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# Coaching Efficacy and Coaching Effectiveness: Examining Their Predictors and Comparing Coaches' and Athletes' Reports

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Research on the conceptual model of coaching efficacy (Feltz, Chase, Moritz, & Sullivan, 1999) has increased dramatically over the past few years. Utilizing this model as the guiding framework, the current study examined: (a) coaching experience and sex as predictors of coaches' coaching efficacy; (b) sport experience, sex, and the match/mismatch in sex between coach and athlete as predictors of athletes' perceptions of their coach's effectiveness on the four coaching efficacy domains; and (c) whether coaches' reports of coaching efficacy and athletes' perceptions of coaching effectiveness differed. Coaches ($N = 26$) and their athletes ($N = 291$) from 8 individual and 7 team sports drawn from British university teams ($N = 26$) participated in the study. Coaches completed the Coaching Efficacy Scale (CES), while athletes evaluated their coach's effectiveness using an adapted version of the CES; coaches and athletes also responded to demographic questions. Results indicated that, in coaches, years of coaching experience positively predicted technique coaching efficacy, and males reported higher game strategy efficacy than females. In athletes, sport experience negatively predicted all perceived coaching effectiveness dimensions, and the mismatch in sex between athletes and their coach negatively predicted perceived motivation and character building coaching effectiveness. Finally, on average, coaches' ratings of coaching efficacy were significantly higher than their athletes' ratings of coaching effectiveness on all dimensions. The findings are discussed in terms of their implications for coaching effectiveness.

Coaches are considered influential individuals in athletes' lives. Coaches can positively affect athletes' performance, behavior, and psychological and emotional well being (see Horn, 2002). The main medium through which coaches exert their influence on sport participants is their own behaviors, and coaches who have a positive impact on athletes engage in effective behaviors. Effective coaching behaviors are those that result in successful performance and positive psychological

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outcomes in athletes such as high perceived ability, self esteem, and enjoyment (see Horn, 2002). Thus, effective coaches can have an influence on different aspects of the athletic experience.

## The Coaching Efficacy Model

A construct that has implications for coaching effectiveness is coaching efficacy (Feltz et al., 1999). Coaching efficacy has been defined as the extent to which coaches believe that they have the capacity to influence the learning and performance of their athletes and consists of four dimensions: motivation, game strategy, technique, and character building (Feltz et al., 1999). Motivation efficacy refers to coaches' confidence in their ability to influence the psychological skills and states of their athletes. Game strategy efficacy is the coaches' belief in their ability to coach and lead their team to a successful performance during competition. Technique efficacy pertains to the coaches' beliefs regarding their instructional and diagnostic skills, while character building efficacy concerns the coaches' beliefs in their ability to influence their athletes' personal development and positive attitude toward sport.

Feltz et al. (1999) proposed that certain desirable outcomes for both coaches and athletes should result from high levels of coaching efficacy. Examples of these outcomes are commitment to coaching and the use of effective motivational techniques for coaches, and satisfaction, performance, confidence, and motivation for athletes (Feltz et al., 1999). In empirical work, overall coaching efficacy has been associated with intercollegiate coaches' commitment to coaching (Kent & Sullivan, 2003), while motivation and technique efficacy have been linked to coaches' reports of engaging in training and instruction and giving positive feedback to their players (Sullivan & Kent, 2003). Coaching efficacy has also been linked to team efficacy, satisfaction with the coach, and team performance in athletes (e.g., Feltz et al., 1999; Myers, Vargas-Tonsing, & Feltz, 2005; Vargas-Tonsing, Warners, & Feltz, 2003). In our view, the positive athlete-related outcomes associated with coaching efficacy indicate that highly efficacious coaches may also be more effective.

Several variables have been proposed to influence coaching efficacy including coaching experience, prior team success, perceived skill of one's athletes, and perceived social support from school, community, and athletes' parents (Feltz et al., 1999). In empirical research, perceived community and parental support were positively linked to coaching efficacy in male high-school basketball coaches (Feltz et al., 1999). In intercollegiate coaches, coaching experience significantly predicted character building (Marback, Short, Short, & Sullivan, 2005; Short, Smiley, & Ross-Stewart, 2005), motivation, and game strategy (Marback et al., 2005) efficacy. In addition, career-winning percentage predicted game strategy efficacy, and perceived team ability and social support from athletes' parents predicted motivation and character building efficacy (Myers et al., 2005). Thus, empirical evidence exists for several sources posited in the coaching-efficacy model.

Research has also identified differences in coaching efficacy as a function of sex, a variable not originally hypothesized to affect this construct. For example,

male intercollegiate coaches reported higher game strategy efficacy than their female counterparts (Marback et al., 2005; Sullivan & Kent, 2003). However, male coaches considered themselves less efficacious with regard to their character building abilities than females (Marback et al., 2005). Due to the link between sex and coaching efficacy identified in past research, sex should be considered in investigations of this construct. To date, only two coaching efficacy studies have examined sex, while most research has focused on the sources of coaching efficacy hypothesized in the original model (Feltz et al., 1999).

As indicated earlier, several desirable athlete-related outcomes are associated with coaching efficacy suggesting that coaches who have high efficacy may be more effective than are those who have low efficacy. This is not surprising if we consider the origins of the coaching efficacy construct. The construct was developed out of a 5-week seminar with 11 coaches in which dimensions of effective coaching, repeatedly mentioned in the coaching education literature, were identified and eventually reduced to four key components (Feltz et al., 1999). Thus, the dimensions of coaching efficacy correspond to essential components of effective coaching.

## Athletes' Perceptions of their Coach

Effective coaches exert their positive influence on their athletes through their behaviors (Horn, 2002; Smith, Smoll, & Curtis, 1979; Smoll & Smith, 1989). An important variable hypothesized to mediate the relationship between coaching behaviors and athlete outcomes such as motivation, performance, behavior, beliefs, attitudes, and evaluative reactions is athletes' *perceptions* of these behaviors (see Horn, 2002; Smoll & Smith, 1989). The importance of athletes' perceptions of their coach's behaviors for athlete-related outcomes has been recognized in the coaching-efficacy literature (e.g., Myers, Feltz, Maier, Wolfe, & Reckase, 2006).

