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ANALYSIS OF FACTORS ASSOCIATED WITH COACHING EFFICACY AMONG NEW MEXICO HIGH SCHOOL COACHES

by

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DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

Doctor of Philosophy

Physical Education, Sports, and Exercise Science

The University of New Mexico
Albuquerque, New Mexico

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DEDICATION

To my parents and my wife for their unconditional love and support throughout the years of challenges and sacrifices as I completed my Ph.D. studies.

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I want to acknowledge and express my appreciation to the individuals who helped me finish this study.

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ANALYIS OF FACTORS ASSOCIATED WITH COACHING EFFICACY AMONG NEW MEXICO HIGH SCHOOL COACHES

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ABSTRACT

The purpose of the study was to analyze various factors associated with coaching efficacy among New Mexico high school coaches. The study examined their coaching efficacy from three different perspectives. First, the study determined whether coaching efficacy differ depending on sociocultural and organizational factors such as coach gender/ethnicity, school size, and type of school assignment. Second, the study examined which sources of efficacy specifically predict coaching efficacy. Third, the study identified the best set of efficacy sources predicting coaching efficacy. The sources of efficacy initially identified in this study were coaching experience, playing experience, prior success, perceived athlete ability, perceived athlete improvement, and perceived social support.

The target population of the study was New Mexico high school team sports head coaches because the coaching efficacy measurement (i.e., Coaching Efficacy Scale II-High School Team) was best applicable to team sports rather than individual sports and

head coaches rather than assistant coaches (Myers et al., 2008). The scale was used to measure total coaching efficacy and five dimensions of coaching efficacy. With the cooperation of the New Mexico Activities Association (NMAA), 230 study participants completed the survey questionnaires.

The results of the study showed three major findings. First, the level of coaching efficacy significantly differed depending on coach gender and school size: Male coaches engaged in large schools had higher level of coaching efficacy compared to female coaches engaged in small schools. For coach ethnicity and type of school assignment, the difference in the level of coaching efficacy was not significant. However, in part, non-Hispanic White coaches had significantly higher level of coaching efficacy than did Hispanic coaches.

Second, the study found significant influences of nearly all efficacy sources on coaching efficacy. From this viewpoint, it was not possible to identify the efficacy sources specifically applicable to the study population. The only efficacy source that had a low predictability was perceived athlete ability.

Third, the findings showed that different sets of efficacy sources were selected to best predict each coaching efficacy dimension and total coaching efficacy. Total coaching experience was the most frequently involved source in those sets while head coaching experience and perceived athlete ability were not selected in any of the sets.

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CHAPTER I

INTRODUCTION

Coaches use the coaching practices that best reflect their roles and duties. In general, significant role differences exist between amateur-level sports and professional-level sports. Since winning is highly valued in professional sports, the roles and duties of these coaches may emphasize the development and implementation of effective training programs, game tactics, and motivational strategies to win. Improving athletic performance is the main emphasis and winning is the goal.

The roles of high school coaches differ from those encountered in professional-level sports. High school coaches are not only responsible for their team performance but also for taking care of athletes' overall development such as character building, physical/mental growths and, in some occasions, their academic success. They often have secondary roles as teachers, motivators, strategists, and character builders (Feltz, Short, & Sullivan, 2008).

The expectations of high school coaches are different than those found in after school sports programs and/or college and university sports. Ideally, high school coaches make a commitment to the educational value of athletic activities. However, in reality, efforts are made to maximize athletic performance and to win as many games as possible. This attitude is often called “win at all costs”. In the United States, high school athletic (team) performance is of huge community concern. Sage (1987) described:

> American high school athletics is unlike athletics anyplace else. There is a great deal of public interest in the teams, large crowds attend some of the contests, and community spirit and reputation are often linked to the teams' performance. The

social climate of the school and even the social status of the student-athletes are affected by the athletic program. (p. 214)

High school coaches may feel frustrated with their inability to meet so many different expectations (Wang, Yang, & Sabatelle, 2011). Many coaches experience heavy workloads, which in addition to coaching may also include classroom teaching and/or administrative duties. Focused on such challenges, studies have explored diverse coaching-related factors to better understand coaching performance and effectiveness.

