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Group Leadership: Efficacy and Effectiveness

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A model of leadership effectiveness including leadership efficacy, anxiety, and self- and collective efficacy for the task was hypothesized and tested in 2 laboratory studies. Groups of 3 people, 1 designated as leader, performed distinct employee hiring tasks in both studies. The empirical model from the combined samples indicates that leaders high in leadership efficacy experienced higher levels of self- and collective efficacy for the task and lower levels of anxiety, and lower levels of anxiety were related to higher self-efficacy for the task. Additionally, the model indicates that the leaders' self-efficacy for the task was associated with their collective efficacy, which in turn predicted the followers' collective efficacy. The followers' collective efficacy strongly predicted group performance. The results are discussed in terms of both their practical significance and their theoretical implications.

Leaders, whether in management positions or in political office, often find themselves in demanding situations. Looking around, we can point to many examples of leaders who are particularly successful in their leadership roles. Indeed, some leaders who appear quite capable are unable to apply their abilities in a particular situation, whereas other leaders who have high levels of leadership efficacy are successful in the same situation. These high-efficacy leaders may be better equipped to handle demanding situations and may transfer their efficacy to their followers, resulting in superior group performance. Thus, the purpose of this research is to examine the role of efficacy and anxiety in leader and group performance.

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Traits such as efficacy and high expectations are often included when theorists consider the issue of effective leadership (Chemers, 2001; House & Shamir, 1993). However, the empirical literature on leadership has given relatively little attention to constructs related to self-perceptions. Reviews of empirical investigations into leadership using the trait approach reveal very little work on self-efficacy, and the studies that have been undertaken have confounded important constructs, such as self-esteem and self-efficacy, and yielded mixed results (Bass, 1990; Chemers, 2001; Kipnis & Lane, 1962; Yukl, 1994). Recently, there has been renewed interest in the role of self-efficacy in leadership effectiveness (Chemers, Watson, & May, 2000; Murphy, 2002; Watson, Chemers, & Preiser, 1996). We are interested in empirically investigating the role of self-efficacy for leadership in leadership effectiveness. Specifically, we are interested in better understanding the mechanisms by which leadership efficacy results in enhanced group performance.

Leadership Efficacy

An extensive literature on self-efficacy reveals the powerful role that efficacy can play in influencing both motivation and performance (Bandura, 1997). Self-efficacy is a key construct

derived from Bandura's (1986) social–cognitive theory in which it plays a crucial role in linking ability with performance. Self-efficacy is defined as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). According to Bandura (1977), "people process, weigh, and integrate diverse sources of information concerning their capability, and they regulate their choice behavior and effort expenditure accordingly" (p. 212).

Empirical studies of self-efficacy have yielded some consistent findings. A substantial literature shows that self-efficacy influences what people choose to do, their persistence in the face of difficulties, and how much effort they put forth (Bandura, 1982; Bandura & Cervone, 1983; Bandura & Wood, 1989). Efficacy beliefs have also been shown to influence thought patterns (whether individuals think optimistically or pessimistically, erratically or strategically) and stress reactions (Bandura, 1986, 2000). Self-efficacy is also associated with work-related performances, including life insurance sales (Barling & Beattie, 1983), faculty research productivity (M. S. Taylor, Locke, Lee, & Gist, 1984), learning and achievement (Campbell & Hackett, 1986; Multon, Brown, & Lent, 1991), career choice (Lent, Brown, & Larkin, 1987), and adaptability to new technology (Hill, Smith, & Mann, 1987). Self-efficacy has additionally been shown to act as a cognitive mediator of performance (Bandura, 1982, 1997; Gist, 1989), and as Locke, Frederick, Lee, and Bobko (1984) suggested, "self-efficacy might provide an integrating mechanism between goal-setting and social-learning-theory approaches to task performance" (p. 241). In summary, self-efficacy is an important motivational construct that influences choices, goals, effort, coping, persistence, and performance.

Self-efficacy in a leadership situation, or leadership efficacy, refers to one's belief in his or her general ability to lead (Murphy, 1992). Bandura (1997) has asserted that self-efficacy is quite domain specific; indeed, domain-linked measures of perceived efficacy are more effective in predicting academic performance, anxiety, pain tolerance, diabetic metabolic control, and political participation than are omnibus locus-of-control scales (Bandura, 1997; Grossman, Brink, & Hauser, 1987; Manning & Wright, 1983; McCarthy, Meier, & Rinderer, 1985; Smith, 1989; K. M. Taylor & Popma, 1990; Wollman & Stouder, 1991). Thus, self-efficacy for leadership—not generalized self-esteem, positive affect, or locus of control—should relate to leadership effectiveness.

Leadership Efficacy and Effectiveness

Initial investigations into the role of leadership efficacy in predicting leadership, group, and organizational outcomes have shown promise (Chemers et al., 2000; Murphy, 2002; Watson et al., 1996). Chemers et al. (2000) found that the leadership efficacy of Reserve Officer Training Corps cadets was strongly related to leadership ratings by superior officers, peers, and trained observers. In two additional field studies, perceived leadership efficacy was positively related to ratings of the leaders' performance (Murphy, Chemers, Kohles, & Macaulay, 2003). In another study investigating the effects of leadership efficacy on team performance among women's and men's college basketball teams, leader efficacy was found to be a better predictor of group performance than more frequently used predictors such as previous year's win–loss record, number of returning lettered players, and number of players competing to earn a place on the team (Watson et al., 1996). Hence, on the basis of social–cognitive theory and preliminary empirical evidence, we tested the following hypothesis (see Figure 1 for a model of all hypothesized relationships):

> *Hypothesis 1:* Leadership efficacy will be positively related to group performance.