Two recent studies have investigated athletes' perceptions of their coach on the four coaching efficacy domains. In the first study, intercollegiate soccer and ice-hockey players were presented with the items used to measure the four dimensions of coaching efficacy (i.e., motivation, game strategy, technique, and character building) and asked to indicate how *competent* they thought their head coach was (Myers, Feltz, et al., 2006). The authors defined coaching competency as "athletes' evaluations of their head coach's ability to affect their learning and performance" (p. 113) and found that this construct consists of the same four dimensions that make up coaching efficacy. In a second study using the same sample, athletes' perceptions of motivation competence had a moderately large and positive relationship with their satisfaction with the coach (Myers, Wolfe, Maier, Feltz, & Reckase, 2006).

The present study sought to extend this literature by investigating athletes' perceptions of coaching *effectiveness* on the four coaching efficacy domains. We defined coaching effectiveness as the extent to which coaches can implement their knowledge and skills to positively affect the learning and performance of their athletes. We focused on effectiveness rather than competence because effectiveness is concerned with the *outcomes* or results one produces, whereas competence

pertains to the *skills* one has. From an applied perspective, we believe that being able to produce outcomes has more important implications for the athletes' experiences than being perceived as merely having the skills to do so. Finally, in our view, a coach can produce outcomes only if he or she has the required skills. Thus, a coach who is perceived as effective is also likely to be perceived as competent.

## Predictors of Perceived Coaching Effectiveness

As indicated earlier, athletes' perceptions of coaching behaviors are hypothesized to play an important mediating role between coaching behaviors and athlete outcomes. These perceptions may also be affected by athletes' personal characteristics or individual difference variables (Horn, 2002; Smoll & Smith, 1989). One variable proposed to influence athletes' perceptions of coaches' behaviors is athletes' sex (Horn, 2002; Smoll & Smith, 1989). For example, male university student athletes reported higher perceptions of autocratic and lower perceptions of democratic coaching behaviors than did female athletes (Holembeak & Amorose, 2005). In junior-college baseball and softball players, compared with females, males perceived their coach to display more autocratic behaviors, and provide more training and instruction, social support, and positive feedback (Gardner, Shields, Bredemeier, & Bostrom, 1996). Although these findings may have been influenced by actual coaching behaviors, clearly, sex differences in perceptions of coaching behaviors do exist.

A related variable that has received very little attention to date in studies of perceived coaching behaviors is the match between players' and coaches' sex. This variable may have implications for athletes' perceptions. For instance, female college athletes perceived female coaches to give more positive feedback and encouragement but they perceived male coaches as more structured and organized (Frey, Czech, Kent, & Johnson, 2006). Moreover, female college athletes coached by male coaches perceived that their coaches used certain efficacy-enhancing techniques (i.e., setting specific performance goals and pointing out similar successful athletes) more often than did female athletes coached by female coaches (Vargas-Tonsing, Myers, & Feltz, 2004). The latter athletes perceived their coaches as using hard physical conditioning and verbal persuasion more often. Overall, the extant evidence suggests that male and female athletes vary in their perceptions of their male and female coaches' behaviors. It is possible that the match in sex between coaches and athletes has implications for athletes' perceptions of coaching effectiveness.

One other personal variable that might influence athletes' perceptions of coaches' behaviors is athletes' sport experience. To our knowledge, no study has reported differential perceptions of coaches' behaviors as a function of athletes' sport experience. However, it is possible that athletes, who have participated in their sport for many years and have been exposed to different styles of coaching and different coaching behaviors, may evaluate their coach's effectiveness differently. For example, more experienced athletes are likely to have higher expectations of coaching and therefore may be more critical of their current coach. Thus,

athletes' sport experience is a variable worthy of investigation in studies of coaching effectiveness.

## Comparing Coaches' and Athletes' Perceptions

An interesting issue that has received little attention to date is whether coaches' and athletes' reports of coaching behaviors related to the four coaching efficacy domains differ. One relevant study has compared coaches' and athletes' evaluations of coaching efficacy. Specifically, Short and Short (2004) asked nine intercollegiate male football coaches to complete the Coaching Efficacy Scale (CES), and using the same items, they asked athletes to rate how confident they perceived their coach to be. Seven coaches (i.e., 78%) gave themselves higher ratings than their athletes gave them. Although this study reported interesting findings, it employed a small sample size of only male football players and coaches limiting the generalizability of the findings. Research is needed to examine differences between coaches' reports and athletes' perceptions of coaching behaviors related to the four coaching efficacy domains using larger and more diverse samples of athletes and coaches.

Other studies investigating similar issues have revealed substantial discrepancies between the athletes' perceptions and their coaches' reports. For example, Kenow and Williams (1992) examined female college basketball players' and their coach's views of effective coaching behaviors that might occur when playing against a top team in their league, and found that the coach rated some of his behaviors substantially more positively than did his athletes. Vargas-Tonsing et al. (2004) also investigated coaches' and athletes' perceptions of the frequency and effectiveness of techniques used by coaches to enhance their athletes' efficacy. They classified perceptions as congruent for 15% of the techniques in terms of how frequently they were used, and for only 8% in terms of how effective they were considered by coaches and athletes. Thus, some evidence suggests that coaches' and athletes' perceptions differ, with coaches rating themselves more positively than their athletes do.

## The Present Research

Based on the literature reviewed above, the current study had three purposes: First, to examine predictors of coaches' reports of coaching efficacy; second, to investigate predictors of athletes' perceptions of coaching effectiveness on the four coaching efficacy domains; and third, to examine whether coaches' reports of coaching efficacy and athletes' perceptions of coaching effectiveness on the four coaching efficacy domains differ. Based on past research (Marback et al., 2005), we hypothesized that years of coaching experience and coaches' sex would predict coaching efficacy. Athletes' sport experience, sex, and the match/mismatch in sex between coaches and athletes were expected to predict athletes' perceptions of coaching effectiveness (Frey et al., 2006; Smoll & Smith, 1989; Vargas-Tonsing et al., 2004). Finally, athletes' perceptions of coaching effectiveness were expected

to differ significantly from coaches' efficacy ratings on the four coaching efficacy domains (Short & Short, 2004; Vargas-Tonsing et al., 2004).