Coaching efficacy is one factor that has been extensively studied in the field of sport coaching research. Coaching efficacy, originally conceptualized within the context of high school sports, is defined as a coach's beliefs that he or she has the ability to have a positive effect on athlete learning and performance (Feltz et al., 1999). It was constructed as having four dimensions: motivation, game strategy, technique, and character building. Motivation refers to the coaches' confidence in their ability to successfully inspire their athletes' to do their very best. Game strategy includes those factors that make coaches feel confident in their ability to effectively coach their teams during competition to lead successful team performance. Technique refers to the coaches' confidence in their ability to provide proper instructional and diagnostic skills. Character building is the coaches' confidence in their ability to help athletes develop (positive) attitudes toward sports. Recently, a physical conditioning dimension was added, thereby making coaching efficacy based on five criteria (Myers, Feltz, Chase, Reckase, & Hancock, 2008). Physical conditioning refers to the coaches' confidence in their ability to effectively manage athletes' physical preparation for participating in their sport.

Along with its conceptual development, Feltz et al. (1999) proposed a conceptual model of coaching efficacy. According to the model, coaching efficacy is influenced by the sources of efficacy information while producing the relevant outcomes. Sources of efficacy information involves following four factors: (a) the extent of coaching experience/preparation, (b) prior success (win-loss record), (c) perceived skill of athletes, and (d) social supports from school, parents, community, and administrators. The relevant outcomes include coaching behavior and player/team satisfaction, performance, and efficacy.

Focused on the sources of coaching efficacy, studies using this coaching efficacy model provide the empirical evidence that supports which efficacy sources are specifically applicable to the coaches in different sport settings (e.g., youth volunteer sports, high school sports, and college sports). Also, there are ongoing efforts to explore new sources of efficacy not listed in the original coaching efficacy model. They include coaching education, playing experience, athlete improvement, and athlete support (Chase, Feltz, Hayashi, & Helper, 2005).

Statement of the Problem

In spite of past efforts to examine coaching efficacy from multiple perspectives, many questions remain. First, nearly all of the previous coaching efficacy studies do not take into account the influence of ethnicity and geographic location. More specifically, most of the high school coaches involved in previous coaching efficacy studies were Caucasians from northern part of the United States or from Canada (e.g., Feltz et al., 1999; Myers et al., 2008; Myers, Feltz, & Chase, 2011). Given that the results of these

studies may not be applicable to other populations, additional research is needed that include the influence of ethnicity and geographic location.

There has been a lack of exploring the range of factors that one might expected to influence coaching efficacy. It was assumed that the level of coaching efficacy may differ depend on factors that were not identified as sources of coaching efficacy (e.g., coaches' gender and competition level, and school size); however, very little research has been done to explore such variables (Feltz et al, 2008).

Coaches' demographic factors such as gender and ethnicity have not been the main focus of other coaching efficacy studies. In particular, no studies have examined the effect of coach ethnicity on coaching efficacy.

School size is another important factor that has received little attention in coaching efficacy research. For example, in New Mexico, high schools are divided into six classes depending on student enrollment. All high school teams compete only with schools of the same classification (New Mexico Activities Association [NMAA]; 2013). It is important to note that organization size nearly always defines funding. In general, as compared to smaller schools, large schools tend to have a bigger pool of potential athletes, more funds, and better facilities. No previous attempts were made to investigate whether school size affects high school level coaching efficacy. Therefore, it may be meaningful to determine whether school size influences how coaches perceive their ability to coach effectively.