Task Efficacy: Self and Collective

Self-Efficacy for Task

As we have already mentioned, efficacy is conceptualized as being domain specific (Bandura, 1997). However, it is important not to confuse domain specificity with behavioral specificity; efficacy is not only concerned with specific behaviors enacted in specific situations (Bandura, 1997). Bandura (1997, p. 49) has maintained that efficacy assessments can be made within three levels of generality. He compared the most specific level of perceived self-efficacy, "for a particular performance under a specific set of conditions," to a more interme-

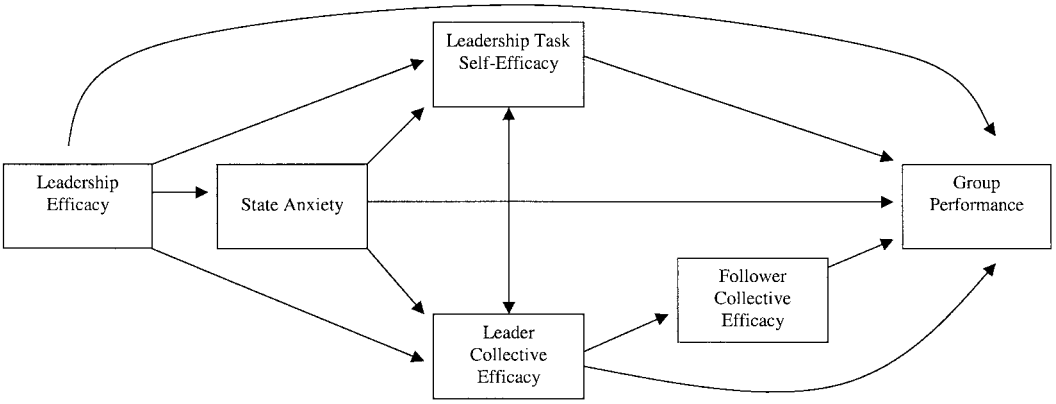

Figure 1. Hypothesized model.

diate level of self-efficacy, "for a class of performances within the same activity domain under a class of conditions sharing common properties," and finally, to the most general level of efficacy, wherein the "activities or the conditions under which they must be performed" are not specified.

When general leadership efficacy is assessed, one is attempting to gauge a certain class of performances within a generic class of settings. Although understanding a leader's efficacy in leading a particular group in a particular task is important, we refer to that as task, not leadership, efficacy. Thus, in accordance with Bandura's classification, one's sense of leadership efficacy is a more general assessment than one's sense of leading in a particular situation, or task self-efficacy. Furthermore, we reason that individuals' efficacy in their ability at a more general level will be predictive of their efficacy at a more specific level. More specifically, we propose the following hypothesis:

> *Hypothesis 2a:* Leadership efficacy will predict the leader's task self-efficacy.

Additionally, using the same logic that supported our first hypothesis, we propose the following:

> *Hypothesis 2b:* The leaders' task self-efficacy will predict performance.

Collective Efficacy for Task

Although we have highlighted the importance of self-efficacy on individual performance, a full understanding of how efficacy beliefs influence collective action requires consideration of the social nature of groups (Zaccaro, Blair, Peterson, & Zazanis, 1995). Indeed, people do not live their lives in autonomy, and many of the outcomes are a result of interdependent endeavors. In acknowledgement of this point, Bandura (1997) extended social–cognitive theory's conception of human agency to include collective agency. As defined by Bandura (1997), collective efficacy "represents a group's shared belief in its conjoint capabilities to organize and execute the courses of action required to produce given levels of attainment" (p. 477).

It is important to note that collective efficacy is not simply an extension of self-efficacy principles from the individual to the aggregate (Bandura, 2000; Zaccaro et al., 1995). Group dynamics theorists and researchers have pointed out that the behavior of a group cannot adequately be predicted by summing up behaviors of the individual members (Carron, 1988). A group's performance is the result not simply of the aggregation of the shared abilities, skills, and knowledge of the individual members but also of the interactive and synergistic dynamics of their exchanges (Bandura, 2000). Although they are independent constructs, research has shown self- and collective efficacy to be related. Parker (1994) found that, at least in some domains, self-efficacy and collective efficacy are related but independent constructs. Researchers who examined the relationship between self- and collective efficacy in the academic domain found that collective efficacy strongly predicts

variation in teacher efficacy above and beyond the variance explained by other school contextual factors including student achievement and socioeconomic status (Goddard & Goddard, 2001). Additionally, Fernandez-Ballesteros and colleagues found that perceived individual efficacy contributed substantially to a sense of collective efficacy to effect social change through unified action (Fernandez-Ballesteros, Diez-Nicolas, Caprara, Barbaranelli, & Bandura, 2002). Thus, we hypothesize the following:

> *Hypothesis 3a:* The leader's task self-efficacy and task collective efficacy will be associated.

In addition, we propose that leaders' efficacy in their general ability to lead a group will be predictive of their efficacy in the groups' performance under their leadership. More precisely,

> *Hypothesis 3b:* Leadership efficacy will predict the leader's task collective efficacy.

The recent demonstration of collective efficacy as a key determinant of work team effectiveness has sparked the need for examining how collective efficacy can be fostered within teams (Lindsley, Brass, & Thomas, 1995). One possibility concerns the transference of the group leader's expectations to the members of the group. The Pygmalion effect refers to the notion that belief in potential creates potential. That is, by being believed in, the individual becomes that person whom he or she is perceived to be: the self-fulfilling prophecy. The Pygmalion effect originated with the discovery of enhanced learning as a result of higher teacher expectations (Rosenthal & Jacobson, 1968). This phenomenon has been shown to be present in situations ranging from students in a classroom to adult military trainees at a military base (Eden & Shani, 1982; Rosenthal & Jacobson, 1968).

