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Collective efficacy based on the coaching efficacy in female profesional basketball teams

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ABSTRACT

The purpose of the present research was to determine the relationship between coaching efficacy and collective efficacy in professional women's basketball teams. 12 teams consisting of 12 head coaches (41.41±8.82 yrs. age; 18.25±7.47 yrs. coaching experience) and 116 players (23.74±4.36 yrs. age; 9.74±4.01 yrs. athletic experience; 4.32±2.96 yrs. professional experience) were randomly selected from the teams in Iran's professionalbasketball leagues in 2011. Coaching Efficacy Scale (CES; Feltz et al. 1999) and Collective Efficacy Questionnaire for Sports (CEQS; Short et al., 2005) were used along with a demographics questionnaire for collecting data. Pearson correlation coefficient and a multivariate regression model were used for data analysis. The results showed that, among the dimensions of coaching efficacy, character building is negatively associated with effort, persistence, unity, and overall level of efficacy ($p < 0.05$), while no other significant relationship was observed between other variables. Regression analysis indicated that among the dimensions of coaching efficacy ($R^2 = 0.122; p = 0.006; F(4,111) = 3.845$), motivation ($p = 0.041; \beta = 0.655$) and character building ($p = 0.019; \beta = -0.617$) were the most important predictors of efficacy in professional women's basketball teams. The present findings support the conceptual model of coaching efficacy developed by Feltz et al. (1999) regarding the positive effect of motivation on collective efficacy and highlight the necessity to review and expand this model.

Keywords: Coaching efficacy, Collective efficacy, Basketball

INTRODUCTION

According to the social cognitive theory (Bandura, 1977, 1986, 1997), self-efficacy is one of the significant predictors of behaviors and is defined as one's belief in one's ability to succeed in specific situations. There are four factors that affect self-efficacy: enactive attainment, vicarious experience, verbal persuasion, and physiological factors. Self-efficiency beliefs affect one's goals and level of commitment to them, the quality of analytic and strategic thinking, motivation and persistence in dealing with problems, and vulnerability to stress and depression (Bandura, 1977, 1986, 1997). Early studies suggested that general self-efficacy is associated with vocational, educational, and military success (Sherer, 1982). However, later studies have shown that despite the similarity between tasks, self-efficacy in a task may not necessarily apply to other tasks (Krueger, 2003). In fact, self-efficacy is a task-specific construct (Bandura, 2001). Accordingly, self-efficacy in the area of sport has been distinctively conceptualized for players, teams, and coaches.

Self-efficacy beliefs at the team level is not merely the sum of players' perception of their self-efficacy, for a team may consist of members with different levels of self-efficacy and the members may believe in the ability of the team as a whole instead of individual abilities. In contrast, the members may believe in their individual ability for a

desirable performance (self-efficacy), but believe that the team falls short in its ability to succeed (Bandura, 1997). In effect, evaluating the sum of the self-efficacy of individuals at the team level disregards such factors as coordination, interaction, and unity that are inherently required by each team. Therefore, collective efficacy is the sense of collective competence shared among individuals when allocating, coordinating, and integrating their resources in a successful concerted response to specific situational demands (Zaccaro, Blair, Peterson, &Zazanis, 1995). Research has shown that players' perceptions of self-efficacy may increase or decrease as a result of winning or losing (Watson, Chemers, &Preiser, 2001). Theoretically, collective efficacy beliefs influence participation, motivation, effort, perseverance under difficult conditions, and improved team performance (Bandura, 1986, 1997, 2001). Conceptualizing collective efficacy in sports, Short, Sullivan, and Feltz (2005) defined five dimensions for this construct: ability, effort, persistence, preparation, and unity. Since collective efficacy has its roots in the concept of self-efficacy, collective efficacy involves similar sources of efficacy information, with a difference that sources of self-efficacy information are examined at the team level (Feltz&Lirgg, 2001). Watson and Chemers (1998) suggest that three group level influences are most important: group composition, previous group experiences, and leader's effectiveness.

