The Dynamic Relationship among Group Efficacy Perceptions, Attributions and Task Performance

John W. Whiteoak  
School of Business  
Faculty of Arts & Business  
University of the Sunshine Coast  
Email: jwhiteoak@usc.edu.au

Abstract

Purpose: While strategies for optimising individual performance have been widely studied a greater understanding of group-level processes is needed to better inform managers and team leaders about group performance. The purpose of this study was to investigate, in groups of three, the relationship among group efficacy, attributions made by group members and subsequent performance. The study explored the performance patterns of small groups that exhibited a group efficacy 1) increase, 2) decrease or 3) an initial decrease followed by an increase.

Design/methodology/approach: The current study used both quantitative and qualitative data collection processes. A case study design was used to investigate the six research hypotheses. Quantitative data were gathered to screen and classify the study participants and to assess group performance and group efficacy. Qualitative data were also gathered in the form of performance attributions from transcripts of videotape recordings.

Findings/results: Results indicate that the connection between group efficacy perceptions and group performance is not a simplex relationship and is influenced by the history of a group’s success and failures. Further, group-level performance attributions appeared to influence the relationship and differed depending on performance patterns.

Practical implications: The results of this study are relevant to managers who rely on groups and teams of employees to make decisions and to accomplish tasks efficiently and effectively. The paper provides recommendations to manage the efficacy-performance relationship in pods, groups and teams.

Originality/value: In this research a case study approach exploring the relationship between efficacy perceptions and performance patterns was validated. This approach provided a methodology that allowed the author to closely examine the pattern of relationships between these variables. This methodology may have potential value to other researchers investigating complex phenomenon. Another contribution of the research is the mixed-method approach and findings that showed performance attributions play an important role in the relationship between group efficacy perceptions and performance outcomes.

Keywords: group efficacy; performance attributions; performance patterns

JEL Classification: D70  
PsycINFO Classification: 3630  
FoR Code : 1503, 1702  
ERA Journal ID#: 123340
Introduction

The group efficacy construct evolved from Bandura’s (1986) social cognitive theory and has become known as a meaningful and measurable construct in the group effectiveness literature (Bandura, 1997; Gibson, & Earley, 2007; Guzzo, Yost, Campbell, & Shea, 1993; Pescosolido, 2003). Group (or collective) efficacy can be defined as “a group’s shared belief in its conjoint capabilities to organise and execute the courses of action required to produce given levels of attainments” (Bandura, 1997, p. 447). It has been found to influence and predict the performance level of groups (Bandura, 1986; Earley, 1999; Feltz & Lirgg, 1998; Gibson, Randel & Earley, 2000; Whitney, 1994) and also to lead groups to exert more effort and persist longer in the pursuit of their goals (Gully, Incalcattera, Joshi & Beaubien, 2002; Mulvey & Klein, 1998; Prussia & Kinicki, 1996).

Although Bandura (1977; 1982; 1986) initially focused on self-efficacy, he also suggested that performance beliefs operate at the group level of analysis (Gibson, 2001). Group-level efficacy is a complex phenomenon (Gibson & Earley, 2007; Gully et al., 2002; Guzzo et al., 1993). The perception exists within the individual but may differ depending on how group members interact while contributing to goal accomplishment (Tasa, Taggar & Seijts, 2007). That is, an individual’s group efficacy perceptions may be influenced by how competent the members of the group see themselves, the other group members’ beliefs, motivation and performance (Gully et al., 2002), and the extent to which members believe the group can successfully coordinate their actions. Although the relationship between collective efficacy beliefs and team performance has been well-documented, few studies have investigated the underlying mechanisms (Porter, Gogus, & Yu, 2011) and additional empirical attention could be directed to exploring the way that group efficacy develops in relation to group performance (Gibson & Earley, 2007; Lindsley, Brass & Thomas, 1995; Shea & Howell, 2000).

The present study aimed to advance the current literature by investigating the relationship between group efficacy and group performance over twelve trials of a computer simulation task, in groups that were found to exemplify: 1) increases in group efficacy (upward spirals); 2) decreases in group efficacy (downward spirals); or 3) an initial decrease in group efficacy followed by a correction or increase in group efficacy (self-correcting spirals).

A further aim of this study was to add to our understanding of performance attributions with particular reference to their impact on the group performance-group efficacy relationship. The way in which individuals and groups interpret the causes of their performance is important (Riggs & Knight, 1994; Tolli & Schmidt, 2008). Further, these causal attributions are thought to have an impact on the effects of previous performance on self-efficacy perceptions (Silver, Mitchell, & Gist, 1995; Taggar & Neubert, 2004). The early stage of a new task may be particularly important (Lindsley et al., 1995). Thus, the current research took into account the performance attributions made by the groups after receiving performance feedback.