Type of school assignment is another unexplored factor that may influence high school-level coaching efficacy. In the United States, many high school coaches have other school duties such as classroom teaching and administrative tasks while other

coaches do not have additional school assignments (Sage, 1987; Theyberg, no date). Different job challenges exist in each of the two coaching situations. The coaches who have additional teaching and/or administrative assignments may experience work overload, which in turn, create job stress and role conflict (Scantling, & Lackey, 2005). On the other hand, the coaches who do not have additional school assignments may experience financial difficulties due to their low salaries. With few exceptions, a majority of states do not provide enough compensation. For example, coaches in North Carolina's public school system are paid an average seasonal wage of $1,978, and football coaches living in western Pennsylvania received $7,728 per season (Theyberg, no date). Considering the job difficulties (e.g., role conflict and low salary), one might assume that the type of school assignment may affect high school coaches' coaching confidence. It is meaningful to see whether the level of coaching efficacy differs between coaches who have or do not have additional school assignments.

Based on the acknowledgement of such problems, this study analyzes New Mexico high school coaches' coaching efficacy from two different perspectives. First, the study, using the sources identified in previous coaching efficacy studies, will identify the sources of efficacy. Second, the study will explore the influence of selected sociocultural and organizational factors on coaching efficacy. These factors will include coaches' gender and ethnic background, school size, and type of school assignment.

Theoretical Framework

The theoretical framework of this study was based on two coaching-related models: (a) the conceptual model of coaching efficacy (Feltz et al., 1999) and (b) Horn (2008)'s working model of coaching effectiveness.

First, the study employed the conceptual model of coaching efficacy to establish the relationships between the sources of coaching efficacy and its dimensions. The model has been revised by the results of recent coaching efficacy studies: Additional sources and dimensions were identified by the studies. The interest of this study was not only on investigating each efficacy dimension but also analyzing total coaching efficacy (the sum average of all efficacy dimensions). Therefore, these factors were all combined into one variable category, called coaching efficacy factors.

Second, Horn (2008)'s working model of coaching effectiveness was partially applied to the study framework to provide a theoretical basis for identifying sociocultural and organizational factors that are expected to influence coaching efficacy. Horn's (2008) model suggests there are complex relationships between the diverse coaching-related variables that explain the process of achieving coaching effectiveness. Among the relationships, particular attention was given to the influence of sociocultural context and organizational climate on the coach's expectancies, values beliefs, and goals. Given that these psychological orientations are conceptually parallel to coaching efficacy (Sullivan, Paquette, Holt, & Bloom, 2012), it was assumed that they are expected to influence coaching efficacy.

For the theoretical framework of the study, the two antecedents (sociocultural context and organizational climate) were labeled as sociocultural factors and organizational factors, respectively. As previously stated in the problem statement section, the factors included in this category are (a) coach gender, (b) coach ethnicity, (c) school size, and (d) type of school assignment.

Figure 1 below illustrates the proposed model for this study, which stipulates the relationships between three groups of study variables: (a) sociocultural/organizational factors, (b) sources of efficacy information and (c) coaching efficacy factors.

