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A Season Long Case Study Investigation of Collective Efficacy In Male Intercollegiate Basketball

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ABSTRACT

Collective efficacy is defined as a group's shared belief, which emerges from an aggregation of individual group members' perception of the group's capabilities to succeed at a given task (Bandura, 1986). The present study used a case study design to explore the relationships between collective efficacy and performance over the course of one season. It was hypothesized that there would be a positive relationship between collective efficacy and team performance. Although this prediction was not supported, findings indicated that there was a positive relationship between collective efficacy and the opponent's winning percentage. Although the lack of a performance-confidence relationship may be due to the limitations of case study design, the importance of the quality of the opponent is consistent with previous conceptualization.

Introduction

Arguably, confidence is the most important conceptual and practical issue in sports. Sport psychology research aside, there is ample anecdotal evidence to support the notion that how one performs is inextricably tied to how confident one feels about the task at hand Bandura (1977) conceptualized self-efficacy as one's ability to successfully perform a specific behavior necessary to attain a particular outcome.

Bandura (1990) stated that one's expectations of self-efficacy are the product of a complex process of self-persuasion that relies on cognitive processing of diverse sources of efficacy information. These sources include performance accomplishments, vicarious experiences, verbal persuasion, and physiological states. Probably the most influential sources of efficacy are performance accomplishments that evolve from mastery experiences (i.e., actual experiences of

successfully completing that task) (see Moritz, Feltz, Mack, & Fahrback, 2000 for a meta-analysis of self-confidence). As such, self-efficacy is a very specific notion, and depends on the exact constraints of the task to be completed, and one's perceptions of their ability to complete such a task.

To accommodate the element of group performances in sport and other contexts, Bandura (1986, 1997) introduced the concept of collective efficacy as an extension of self-efficacy. Collective efficacy is defined as a group's shared belief, which emerges from an aggregation of individual group members' perception of the group's capabilities to succeed at a given task (Bandura, 1986, 1997). As with self-efficacy, collective efficacy is also affected by particular sources of efficacy information, with mastery experiences being particularly salient.

This construct may be particularly salient in sports, where most activities take place as a team. Therefore, many of the obstacles and difficulties that the athletes are confronted with, demonstrate team challenges that require the team to overcome and produce effective performance (George & Feltz, 1995). Although collective efficacy is a relatively new construct in sport psychology, it has already been linked to such issues as pre-competitive anxiety (Greenlees, Nunn, Graydon, & Maynard, 1999), self-efficacy (Feltz & Lirgg, 1998), and team cohesion (Kozub & MacDonnell, 2000; Spink, 1990).

Collective efficacy clearly has a strong impact on performance. Performance of a particular group can be based on the amount of collective efficacy they possess. Theoretically speaking, groups that possess high levels of collective efficacy should outperform those teams that possess lower levels of collective efficacy.

Three similar studies showed the link between team confidence and performance in laboratory groups asked to complete a physical activity task. Hodges and Carron (1992) had participants complete in the task of holding up a medicine ball as a group of three. The authors created three groups - a control group, a high collective efficacy group and a low collective efficacy group. Both collective efficacy groups were provided with false feedback that influenced the participants to believe they were correspondently high or low in collective efficacy. They found that the efficacy manipulation was effective, and from the initial trial to the next, the high collective efficacy group increased their performance, while the performance of the low collective efficacy group decreased.

Lichacz and Partington (1996) had a similar design using a rope-pulling task. Participants were divided into four true-groups (subjects currently participating on a team together), two ad hoc groups (subjects with prior team experience), and two groups that did not possess any prior collective team experience. False feedback was provided to manipulate the subjects into believing they were either high or low in collective efficacy. Findings demonstrated that group history and collective efficacy (through manipulated performance feedback) were related to performance, although group history impacted performance more than the false feedback. Finally, Greenlees, Graydon, and Maynard (2000) used artificial groups with the task of completing time trials were performed on cycle ergometers. Before the time trials were conducted the participants were asked to choose a finishing time and position goal for their group. Once trial 1 was completed the triads were placed in either a high or low collective efficacy group, and received false feedback based

on their placement. Results indicated that collective efficacy and performance are related. From Trial 1 to Trial 2 the low collective efficacy group reduced their performance and the high collective efficacy group maintained their performance.