The Group Efficacy-Group Performance Relationship

Dynamic Cycles and Spirals

Shea and Howell (2000) suggest that the group efficacy-group performance relationship is cyclic and highly interdependent with reciprocal causality. This notion of a cyclic relationship is grounded in action theory (Masuch, 1985). Hackman (1990) initially discussed the notion that groups can experience a ‘performance-efficacy’ spiral and this was developed further by Lindsley et al. (1995).

Lindsley et al. (1995) proposed that the group efficacy - group performance relationship may take the form of a ‘deviation-amplifying loop’. Deviation-amplifying loops or spirals are claimed to occur when the variables build upon themselves in either a positive or negative way so that a change in one variable (that is, increase or decrease) leads to a similar change in the other variable. They also discuss the possibility that ‘downward spirals’ may correct upwardly under certain conditions. A ‘self-correcting’ cycle is said to occur “when a decrease in performance and self-efficacy is followed by an increase in performance or self-efficacy (or vice-versa)” (Lindsley et al., 1995, p. 650). These researchers suggest that self-correcting cycles are preferable to upward or downward spirals as they lead to learning and innovation within the group.
Early experiences and the perception of success

Previous research indicates that what happens early in the group’s experience can have long-term effects (Cohen & Bailey, 1997; Gersick, 1989). Thus, it seems that the development of an efficacy-performance spiral may be influenced by outcomes occurring early on in a group’s task experience. Pescosolido’s (2003) study of MBA students showed that early levels of group efficacy may have a substantial influence on group processes and procedures. On the other hand, Jung and Sosik (2003) found that in the early stages of group development, the relationship between group efficacy and group performance may be tenuous, but with experience group efficacy perceptions become more homogeneous within the group and the relationship between group efficacy and group performance strengthens. Sivasubramaniam, Murray, Avolio and Jung (2002) found that group potency (a general measure of group efficacy) was predictive of performance at time 2 in their model and assert that early leadership interventions might have a significant and positive impact on subsequent group/team performance. However, the literature is relatively sparse when it comes to explaining the processes that may be driving the development of the group efficacy – group performance relationship. The current study closely examined the impact of task experience on the relationship between efficacy and performance.

Previous research has indicated that the perception of success may play an important role in the group efficacy-group performance relationship. According to Bandura (1986), performance success will generally raise efficacy appraisals whereas repeated failures will lower them. Riggs and Knight (1994) found that a group’s perception of success or failure played a direct, dominant role in the determination of all belief and attitudinal variables in their causal model. Feltz and Lirgg (1998) examined the pattern of team and player efficacy during a season of collegiate ice hockey competition and found that team efficacy significantly increased after a win and significantly decreased after a loss. It was expected that the current study would add to the evidence supporting claims that:

**Hypothesis 1:** High performing (successful) groups will have higher levels of group efficacy while less successful groups will have lower group efficacy beliefs.

Upward and downward spirals

The group efficacy-group performance relationship is thought by some to be highly complex, such that group efficacy perceptions develop and change over time and with experience (Ericksen & Dyer, 2004). Lindsley et al. (1995) argue that groups that initially perform well will perform even better over time, and higher levels of group efficacy resulting from performance feedback will continue to reinforce further increases in group efficacy levels. In keeping with this, Hackman (1990) found evidence for groups getting caught in what he called ‘self-fueling spirals’ where, over time “the rich get richer and the poor get poorer” (Hackman, 1990, p. 481). Other researchers refer to these spiraling processes as “vicious circles” or “self-fulfilling prophecies”, and conclude that “success breeds success” (Masuch, 1985). However, relatively few empirical studies have examined how the early performance outcomes of a group effect its later performance achievements and efficacy perceptions. The current study hypothesised that:

**Hypothesis 2:** Groups that initially perform well will show higher levels of group efficacy and will continue to improve with experience. On the other hand, groups that initially perform poorly will show lower levels of group efficacy and decrease in performance over time.