The importance of collective efficacy is mainly due to its key role in athletic performance. Results from different sports show that collective efficacy beliefs are associated with performance in such sports as baseball (George, 1994), basketball (Chase, Ewing, Lirgg, & George, 1994; Watson et al., 2001), football (Myers, Feltz, & Short, 2004), volleyball (Ramezaninejad, Hosseini, Dadban, &Shafi'i, 2009), and softball (Hepler& Chase, 2008). In addition, in a meta-analysis by Moritz, Feltz, and Fahrbach (2000) based on a review of 45 studies, a significant positive relationship was found between self-efficacy and sport performance ($r = 0.38$). Even in studies that used task-specific scales for measuring self-efficacy a stronger correlation was observed between self-efficacy and sport performance ($r = 0.45$). In general, the literature provides adequate evidence that suggests that performance in different sports can be predicted by collective efficacy, indicating the importance of this construct.

On the other hand, the role of coaches in structuring and spearheading teams toward progress and success cannot be ignored. The technical and psychological capabilities of coaches are definitely important determinants of success. Coaching efficacy is one of these capabilities that play a key role in coaching behaviors. Coaching efficacy is derived from Bandura's (1977, 1986, 1997) concept of self-efficacy and the teacher self-efficacy model of Denham and Michael (1981). It has been defined as the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes (Feltz, Chase, Moritz, & Sullivan, 1999). The concept of coaching efficacy comprises four dimensions: technique, game strategy, motivation, and character building efficacy (Feltz et al., 1999). Technique refers to coaches' confidence in their ability to affect the psychological skills and motivational states of their athletes. Game strategy is defined as the confidence coaches have in their ability to coach during competition and lead their team to a successful performance. Motivation is the confidence coaches have in their ability to affect the psychological skills and motivational states of their athletes. Finally, character building involves the confidence coaches have in their ability to influence a positive attitude towards sport in their athletes (Feltz et al., 1999). In the conceptual model of coaching efficacy developed by Feltz et al. (1999), it has been suggested that sources of coaching efficacy information coach's past success, coaching experience, perceived player talent, and social support (Figure 1). They also suggested that coaching efficacy can predict coaching behavior, player satisfaction, and current success.

Informational sources of coaching efficacy in this conceptual model were supported by the empirical evidence in Feltz et al. (1999) and were expanded by Chase,Hayashi, and Feltz (1999), Malete and Feltz (2000), and Myers,Vargas-Tonsing, and Feltz (2005). High efficacy coaches have higher winning percentage, greater player satisfaction, and frequent praise and encouragement behaviors, but exhibit less instructional and organizational behaviors. Although this evidence provided early support for the conceptual model of coaching efficacy, studies have seldom considered the effect of coaching efficacy in collective efficacy. Vargas-Tonsing, Warner, and Feltz, (2003) examined the relationship between coaching efficacy, player efficacy, and team efficacy in 12 high school volleyball teams and found that there is no significant relationship between coaching efficacy and player efficacy. Moreover, among the dimensions of coaching efficacy only character building was negatively associated with team efficacy ($r = -0.6$). However, Vargas-Tonsing et al. (2003) reported that motivation efficacy ($\beta = 1.05$) and character building efficacy ($\beta = -1.43$) are the strongest predictors of team efficacy. Boardley, Kavussanu, and Ring (2008) examined the athletes' perception of coaching effectiveness. The findings showed a positive relationship between union-rugby players' perception of coaching effectiveness and their self-efficacy in sport performance. However, technique was the only predictor of players' self-efficacy ($\beta = 0.29$). Taghi (2010) studied Iran's Pro Soccer League and 1st Division League and found that technique is negatively associated with ability and preparation, while motivation is positively associated with all the dimensions of collective efficacy (i.e. ability, effort, persistence, and unity). However, game strategy and character building were not significantly associated with the dimensions of collective efficacy. Ramezan (2011) examined the causal effect of coaching efficacy on collective

efficacy in professional volleyball teams using structural equation modeling, which suggested the significant positive effect of coaching efficacy on collective efficacy ($\beta = 0.51$).