# Method

## Participants

Head coaches ($N = 26$) and their athletes ($N = 291$) from a variety of sport teams ($N = 26$) of a British University competing in the British-University-Sport-Association championship participated in the study. The number of athletes per team ranged from 7 to 12 ($M = 11.19$, $SD = 1.39$). Participants were recruited from individual (archery, badminton, fencing, judo, jujitsu, karate, table tennis, trampoline) and team (basketball, soccer, hockey, lacrosse, netball, rugby, volleyball) sports. Coaches and athletes from a variety of sports were selected to increase the generalizability of the findings. Male and female coaches and athletes were used to enable us to examine sex mismatch as a predictor of perceived coaching effectiveness. University teams were employed because coaches and athletes of these teams typically have a lot of coaching and sport experience, respectively, which were examined as predictors of coaches' and athletes' reports.

The coaches were 19 males and 7 females, whose age ranged from 19 to 66 years ($M = 33.42$, $SD = 14.42$) for males and 21–51 ($M = 35$, $SD = 12.92$) for females. Their coaching experience ranged from 2 to 39 years ($M = 8.66$, $SD = 9.91$) for males and 1–22 ($M = 9.00$, $SD = 7.02$) for females, their sport experience ranged from 4 to 50 years ($M = 14.79$, $SD = 10.67$) for males and 6–30 ($M = 13.14$, $SD = 7.88$) for females, and they had participated in their sport in varying standards: recreational ($n = 1$), county ($n = 5$), regional ($n = 5$), national ($n = 11$), and international ($n = 6$). The athletes were 115 males and 176 females, whose age ranged from 19 to 29 years ($M = 21.30$, $SD = 1.70$) for males and 18–31 years ($M = 21.09$, $SD = 1.89$) for females. Their sport experience ranged from .1–17 years ($M = 8.34$, $SD = 5.08$) for males and .20–20 years ($M = 7.02$, $SD = 4.25$) for females, and time with their current coach ranged from .1–4 years ($M = .95$, $SD = .84$) for males and .2–6 years ($M = 1.02$, $SD = .98$) for females. Most ($n = 111$) male athletes had a male coach; only four had a female coach. Most ($n = 104$) female athletes also had a male coach; 72 female athletes had a female coach.

## Measures

***Coaching Efficacy.*** The 24-item CES (Feltz et al., 1999) was used to measure dimensions of coaching efficacy: motivation (7 items), game strategy (7 items), technique (6 items), and character building (4 items). First, coaches were informed that coaching confidence refers to the extent to which coaches believe that they have the capacity to affect the learning and performance of their athletes. Then, they were asked to think about how confident they were as a coach and to rate their confidence for each item on a 10-point Likert scale with anchors of 0 (*not at all confident*) and 9 (*extremely confident*). The stem for each item was "How confident are you in your ability to. . .". Examples of items are "motivate your athletes" (motivation), "understand competitive strategies" (game strategy), "teach the skills of your sport" (technique), and "instil an attitude of fair play among your

athletes" (character building). Feltz et al. (1999) reported alpha coefficients of .91 for motivation, .88 for game strategy, .89 for technique, .88 for character building, and .95 for the total scale and provided evidence for the factorial, convergent, and discriminant validity of the scale. The CES has been used successfully with university coaches (e.g., Marback et al., 2005; Myers et al., 2005; Short et al., 2005).

***Perceived Coaching Effectiveness.*** A modified version of the CES was used to measure athletes' perceptions of their coach's effectiveness. First, athletes were informed that coaching effectiveness refers to the extent to which coaches can implement their knowledge and skills to positively affect and improve the learning and performance of their athletes. Then, they were asked to think about how effective their coach was and rate his/her effectiveness for each item. The stem for each item was "how effective is your coach in his/her ability to. . .". The items were—with minor wording changes where necessary—the same as those used in the CES. Ratings were made on a 10-point Likert scale with anchors of 0 (*not at all effective*) and 9 (*extremely effective*).

Confirmatory Factor Analysis (CFA) was used to test the factor structure of the modified scale to determine whether the adapted scale maintained the factor structure of the original instrument. The CFA was conducted using the EQS 6.1 (Bentler & Wu, 2002) statistical package. The first analysis produced a high value for the normalized estimate of Mardia's coefficient of multivariate kurtosis (68) indicating substantial deviation from multivariate normality. Therefore, in all analyses, the Robust Maximum Likelihood estimation method was used, which produces more accurate standard errors, chi-squared values, and fit indices when the data are not normally distributed (Bentler & Wu, 2002). The case numbers with the largest contribution to normalized multivariate kurtosis suggested the presence of no outliers; therefore, no cases were removed.

We used all 24 items to specify the same intercorrelated four first-order factors found in the CES (Feltz et al., 1999). Motivation had moderately high correlations with game strategy ($r$ = .65) and technique ($r$ = .66) and a high correlation with character building ($r$ = .83) perceptions of coaching effectiveness. Game strategy had a moderately high correlation with character building ($r$ = .68) and a high correlation with technique ($r$ = .83), while the latter two dimensions were moderately correlated ($r$ = .65). The model achieved an acceptable fit to the data, Satorra-Bentler $\chi^2$ (246) = 595.32, Satorra-Bentler $\chi^2/df$ = 2.42, CFI = .90, RMSEA = .07, SRMR = .07, CAIC = -1052. For comparison purposes, the fit indices of the equivalent model for the CES (Feltz et al., 1999) were: Satorra-Bentler $\chi^2$ (246) = 790.21, Satorra-Bentler $\chi^2/df$ = 3.21, CFI = .89, and RMSEA = .08; for the scale used to measure coaching competency (Myers, Feltz et al., 2006) the fit indices were: Satorra-Bentler $\chi^2$ (246) = 1549.86, Satorra-Bentler $\chi^2/df$ = 6.30, CFI = .92, RMSEA = .10, and SRMR = .04.