The Challenge of Self-Correcting Spirals - learning and effort

A better understanding of the group efficacy-group performance relationship in terms of whether group members perceive outcomes as ‘success’ or ‘failure’ is important for individuals, teams and organizations. This is particularly so when considering the practical implications for groups who enter into upward or downward efficacy-performance spirals. Although upward spirals may seem to be beneficial, learning may not take place. Consistent prior success can lead to decreased search and attention, complacency and overconfidence (Sitkin, 1992). Similarly, downward spirals may lead to a reduction in effort and eventual withdrawal from an activity (Kent & Gibbons, 1987). For maximum, long-term learning and high performance to occur, it is suggested that we need to learn from our mistakes through experiencing failure and making adjustments accordingly. For this reason, it is possible that self-correcting spirals may be preferable if they are the result of increases in learning, perceived efficacy and task performance (Lindsley et al., 1995). Lindsley et al. (1995) suggested that small wins will be
related to stopping spirals. The current study investigated the operation of self-correcting spirals, and hypothesised that:

**Hypothesis 3:** A series of small performance improvements will be likely to occur prior to a group efficacy correction.

Lindsley et al. (1995) also state that stopping spirals once they have begun may be much more difficult than initially avoiding them and that feedback may be ignored during a downward or upward spiral. As a result, the following hypothesis was investigated:

**Hypothesis 4:** Groups that show an upward trend in performance will be less influenced by performance failure later in the task experience than groups that exhibit a downward trend and similarly groups that have a downward performance trend will be less likely to be influenced by performance success later in the task than those in an upward trending group.

**The Impact of Performance Attributions on the Group Efficacy-Group Performance Relationship**

Attribution theory is concerned with how humans perceive the causes of behaviour (Weiner, 2005). This theory proposes that success or failure can be explained in terms of the locus of causality between causes that are internal (for example, effort or ability) and those that are external (for example, luck or task difficulty). Other factors that attribution theory considers relevant are controllability (for example, due to lack of effort or lack of ability) and stability (for example, due to a trait or mood) (Taggar & Neubert, 2004).

According to Schunk (1991), the effect of previous performance on self-efficacy depends upon the attributions that people make about the causes of performance. Gist and Mitchell (1992) also state that the link between group efficacy judgments and performance is not automatic because individuals will attempt to understand the cause of a particular performance outcome. More recently, Tolli and Schmidt, (2008) found performance feedback and attributions interactively influenced self-efficacy, which in turn influenced goals.

Bandura and Wood (1989) argued that attributions about the degree of controllability over the cause of prior performance may influence self-efficacy. In particular, perceived control over one’s own performance will lead to enhanced self-efficacy whereas lack of perceived control will lead to diminished self-efficacy (Bandura & Wood, 1989; Bandura, 1991; Martocchio & Dulebohn, 1994). Consequently, it appears that performance, self-efficacy and attributions are all inter-related (Silver, Mitchell, & Gist, 1995). However, little previous research to date has examined attributions occurring in groups and how they may impact on group performance and group efficacy. Understanding these complex relationships may shed light on motivational and persistence strategies used when coping with failure and help to facilitate personal development and organizational performance in groups.

According to attribution theory, an event may be interpreted as being internally caused or externally caused and the interpretation of this causality influences an individual’s subsequent behavior (Nisbett & Schachter, 1966). Thus, internal performance attributions (such as, “we are really good at this”) may suggest a perception of controllability on the part of the actor or group, whereas external performance attributions (such as, “the task is faulty”) may indicate a perception of uncontrollability.

Lindsley et al. (1995) proposed that group efficacy-group performance spirals are likely to involve attributions of uncontrollability. To influence efficacy individuals must believe that they, rather than some external factor, are the cause of some performance change (Lindsley et al. 1995). An attribution of control fosters actions aimed at self-correction, whereas a perceived lack of control may result in frustration, anxiety, and feelings of helplessness (Bandura, 1997). Further, Lindsley et al. propose that verbal persuasion may be particularly important in instigating corrective adjustments and in avoiding performance spirals. For example, hearing discouraging remarks (for example, “you are never going to get this right”) following a failure may contribute to the occurrence of a downward spiral. Thus, in the current study it was expected that:
Hypothesis 5: Groups operating in a downward performance-efficacy trend will be more likely to make negative or discouraging and/or external performance attributions about their group’s effort, while groups that show improvements in performance and group efficacy are more likely to make encouraging and/or internal attributions about their performance achievements.

Finally, Bandura (1986) also claims that failure that does not reflect a lack of effort or adverse external circumstances may be particularly important in the early course of events. As a consequence it is also expected:

Hypothesis 6: Groups that experience an early loss (i.e., receive negative feedback about their performance) and internalise their failure will also initially make low judgments about their group efficacy.