To date, the only study of collective efficacy and team performance conducted on actual sport teams was reported by Feltz and Lirgg (1998). They studied collegiate hockey teams over the course of a season. The consistency of player and team efficacy across the season was examined, and also the relationship between player efficacy, team efficacy and team performance. A total of six hockey teams participated in the study, making a total of 159 participants. Team efficacy was measured using eight items, which asked the players to rate the degree of confidence they had in their team's ability to perform certain factors that pertain to the game of hockey. The factors included being able to outskate, outcheck, force more turnovers, bounce back from performing poorly, score on power plays, kill penalties against the opposing team, and have an effective goaltender who could block a high percentage of goal attempts. The player efficacy measure was comprised of three questions, which asked participants to rate their ability to out-perform their defensive opponent, out-perform their offensive opponent and bounce back from performing poorly. Performance measures were gathered by obtaining the game statistics. Statistics used were margin of win, game outcome (win, loss, or tie), shots attempted, scoring percentage, power play shots attempted, power play percentage, and short-handed defence percentage. Findings supported that team efficacy beliefs are a stronger predictor of team performance than are player efficacy beliefs. Therefore, this supports Bandura's (1997) belief that individual efficacy is not as good of a predictor of team performance than collective efficacy. Also, it was found that past team performance effected team efficacy beliefs to a greater extent than player efficacy beliefs. Finally, it was found that there is a strong connection between perception of collective efficacy and team performance.

Like Feltz and Lirgg's (1998) study, the current research is a case study investigation of collective efficacy in sports teams. Unlike the previous research, the case study will focus on one team over the length of a season. Also, the participating team will be a collegiate basketball team, unlike Feltz and Lirgg's hockey sample, and a collective efficacy questionnaire proven valid, reliable, and psychometrically sound for a variety of sports - the Collective Efficacy Questionnaire for Sports (CEQS) (Short, Sullivan, & Feltz, 2001) will be used for the present sample. Thus this study will not only explore the relationship between collective efficacy and team performance, but should support the generalizeability of the construct of collective efficacy in sports, and the CEQS as a measurement.

Method

Participants

A team participating in the Ontario University Athletics men's varsity basketball league participated in the study. All team members consented to participate, but only the twelve dressed starters for each game actually completed the procedures. The age of the players ranged from 19 to 24 years ($M = 21.1$). The participants had played basketball for an average of 10.1 years, and were with the present team for an average of 2.5 years. The participants also ranged from 1 to 17 in the amount of years they participated in basketball, and their years with the present team

ranged from 1 to 5.

Measures

Collective efficacy was measured by using the Collective Efficacy for Sport Questionnaire (CESQ) (Sullivan, Short, & Feltz, 2001). The CESQ is made up of 20 items, which are measured on a 9-point scale with higher scores indicating greater confidence. Each item begins with the stem “rate your team’s confidence, in terms of the upcoming competition, that your team has the ability to ...”. Answers can range from “not at all confident” to “extremely confident”. The scale has been supported by confirmatory factor analysis, and has been shown to be reliable and demonstrate concurrent validity with respect to other group dynamics in sport (Short et al., 2001). The 20 items measure five different elements of collective efficacy. The five elements that are measured are ability (e.g., “outplay the opposing team”) effort (e.g., “play to it’s capabilities), persistence (e.g., “perform under pressure”), preparation (e.g., “be ready”), and unity (e.g., “be united”). Instructions given on the questionnaire inform the athlete to rate their team’s confidence in terms of their upcoming competition.

To determine continuous performance measurements that would indicate the level of performance specific to this team, the authors consulted with the team’s head coach. Two performance measures were determined - field goal percentage and rebound differential. These variables were available for every game of the season.

Procedures

Initially, approval from the ethics board was sought in order to begin conducting research with the athletes. Once approval was gained, the basketball coach was approached to describe the study and to receive permission to work with the players. Informed consent was received from the participating players.

In order to allow for group development, data collection did not begin until the quarter point of the season. Throughout the course of the study, participants completed the CESQ alone 24 hours before each regular season game.