When a construct consists of interrelated factors, it is important to examine whether the factor correlations can be explained by one or more higher-order factors (Kline, 2005). Thus, we examined whether the four first-order factors were subsumed under a second-order factor. If the fit of a second-order model approaches that of the first-order model, the second-order model should be chosen due to its greater parsimony (Kline, 2005). This was the case in the current study, Satorra-Bentler $\chi^2$ (226) = 627.90, Satorra-Bentler $\chi^2/df$ = 2.78, CFI = .89, RMSEA = .07,

**Table 1 Factor Loadings and Error Variances of Coaching Efficacy Scale Items Used to Measure Coaching Effectiveness**

| Subscale/Item | Item Order | Loading | EV |
|---|---|---|---|
| Motivation | | | |
| Help athletes maintain confidence in themselves | 1 | .80 | .60 |
| Mentally prepare his/her athletes for game strategies | 3 | .74 | .67 |
| Build the self-esteem of his/her athletes | 6 | .86 | .52 |
| Motivate his/her athletes | 10 | .88 | .47 |
| Build team cohesion | 12 | .78 | .63 |
| Build the self-confidence of his/her athletes | 15 | .87 | .49 |
| Build team confidence | 23 | .84 | .55 |
| Game Strategy | | | |
| Recognize opposing team's strengths during competition | 2 | .67 | .74 |
| Understand competitive strategies | 4 | .64 | .77 |
| Adapt to different game situations | 8 | .74 | .67 |
| Recognize opposing team's weaknesses during competition | 9 | .71 | .70 |
| Make critical decisions during competition | 11 | .77 | .64 |
| Maximize his/her team's strengths during competition | 17 | .78 | .63 |
| Adjust his/her game strategy to fit his/her team's talent | 21 | .74 | .67 |
| Technique | | | |
| Demonstrate the skills of his/her sport | 7 | .62 | .78 |
| Coach individual athletes on technique | 14 | .76 | .65 |
| Develop athletes' abilities | 16 | .83 | .56 |
| Recognize talent in athletes | 18 | .68 | .74 |
| Detect skill errors | 20 | .73 | .68 |
| Teach the skills of his/her sport | 22 | .75 | .66 |
| Character Building | | | |
| Instill an attitude of good moral character | 5 | .78 | .63 |
| Instill an attitude of fair play among his/her athletes | 13 | .77 | .64 |
| Promote good sportsmanship | 19 | .77 | .64 |
| Instill an attitude of respect for others | 24 | .81 | .59 |
| Total Coaching Effectiveness | | | |
| Motivation | | .84 | .54 |
| Game strategy | | .86 | .52 |
| Technique | | .84 | .55 |
| Character building | | .86 | .52 |

SRMR = .08, CAIC = -1033, and therefore the second-order model was chosen. The items[1], factor loadings, and error variances of the final model are presented in Table 1.

### Procedure

After the study was approved by the Ethics Committee of our university, coaches of university teams ($N = 26$) were contacted and were provided information about the study protocol. All coaches agreed to participate and a time and date for data collection was scheduled. Two of the authors administered the questionnaires before a training session to coaches and athletes. The questionnaire included demographic questions (i.e., age and sex) and either the CES completed by coaches or its modified version completed by the athletes. Participants also reported their sport experience. They were informed that all information would be kept confidential and that they could withdraw from the study at any time. Following questionnaire completion, participants were debriefed. Data were collected 2–3 months into the season in 2004–2005.

## Results

### Descriptive Statistics, Correlational Analyses, and Scale Reliabilities

Descriptive statistics, zero-order correlations, and scale reliabilities of all *coach* variables are presented in Table 2. It can be seen that most coaches reported high levels of coaching efficacy with the highest rating given for technique and the lowest rating given for motivation. Zero-order correlations indicated that the four dimensions of coaching efficacy were modestly and positively interrelated except for motivation and technique efficacy which had a low correlation. Correlations around .10, .30, and .50 were considered small, medium, and large, respectively (see Cohen, 1992). Coaching experience and age were positively related to each other and to overall coaching efficacy. Finally, males reported significantly higher game strategy efficacy ($M = 7.23$, $SD = .67$) than females ($M = 6.55$, $SD = .45$). Positive correlations also emerged between sex and the remaining coaching efficacy dimensions. Finally, all scales measuring coaching efficacy dimensions had good levels of internal consistency as indicated by the alpha coefficients reported in Table 2.

Descriptive statistics, zero-order correlations, and alpha coefficients of all *athlete* variables are presented in Table 3. On average, the athletes perceived their coach to be effective on motivation, game strategy, technique, and character building. The four dimensions of coaching effectiveness were modestly and positively interrelated. Sport experience and age were negatively related to most dimensions as well as the overall coaching effectiveness. In addition, male athletes rated their coaches higher for motivation effectiveness ($M = 6.41$, $SD = 1.31$) than did female athletes ($M = 5.90$, $SD = 1.70$). All scales had good internal consistencies (see Table 3).

**Table 2 Descriptive Statistics, Alpha Coefficients, and Zero-Order Correlations Among Variables for Coaches (*N* = 26)**

| Variable | *M* | *SD* | Range | α | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Motivation CE | 6.86 | 0.86 | 4.57–8.43 | .92 | | | | | | | | |
| 2. Game strategy CE | 7.05 | 0.68 | 6.00–8.71 | .81 | .45* | | | | | | | |
| 3. Technique CE | 7.57 | 0.72 | 6.00–8.50 | .76 | .19 | .49* | | | | | | |
| 4. Character building CE | 7.41 | 0.94 | 5.75–8.75 | .77 | .52* | .53* | .48* | | | | | |
| 5. Total CE | 7.19 | 0.60 | 6.04–8.13 | .90 | .76* | .81* | .67* | .80* | | | | |
| 6. Coaching experience | 8.75 | 9.08 | 1–39 | — | .38 | .27 | .39* | .36 | .46* | | | |
| 7. Sport experience | 14.35 | 9.87 | 4–50 | — | .24 | .49* | .38 | .27 | .45* | .50* | | |
| 8. Age | 33.85 | 13.80 | 19–66 | — | .31 | .27 | .36 | .41* | .43* | .68* | .57* | |
| 9. Sex | 0.73 | 0.45 | 0–1 | — | .00 | .45* | .26 | −.03 | .22 | −.02 | .08 | −.05 |

*Note*. *$p < .05$. Coaching experience, sport experience, and age are expressed in years. Sex was coded 0 for females and 1 for males.

CE = Coaching Efficacy.

