction of the construct. A popular alternative method which focuses on capturing sharedness is to average individual members' estimates of group efficacy, thus making estimates of within-group agreement possible. Stajkovic and Lee's (2001) meta-analysis demonstrated that a group discussion method and individual aggregation method produced almost identical weighted average correlations (.438 vs. .446).

As we argued, these are not simply statistical arguments or preferences. Our model suggests that the empirical assessment of group efficacy beliefs must be tied to a conceptualization of such a construction. If group efficacy is a collective construct as we argued then it seems likely that a group discussion approach will more accurately capture underlying process than an aggregation approach. However, use of a group discussion procedure may introduce possible bias. Bandura (1997: 479) argued that "a single judgment forged by group discussion masks the variability in members' beliefs about their group's capabilities...[and] can raise or lower the very belief being measured, depending on the direction the discussion takes." A direct comparison of a group discussion approach with other methods was evaluated by Gibson, Randel, and Earley (2000). In a series of studies, the authors examined three general methods for assessing group efficacy, namely, a group potency scale, aggregating members' personal estimates of their group's capability, and a collective judgment formed by the group after discussion. Results suggest that assessments of group efficacy using group discussion methods were marginally better predictors of group outcomes than assessments using aggregation methods. The assessments using the group discussion method explained more variance in the time it took groups to reach agreement and in the level of intra-group agreement than did the aggregation method or the group potency scale. Similar results were obtained in Earley (1999), Kirkman, Tesluk and Rosen (2001) and Gully, Incalcaterra, Joshi, & Beaubien (2002).

Motivational intensity. We have yet to see researchers simultaneously assess the various dimensions of intensity of group efficacy beliefs (strength, salience and valence). Like valence in expectancy theories of motivation, the combined effect of strength, salience and valence of group efficacy provide critical missing pieces in understanding the motivational impact. High group efficacy strength may mean a group is certain it can perform a task objective but whether the group follows through is likely dependent on whether the belief is relevant at a given point in time, as well as the group's desire for the outcomes of the task objective. It is therefore important for researchers to investigate group efficacy intensity as a complex multidimensional characteristic. Doing so may be especially critical as researchers grapple with timely issues such as motivating teams to innovate, effectively manage knowledge, and maintain networks of connections internal and external to the team. Although these activities demonstrate important relationships with overall effectiveness (see Earley and Gibson, 2002 for a review), they are often seen as superfluous or voluntary. Based on our model, motivating teams to engage in these activities may mean increasing not only the strength of their belief that they can perform them, but also their salience and valence.

Concerns of salience and consistency over time. Finally, it is critical for future operationalizations to capture the dynamic nature of group efficacy beliefs and provide adequate measures of group efficacy as it unfolds. We advocate the examination of recursive relationships among efficacy and effectiveness. Current levels of effectiveness influence subsequent levels of efficacy as common sense would dictate. However, based on our framework we argue that these recursive influences likely fade with time and experience as a team becomes entrenched in its own performance successes. Breaking habitual team routines is an important future research arena; failure to do so can result in very dangerous outcomes since unexpected changes may not be dealt with adequately or promptly. Ironically, our model indicates that it may be necessary to purposefully introduce exogenous shocks to a team (e.g., force membership changes or deprive the team of critical resources) so that it maintains responsiveness and awareness.

SOME CONCLUDING THOUGHTS

Nearly two decades of research has demonstrated that at an individual level, self-efficacy beliefs are a key managerial tool (Stajkovic & Luthans, 1998). Scholars have begun to explore efficacy beliefs at the

group level (Campion et al., 1993; Gibson, 1999; Prussia & Kinicki, 1986); however, they have focused mainly on a functional approach neglecting the impact of structural features. We have proposed that if group performance (rather than individual performance) is of interest, group efficacy must reflect expectations about the group as a whole, characterized by collective origins, the cognitive processes involved in formation of the beliefs over time, and numerous identifiable characteristics. We have offered such an approach, clarifying, synthesizing and extending previous research, to develop a framework that is mindful of both structure and function.

This conceptualization addresses several gaps in the literature. First, it helps us to understand *how* groups may differ with regard to their efficacy beliefs. Previous functionalist approaches have predominantly focused on level; that is, which groups in a sample indicate a high level of certainty in contrast to those having low certainty. However, one can imagine work teams having a strong sense of efficacy but lacking desire to engage in a particular work activity. We would not expect these groups to be as motivated by their efficacy as groups that have a high level of intensity (strength, salience and valence). An important conceptual issue arises from our structural approach and was identified by Bandura (1997), namely, what role do efficacy characteristics play in determining team motivation and commitment to pursue their collective activities? If we follow Bandura's argument that self-efficacy has greater predictive power than expectancy because it captures a broader assessment of personal resources and circumstance, then it seems reasonable to suggest that group efficacy judgments are not merely cognitive estimates of probability devoid of context and desirability.

Second, a structural approach helps explain why groups differ in their efficacy beliefs because it sheds light on the process of formation and sources of information used in forming a belief. This provides clues as to why some groups are motivated and others are not. Groups differ in their knowledge of member attributes represented on the team, the level of cohesion and identity, interpretations of past experiences of success and failure, and the task constraints and inducements they face. A structural approach allows us to focus simultaneously on these categories as potential sources for efficacy beliefs. For example, a group that is not performing well may have low efficacy beliefs because they are unaware of the potential expertise that

each group member brings to the group. This impacts their ability to assign roles, which, in turn, impacts identity and cohesion, and an ability to get the task done with a minimum of process loss. By understanding these features as potential sources of group efficacy, we can go a lot further in predicting and explaining the low level of team effectiveness as well as providing sources of leverage for improving performance.