In summary, it was expected that group efficacy and group performance would be broadly related to each other across the duration of the study. In addition, the impact of group performance on group efficacy perceptions was expected to be influenced differently depending on a group’s performance trend. Patterns of success and failure during the completion of the group task were also expected to play a role in the efficacy-performance relationship. Finally, it was hypothesized that successful performance that is attributed to internal factors would raise group efficacy perceptions, and unsuccessful performance that is attributed to internal, stable and uncontrollable factors would lower group efficacy perceptions.

Method

Case Study Method
To investigate the six hypotheses discussed above a case study design was employed. A case study design was employed to investigate the study’s six hypotheses because of the desire to specifically analyse groups that exhibited different characteristics or attributes within a naturally occurring classification. That is, the group classifications were not manipulated; instead, small groups were purposively selected from a larger sample of groups who had participated in a prior study. This approach allowed the selection of, groups that exhibited specific patterns of group efficacy, and provided ‘ideal’ theoretical cases as units of analysis. To improve the validity of the results a multiple case-design was used and two critical cases were selected from within each classification. According to Yin (1989), this presents the opportunity of literal and theoretical replication and should provide stronger support for the hypotheses

Sample Selection Procedure
The sample selection process for this study consisted of three stages. First, eighty-seven undergraduate students (29 groups of three) participated in a quasi-experiment involving a simulated organization. Second, from these data groups were identified that best represented either an upward, downward or self-correcting group efficacy trend. Groups were classified using a k-means hierarchical cluster analysis. Three clusters were specified in the analysis based on group efficacy scores collected during the four stages of the study. The resulting cluster means are presented in Table 1.

Table 1 shows that Cluster 1 consisted of nine groups that appeared to decrease in efficacy while Cluster 2 comprised seven groups that tended to increase in efficacy after initially decreasing. Cluster 3 consisted of thirteen groups where it appeared that efficacy scores increased during the experiment.

The final step in the sample selection process was to apply screening procedures to select groups that displayed the attributes of interest. The initial examination of the clusters revealed that it would be unlikely to find more than two ‘ideal’ cases consistently from within each cluster. To select the cases for further investigation, nine PhD qualified judges were shown the raw efficacy scores of each cluster (Table 2 shows the upward efficacy cluster) and asked to select two groups they believed best represented the classification. The judges were told that absolute values where not important and they should identify the groups that followed the most representative trend from Stage 1 to Stage 4.
Table 1.
Cluster mean group efficacy scores for Final Cluster Centers

<table>
<thead>
<tr>
<th>Cluster Center</th>
<th>1 (n = 9)</th>
<th>2 (n = 7)</th>
<th>3 (n = 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficacy Stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>56.78</td>
<td>57.00</td>
<td>66.31</td>
</tr>
<tr>
<td>2</td>
<td>52.67</td>
<td>53.86</td>
<td>76.00</td>
</tr>
<tr>
<td>3</td>
<td>43.67</td>
<td>59.29</td>
<td>79.31</td>
</tr>
<tr>
<td>4</td>
<td>40.67</td>
<td>63.29</td>
<td>82.08</td>
</tr>
</tbody>
</table>

Inter-rater reliability for the judges’ decisions suggested high levels of agreement on all three classifications; with Cronbach alpha’s of 0.95, 0.92 and 0.91 for upward, downward and self-corrective trend clusters, respectively. Based on these decisions the two most frequently identified groups within each cluster were chosen as the basis for further analysis. To illustrate, from Table 2, the judges selected Group 1 and Group 11 most frequently.

Table 2.
Raw Scores for Groups in the Upward Trend Cluster

<table>
<thead>
<tr>
<th>Group</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>64</td>
<td>75</td>
<td>76</td>
<td>88</td>
</tr>
<tr>
<td>2</td>
<td>69</td>
<td>77</td>
<td>78</td>
<td>70</td>
</tr>
<tr>
<td>3</td>
<td>68</td>
<td>79</td>
<td>88</td>
<td>84</td>
</tr>
<tr>
<td>4</td>
<td>36</td>
<td>65</td>
<td>63</td>
<td>76</td>
</tr>
<tr>
<td>5</td>
<td>64</td>
<td>85</td>
<td>87</td>
<td>89</td>
</tr>
<tr>
<td>6</td>
<td>80</td>
<td>88</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>7</td>
<td>80</td>
<td>86</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>8</td>
<td>67</td>
<td>70</td>
<td>72</td>
<td>69</td>
</tr>
<tr>
<td>9</td>
<td>83</td>
<td>89</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>10</td>
<td>84</td>
<td>88</td>
<td>87</td>
<td>90</td>
</tr>
<tr>
<td>11</td>
<td>36</td>
<td>45</td>
<td>64</td>
<td>68</td>
</tr>
<tr>
<td>12</td>
<td>75</td>
<td>79</td>
<td>87</td>
<td>90</td>
</tr>
<tr>
<td>13</td>
<td>56</td>
<td>62</td>
<td>60</td>
<td>74</td>
</tr>
</tbody>
</table>

Sample
The resulting participants in this study were eighteen undergraduate students (six groups of three). Sixty-six percent of these participants were female; 78% studied full-time; 78% were in their first year of study and 26% did not work. The average age of the participants was 21.3 years (SD = 3.06).