**Table 3 Descriptive Statistics, Alpha Coefficients, and Zero-Order Correlations Among Variables for Athletes ($N$ = 291)**

| Variable | *M* | *SD* | Range | α | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Motivation PCE | 6.10 | 1.57 | 0.29–9.00 | .93 | | | | | | | | |
| 2. Game strategy PCE | 6.47 | 1.29 | 2.71–8.86 | .88 | .61* | | | | | | | |
| 3. Technique PCE | 6.83 | 1.30 | 2.33–9.00 | .87 | .58* | .72* | | | | | | |
| 4. Character building PCE | 6.42 | 1.59 | 1.50–9.00 | .86 | .74* | .57* | .56* | | | | | |
| 5. Total PCE | 6.44 | 1.22 | 2.83–8.83 | .95 | .88* | .86* | .83* | .82* | | | | |
| 6. Sport experience | 7.54 | 4.63 | 1–20 | — | −.17* | −.15* | −.24* | −.17* | −.21* | | | |
| 7. Age | 21.17 | 1.82 | 18–31 | — | −.10 | −.14* | −.12* | −.12* | −.14* | .11 | | |
| 8. Sex | 0.40 | 0.49 | 0–1 | — | .16* | −.02 | .01 | .07 | .07 | .14* | .06 | |
| 9. Sex match/mismatch | 0.37 | 0.48 | 0–1 | — | −.21* | −.05 | −.10 | −.23* | −.17* | −.03 | −.03 | −.56* |

*Note:* *$p < .05$. Sport experience and age are expressed in years. Sex was coded 0 for females and 1 for males. Sex match and mismatch between athletes and their coach were coded 0 and 1 respectively.

PCE = Perceived Coaching Effectiveness.

## Predictors of Coaching Efficacy

The first purpose of this study was to investigate coaching experience and sex as predictors of coaching efficacy and was examined using multivariate multiple regression analysis. The multivariate effect for coaching experience was not significant, while the effect for sex approached significance, $F(4, 20) = 2.62$, $p = .07$, $\eta_p^2 = .34$. Results of this analysis are presented in Table 4. Coaching experience and sex did not significantly predict motivation or character building efficacy. Sex positively predicted game strategy efficacy: Male coaches had significantly higher levels of game strategy efficacy ($M = 7.23$, $SD = .67$) than females ($M = 6.55$, $SD = .45$). Coaching experience was a positive predictor of technique coaching efficacy. A separate analysis showed that coaching experience was the only significant predictor of total coaching efficacy. The amount of variance ($\eta_p^2$) in each criterion variable accounted for by each predictor can be seen in Table 4.

## Predictors of Perceived Coaching Effectiveness

The second purpose of the study was to examine sport experience, match/mismatch in sex between athletes and their coach, and sex as predictors of perceived coaching effectiveness and was also examined using multivariate multiple regression analysis. Significant multivariate effects for sport experience, $F(4, 284) = 4.82$, $p = .001$, $\eta_p^2 = .06$, and sex match/mismatch, $F(4, 284) = 4.22$, $p = .002$, $\eta_p^2 = .06$, were found; the multivariate effect for sex approached significance, $F(4, 284) = 2.41$, $p = .05$, $\eta_p^2 = .03$. Results are presented in Table 5. Sport experience was a negative predictor of athletes' perceptions of all dimensions of coaching

**Table 4 Predictors of Coaching Efficacy: Coaches (*N* = 26)**

| Predictor Variable | *b* | 95% CI for *b* | β | *t* | $\eta_p^2$ |
|---|---|---|---|---|---|
| | | Motivation | | | |
| Coaching experience | 0.04 | 0.00, 0.07 | 0.38 | 1.96 | .14 |
| Sex | 0.02 | −0.74, 0.78 | 0.01 | .05 | .00 |
| | | Game Strategy | | | |
| Coaching experience | 0.02 | −0.01, 0.05 | 0.28 | 1.57 | .10 |
| Sex | 0.69 | 0.14, 1.24 | 0.46 | 2.59* | .23 |
| | | Technique | | | |
| Coaching experience | 0.03 | 0.00, 0.06 | 0.40 | 2.16* | .17 |
| Sex | 0.43 | −0.18, 1.04 | 0.27 | 1.47 | .09 |
| | | Character Building | | | |
| Coaching experience | 0.04 | −0.01, 0.08 | 0.36 | 1.83 | .13 |
| Sex | −0.06 | −0.90, 0.78 | −0.03 | −0.14 | .00 |
| | | Total Coaching Efficacy | | | |
| Coaching experience | 0.03 | 0.01, 0.06 | 0.46 | 2.60* | .23 |
| Sex | 0.31 | −0.18, 0.80 | 0.23 | 1.29 | .07 |

*Note*. *$p < .05$. Sex was coded as 0 for females and 1 for males.

CI = Confidence Interval.

**Table 5 Predictors of Perceived Coaching Effectiveness: Athletes (*N* = 291)**

| Variable | *b* | 95% CI for *b* | β | *t* | $\eta_p^2$ |
|---|---|---|---|---|---|
| | | Motivation | | | |
| Sport experience | −0.06 | −0.10, −0.03 | −0.19 | −3.26** | .04 |
| Sex match/mismatch | −0.54 | −0.98, −0.10 | −0.17 | −2.40* | .02 |
| Sex | 0.29 | −0.15, 0.73 | 0.09 | 1.31 | .01 |
| | | Game Strategy | | | |
| Sport experience | −0.04 | −0.07, −0.01 | −0.15 | −2.51* | .02 |
| Sex match/mismatch | −0.21 | −0.58, 0.16 | −0.08 | −1.14 | .00 |
| Sex | −0.13 | −0.50, 0.24 | −0.05 | −0.68 | .00 |
| | | Technique | | | |
| Sport experience | −0.07 | −0.10, −0.03 | −0.24 | −4.09*** | .06 |
| Sex match/mismatch | −0.32 | −0.68, 0.05 | −0.12 | −1.70 | .01 |
| Sex | −0.06 | −0.43, 0.30 | −0.02 | −0.35 | .00 |
| | | Character Building | | | |
| Sport experience | −0.06 | −0.10, −0.02 | −0.17 | −3.03** | .03 |
| Sex match/mismatch | −0.88 | −1.32, −0.43 | −0.27 | −3.90*** | .05 |
| Sex | −0.18 | −0.62, 0.26 | −0.06 | −0.79 | .00 |
| | | Total Perceived Coaching Effectiveness | | | |
| Sport experience | −0.06 | −0.09, −0.03 | −0.22 | −3.78*** | .05 |
| Sex match/mismatch | −0.44 | −0.78, −0.10 | −0.18 | −2.57* | .02 |
| Sex | 0.00 | −0.34, 0.34 | 0.00 | 0.01 | .00 |

*Note*. *$p < .05$, **$p < .01$, ***$p < .001$. Sex coded 0 for females and 1 for males. Sex match and mismatch between athletes and their coach coded 0 and 1 respectively.