In accordance with the Pygmalion effect, leaders' high levels of collective efficacy for a task may lead to higher collective efficacy among group members, resulting in self-fulfilling prophecies of heightened group performance. Indeed, in recent work by Pescosolido (2001), the informal group leaders' self-efficacy was found to be strongly linked to the collective efficacy of the group members, and he suggests a causal link from leader self-efficacy to group collective efficacy. Thus, we propose the following link between leader expectations and follower expectations:

> *Hypothesis 4:* The leaders' collective efficacy for the task will predict the collective efficacy of the followers.

Group Effectiveness: The Role of Collective Efficacy

Although we have already discussed the relationship between self-efficacy and individual performance, a full understanding of how efficacy beliefs influence group performance requires consideration of the group's collective efficacy (Bandura, 2000; Zaccaro et al., 1995). A growing body of research indicates the importance of perceived collective efficacy on group functioning. A recent meta-analysis by Stajkovic and Lee (2001) showed that collective efficacy is strongly related to group performance, with an average correlation of .45, and further showed that the relationship between group efficacy and performance increases as tasks become more interdependent. The motivational and behavioral effects of perceived collective efficacy have been examined using two approaches: by experimentally manipulating perceived efficacy and by examining naturally developed levels of collective efficacy (Bandura, 2000). Using the first approach, Durham, Knight, and Locke (1997) examined the role of collective efficacy in a computerized tank battle simulation, Prussia and Kinicki (1996) conducted a laboratory study wherein groups performed a brainstorming task, and Hodges and Carron (1992) had high school students collectively engage in a muscular endurance task. These studies, as well as others (Earley, 1994), have revealed that the higher the perceived collective efficacy is, the higher the groups' motivation, the greater their persistence in the face of adversity, and the greater their performance will be.

The second group of studies has examined naturally developed beliefs of collective efficacy, such as in undergraduate students working on a model construction task (Silver & Bufanio, 1996). Through these studies, the role of collective efficacy in various social systems has been

examined (Bandura, 2000). The role of collective efficacy has been examined in educational systems (Bandura, 1997), combat teams (Jex & Bliese, 1999; Lindsley, Mathieu, Heffner, & Brass, 1994), business organizations (Earley, 1994; Hodges & Carron, 1992; Little & Madigan, 1994), urban neighborhoods (Sampson, Raudenbush, & Earls, 1997), and athletic teams (Carron, 1984; Feltz & Lirgg, 1998; Mullen & Cooper, 1994). For example, examining the performance of volleyball teams, Spink (1990) found that teams with high levels of collective efficacy finished higher in the volleyball tournament than teams with lower collective efficacy, and Watson et al. (1996) found that a basketball team's collective efficacy was strongly predictive of its win–loss record during the season. Overall, the research on collective efficacy has revealed that people's beliefs in their collective efficacy influence how well they use their resources, how much effort they put into their group task, their persistence in the group endeavor, and their future goals (Bandura, 2000).

As mentioned before, collective efficacy is not simply an extension of self-efficacy principles from the individual to the aggregate (Bandura, 2000); we believe the two are independent, yet related, constructs. Whereas self-efficacy entails perceived personal efficacy in pursuits and should be important in predicting one's unique performance in the task at hand, collective efficacy should be important in gauging the performance of the interdependent action of collectives. Thus, to the extent that group performance is dependent on the interdependent action of the group members, we propose the following two hypotheses:

> *Hypothesis 5a:* The leaders' collective efficacy will predict group performance.
>
> *Hypothesis 5b:* The followers' collective efficacy will predict group performance.

Leadership Efficacy in Demanding Situations

Although the underlying mechanism by which performance is enhanced by leadership efficacy is most likely not unidimensional but rather multifaceted, one line of research highlights the importance of efficacy in demanding situations. Self-efficacy aids in determining whether one will cope with aversive experiences, how long they will cope, and how much effort they will expend on their coping efforts (Bandura, 1977). In 1982, Bandura and his colleagues demonstrated that there was a close correspondence between coping behavior and stated levels of perceived self-efficacy. Another study, examining physiological arousal as a function of the level of perceived self-efficacy (Bandura, 1982), demonstrated that participants with high levels of self-efficacy for the task were viscerally unruffled; however, those with lower levels of self-efficacy exhibited heart rate acceleration and increases in blood pressure both when anticipating and performing the task. Individuals with high self-efficacy exhibit little stress reaction, whereas those with low self-efficacy experience a high level of anxiety and autonomic arousal (Bandura, Cioffi, Taylor, & Brouillard, 1988).

Recent empirical investigations into leadership effectiveness revealed that the relationship of leadership efficacy to leader, group, and organizational performance becomes stronger under more stressful and demanding situations within a self-regulative model of leadership (Murphy, 2002). Murphy (1992) found that under stressful situations, leaders high in leadership efficacy had better performing groups than leaders low in leadership efficacy. In another laboratory study, Watson and Chemers (1995) reported that under adverse conditions, leaders with high levels of self-efficacy for leadership persisted longer on a task than leaders with low levels of efficacy and also reported more positive perceptions of their overall performance. Additionally, Murphy and Kohles (1996) found that managers with high leadership self-efficacy reported fewer stress symptoms and lower levels of role stress than managers low in leadership efficacy.