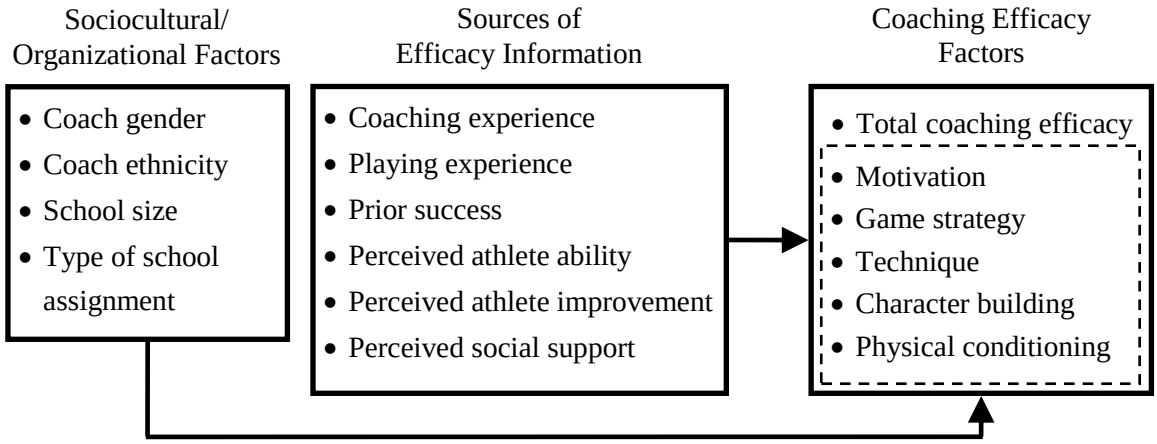

Figure 1.Proposed model of the study. The box shown with a dotted border represents the five dimensions of coaching efficacy. Modified from "A Conceptual Model of Coaching Efficacy: Preliminary Investigation and Instrument Development," by D. L. Feltz, M. A. Chase, S. E. Moritz, & P. J. Sullivan, 1999, *Journal of Educational Psychology, 91,* p. 765-776.

The left box of the model includes four sociocultural/organizational factors that are expected to influence coaching efficacy factors. According to Horn's working model of coaching effectiveness, the first two factors (gender and ethnicity) fall under the purview of sociocultural context, and the third factor (school size) represents one of the factors constituting organizational climate. The fourth factor (type of school assignment) was not specifically identified in Horn (2008)'s model. However, it was categorized as an organizational factor in the study framework.

In the middle box of the model, six sources of efficacy information were identified to examine their effects on coaching efficacy factors. These sources were

selected based on recent work of Myers et al. (2011). Basically, the study identified nine sources of efficacy information by integrating all the sources investigated in previous coaching efficacy studies. The other three sources (assistant coaching experience, coaching education, and perception of athletic experience) were excluded in this study because of the lack of measurement objectivity.

Finally, the right box of the model identifies six coaching efficacy factors, total coaching efficacy and each of the five efficacy dimensions. These variables were set up as the dependent variables that are influenced by sociocultural/organizational factors and sources of efficacy information. Instead of applying the original four efficacy dimensions (Feltz et al., 1999), this study accepts the recently described five efficacy dimensions proposed by the Myers et al. (2008) study.

Statement of the Purpose

The purpose of this study is to analyze the various factors associated with coaching efficacy among New Mexico high school team head coaches. Focused on identifying the factors that were expected to influence coaching efficacy, the present study determines whether coaching efficacy differ depending on the selected sociocultural and organizational factors, and examined which sources of efficacy specifically predict the coaching efficacy of New Mexico high school team head coaches.

Research Questions

The following three research questions were explored:

1. Does the level of coaching efficacy differ depending on sociocultural and organizational factors such as coach gender/ethnicity, school size, and type of school assignment?
2. Which specific efficacy sources influence coaching efficacy?
3. What is the best set of efficacy sources that predict coaching efficacy?

Significance of the Study

As discussed earlier, previous coaching efficacy studies have two main limitations: (a) a limited ethnic sample and (b) a lack of exploring possible relevant factors that were not identified as the efficacy sources. Basically, the present study attempts to overcome such limitations by including study participants from diverse ethnic backgrounds and by exploring new coaching efficacy predictors such as coach gender/ethnicity, school size, and type of assignment.

More specifically, the ethnic diversity found in New Mexico addresses the limitations of previous studies. New Mexico is one of three states where less than 50% of the population is comprised of non-Hispanic Whites (United States Census Bureau, 2012). In this respect, the study will gain external validity in terms of ethnic diversity.

In addition, the results of the study may be used as a valuable coaching education tool. Coaching education is more than providing technical and tactical knowledge, but also includes advanced educational topics such as sport psychology, social interactions, and coaching communications (Vargas-Tonsing, 2007). As being one important factor in the field of sport psychology, analyzing diverse factors associated with New Mexico high

school coaches' coaching efficacy may contribute to the extension of knowledge to improve coaching education for secondary school coaches in New Mexico.