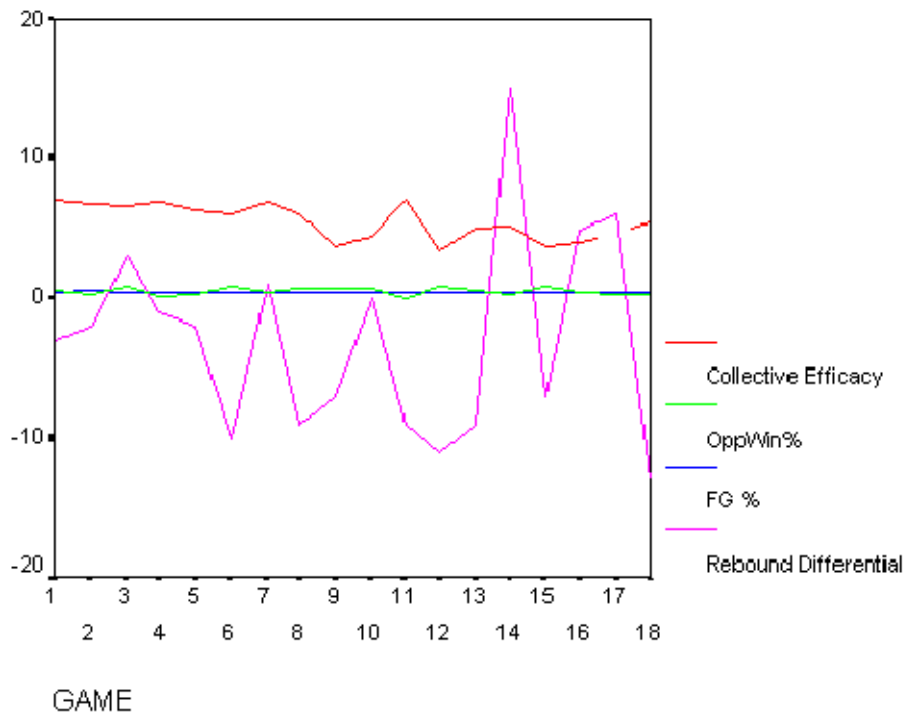
Results

The unit of analysis for this study was the team average for each collective efficacy factor for each game. These values are given in Table 1. Performance measures for the team (e.g., rebound differential and shooting percentage) are also given in Table 1 for each game. All factors of team confidence were highly correlated (e.g., $p < .001$), with correlations ranging from .951 to .995. As can be seen visually in Figure 1, there appears to be absolutely no relationship between how confident the team is regarding the upcoming game, and their performance in that game. For this sample, team confidence appears to be a unidimensional construct; given the high correlations between the five confidence factors, an overall score of general team confidence was also calculated as an average of the five subscales. This is also presented in Table 1.

Table 1. Descriptive Statistics for all Variables				
Variable	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Ability	5.85	1.43	-.50	-0.89
Unity	5.53	1.28	-.40	-1.45
Persistence	5.79	1.28	-.46	-1.13
Preparation	5.41	1.23	-.38	-1.25
Effort	5.40	1.29	-.36	-1.45
General Collective Efficacy	5.60	1.29	-.41	-1.35

In attempting to illuminate the nature of collective efficacy in this team, one new variable was utilized. The (end of season) winning percentage of the opposing team was used as an indicator of the ability of the opponent. As can be seen in Figure 1 there appears to be a strong relationship between the collective efficacy of the case study team and the winning percentage of the team that they are about to play.

Figure 1. Team confidences & opponents winning percentage across the season.



One suggested statistical method for examining case study data is the ipsative single case statistical analysis of change (Yarnold, Feinglass, McCarthy, & Martin, 1999). This involves computing ipsative standard scores for all the variables in case, and examining four equally spaced repeated measures. The lag-1 autocorrelation is calculated for these four scores, and if the difference between the standardized scores exceeds 1.96 times the square root of the autocorrelation, then it is a statistically significant difference. A more complete description of this procedure lies beyond the scope of this paper. The interested reader is referred to Yornold et al.,