Procedure
On arrival at the research venue, participants were randomly allocated to groups of three. Once in their group, participants were given standardised instructions explaining the task and emphasising that they were required to work as a group. The participants were then asked if they agreed to be recorded during the experiment - all participants consented. The task selected for this study was a computer-based organisational simulation developed by Robert Wood and used in previous research (Bandura & Wood, 1989; Wood & Bailey, 1985). In completing the task, participants assumed the role of managers of a department in a furniture factory that processed special orders within a manufacturing environment.

In this study the simulation was organised into four stages of three trials each and it took approximately one hour to complete the total of twelve trials. After completing each individual trial, participants received feedback on a computer screen, as a group, about their simulated...
department in the simulated furniture factory environment. The computer program calculated
group performance by how well the group set goals, provided feedback and assigned rewards to
their virtual employees. After reviewing their performance outcomes, the study participants
could alter their choices for the next production order.

After each stage of three trials, the groups were presented with a questionnaire to assess
their group efficacy perceptions. That is, participants received feedback about their group’s
performance for trials one to three and then indicated their group efficacy by stating how well
they believed they would perform in the next three trials. This continued through to the last
measure of group efficacy at the end of the fourth stage (namely, after twelve trials).

**Measures**

*Group performance.* Group performance was measured in terms of the group’s ability to
influence the performance of simulated employees in a furniture factory. Each group was
provided with a list of employee profiles outlining the skills and abilities of each employee. Each
group managed the same employees. At each trial, a list of tasks was presented to the group on a
computer screen and they were required to allocate employees to appropriate job functions, set
goals and reward performance. Improving group performance depended on how well they
allocated employees to job functions and appropriate choice of associated motivation factors (for
example, goal-level and reward). The performance measure was based on the simulated
production hours of each trial and this was calculated automatically by the simulation program.
The group’s performance was reported as a percentage of a pre-set standard time, with a lower
percentage suggesting a higher level of performance. These data were then standardised so that
a higher score indicated a higher level of performance.

*Group efficacy.* At the end of each stage, the group recorded its perceived group efficacy on
a multi-item efficacy scale that described nine possible levels of performance attainment. Each
level was expressed as a percentage of a standard time ranging from 70% of standard time (high
performance) to 140% of standard time (low performance). For each level, the participants
responded on a 10-point scale ranging from ‘no confidence at all’ to ‘total confidence’, to
indicate how confident they felt about attaining that level of performance. The consensual
method approach was used for estimating group efficacy - that is, the three group members had
to agree about their level of confidence on each rating. Previous work (e.g., Gibson et al., 2000;
Whiteoak et al., 2004) has shown this method to be both valid and reliable.

*Performance-based attributions.* In this study a group’s performance attributions were
analysed using transcribed conversations from videotaped interactions. The researchers
subsequently reduced the transcripts to contain only the performance-based attributions that
immediately followed performance. The resulting transcripts were then analysed for themes by
the researchers.

**Data Analysis**

The current study used both quantitative and qualitative data collection processes.
Quantitative data were gathered to screen and classify the study participants to make sure that
reliable cases were found to provide valid tests of the hypotheses put forward. Quantitative
measures were also used to assess group performance and group efficacy in order to investigate
the relationship between these variables and the occurrence of upward, downward and self-
correcting performance spirals. Quantitative analytic techniques (descriptive statistics and k-
means hierarchical cluster analysis) were used. Qualitative data were gathered in the form of
performance attributions from transcripts of the videotape recordings. Together the data should
provide a rich source of information to enable ‘pattern matching’. Pattern matching is a form of
theory testing analysis that establishes a set of predictions before the case study is conducted
(de Vaus, 2001). This was the case with the current study.