Delimitations

The delimitations of the study were addressed as follows:

1. All study participants are current members of the New Mexico Activity Association (NMAA).
2. All study participants are high school head coaches engaged in one of the following team sports: football, volleyball, soccer, basketball, baseball, and softball.
3. Each study participant completed a demographic information questionnaire, a coaching information questionnaire, and a completed coaching efficacy measurement (i.e., Coaching Efficacy Scale II-High School Teams).

Limitations

The limitations of the study include the following concern:

1. Findings of the study may be only applicable to the New Mexico high school team sports head coaches. Therefore, the findings may not apply to other sports types/levels or other geographical locations.
2. Data are all based on self-reported responses. Consequently, the study may reflect the biases associated by coaches giving socially and professionally expected responses.
3. Concerns with confidentiality may cause some participants to refuse to participate in the survey, and thereby reduced the number of returned questionnaires.

Assumptions

The present study is based on the following three assumptions:

1. The study participants can read and understand the instruments as administered.
2. The study participants responded to the surveys independently and honestly.
3. The instruments employed in the study are accurate, valid, and reliable.

Definition of Terms

Character building efficacy: beliefs in the ability to encourage the development of positive attitudes.

Coaching efficacy: beliefs in the ability to enhance athlete's learning and performance.

External social support: perceived backing from school administrators and local community members.

Game strategy efficacy: beliefs in the ability to coach teams during competition thus improving the chance for a positive outcome.

Internal social support: perceived backing from athletes and their parents.

Motivation efficacy: beliefs in the ability to encourage athletes' enthusiasm.

Perceived social support: comparison of the support from diverse interest groups in an idealized high school sports program to what is expected.

Physical conditioning efficacy: beliefs in the ability to effectively manage athletes' physical preparation for their sport participation.

Playing experience: having participated in the same sport competitively as a student athlete or as a professional athlete.

Technique efficacy: beliefs in the ability to provide proper instructional and diagnostic skills.

CHAPTER II

LITERATURE REVIEW

This chapter provides an in-depth understanding of coaching efficacy concept as well as the development and evolution of the various theoretical models used to identify the predictors of coaching efficacy. Areas of interest involve self-efficacy theory, a teacher efficacy model, a working model of coaching effectiveness, a conceptual model of coaching efficacy, and predictors of coaching efficacy as identified in earlier studies.

Self-Efficacy Theory

The concept of self-efficacy originated from social cognitive theory, which recognizes that people are proactive agents rather than passive reactors to environmental situations (Bandura, 1999; Feltz et al., 2008). People function as the contributors to their own motivation, behavior, and development within a network of triadic reciprocal causation between (a) internal personal factors, (b) behavioral patterns, and (c) environmental events. Within this network, self-efficacy is the core agent that defines motivation and goal-directed behavior (Bandura 1986, 1997, as cited in Feltz et al., 2008).

Self-efficacy refers to one's beliefs in having the capacity to execute the behaviors required to produce given outcomes (Bandura, 1977, 1999). According to self-efficacy theory (Bandura, 1977), efficacy beliefs determine the ability to initiate coping behaviors and the effort it takes to sustain those behaviors in the face of stressful and taxing situations. The stronger the beliefs, the easier it is to cope within given situations. The process of sustaining their efforts helps people gain mastery experiences that make a desired outcome more likely.

Theoretically, self-efficacy differs from outcome expectation (Bandura, 1977). As seen in Figure 2, the efficacy expectations (i.e., self-efficacy) involved in the process of executing one's behavior while the outcome expectations are associated in the process of deriving the outcome. An outcome expectation estimates whether a given behavior will result in certain outcomes whereas an efficacy expectation drive one's confidence in performing a required behavior.