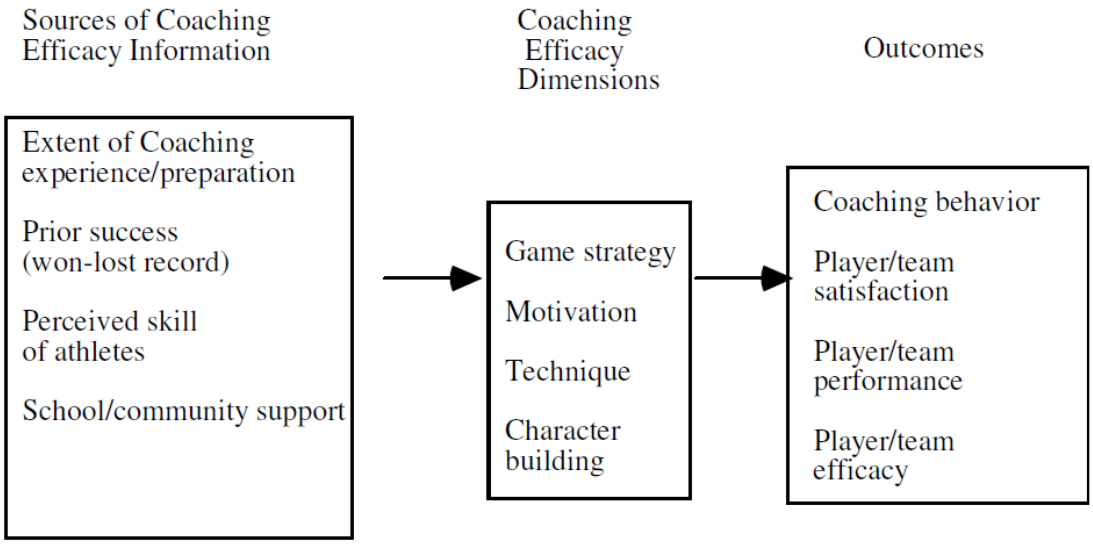

Figure 1.The conceptual model of coaching efficacy (Feltz et al., 1999)

In sum, the limited sometimes contradictory evidence in the literature on self-efficacy does not provide adequate support for the conceptual model of coaching self-efficacy by Feltz et al. (1999). Therefore, the present research tries to provide deeper insight into the dynamism of coaches' and players' self-efficacy beliefs by examining the role of coaching efficacy in predicting the collective efficacy of professional women's basketball teams.

MATERIALS AND METHODS

Participants

The population of this study consists of basketball coaches and players in Iran's Pro League, Division I League, and Division II League (16, 12, and 14 teams respectively) during the period 2011-2012. Each team comprised a head coach, an assistant coach, and at least 15 players. Accordingly, the population consisted of 42 teams with 42 head coaches, 42 assistant coaches, and 630 players. Finally, 12 teams (6 teams from Pro League, 4 teams from 1st Division League, and 2 teams from Division II League) consisting of 12 head coaches and 180 players were selected as sample. After informing the sample of the purpose of the research and assuring them of confidentiality of the information, the questionnaires were distributed among them. Overall, 12 coaches (41.41±8.82 yrs. age; 18.25±7.47 yrs. experience) and 116 players (23.74±4.36 yrs. age; 9.74±4.01 yrs. athletic experience; 4.32±2.96 yrs. professional experience) completed the instruments. The instruments were a demographics questionnaire, Coaching Efficacy Scale, and Collective Efficacy Questionnaire for Sports.

Measures

Demographics Questionnaires:Two editions of demographic questionnaireswas developed for coaches and players. The coaching version included seven items for recording team name, age, coaching experience, marital status, league (Pro, Division I, or Division II), experience in different leagues, and titles. Similarly, the player version included seven items for recording team name, age, sport experience, marital status, league, experience in different leagues, and titles.