Certainly, the experience of less anxiety by high-efficacy leaders, in situations filled with potential stressors, may play a key role in the enhanced performance, task self-efficacy, and collective efficacy for the task of those leaders. Anxiety is defined as "a state of anticipatory apprehension over possible deleterious happenings" (Bandura, 1997, p. 137). Because "high arousal can debilitate performance, people are more inclined to expect success when they are not beset by aversive arousal than if they are

tense and viscerally agitated" (Bandura, 1997). Bandura (1988) tested treatments aimed at eliminating emotional reactions to threats and found heightened beliefs in coping efficacy and corresponding improvements in performance. The preceding discussion suggests the following hypotheses:

> *Hypothesis 6a:* Leadership efficacy will negatively predict anxiety in a leadership situation.
>
> *Hypothesis 6b:* The leader's anxiety in a leadership situation will negatively predict task self-efficacy, task collective efficacy, and group performance.
>
> *Hypothesis 6c:* The relationship between leadership efficacy and anxiety, task self-efficacy, collective efficacy, and group performance will be stronger under highly demanding situations. More precisely, we hypothesize an ordinal interaction between leadership efficacy and level of situational demand on all four variables.

A summary of all of the proposed relationships is depicted in Figure 1; we investigated these relationships in two laboratory experiments. To test the hypotheses, we asked groups of 3 people, one designated as leader, to conduct employee evaluation and placement tasks. The leaders' leadership efficacy, task self-efficacy, and self-reported anxiety levels were assessed. Measures of collective efficacy for the task were taken from all group members, and group performance was assessed. Given that the group is the unit of analysis and that structural equation modeling, a large-sample statistic, was used to test the proposed hypotheses, data from both studies were aggregated for analyses. First we present the methodology for both studies, and then we discuss the results.

Method for Study 1

Participants

One hundred seventeen students (39 groups of 3) from a small West Coast liberal arts college participated in this study. Volunteers were recruited from classes and were informed that every member in the best performing group would receive a gift certificate for a local music store.

Measures

All self-report measures were scored by summing over the items and then dividing by the number of items. Cronbach's alphas for each scale are shown in Table 1.

Self-Efficacy for Leadership. This measure was developed by Murphy (1992) to measure individuals' confidence in their general leadership abilities. Participants were asked to rate their leadership abilities on eight 5-point Likert-type scales from *strongly agree* to *strongly disagree*. Example statements include "I am confident of my ability to influence a work group that I lead" and "I know what it takes to keep a work group running smoothly." Past studies have found reliability ranging from .75 to .86 and convergent and discriminant validity with measures such as self-esteem and self-ratings of perceived leadership experience (Murphy, 1992; Murphy & Ensher, 1999; Murphy et al., 2003).

State Anxiety Inventory (Form Y). The state anxiety portion of the State–Trait Anxiety In-

Table 1
Scale Ranges, Means, Standard Deviations, and Standardized Item Alphas for Scales

Scale	Range	*M*	*SD*	α Study 1	α Study 2
Self-Efficacy for Leadership	1–5	3.73	0.51	.75	.86
Leader State Anxiety Inventory	1–4	1.75	0.43	.90	.94
Leader Self-Efficacy for Task	1–5	3.74	0.67	.80	.75
Leader Collective Efficacy for Task	1–5	4.00	0.62	.85	.86
Follower Collective Efficacy for Task	1–5	3.96	0.52	.86	.84

Note. All constructs are coded such that higher scores indicate more of that construct.

ventory (Spielberger, 1983) was used to measure the individual's anxiety levels at the time taken. The scale consists of 20 statements that participants respond to on a 4-point Likert-type scale (ranging from *not at all* to *very much so*). The scale has been used in numerous settings as a reliable and valid measure of state anxiety (Spielberger, Gorsuch, & Lushene, 1970). Median Cronbach's alpha for this version is reported to be .92 (Spielberger, 1983). Furthermore, a meta-analysis of more than 2,000 studies demonstrated the validity and reliability of both state and trait portions of the inventory (Spielberger, 1985).

Self-Efficacy for the Task. Before engaging in the second epoch of the task, the leaders' self-efficacy for the task at hand was assessed. The Self-Efficacy for the Task scale was adapted from Riggs, Warka, Babasa, and Betancourt's (1994) Personal Efficacy Belief Scale. Research shows an internal consistency of .86 and has shown this scale to be related to individual performance as well as organizational commitment and job satisfaction (Riggs et al., 1994). The original 10-item scale was used to assess personal efficacy in a workplace. The modified scale used only 4 items, selected for their appropriateness for the laboratory task, and the items were reworded to refer to a person's efficacy belief about the task rather than their job. Participants responded on a 5-point Likert-type scale (ranging from *strongly disagree* to *strongly agree*). Sample items include "I have confidence in my ability to do this task" and "I have the skills needed to perform this task well." Other forms of task self-efficacy questionnaires have been used by researchers in this area with good success (Bandura, 1997).

Collective Efficacy for the Task. Perceived collective efficacy was gauged by assessing members' appraisals of the groups' capability as a totality (Bandura, 2000). Adapted from Riggs et al.'s (1994) Collective Efficacy Belief Scale, the Collective Efficacy for the Task scale consists of four items (ranging from *strongly disagree* to *strongly agree*) assessing one's perception of the group's ability to perform the task at hand. Items include "The group I work with has above average ability" and "This group is not very effective." Riggs et al.'s (1994) original scale consisted of seven items that asked individuals to rate the department in which they work. For this study, four items from that scale were modified by replacing the word *department* with *group* to assess collective efficacy for the group working on the experimental task. The original scale has good internal consistency (Cronbach's $\alpha = .88$) and is related to group performance (Riggs et al., 1994). Furthermore, a recent meta-analysis of collective efficacy showed a strong relationship to group performance (Stajkovic & Lee, 2001).

Task performance. Although participants engaged in two epochs of task performance, the first phase existed simply to provide participants with experience on which to base their self- and collective efficacy for the task evaluations. Thus, group performance was based on task execution during the second task phase; however, analyzing the data using the first epoch of task performance yields nearly identical results as when examining the second epoch.