CI = Confidence Interval.

effectiveness. Sex match/mismatch negatively predicted perceptions of motivation and character building coaching effectiveness: Athletes were less likely to perceive their coach as effective in motivation and character building when there was a mismatch in the sex between coach and athlete. Sex did not significantly predict any coaching effectiveness dimension. A separate analysis indicated that both sport experience and sex match/mismatch were negative predictors of perceived total coaching effectiveness. The amount of variance ($\eta_p^2$) in each criterion variable accounted for by each predictor can be seen in Table 5.

We also examined whether type of sport (i.e., individual versus team) and its potential interaction with sex influenced athletes' perceptions of coaching effectiveness by conducting a 2 Sport Type (individual, team) × 2 Sex (male, female) MANOVA. This analysis revealed significant sport type, $F$ (4, 284) = 8.17, $p <$ .001, $\eta_p^2 = .10$, and sex, $F$ (4, 284) = 3.09, $p = .02$, $\eta_p^2 = .04$, multivariate main effects, but no significant interaction. Follow-up ANOVAs indicated that athletes in individual sports perceived their coach as significantly more effective in technique ($M = 7.24$, $SD = 1.25$) than did team sport athletes ($M = 6.57$, $SD = 1.27$), $F$ (1, 287) = 17.65, $p < .001$, $\eta_p^2 = .06$. No other significant effects were found for type of sport.

## Comparing Coaches' and Athletes' Reports

The third purpose of the study was to examine whether coaches' reports of coaching efficacy and athletes' perceptions of coaching effectiveness differed. Mean scores for each dimension were computed for each team by averaging the ratings of the team members. Before aggregating athletes' ratings, the degree of consensus in these ratings was assessed (see Moritz & Watson, 1998; Myers & Feltz, 2007) by computing the within-team agreement index for each scale ($r_{wg\,(j)}$; James, Demaree, & Wolf, 1984). On average, there were 11.19 athletes on each team (*SD* = 1.39, range = 7–12). One team had a low $r_{wg\,(j)}$ value (.16) for motivation and was therefore deleted from the analysis involving the motivation dimension. A second team had a negative value (-.52) for character building and was deleted from the analysis involving this dimension. Mean values for $r_{wg\,(j)}$ were .92 (*SD* = .05, range = .75–.98) for motivation; .92 (*SD* = .05, range = .78–.97), for game strategy; .90 (*SD* = .11, range = .49–.98) for technique; .82 (*SD* = .13; range = .49–.95) for character building; and .97 (*SD* = .02, range = .93–.99) for total perceptions of coaching effectiveness. These values indicate sufficient within-team consensus in perceived coaching effectiveness that justify aggregating individual data.

Mean team scores were compared with the coaching efficacy scores reported by each team's coach using 2 Group (Coach, Athlete) by 4 Dimension (Motivation, Game Strategy, Technique, Character Building) repeated-measures ANOVAs. These analyses allowed us to statistically compare ratings of coaches with those of their own athletes. The analyses revealed significant differences between coaches and athletes on motivation, $F$ (1, 24) = 7.51, $p$ = .01, $\eta_p^2$ = .24, game strategy, $F$ (1, 25) = 8.49, $p$ = .007, $\eta_p^2$ = .25, technique, $F$ (1, 25) = 11.53, $p$ = .002, $\eta_p^2$ = .32, and character building, $F$ (1, 24) = 11.78, $p$ = .002, $\eta_p^2$ = .33. Thus, on average, coaching efficacy as reported by the coaches was greater than coaching effectiveness perceived by their athletes in all four coaching efficacy dimensions (see Figure 1). In addition, overall coaching efficacy ($M$ = 7.24, $SD$ = 0.62) was higher than perceived coaching effectiveness ($M$ = 6.49, $SD$ = 0.67), $F$ (1, 25) = 12.50, $p$ = .002, $\eta_p^2$ = .33. We also examined whether sport type, sex, and their interaction influenced these results by including sport type and sex as factors in the above analysis. No significant main or interaction effects were found.

Finally, we performed a supplementary analysis in which we examined the number of coaches who rated themselves similar to their athletes using an analytic strategy employed in previous research (Short & Short, 2004). First, for each team, we computed the 95% Confidence Interval (CI) for the mean of the athletes' ratings for each of the four dimensions and for the total coaching effectiveness. The limits of this CI were computed by adding to and subtracting from the sample mean the *SE* of the mean multiplied by the t-statistic associated with a $p$ of .05 (see Tabachnick & Fidell, 2001). Second, for each team, we classified the coach's score as: *lower* than their athletes' score if it was *below* the lower limit of the 95% CI; *equal* to their athletes' score if it was *within* the 95% CI; and *higher* than their athletes' score if it was *above* the upper limit of the 95% CI. The number of coaches classified in each category (i.e., lower, equal, and higher) for the four dimensions and the total can be found in Table 6. Inspection of the number of coaches in each category indicates that, very few coaches rated themselves lower