Coaching Efficacy Scale (CES): This scale has been developed and validated by Feltz et al. (1999). CES includes 24 items in four subscales: technique efficacy (6 items), game strategy efficacy (7 items), motivation efficacy (7 items), and character building efficacy (4 items). The items are rated on a 10-point Likert scale from 0 (not at all confident) to 9 (extremely confident). Based on the data from 665 coaches in different sports and using factor analysis, Myers et al. (2005) reported that the four-factor scale is more desirably fit than the three-factor or the single-factor scale. Further, Rahmani (2011) supported the four-factor structure of the scale using factor analysis in table tennis and wushu coaches ($CFI = 0.99; IFI = 0.99; SRMR = 0.025; p = 0.008; df = 9; \chi^2 = 22.05$). Due to the limited number of sample coaches in the present research ($n = 12$), the construct validity of the scale was not examined. The reliability of CES has been reported to be adequate in various studies (e.g. Myers et al., 2005; Afkham, 2009; Taghi, 2010; Rahmani, 2011; Ramezan, 2011). In the present research, the internal consistency of the scale was measured using Cronbach's alpha: 0.912 for technique efficacy, 0.912 for game strategy efficacy,

0.873 for motivation efficacy, 0.673 for character building efficacy, and 0.966 for the overall scale. Further, the item-whole correlation for all the items of CES ranged from 0.352 to 0.945, indicating the adequate correlation of all items to the whole scale.

Collective Efficacy Questionnaire for Sports (CEQS):This questionnaire has been developed and validated by Short et al. (2005) and consists of 20 items in five subscales: ability, persistence, effort, preparation, and unity (4 items for each subscale). The items are rated on a 10-point Likert scale from 0 (not confident at all) to 9 (extremely confident). Using factor analysis, Short and colleagues showed that the five-factor structure of the scale has adequate goodness of fit ($\text{RSEMA} = 0.09; \text{CFI} = 0.92; \text{NNFI} = 0.90; \text{SRMR} = 0.04; p = 0.001; df = 160; \chi^2 = 574.29$). Based on the data from 131 female basketball players in Iran's Pro League, Ramezan (2011) showed the goodness of fit of CEQS ($\text{CFI} = 0.90; \text{IFI} = 0.92; \text{SRMR} = 0.047; p = 0.082; df = 5; \chi^2 = 18.39$). In the present study, the item-whole correlation for all the items ranged from 0.495 to 0.770, indicating the adequate correlation of all the items to the whole scale. Moreover, the results of confirmatory factor analysis suggested that the five-factor model fits the collected data ($\text{CFI} = 0.95; \text{IFI} = 0.95; \text{SRMR} = 0.075; p \leq 0.0001; df = 160; \chi^2 = 499.18$). Due to the documented construct validity of CEQS no further analysis was done, although drawing the error covariance matrix would have improved the goodness of fit of the model. The internal consistency of the questionnaire, as reported in various studies, suggests the desirable reliability of CEQS (Short et al., 2005; Ramezaninejad et al., 2009; Taghi, 2010; Ramezan, 2011). In the present research, the internal consistency of the scale was as follows: 0.781 for ability, 0.758 for effort, 0.780 for persistence, 0.804 for preparation, 0.825 for unity, and 0.948 for the overall scale.

Data Analsis

Descriptive statistics were used to summarize and classify the demographics data and the research variables. Kolmogorov-Smirnov (K-S) test was applied to examine the normality of data distribution, Cronbach's alpha was used to determine the internal consistency of the instruments, Pearson correlation coefficient was used to examine the relationships between variables, factor analysis was applied to examine CEQS, and a multivariate regression model was used to determine the explanatory power of coaching efficacy for predicting collective efficacy. All the analyses were done at the 95% confidence interval using SPSS 15 and LISREL 8.53.