Specifically, in this study we assessed group quantitative performance as measured by the number of evaluations completed in the second epoch. Quantitative performance was used in this study because, owing to ceiling effects, there was little to no variability in quality, or accuracy, of the employee appraisals.

Procedure

Task. The task used was Saavedra, Earley, and Van Dyne's (1993) version of Marcic's (1989) merit bonus activity classroom exercise. It was a performance appraisal task requiring participants to read employee descriptions and subsequently recommend merit bonuses. The employee descriptions did not contain information regarding their current salary. The groups, consisting of two followers and one leader, rated each employee on four factors: effort, ability, performance, and friendliness. The employees were rated on a 3-point scale: *below average*, *average*, or *above average*. An example of an employee description is "Carol Adams, Scheduling Department: Even though Carol is below average in skill level, she works unusually long hours and turns in satisfactory results. She is not liked by her coworkers." After reading the descriptions, the groups rated each employee on the four factors and then determined a recommended merit percentage increase on the basis of departmental weightings that were provided. An example of these factor weightings, for the Marketing Depart-

ment, is effort: .10, ability: .40, performance: .21, and friendliness: .29.

Procedural overview. One member from each group was randomly assigned to be group leader. Leaders completed the Self-Efficacy for Leadership scale (Murphy, 1992) while the followers waited in the waiting room. The researcher briefed the leaders on the process of determining the merit increases by working through one example and told the leaders that it was their responsibility to explain the task to the followers. The leaders were then informed that their duties were to motivate and encourage the group to perform well; further, they were not to take a methodical role in task production but rather they were there only to assist, motivate, and take responsibility for the group's performance. Additionally, the leaders were informed of how the groups were to operate: One member was to score the employees and write down the department weightings, while the other member computed the weighted scores and the recommended merit increase. Leaders were informed that the average number of appraisals completed in 10 min was 20. This was actually about twice as many as a typical group could complete; the high standard was imposed to create a highly motivating situation.

To analyze the role of leadership efficacy in demanding situations, we manipulated the amount of situational stress by creating moderately and highly demanding situations. Specifically, to create a stressful leadership situation, leaders in the highly demanding condition were given three false pieces of information. First, they were told that the researcher was in the room to monitor their leadership abilities. Second, they were told they were being videotaped both for data collection purposes and for the Office of Career Development Services at the college (which was ostensibly interested in reviewing the leaders' abilities). Finally, they were told that at the completion of the group task they were to give an 8–10 min presentation regarding their group's dynamics to the director of the college's leadership institute, an institute that sponsors a sound education program of leadership studies. Previous research has shown that expecting to give a speech is highly effective in increasing participants' anxiety (Anthony & O'Brien, 1999). The leaders placed in the moderately demanding condition were told that the researcher was in the room in case something happened and that they were being videotaped only for data collection purposes. They were told nothing about presenting to the director.

The leaders instructed the group members how to perform the task, and before engaging in the task the leaders completed the State Anxiety Inventory. The group was then given 10 min to perform the task, and at the end of the epoch the group was informed that they were to perform the task a second time. The purpose for having two periods of task completion was to give the participants experience with the task on which to base their self- and collective efficacy for the task appraisals. Prior to the second task session, the leader completed the Self-Efficacy for the Task measure, and all group members completed the Collective Efficacy for the Task measure. Participants were not provided feedback on their performance during the first epoch, and they were given a different group of employees to appraise during the second period of task completion. At the end of the experiment, all participants were thoroughly debriefed about the nature of the experiment, with special attention given to participants in the experimental group. All members of the best performing group were given a gift certificate as promised.

Method for Study 2

The method for Study 2 was similar to that of Study 1. The primary differences were an increased sample of groups and a new task. We chose a different group task both to increase generalizability and to examine qualitative, as well as quantitative, performance.

Participants

Two hundred sixteen students (72 three-person groups) from a small West Coast liberal arts college participated in this study. Volunteers were recruited from classes and dorms, where sign-up sheets were posted. The mean age of the participants was 19.34 (range, 17–26). There were 96 men 117 women in the total sample (3 people failed to provide their gender). Of the leaders, there were 29 men and 42 women, although 1 leader failed to provide his or her gender. Participants were told that each member of the best performing group would receive a $50 gift certificate to a local music store.

Measures

The self-report measures used in this study were the same as those used in the first study: the Self-Efficacy for Leadership scale (Murphy, 1992), the State Anxiety Inventory (Spielberger et al., 1970), the Self-Efficacy for the Task scale, and the Collective Efficacy for the Task scale.

Task performance consisted of both a quantity and a quality measure. Quantity was measured by the total number of job placements each group completed. Quality was measured by comparing the groups' job placements to a suitability rating calculated by two experts (industrial organizational psychologists). Each applicant received a suitability rating for each of the positions.

Procedure

Task. The task used in this study consisted of evaluating job descriptions and the resumes of actual job candidates. The groups were given four stacks of materials consisting of job descriptions for 13 jobs, 70 resumes from actual job applicants, blank sheets for notes entitled "Evaluation of Job," and blank sheets for notes entitled "Evaluation of Applicant." Groups were to imagine that they were a team of human resources professionals. They were to evaluate each of the 13 positions available and find which applicants would be suitable for which positions. They were to match as many applicants and jobs as possible in 30 min.

Procedural overview. Just as in Study 1, one member from each group was randomly assigned to be the group leader. Leaders were asked to complete the Self-Efficacy for Leadership scale (Murphy, 1992) while the followers waited in the waiting room. The researcher then explained the task to the leader and told the leader that it was his or her responsibility to explain the task to the followers. The leaders were also told that they were responsible for the group's performance.