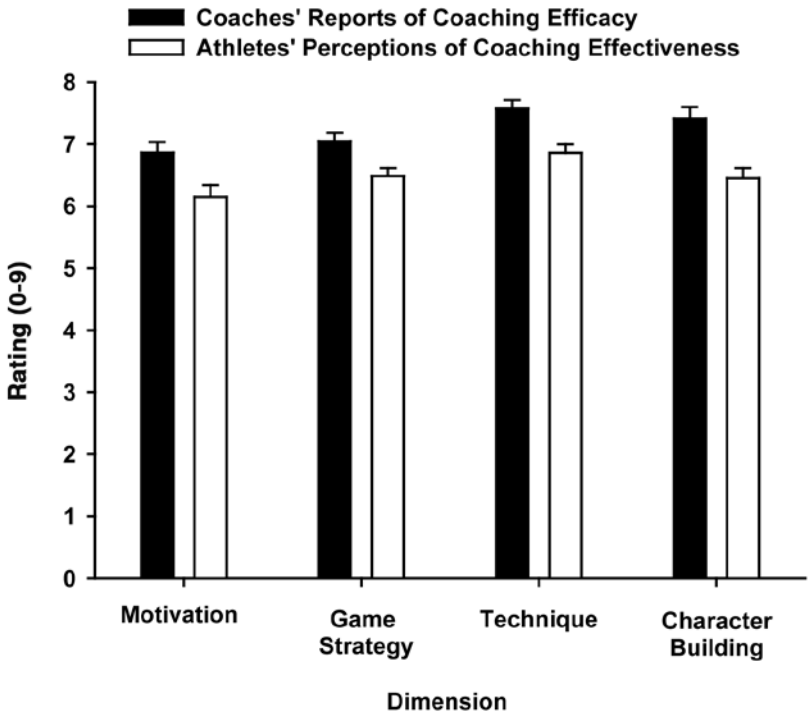


**Figure 1** — Mean (*SE*) coaching efficacy and perceived coaching effectiveness scores.

**Table 6 Number of Coaches Classified as Lower, Equal, or Higher Than Their Athletes**

| | Coach Classification | | |
|---|---|---|---|
| **Coaching-Efficacy Dimension** | **Lower[1] *n* (%)** | **Equal[2] *n* (%)** | **Higher[3] *n* (%)** |
| Motivation | 4 (15%) | 11 (42%) | 11 (42%) |
| Game strategy | 3 (12%) | 13 (50%) | 10 (38%) |
| Technique | 2 (8%) | 9 (35%) | 15 (58%) |
| Character building | 1 (4%) | 14 (54%) | 11 (42%) |
| Total | 3 (12%) | 9 (35%) | 14 (54%) |

*Note*. [1]Coaches whose rating was below lower limit of 95% team CI; [2]Coaches whose rating was within 95% team CI; [3]Coaches whose rating was above upper limit of 95% team CI.

* $p < .05$, ** $p < .01$.

than their athletes on all dimensions. The same number of coaches (42%) rated themselves higher or similar to their athletes on motivation. Finally, compared with their athletes, 50% or more of the coaches gave higher technique and total ratings and similar game strategy and character-building ratings (see Table 6).

# Discussion

Psychological and behavioral consequences of coaching efficacy have received increased attention in recent years with several studies identifying positive outcomes of this construct for both coaches and athletes (e.g., Feltz et al., 1999; Kent & Sullivan, 2003; Myers et al., 2005). However, relatively little attention has been paid to sources of coaching efficacy (e.g., Myers et al., 2005). More importantly, research has not examined perceptions of coaching effectiveness in the coaching efficacy domains, predictors of these perceptions, and the degree to which they differ from coaches' reports of coaching efficacy. The current study sought to fill this gap in the literature.

Athletes' perceptions of coaching effectiveness in the four coaching efficacy domains were measured with a modified version of the CES (Feltz et al., 1999), which displayed the same factor structure as the original scale. Following a similar approach, Myers and colleagues (Myers, Feltz et al., 2006) also adapted the CES to measure players' evaluations of their coach's competency in the four coaching efficacy domains. They also used the same items used in the original scale but asked athletes to evaluate how *competent* their coach was, whereas we asked them to indicate how *effective* their coach was. Myers, Feltz et al. (2006) reported the presence of the same four first-order factors found in this study. Thus, all three scales that have used the same 24 items to measure coaches' and athletes' perceptions have displayed the same four dimensions, demonstrating the stability of these dimensions when measuring coaching efficacy, effectiveness, or competency.

## Predictors of Coaching Efficacy

The first purpose of this study was to examine predictors of coaching efficacy. Although coaching experience and sex did not predict motivation and character building efficacy, sex predicted game strategy efficacy. Specifically, male coaches reported significantly higher beliefs in their ability to coach and lead their team to a successful performance during competition than female coaches, a finding consistent with previous research (Marback et al., 2005; Sullivan & Kent, 2003). One explanation for this finding may be the sex differences in coaches' views of what it takes to be a good coach. Specifically, male coaches tend to identify producing winners as one of their top priorities, whereas female coaches rank being a good role model and understanding athletes' feelings as their top priorities (Molstad, 1993). Perhaps due to the importance they place on winning, male coaches spend more of their time developing their skills to lead the team to success during competition thereby enhancing their game strategy efficacy.

Years of coaching experience positively predicted technique efficacy. This finding is not surprising if we consider that extensive coaching experience should provide more opportunities for mastery experiences relating to diagnosing and

remedying athletes' difficulties on technique. As mastery experiences are the most important source of efficacy beliefs (Bandura, 1997) they should contribute to coaches' technique efficacy beliefs. In past research, coaching experience has been linked to higher levels of technique (Feltz et al., 1999), but also game strategy (Feltz et al., 1999; Marback et al., 2005; Myers et al., 2005), motivation (Feltz et al., 1999; Marback et al., 2005), and character building (Marback et al., 2005) efficacy. Although coaching experience was a significant predictor of only technique efficacy, *all* dimensions of coaching efficacy were positively related to coaching experience as indicated by the zero-order correlations; however, these correlations were not significant, likely due to the small sample size.

## Predictors of Perceived Coaching Effectiveness

The second purpose of this study was to examine predictors of athletes' perceptions of their coach's effectiveness. Sport experience negatively predicted perceptions of all dimensions of coaching effectiveness. One interpretation of this finding is that the longer athletes had been involved in their sport the more critical they were of their coach perhaps because more experienced athletes are also more knowledgeable of their sport and coaching techniques. More experienced athletes may also have had greater opportunities to be coached by more than one coach, and to be exposed to a variety of coaching styles, thereby developing certain standards. For example, if a player was coached by a highly effective coach in the past, he or she may expect similar standards of coaching and is more likely to be critical of the present coach, if he or she does not meet these standards. However, because athletes' coaching knowledge and standards were not measured in this study, this is merely a speculation awaiting verification from future research.

An interesting finding of the current study was that athletes, who were coached by coaches of the opposite sex, perceived them as less effective in motivation and character building compared with those who were coached by coaches of the same sex. Most of these athletes were females coached by male coaches. These findings make sense if we consider the multidimensional model of sport leadership, which posits that a leader or coach is most effective, in part, when the behaviors he or she displays coincide with the behaviors the team members prefer (Chelladurai & Saleh, 1978). Perhaps when sex compatibility between athlete and coach exists, coaches engage in motivation and character building behaviors that are also preferred by the athletes, who perceive these behaviors thereby evaluating their coach more positively. Recent qualitative research has also indicated that female elite soccer players were more satisfied when coached by female coaches due to their understanding and caring style of communication, which they preferred (Fasting & Pfister, 2000). Due to the similarities between athletes' preferences and coaches' behaviors, it is possible that athletes evaluate coaches of the same sex more positively than they do coaches of the opposite sex.