**Results and Discussion**

The Group Efficacy-Group Performance Relationship

Figures 1a, 2a and 3a present the group performance trends of each of the groups in the
study, while Figures 1b, 2b and 3b present the relevant group efficacy scores of each group.
These figures are discussed in more detail below.
Consistent with Hypothesis one, performance success was found to generally raise efficacy appraisals while repeated failure decreased them (compare Figures 1a, b, c, with 2a, b, c). However, the findings also show that the level of confidence displayed by a group does not necessarily convey their level of performance. Theoretically, group efficacy should be a positive predictor of subsequent group performance (Myers, Feltz, & Short, 2004). These results indicate that the pattern of previous performances can play an important role in the development of group efficacy perceptions. It seems that performance and group efficacy are not isomorphic and that higher performance does not necessarily engender higher levels of group efficacy. For example, the final performance position of Group up-b (see Figure 1a) is the highest of all of the groups in the sample, but their group efficacy scores are clearly lower than the other group in that condition. This suggests that the manner whereby a group arrives at a performance level may also play an important role in the group’s efficacy perceptions.

Hypothesis two posited that groups that start well would have higher levels of efficacy and continue to improve their performance with experience, while groups that began poorly would indicate lower levels of group efficacy and continue to decrease. While it was concluded that the findings are consistent with previous research and indicate that what happens early in a group’s experience may have long-term effects (Cohen, & Bailey, 1997; Gersick, 1989), the results do not provide strong support for the second hypothesis as they are somewhat inconsistent. Group up-a started well, had relatively high efficacy perceptions and finished very strongly (see Figure 1a and 1b). By contrast, Group down-a also started well, had relatively high efficacy perceptions but ultimately performed poorly (see Figure 2b). In comparing these cases, it is notable that Group up-a improved consistently in the first three trials preceding the Stage 1 group efficacy rating. On the other hand, Group down-a’s performance spiked at Trial 3.
This may indicate that performing too well too early could have potentially detrimental effects on a group’s long-term performance. This idea could be explored in future research.

The present findings indicate that the early stages of a new task appear to be extremely important for later group efficacy judgments. Specifically, it appears that an early failure is likely to pull a group’s confidence downward even if performance subsequently improves. Comparing Group up-a to Group up-b (see Figures 1a and 1b), it can be seen that these groups differed dramatically in their efficacy perceptions while their performance at Trial 3 was marginally different. These groups differ predominantly in that Group up-b suffered an early performance set-back at Trial 2. Following this set-back they improved their performance but their efficacy perception remained quite low (compare Figures 1a and 1b).

A similar pattern was observed in Group correct-b and similarly their efficacy judgment was also relatively low (see Figures 3a and 3b). What can also been seen in these cases is that their perceptions remained relatively low in comparison to their actual performance. This is particularly evident if one compares the performance and efficacy of Groups up-a and up-b at the end of the experiment (see Figures 1a and 1b). Conversely, an early success appears to lift a group’s efficacy perceptions even if the group subsequently fails. For example, Group correct-a (see Figure 3a) and Group down-b (see Figure 2a) began well and then suffered a performance set-back at Trial 3 in both cases. However, their early success appears to prop up their later efficacy perceptions (see Figures 3b and 2b).
Figure 3a. Performance of the groups in the self-correcting classification.

Figure 3b. Group efficacy of the groups in the self-correcting classification.

Hypothesis three suggested that a series of small performance wins would be observed in groups that self-correct after having an initial downward efficacy trend. Results for groups in the self-correcting classification (Figures 3a and 3b) provide some limited support for this suggestion. These groups had relatively similar patterns of performance throughout the experiment; most notable here is how performance may drive a group efficacy correction. Interestingly, both groups suffered two performance drops and between the first and second decrease there was an increase in performance (see Trial 3 to Trial 4 and Trial 4 to 5 for group correct-b and correct-a, respectively). Both groups showed two performance improvements by Trial 6 and both were performing relatively well. However, their group efficacy at Stage 2 decreased and it was not until further performance gains occurred that the groups’ efficacy judgment increased. These results suggest that a negative efficacy trend may be changed only through consistent improvement. Bandura (1997) suggested that overcoming failure may lead to higher levels of confidence. As noted previously, Lindsley et al. (1995) propose that learning and innovation may be most likely in such groups. In the current study, these groups did not ultimately display the highest levels of group confidence but they may have been more resilient in the face of future adversity. Investigating the long-term effects on a group that has managed to overcome failure offers an interesting topic for future research.