Just as in Study 1, we manipulated situational stressors in order to analyze the role of leadership efficacy in demanding situations. The stress manipulation was similar to that used in Study 1. Leaders in the highly demanding condition were told that they were being videotaped so that experts in the Office of Career Development Services at the college could evaluate their leadership ability. They were also told that they would have to give a presentation regarding their group's performance to the director of the leadership institute at the completion of the group task. The leaders placed in the moderately demanding condition were told that the videotape was for collection purposes only and may or may not be used; they were told nothing about presenting to the director. Participants were debriefed in the same manner as in Study 1, and again, members of the best performing group were given a gift certificate.

Results

Treatment of the Data

Self-report responses from the two group followers were aggregated to the dyadic level for analysis (i.e., individual responses per item were summed and divided by 2). The data were aggregated because the responses of the members of the dyads were not completely independent and thus should not be analyzed as separate data points (Kenny & LaVoie, 1984); this aggregation will also reduce the impact of individual differences on the perception of the group attributes and conduct (Simons & Peterson, 2000).

In Study 2, only 61 of the 72 groups completed the answer sheets within the allotted time. The other groups did not write down their answers, so they received scores of 0. However, such scores may not have accurately reflected those groups' performance, as many of the groups had assembled several resumes and job positions and had placed them in stacks around the room. To normalize the distribution and avoid misrepresenting the groups' actual performance, we excluded all groups that did not complete a rating form from the analysis. The quality and quantity measures were still nonnormal, so a square-root transformation was conducted. The two measures of performance (quality and quantity) correlated at .90 and were therefore averaged to create a single measure of performance.

Data from the 39 groups in Study 1 and the 61 groups in Study 2 were combined for analyses ($N = 100$ groups). Performance scores were converted to standard scores prior to data aggregation.

Descriptive Statistics, Reliability of Measures, and Correlation Matrix

Table 1 presents the scale ranges, means, standard deviations, and reliability for all measures. Table 2 presents a correlation matrix for all variables in the combined sample.

Overview of Statistical Analyses

The main purpose of this research was to understand the roles that efficacy and anxiety play in leadership effectiveness. First, we examined the role that situational challenge played in leaders' anxiety, efficacy, and group performance. Next, we tested the hypothesized model. We tested the fit of this model using the structural equation modeling package Amos (Arbuckle, 1997).

Situational Demand Manipulation Hypotheses

Analyses of differences in self-reported anxiety levels between the two conditions (moderately and highly demanding) confirmed that participants who performed under highly demanding conditions reported significantly more anxiety ($M = 1.90$, $SD = 0.45$) than those participating under moderately demanding conditions ($M = 1.64$, $SD = 0.37$), $t(98) = -3.27$, $p < .01$.

We hypothesized that the relationship between leadership efficacy and state anxiety, leader task and collective efficacy, and performance would be stronger under highly stressful conditions. We tested these moderation hypotheses by examining the interaction between leadership efficacy and stress condition on all four outcome variables in four linear regression models. The hypotheses were not supported. The interaction between leadership efficacy and stress was not significant for anxiety, task efficacy, or performance (all interaction ps $> .20$), and although there was a significant interaction on the leaders' collective efficacy ($\beta = 1.58$, $p < .05$), it was not in the predicted direction. Contrary to predictions, the interaction indicated that the positive relationship between leadership efficacy and leader collective efficacy was stronger in the less demanding, not the more demanding, situation.

Hypothesized Model

Using Amos, we conducted structural equation modeling to examine the relationships between leadership efficacy, anxiety, leader task efficacy, leader collective efficacy, follower collective efficacy, and group performance. Figure 1 illustrates the hypotheses delineated in the introduction. All variables are measured, and the absence of a line connecting variables implies no hypothesized direct effect.

Model Estimation

Maximum likelihood estimation was used to estimate the model. Although we still cannot confirm or disprove the theoretical model (Pedhauzer, 1982), goodness-of-fit tests determine whether the model being tested should be accepted. Jaccard and Wan (1996) recommend the use of at least three fit tests, one from each of the following categories so as to reflect diverse criteria: goodness-of-fit tests based on predicted versus observed covariances, goodness-of-fit tests comparing the given model with an alternative model, and goodness-of-fit tests based on

Table 2
Intercorrelations Among Study Variables (n = 100)

Scale	1	2	3	4	5	6
1. Self-Efficacy for Leadership	—					
2. Leader State Anxiety Inventory	−.40**	—				
3. Leader Self-Efficacy for Task	.50**	−.40**	—			
4. Leader Collective Efficacy for Task	.22*	−.08	.43**	—		
5. Follower Collective Efficacy for Task	.04	.02	.25*	.39**	—	
6. Performance measure	.02	.09	.04	.02	.36**	—

* $p < .05$. ** $p < .001$.

predicted versus observed covariances but penalizing for lack of parsimony.

Analysis of fit statistics from each of the above categories indicated that the path model was acceptable. The overall chi-square test for the model was not significant, $\chi^2(3) = 2.82$, $p = .42$, indicating that there was no statistically significant departure from the specified model. A measure of residual fit, the root-mean-square error of approximation (RMSEA), was .00. Browne and Cudeck (1993) suggested that .05 or less indicates a close fit. The goodness-of-fit index (the comparative fit index; CFI) was 1, indicating a very good fit (Arbuckle, 1997). The empirical model is presented in Figure 2 with standardized coefficients.