RESULTS

Table 1 shows the descriptive statistics related to the variables and the relationships between them. As can be seen, there is a weak, significant, negative relationship between character building efficacy and effort ($r(115) = -0.21; p \leq 0.05$), persistence ($r(115) = -0.2; p \leq 0.05$), unity ($r(115) = -0.21; p \leq 0.05$), and the overall collective efficacy ($r(115) = -0.21; p \leq 0.05$). No significant relationship was observed between other variables ($p > 0.05$).

Table 2 provides the results of regression analysis. Based on the data in this table, the regression model of collective efficacy based on the dimensions of coaching efficacy is statistically significant ($F(111,4) = 3.845; p = 0.006; R^2 = 0.122$); that is, the dimensions of coaching efficacy can significantly predict collective efficacy in professional women's basketball teams. The coefficient of determination indicates that coaching efficacy can only explain 12.2 percent of variance in collective efficacy. Table 3 presents the results of testing the significance of the regression model's coefficients. According to the data provided, only motivation efficacy ($\beta = 0.655; p = 0.041$) and character building efficacy ($\beta = -0.617; p = 0.019$) are significant predictors of collective efficacy and the rest of coaching efficacy dimensions have no significant explanatory power ($p > 0.05$).

Table 1.Descriptive statistics of variables and their relationships ($n = 116$)

Variables	M±SD	1	2	3	4	5	6	7	8	9	10
1. Technique	8.94±0.99	-									
2. Game Strategy	8.69±0.99	0.84***	-								
3. Motivation	8.96±0.95	0.83***	0.96***	-							
4Character Building	9.04±0.86	0.92***	0.87***	0.84***	-						
5. Coaching Efficacy	35.64±3.64	0.94***	0.96***	0.95***	0.95***	-					
6. Ability	8.23±1.44	-0.15	-0.08	-0.02	-0.18	-0.11	-				
7. Effort	7.80±1.56	-0.16	-0.08	-0.04	-0.21*	-0.13	0.76***	-			
8. Persistence	7.85±1.61	-0.16	-0.11	-0.07	-0.21*	-0.14	0.65***	0.77***	-		
9. Preparation	8.02±1.51	-0.1	0.01	-0.04	-0.16	-0.06	0.82***	0.83***	0.73***	-	
10. Unity	7.83±1.60	-0.15	-0.12	-0.06	-0.21*	-0.14	0.8***	0.81***	0.75***	0.81***	-
11. Collective Efficacy	39.75±6.99	-0.16	-0.09	-0.03	-0.21*	-0.13	0.87***	0.92***	0.87***	0.92***	0.92***

$^* p \leq 0.05; ^{**} p \leq 0.01; ^{***} p \leq 0.001$

Table 2. The results of significance test of the regression model of collective efficacy based on the dimensions of coaching efficacyy ($n = 116$).

Source of Variance	Sum of Squares	df	Mean Squares	F	P	R^2
Regression	684.91	4	171.23	3.845	0.006**	0.122
Residual	4943.32	111	44.53			
Total	8628.24	115				

** $p \leq 0.01$.

Table 3.The results of significance test of the regression models' coefficients.

Coefficients	B (SE)	β	t	p
Constant	52.26 (7.27)	-	7.186	<0.001**
Technique	0.368 (1.75)	0.50	0.209	0.835
Game Strategy	-1.65 (2.57)	-0.22	-0.642	0.522
Motivation	5.10 (2.24)	0.655	2.068	0.041*
Character Building	-5.20 (2.18)	-0.617	-2.283	-0.019*

* $p \leq 0.05$; *** $p \leq 0.001$.