Contrary to our hypothesis, sex did not predict athletes' perceptions of coaching effectiveness. This result is not consistent with models of coaching effectiveness that propose that athletes' sex may affect perceptions of coaching behaviors (Horn, 2002) and with research that has reported differential perceptions of coaches' leadership behaviors as a function of athletes' sex (e.g., Holembeak & Amorose, 2005). Sex itself may have implications for perceptions of coaching

behaviors other than the ones relevant to coaching effectiveness as measured in this study. It may also be that in other studies (e.g., Holembeak & Amorose, 2005) males and females were coached by coaches who displayed different behaviors. Athletes may have perceived these behaviors and reported different perceptions. However, as this is the first study to examine sex as a predictor of athletes' perceptions of coaching effectiveness on the four coaching efficacy domains, future research should replicate the present findings before firm conclusions are drawn.

### Comparison Between Coaches' Reports and Athletes' Reports

The third purpose of this study was to examine the extent to which coaches' reports of coaching efficacy differed from athletes' perceptions of their coach's effectiveness on the four coaching efficacy domains. Results showed that *on average*, coaches differed from their athletes on motivation, technique, game strategy and character building. Supplementary analysis indicated that a considerable number of coaches (38–42%) rated themselves higher than their athletes on motivation, game strategy, and character building, and most coaches (50% or more) rated themselves higher than their athletes on technique and on the total scale. These findings are consistent with past research that has found that most coaches rated their levels of coaching efficacy higher than their team members did on average (Short & Short, 2004), reported higher frequency of using certain efficacy-enhancing techniques than their players perceived them to use (Vargas-Tonsing et al., 2004), and evaluated themselves as more socially supportive and rewarding than their athletes did (Salminen & Luikkonen, 1996). Research in other domains has also found that individuals tend to evaluate themselves more favorably than others do (e.g., Taylor & Brown, 1988).

In interpreting these findings it is important to keep in mind the content of each questionnaire. Specifically, coaches were asked to indicate how *confident* they were on the four coaching efficacy domains, whereas athletes were asked to indicate how *effective* they perceived their coach to be on these domains. Because perceptions of confidence typically arise from repeated mastery accomplishments (Bandura, 1997), coaches who reported high confidence in this study are likely to have engaged successfully in the behaviors in which they were evaluated by their athletes. Similarly, athletes should have made their judgments about their coach's effectiveness based on the behaviors their coach displayed. However, coaching confidence is not the same as coaching effectiveness and a coach may have given a different rating if asked how effective he or she was. Thus, although the same items were used in both cases, the discrepancy between coaches' and athletes' perceptions could also be due to the different terminology used in the two questionnaires. Future research needs to clarify this issue.

## Practical Implications

The results of this study have several practical implications for both coaches and athletes. For coaches, the finding that coaching experience predicted technique efficacy suggests that coaches who want to increase their technique efficacy need to focus on increasing their coaching experiences. Coaches need to invest their

time early in their career to gain experience by assisting more experienced coaches and assuming coaching responsibilities. In addition, high-quality coaching-education programs could assist young coaches to develop their technique efficacy. Coaching education programs can also help coaches gain experience by providing more practical experiences and internship opportunities as well as by utilizing mentoring and critical reflection to enhance practical coaching experience (see Cushion, Armour, & Jones, 2003; Nelson & Cushion, 2006). Such experiences will better equip coaches to start their own coaching career.

Sport experience and the mismatch in sex between coach and athlete were two negative predictors of athletes' perceptions of coaching effectiveness. The finding that more experienced athletes tended to perceive their coaches as less effective suggests that coaches do not have full control over how effective they are perceived to be by their athletes. Coaches need to improve their communication with their athletes so that they can become aware of their athletes' expectations. In particular, they need to be aware that more experienced athletes may have higher demands and expectations from them and try to meet those expectations by improving their coaching knowledge and skills. Finally, the results regarding sex mismatch between athletes and coaches suggest that coaches need additional education relating to how to coach athletes of the opposite sex, especially in the areas of motivation and character building.

## Study Limitations and Future Research Directions

Although the current study revealed some interesting findings, it also has some limitations, and our results should be interpreted with these in mind. First, the study was cross-sectional, which precludes firm assertions regarding the direction of causality. For example, we do not know whether athletes who were coached by same-sex coaches perceived their coaches as more effective because of this match in sex, or because these coaches engaged in more effective behaviors. Future research should employ quasi-experimental designs to examine the relationships identified in this study. Second, because the sample size of coaches was relatively small, our results may be specific to this sample. Future research should replicate the present findings using a larger sample and examine a variety of athlete-related outcomes as consequences of coaching efficacy. Sport commitment, enjoyment, self-efficacy, and prosocial behaviors are examples of variables that could be investigated (see Boardley, Kavussanu, & Ring, 2008).

Third, in comparison with males, female coaches had low representation in this sample. Thus, our results pertaining to coaching efficacy are applicable mainly to male coaches. The sample also included only a small number of male athletes coached by a female coach. Thus, the findings pertaining to sex match/mismatch are applicable mainly to female athletes coached by male coaches. Future research should replicate the present findings with a larger number of female coaches coaching male athletes. Finally, future research could employ observation methods to evaluate coaches' behaviors that are relevant to the four coaching efficacy domains and compare these observations with coaches' and athletes' reports. This methodology will elucidate whether coaches or athletes are the most accurate assessors of coaching efficacy-related behaviors.

## Conclusion

In conclusion, the current study identified coaching experience as a predictor of technique coaching efficacy providing further support for the coaching efficacy model (Feltz et al., 1999). More importantly, the study extended this model by investigating predictors of athletes' perceptions of coaching effectiveness in the four coaching efficacy domains and examining differences between these perceptions and coaches' reports. Our findings suggest that more experienced athletes may be more critical of their coach and the compatibility in sex between coach and athlete may have implications for athletes' evaluations of their coach's effectiveness. Finally, on average, coaches appear to evaluate themselves more positively than their athletes do.

## Note

1. Although the item "Mentally prepare his/her athletes for game strategies" loaded on the motivation dimension of perceived coaching effectiveness in this study, in other work using the same scale (e.g., Boardley et al., 2008) this item loaded more highly on perceived game strategy effectiveness and was therefore not included in the computation of the motivation subscale. Because this item has been cross-loaded on motivation and game strategy in other studies (Feltz et al., 1999; Myers et al., 2006), future research should reexamine the factor structure of the scale measuring perceived coaching effectiveness with particular attention to the performance of this item.

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