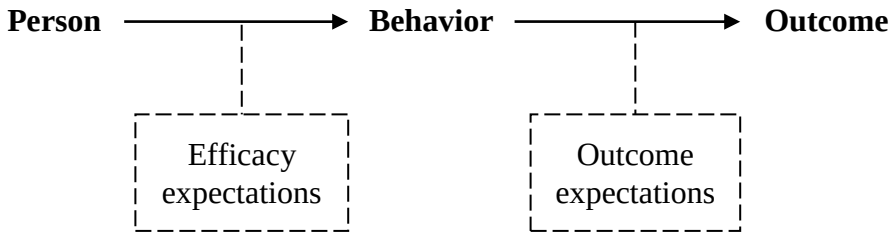

*Figure 2.*Diagrammatic representation of the difference between efficacy expectations and outcome expectations. Adapted from "Self-efficacy: Toward a Unifying Theory of Behavioral Change," by A. Bandura, 1977, *Psychological Review*, 84, p. 193.

The two expectations operate in different ways. Even if one believes that a certain behavior will lead to a desirable outcomes, this belief is of no consequence when there is a lack of confidence in the ability to execute the behavior. For example, every football player understands that strong defense (e.g., hard tackles and body checks) will lead to winning the match. However, if players worry too much about the possibility of pain and injuries, such information does not affect much of their defensive behaviors.

Self-efficacy varies depending on three dimensions: magnitude, generality, and strength. Magnitude refers to the level of task difficulty (Bandura, 1977). Easy tasks require lower level of self- efficacy compared to difficult tasks. Generality implies whether a given circumstance requires a more general sense of efficacy or more situation-

specific efficacy. Strength refers to the level of self-efficacy. Weak efficacy is easily extinguishable when faced with taxing situations while strong efficacy allow for coping and the ability to overcome obstacles.

Bandura (1977, 1999) proposed four major sources of efficacy information that influence efficacy beliefs. They include performance accomplishment, vicarious experience, verbal (social) persuasion, and physical/emotional states. Performance accomplishment is based on personal mastery experiences. Theoretically, this source is the most powerful source in inducing self-efficacy. Vicarious experience refers to events or situations imagined through the feelings and actions of another person. Verbal or social persuasion (e.g., suggestion, exhortation, and self-instruction) reinforce self-efficacy. However, their effects are usually weaker than performance accomplishment. This is because people tend to have less confidence in executing behaviors if they do not have similar experiences. Finally, physical/emotional states (e.g., anxiety, depression, fatigue, and pain) evoked by stressful and taxing situations usually have negative effects on the level and strength of self-efficacy.

According to Bandura (1999), people select, weight, and integrate the sources of efficacy information based on the type of information and how they establish rules to accept new information. Throughout the cognitive process of internalizing information, self-efficacy beliefs affect a range of human behaviors such as control over important events, visualizing future scenarios, making decisions on setting up their goals, regulating their emotional states (e.g., stress depression and anxiety).

Self-efficacy theory has been applied to sport psychology in three major research areas: self-efficacy for athletes, collective efficacy for teams, and coaching efficacy

(Feltz et al., 2008). Along with the Denham and Michael (1981) teacher efficacy model, self-efficacy theory provided theoretical basis for developing the conceptual model of coaching efficacy.

Model of Teacher Sense of Efficacy

The model of teacher sense of efficacy was developed by Denham and Michael (1981) to explore the diverse factors associated with the construct of teaching efficacy. The general idea of the model indicates that teacher sense of efficacy serves as an intervening variable mediating the relationship between antecedent factors and relevant consequences. These relationships can be seen in Figure 3 below.