for further details. The chosen games for this analysis were games 9, 11, 13, and 15. As required for the analysis, they are equally spaced, and for our purposes, represent four opponents of different capabilities. In order of games, the opponents winning percentages were .727, .045, .545, and .864. Thus, based on win-loss records, the games appeared to reflect (in order) a good opponent, a poor opponent, a mediocre opponent, and a very good opponent. For the purposes of this analysis, the highly related collective efficacy sub-scales were averaged to give a score of general collective efficacy. For this current design, the lag-1 autocorrelation for the four scores was .316, and the comparison criterion for differences between scores was calculated at 1.10. Every change in team confidence was statistically significant. There was a significant increase in team confidence from games 9 to 11 (difference in ipsative scores = 2.5), a significant decrease from games 11 to 13 (1.5), and a further, -significant decrease from games 13 to 15 (2.4).

Discussion

The purpose of this research was to examine the relationships between collective efficacy and performance of a basketball team. It was predicted that there would be a positive relationship between collective efficacy and performance. This hypothesis was not found and a consistent relationship was not found between team performance (i.e., field goal percentage, rebound differential), and the factors of collective efficacy as measured by the CEQS. A result that emerged but was not predicted was that there was a significant relationship between team confidence and opponent's winning percentage.

The lack of a relationship between team confidence and performance was not consistent with previous conceptual and empirical literature. Theoretically, these two issues are closely linked as reciprocal sources, and the few studies on the topic in sport psychology have consistently found that collective efficacy has been related to performance. However, most of these studies used artificial, laboratory groups as the team, and "manipulated" collective efficacy through false feedback (e.g., Greenless et al., 1999; Hodges & Carron, 1992; Lichacz, & Partington, 1996). Perhaps the differences between both the nature of the teams and their perceptions may partly explain the difference in findings between these studies and the present results. Still, Feltz and Lirgg's (1998) study of collegiate hockey teams' confidence and performance did support the link between the two factors. Thus, it appears that the most parsimonious explanation for a lack of relationship between team confidence and performance would lie with the design of the present study.

Being a case study, the present findings are obviously limited to the participating team. Perhaps this team, during this particular season, was quite unique. It appears that the confidence of this team is a precarious attribute. It is quite dynamic and appears to be largely determined by one simple factor (of those measured). Perhaps there is something in the make-up of this team that would explain this. It may be comprised of individual members with low self-efficacy, the team may not be very task cohesive, or the leadership on the team may be volatile. These are realistic and natural factors of any team, but in the present case, it has to be acknowledged that some aspects of this team may make it unique with respect to collective efficacy and its link to performance.

One other explanation for these findings may lie in the measurement used for collective

efficacy, and specifically how it was related to the measures of performance. The CEQS is an established measurement, and has support in terms of internal and construct validity, as well as its psychometric properties. However, considering the structure of the five subscales (i.e., unity, persistence, preparation, effort, and ability), perhaps the measures of team performance (i.e., rebounding, and shooting percentage) were too precise to be effectively linked to collective efficacy. Although this may in part explain the lack of results, these performance indicators were not related to performance efficacy as measured by the CEQS, so this limitation may not be as significant as it appears.

The primary result of this study was that team confidence appears to be closely linked to the team one has to play against. Although this finding is also limited due to the fact that the study was a case study, it makes conceptual sense. Bandura's (1997) notion of collective efficacy refers to the confidence team mates have in their conjoint abilities to accomplish a specific task. As operationalized through the CEQS, this specific task is the next game, and in an interdependent sport like basketball, how good the other team is is an important piece of information. This was the most salient aspect of the participating team's collective efficacy throughout their season. They felt most confident when playing a weak opponent, and least confident when playing a strong team. Thus it appears that in an interdependent team sport, a significant aspect of the particular outcome that collective efficacy refers to is the strength of the opponent.

As consistent as this is with Bandura's (1997) conceptualization, previous research has not touched on this practical notion of collective efficacy. Future research should attempt to clarify the nature of this relationship. Specific suggestions include using a more generalizable design than case study (i.e., surveying a number of teams), and a statistical analysis that incorporates collective efficacy, capabilities of the opponent, and previous results between these two teams. This last factor should be related to how strong that opponent is (as signified in the present study), and be a valid operationalization of previous mastery experiences, which predominates Bandura's sources of efficacy. Other issues that could and should be operationalized include individual skill, team skill level, team history, and practice time and dynamics.

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