DISCUSSION AND CONCLUSION

The purpose of the present research was to explain collective efficacy based on coaching efficacy in professional women's basketball teams. The results of testing the relationships between the dimensions of coaching efficacy and the components of collective efficacy showed that there are significant negative relationships between character building and effort, persistence, unity, and overall collective efficacy. This finding suggests that coaches who are highly confident of their character building skills work in teams where players have low levels of collective efficacy, especially in terms of effort, persistence, and unity, and vice versa. The results of regression analysis suggested that, among the dimensions of coaching efficacy, only character building efficacy and motivation efficacy were significant predictors of collective efficacy in professional women's basketball teams. The standard coefficient of the regression model for these two dimensions showed that motivation efficacy is a more important determinant of collective efficacy and plays a positive role in explaining this construct, while character building has less explanatory power and plays a negative role in explaining collective efficacy.

The findings of the present research regarding the effect of motivation efficacy in collective efficacy are consistent with the results of previous studies (e.g. Vargas-Tonsing et al., 2003; Taghi, 2010; Ramezan, 2011). Vargas-Tonsing et al. (2003) showed that motivation efficacy can positively predict collective efficacy in high school volleyball teams ($\beta = 1.05$). In addition, studies carried out on soccer teams (Taghi, 2010) and basketball teams (Ramezan, 1390) show that motivation efficacy is significantly and positively associated with all the components of collective efficacy. The determining role of motivation efficacy in collective efficacy may be due to the fact that, traditionally, motivational skills of coaches affect such efficacy components as mental preparation for competitive matches, self-respect in players, and team cohesion (Vargas-Tonsing et al., 2003). Supporting the importance of motivation efficacy, Gibbons and Forster(2002) showed that Olympians ranked the ability to motivate as one of the two most important qualities of a coach.

Despite the unanimity regarding the positive effect of motivation efficacy on collective efficacy, the evidence on the relationship between character building and collective efficacy is contradictory. Vargas-Tonsing et al. (2003) found a significant negative relationship between character building and collective efficacy in female high school volleyball players, while Taghi (2010) believes in the lack of a correlation and Ramezan (1390) reports a positive relationship between these variables. The reason for the inconsistency of results can be attributed to differences in gender, sport, and competitive level in the studied teams. However, the observed negative relationship between character building and collective efficacy can be interpreted based on certain evidence. Character building efficacy is the confidence coaches have in their ability to instill character development, sportsmanship, and respect for others in players (Myers et al., 2005). Therefore, in situations where players put more emphasis on winning, coaches highly confident of their character building skills may underline the importance of fair play and sportsmanship. This could be one reason for the negative relationship between character building and collective efficacy. On the other hand, other variables may be involved in the effect of coaching efficacy on collective efficacy. For instance, Myers et al. (2005) examined the sources of coaching efficacy and the effect of coaching efficacy on team variables. They showed that in women's teams, coach's gender plays an important role in the relationship between character building and team satisfaction. In teams with male coaches, character building efficacy was negatively associated with team satisfaction. Although experts believe that coaching is something beyond teaching certain skills and coaches are in a position to act as a role model and can reinforce proper behaviors and punish unbecoming behaviors (Horn, 2002), rejection of the attitude and behavioral pattern prescribed by the coach may lead to dissatisfaction and subsequently reduced collective efficacy. Therefore, future research can examine the mediating role of such variables as coach-athlete relations and team satisfaction in the relationship between coaching efficacy and collective efficacy.

In the present research, technique and game strategy efficacy had no significant role in collective efficacy. The reason may be related to the level of coordination and cohesion of the teams, for the studied teams were professional teams with desirable levels of technique and game strategy and the data was collected after preseason when teams had reached an optimal level of technical and tactical abilities. Future research can examine the relationship between coaching efficacy and collective efficacy by controlling the level of technical and tactical abilities of players and coaches. Moreover, since collective efficacy can be affected by winning or losing (Watson et al., 2001), longitudinal studies may prove effective in examining this relationship.

In general, the present research suggests that the conceptual model of coaching efficacy requires revision and expansion, for the findings showed that motivation was the only predictor of collective efficacy in professional women's basketball teams. Moreover, the findings indicate that in team sports such as basketball character building efficacy may lead to reduced collective efficacy and subsequently decline in team cohesion and performance.

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