A third contribution of a structural approach stems from the focus on its dynamic features. Identifying how and why group efficacy changes, its malleability, potential levers for increasing low group efficacy to boost performance, and those for potentially decreasing group efficacy when it is too high helps us employ group efficacy as a motivational tool. An approach mindful of structure and function extends group efficacy as a theory of collective motivation and not simply a factor predicting group performance. It provides a diagnostic and intervention target that managers can use to initiate, direct and maintain behavior.

There is an additional reason that a more thorough understanding of group efficacy is critical at this juncture. As organizations move forward, the prevalence of group-based work is increasing and, more critically, the configuration and implementation of these groups is evolving rapidly. Multinational teams and virtual teams, once rare, are now commonplace (Earley & Gibson, 2002; Gibson & Cohen, 2003). However, lacking a comprehensive view of group efficacy from both a structural and a functional perspective greatly inhibits our capability to understand and predict how these new forms of teams operate with regard to efficacy.

An approach to group efficacy mindful of structure holds great promise for organizations. The prevalence of team-based work activities necessitates a more thorough understanding of group performance and collective motivation. Although we seem to know a great deal about individual-level motivational processes, the more timely issue of how to motivate groups to achieve organizational objectives remains somewhat of a mystery. If we can understand the structure of group efficacy – that is, its origins, how it forms and operates, identifiable characteristics, and how it changes over time – as well as the link between group efficacy and group-relevant outcomes, then we have taken a critical step toward helping collectivities formulate what is required to perform effectively. Given the current trend toward collective collaboration, this understanding may go a long way toward increasing the effectiveness of twenty-first century groups.

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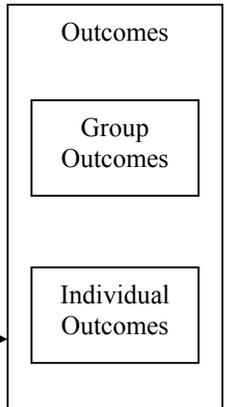
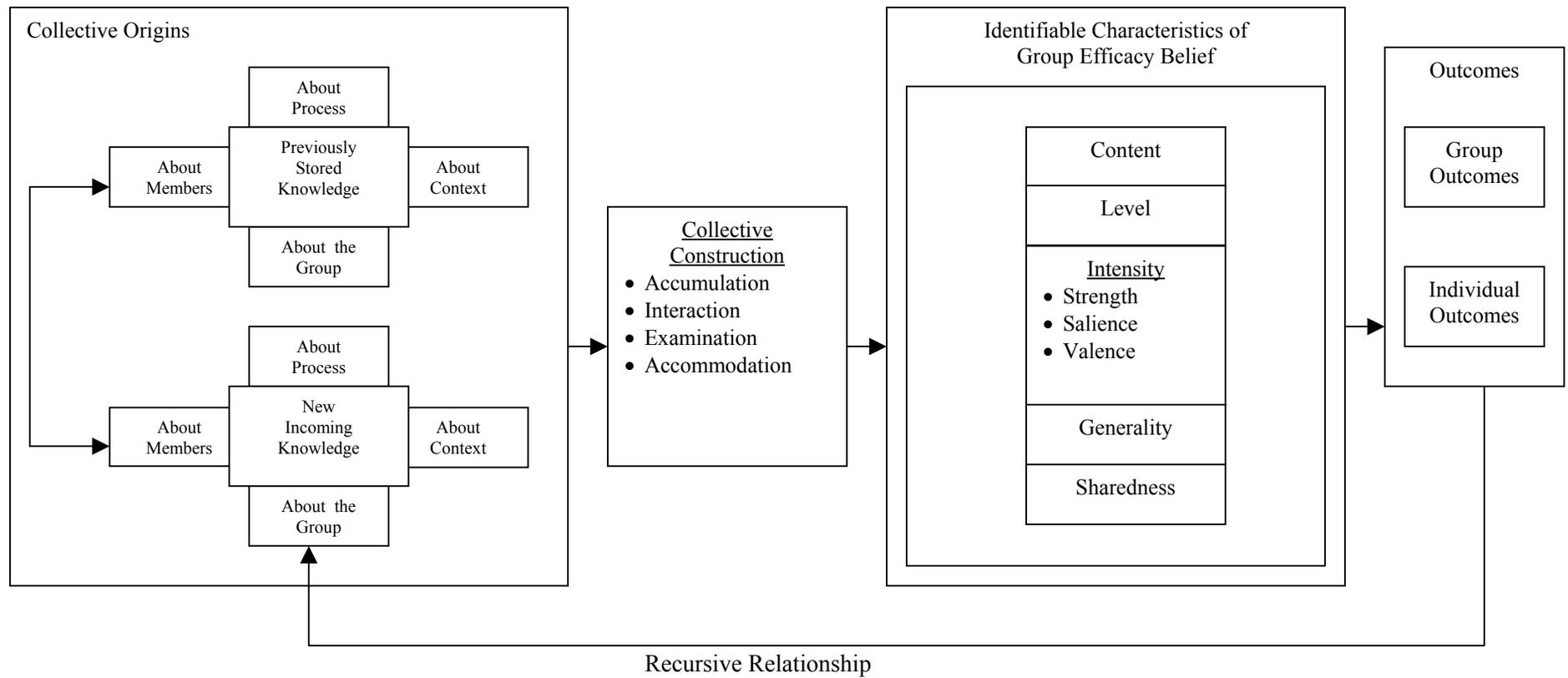
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Figure 1. Integrating the Structure and Function of Group Efficacy



Recursive Relationship