In contrast, the downward efficacy groups appeared to suffer more striking losses (see Figure 2b) and while these groups were able to make subsequent performance improvements, it seems that these improvements were not enough to reverse their downward trending efficacy perceptions (see Figure 2a). Hypothesis four stated that groups who demonstrated a downward efficacy trend would be less likely to be influenced by performance improvements later in the task. There was some support for this hypothesis. Both groups in the down classification (see Figures 2a and 2b) experienced a performance improvement at Trial 9; however, their efficacy perceptions continued to fall at Stage 3. That is, the performance improvement at Trial 9 occurred immediately prior to the groups recording their confidence perceptions for the next set
of Trials. These results suggest that a performance success that follows a downward trend may have only a limited effect on subsequent efficacy perceptions.

This finding has important implications for managers who assume that an improvement in a poor-performing group will lead to a change in direction of the members’ confidence (efficacy) perceptions and continued improvement in group performance. It seems that continued failure may lead a group to become caught in a negative spiral - internalising the status of being poor performers with little confidence. Such groups are likely to eventually accept the validity of the label of being a ‘bad group’ and consequentially, stop trying (Hackman, 1990). It appears from these findings that with task experience, group efficacy becomes relatively independent of performance and less malleable; particularly in groups undergoing a negative performance spiral.

Hypothesis four also stated that groups whose efficacy trended upward would be less likely to be influenced by failure later in the task. The results provide only limited support for this hypothesis and thus drawing strong conclusions is difficult. Nonetheless, the findings provide some evidence to support this suggestion. For example, Figure 1a at Trial 9 and Figure 1b at Stage 3 show that the groups in the up-trends did not appear to be substantially influenced by small failures later in the task, although at this stage the upward trend of Group up-a did appear to flatten.

The Impact of Performance Attributions

Hypothesis five suggested that groups operating in a downward performance - efficacy trend will be more likely to make negative or discouraging and/or external performance attributions about their group’s effort, while groups that show improvements in performance and group efficacy are more likely to make encouraging and/or internal attributions about their performance achievements. Some support was found for this hypothesis.

In particular, it was observed that performance attributions differed between the upward and downward efficacy groups in the early stages of the study. Group up-a’s comments were found to be generally more positive (for example, “they all did pretty well” and “you’ve almost done the perfect job”). Similarly, Group up-b’s comment included “that’s pretty good” and “that’s all right”. By contrast, Group down-a tended to make generally more negative and discouraging statements about their performance (for example, “we need to get them to work harder”, and “at least we are getting down”). Likewise, Group down-b made generally negative comments about their performance that included “we weren’t too good”, “oh well, it’s only a game”. It is interesting to note that the members of Group down-a and Group down-b were tending to making discouraging remarks about their performance before they started performing poorly. As the task continued, Group down-a Group down-b made comments including “it’s not our fault, it’s their fault”, “the employees are slack, I think that’s the problem”, “we are putting them in the best jobs and they are not performing”, and “we are hopeless”.

In the self-correcting classification (see Figure 3a), both groups showed, through their performance attributions, a level of dissatisfaction with their performance even though it had improved (Group correct-a at Trial 6 and Group correct-b at Trial 5). For example, a member of Group correct-a commented that “they have done badly, because of you (one of the group members)”; while Group correct-b members said “we are obviously not playing the game right” and “he (one of the simulated workers) is hopeless”.

It might be expected that performance attributions would be positive when group performance improves. However, the present results indicate that improvement in itself did not necessarily lead a group to make positive attributions about their performance. In fact, it was not until after Trial 9 that the attributions of the self-correcting groups became more ‘positive’, including comments, such as; “yes, we did it”, “we’re going well”, “we are bringing it down now”, and “we got it, that’s great”. At this stage the majority of these groups’ attributions were internal and positive. This was consistent with their performance as it took these groups until Trial 9 to perform higher than the pre-set standard time (see Figure 3a).

It may be that groups perceive performance negatively, regardless of the level of improvement, unless it is seen as a ‘win’. In this study, participants’ performance feedback was presented in terms of an estimated time to do a simulated job. It seems that performance
improvement per se did not lead to higher efficacy perceptions and it was not until their performance was perceived to be above the standard time that groups began to make positive comments about their performance.

This has important implications for groups in that improving performance might not necessarily be conducive to building group confidence if the group still perceives the improvement as a ‘loss’. Focusing the group on the relative improvement rather than the absolute outcome or bottom-line (that is, winning versus losing) may be a useful strategy for group leaders to build confidence among the members. On the other hand, when an improvement is seen by the group as better than a previously perceived successful attempt, or as was the case in the current study, better than the pre-set standard, it is likely that perceptions of confidence will improve without any need for intervention. Still, when this does occur it may be an excellent opportunity for leaders to significantly impact a group’s efficacy perceptions. At the individual level, Ellis, Mendel, and Nir (2006) discuss the importance of drawing lessons from successful experiences and the impact of after-event reviews. The current findings provide a basis for examining this more comprehensively in relation to group efficacy and group performance.