As can be seen in Figure 2, 7 of the 12 hypothesized paths were significant. Specifically, leadership efficacy directly predicted anxiety, task self-efficacy, and leader collective efficacy. The leaders' anxiety predicted their task self-efficacy, which in turn was significantly associated with their collective efficacy. The leaders' collective efficacy predicted the followers' collective efficacy, which in turn predicted group performance. Contrary to our predictions, leader efficacy did not predict performance, and leader anxiety did not predict collective efficacy or performance. Additionally, performance was predicted by neither leader task efficacy nor leader collective efficacy.

Although we have theoretical reasons to predict that leader collective efficacy predicts follower collective efficacy, the reverse association is plausible. We tested the empirical model with the path between leader collective efficacy and follower collective efficacy reversed—that is, with follower collective efficacy predicting leader collective efficacy. The fit of this model was significantly worse than the hypothesized model, $\chi^2(3, N = 100) = 9.63$, $p = .04$, CFI = .94, RMSEA = .14. Again, although structural equation modeling does not provide statistical evidence of a causal link between variables, here we have both theoretical and empirical support that it is the followers' collective efficacy that is predicted from leaders' collective efficacy.

General Discussion

Leaders, whether in management positions or in political office, often find that overwhelming job demands leave them feeling intense pressure or anxiety. However, because of their position, leaders are expected to overcome their own stress and help their work groups cope with the situation. These pressures and their corresponding negative effects can be debilitating to a leader's effectiveness. The current studies demonstrate the importance of follower efficacy in determining group performance and explore how leader self-efficacy is an important factor in determining follower collective efficacy. Our model of group effectiveness encompasses leadership efficacy, task efficacy, collective ef-

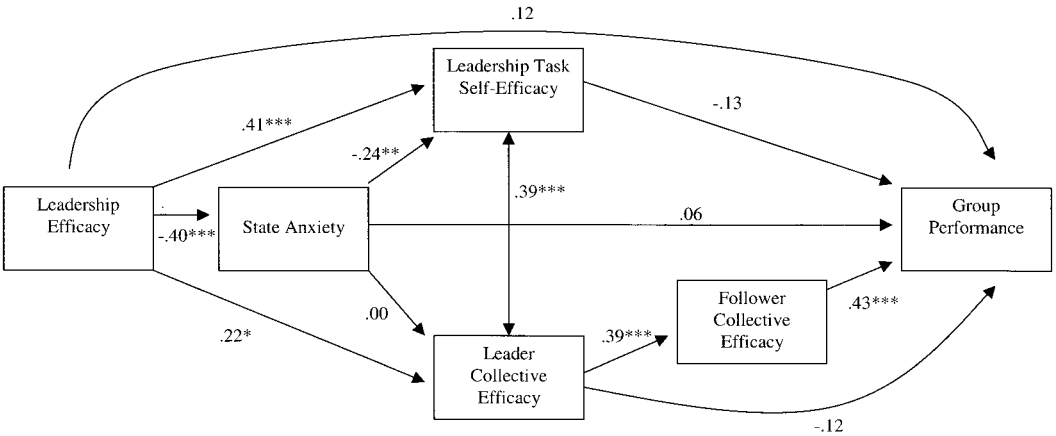

Figure 2. Empirical model from the combined samples. * $p < .05$. ** $p < .001$.

ficacy, and group performance (see Figure 1) and was tested with two laboratory experiments.

Contrary to previous experiments (Chemers et al., 2000; Murphy et al., 2003), leadership efficacy did not directly predict group performance in these experiments. We offer a couple of possible explanations for this. First, a leader's self-efficacy works over time to influence performance, and we may not have detected the relationship owing to the short-term nature of the tasks. Additionally, in Study 2 the leaders helped the followers evaluate each of the positions available and find which applicants would be suitable for which positions, thus rendering them less able to focus on their leadership duties. Finally, because it was a collective task, it is not too surprising that the leader did not have a strong direct effect on task outcomes. Although there was not a *direct* link between leadership efficacy and group performance, leadership efficacy did predict leader collective efficacy, which strongly predicted follower collective efficacy and, in turn, group performance.

Leadership efficacy was associated with the leaders' self- as well as collective task efficacy in the present studies. As Bandura (1997) suggested, efficacy assessments can be made within different levels of generality. Our findings indicate that self-efficacy assessments across levels of generality (within the domain of leadership) are linked. Importantly, our results also demonstrate that *self-* and *collective* efficacy assessments across levels of generality are related. Additionally, the leaders' self-efficacy and collective efficacy for the task were strongly associated, supporting previous research indicating that self- and collective efficacy are independent but related concepts (Parker, 1994).

We examined the possible transference of expectations from leader to follower. Indeed, the more the leaders believed their group could perform the task at hand, the more the followers believed it as well. That is, the leaders may have communicated their high levels of collective efficacy to the followers, and the followers adopted the view themselves. Just as the ancient Greek king of Cyprus, Pygmalion, was able to animate a statue of a perfect woman through his belief and desire (and a little assistance from Venus), leaders may be able to create better followers by believing in them. Leader collective efficacy appears to be an important factor in predicting followers' collective efficacy.

The hypotheses that the leaders' self- and collective efficacy for the task would predict performance were not borne out. It appears that in situations in which group performance is highly dependent on the action of the group members (as was the case in both studies), the leaders' self- and collective efficacy for the task is not directly predictive of group performance. However, in the current research the followers' collective efficacy predicted group performance. That follower collective efficacy should predict group performance is evidenced in previous research (Gibson, 2001; Prussia & Kinicki, 1996). Prussia and Kinicki (1996) conducted a study to show that social–cognitive theory predictions are the same, or *isomorphic*, at the individual and group levels of analysis. Their results support the notion that collective efficacy serves a similar role in the regulation of group behavior as self-efficacy does for individual behavior. Our research strongly supports the predictive value of the emergent group-level attribute of collective efficacy.

Although manipulation checks revealed that individuals were indeed more anxious under the highly, as opposed to the moderately, demanding situations, the moderation hypotheses were not supported. The only significant interaction was not in the predicted direction: The relationship between leadership efficacy and task collective efficacy was stronger in the moderately, not the highly, demanding condition. It may be that in a highly demanding condition, the leaders feel that less of the task is in their control, thus weakening the relationship between their leadership efficacy and their belief in the collective ability of the group. In terms of expectancy theory, the leaders' effort in the less demanding situation may be more directly related to the outcomes of the group, whereas in the highly demanding situation, the effects of their efforts on the outcomes may be less well known. Although this is pure speculation, if the effect is replicable, future research should attempt to elucidate this finding.

Consistent with previous research (Murphy, 1992; Murphy & Kohles, 1996; Watson & Chemers, 1995), however, leaders with high levels of leadership efficacy in our experiment experienced less anxiety in the leadership situation than low-efficacy leaders. These results support more general findings that individuals with high self-efficacy exhibit little stress reac-

tion whereas those with low self-efficacy experience a high level of anxiety (Bandura, Cioffi, Taylor, & Brouillard, 1988).

Our data show that efficacy in one's general ability to lead predicts anxiety in a specific leadership situation, and this anxiety in turn predicts the leaders' efficacy in the task at hand, or task self-efficacy. Thus, in addition to supporting previous research that suggests that perceived efficacy contributes to experienced anxiety, our results also point to the predictive role that anxiety plays in determining one's sense of efficacy in a specific task. In these studies, however, the leaders' anxiety did not directly affect group performance. These findings may be explained by the nature of the tasks: Group performance was a result primarily of the followers' inputs in Study 1 and of all three group members' inputs in Study 2. Perhaps a composite gauge of the followers' and the leaders' anxiety would predict group performance.

In sum, the results from these studies yielded support for 7 of the 12 hypothesized relationships. The empirical model derived from both studies indicates that leaders high in leadership efficacy experienced higher levels of self- and collective efficacy for the task and lower levels of anxiety, and lower levels of anxiety were related to higher self-efficacy for the task. Additionally, our model indicates that the leaders' self-efficacy for the task was associated with their collective efficacy, which in turn predicted the followers' collective efficacy. The followers' collective efficacy strongly predicted group performance. Contrary to our hypotheses, leader anxiety did not predict leader collective efficacy, and neither leader anxiety, leader self-efficacy, nor leader collective efficacy predicted performance.

The primary limitations of this research include the small sample size for using path-analytic techniques, the use of ad hoc groups, and the use of undergraduate students. First, although not insufficient, our sample size was less than ideal; Kline (1998) recommended at least 5 to 10 times as many cases as parameters for ideal significance testing of model effects. To increase the parameter-to-case ratio, we combined data from both studies when conducting the structural equation modeling. The remaining two weaknesses speak to the limited generalizability of these studies. The primary analyses of these studies were based on data collected from ad hoc groups composed of undergraduate students. The use of ad hoc groups and undergraduate students is a derivative of the chosen methodology: laboratory experimentation at an undergraduate institution. This is one of only a few laboratory experiments investigating leadership processes, and as a research tool, laboratory research has a great deal to offer in the study of leadership (Wofford, 1999).

Although this research involved inexperienced individuals, assembled randomly and working together for a brief amount of time, it does have external validity. Many decision-making and task groups in real life are ad hoc groups in which the members do not know each other, and they make important decisions and perform important tasks in a short amount of time. For example, members of emergency task forces established to deal with disasters often convene without prior knowledge of each other. Many members are inexperienced community members willing to help, and they often make important decisions or perform important tasks and dissolve shortly thereafter. Furthermore, in both studies we awarded a prize to the best performing group to encourage good performance. This was done to mimic the incentives work teams typically receive for good performance, cost savings, and other important work outcomes.

We do not suggest that our model generalizes to intact groups with a history; indeed, that is an empirical question for further research. However, we do note that many of the individual paths of our model have been found in intact groups, and this suggests that the model may generalize to teams that have a history. For example, collective efficacy was strongly predictive of the win–loss record in women's and men's college basketball teams (Watson et al., 1996). Also, Murphy and Kohles (1996) found that managers with high leadership self-efficacy reported lower levels of stress than managers low in leadership efficacy.

The theoretical and practical implications of these findings are considerable. This research contributes to social–cognitive theory (Bandura, 1997) in a number of ways. First, we provided evidence that efficacy assessments across levels of generality (within the same domain) are linked; there was a direct link between leadership efficacy and both task self-efficacy and collective efficacy. Second, we

have provided additional evidence that group-level performance is predicted by the collective efficacy of the group members. Finally, our data indicate that one potential source of collective efficacy among group members is the collective efficacy of their leader.

In attempting to flesh out our model of leadership efficacy, anxiety, and performance, in the future, researchers should attempt to experimentally determine the causal association between leader collective efficacy and followers' collective efficacy. Additionally, future research should focus on how leaders' high collective efficacy is communicated to their followers. One hypothesis for this phenomenon is that high-efficacy leaders' social and nonverbal skills act to transmit their higher levels of expectancy (Friedman & Riggio, 1999; Riggio, 2001). Additionally, researchers should identify the conditions under which leadership efficacy predicts group performance. Finally, another promising avenue of research includes understanding the role that followers' anxiety, as well as leaders' anxiety, plays in group performance.

Practically speaking, our findings have implications for leadership development. Through this line of research we hope to learn why and how leaders who have high levels of efficacy in both their leadership ability and the potential success of the group have better performing groups than those leaders with lower levels of efficacy. The findings from this line of research can be incorporated into leadership development programs designed to increase leadership efficacy and augment group performance.

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