Hypothesis six argued that groups that suffer an early loss and internalise the failure would be more likely to have initially relatively low group efficacy perceptions. There is some support for this hypothesis here. Both Group down-b and Group correct-b experienced an early loss and consequently made a relatively low efficacy judgment at Stage 1. In both cases it was found that they tended to internalise their poor performance. In the case of Group down-b, their related comments included: “that didn’t go too good at all”, “we took ages” and “that went pretty bad didn’t it?” Similarly, Group correct-b made comments that included: “we didn’t quite make it”, “we are getting closer”, and “we are only just above time”. So it appears that if a group internalises an initial poor performance then it may be more likely to lower its initial efficacy judgment. Possibly this occurs because group members consider themselves responsible for the failure and, therefore, lower their efficacy perceptions. The perception that “we caused it” appears to lead to more cautious efficacy judgments.

**Limitations and Directions for Future Research**

There are a number of limitations to the current study. Firstly, an undergraduate student sample and a relatively high proportion of females in the sample may hinder the generalisability of the results. The relatively high proportion of females in the sample, however, may not be unrepresentative of some working environments and previous research has shown that gender heterogeneity is unrelated to group efficacy (Tyran & Gibson, 2008). Nonetheless, like many studies using an undergraduate student sample it is important to replicate the current study with different tasks, settings and samples (Sivasubramaniam et al., 2002).

In the original data set from which the sample was selected there were a multitude of performance and group efficacy patterns. This exploratory study employed a strategy of selecting cases that provided ‘illuminating’ examples of group efficacy patterns to allow a more detailed analysis of the way group efficacy and performance relate to one another with task experience. Nevertheless, the results are not considered conclusive, and may be best used for theoretical generalisation (Yin, 1989). Future research examining statistical significance is needed for generalisation and further validation of the findings. Notwithstanding these limitations, the current results may provide important insights into our understanding about the performance and success of many types of pods, groups and teams.

Additional research exploring the role of group leadership on group efficacy, particularly in the early stages of a group’s development is needed. Leadership seems to be a key variable that influences the development and evolution of efficacy because key members or leaders of a group often strongly influence the efficacy perceptions of others (Gully et al., 2002). Feltz and Lirgg (1998) concluded that coaches may maintain or enhance efficacy in their teams if they emphasise process-related goals (for example, strategies) to take the focus off outcomes. Perhaps such approaches may be related to successfully managing perceptions of success and failure within a team.
Recently, collective efficacy has been studied as a potential antecedent of collective flow (Salanova, Rodriguez-Sánchez, Schaufeli, & Cifre, 2014). The study extends the Channel Model of Flow (Csikszentmihalyi, 1975, 1990) at the collective level (workgroups) by including collective efficacy beliefs as a predictor of collective flow. In addition, Whiteoak (2014) in a study looking at coping with monotony identified group potency (a more generalised belief of group efficacy) as a predictor of boredom-coping and suggested an important link to engagement at work. Both of these studies suggest there may be fruitful implications for exploring more closely the benefits of building group efficacy to improve levels of engagement in work.

**Conclusion**

To conclude, the results of this study are relevant to managers who rely on groups and teams of employees to make decisions and to accomplish tasks efficiently and effectively (Baker, 2001). While there is recommended caution about the generalisability of these findings it is suggested managers could pay closer attention to the initial success and failures of a group and how these outcomes may be impacting upon subsequent efficacy perceptions. Where this is the case, and where feasible, a manager might consider withholding or managing feedback about a group’s performance if they feel it may be detrimental to future efficacy perceptions and subsequent performances.

Riggs and Knight (1994) suggested that organisations cultivate success experiences, as well as perceptions of group success among their employees through careful planning and setting of achievable goals. If this is not practical, positive experiences might be maintained, in part, by strategies designed to affect perceptions of success independently of actual levels of overall group performance. This is not meant to imply that deception should be used and that poorly-performing groups should somehow be convinced that they are succeeding, but rather that managers should work to recognise and reward positive outcomes and progress toward success whenever such outcomes occur.

The decision to take a case study approach to explore the dynamic relationship between efficacy perceptions and performance patterns in task-performing groups was validated. This approach allowed the author to closely examine the pattern of relationships between these variables and show that the pattern of success and failure during a group task influences the development of group efficacy perceptions. Finally, findings showed that performance attributions play an important role in the relationship between group efficacy perceptions and performance outcomes.

**References**