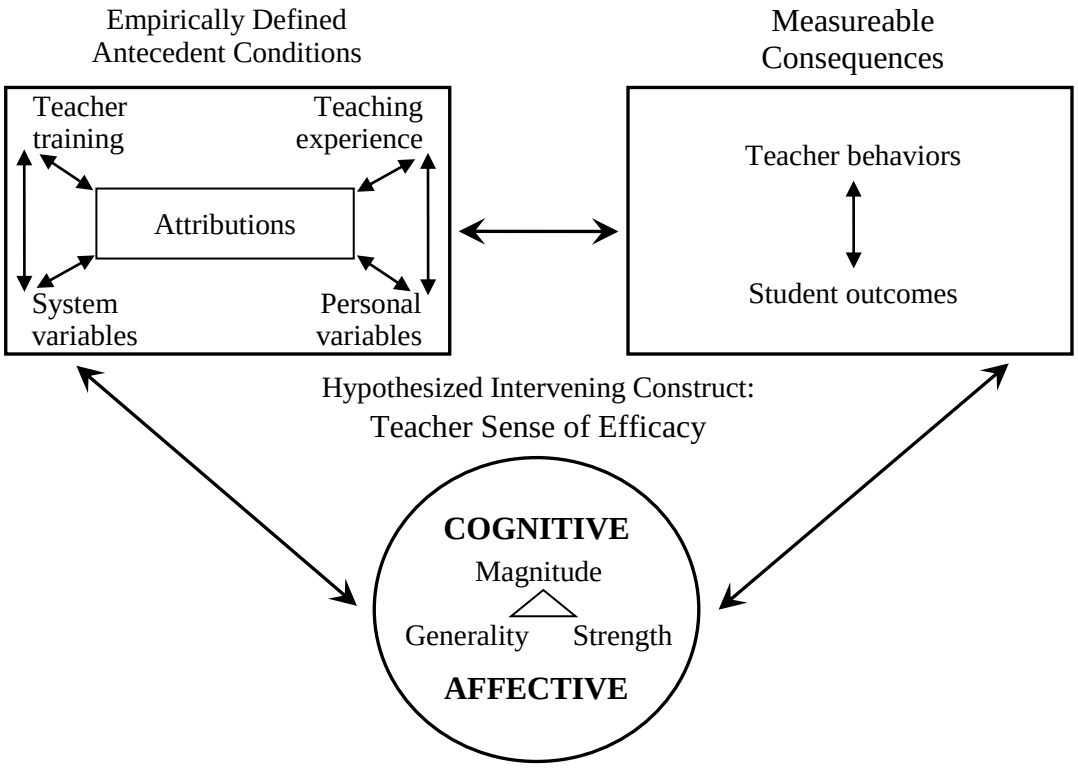

Figure 3. A model for the study of teacher sense of efficacy. Adapted from "Teacher Sense of Efficacy: A Definition of the Construct and a Model for Future Research," by C. H. Denham & J. J. Michael, 1981, *Educational Research Quarterly, 6,*p. 40.

As seen in Figure 3, the model also points out there is a direct relationship between antecedent factors and relevant consequences. For example, Rosenshine suggests that higher level of teachers' enthusiasm (one of the personal variables in the model) results in elevating the level of student achievement even without the interventional effect of teacher sense of efficacy (as cited in Denham & Michael, 1981, p. 41).

Major Components of the Model

Teacher sense of efficacy (the circle box positioned in the bottom part of the model) consists of two components: (a) cognitive and (b) affective (Denham & Michael, 1981). The cognitive component refers to teachers' beliefs that they have the capacity to bring positive changes to students under given environments. The capacity for positive change can be divided into two sub-categories: their own capacity and ideal teacher's capacity. For the ideal teacher capacity, the authors noted that it "reflect the degree to which the environment could be controlled, i.e., the extent to which students can be taught, given their heredity, background, and school variables" (Denham & Michael, 1981, p. 42). The affective component refers to feeling or shame in relation to the efficacy beliefs. As illustrated in the middle part of the circle figure, teacher efficacy varies depending on generality: whether a given circumstance requires situation-specific or general sense of efficacy, magnitude: whether a given task is difficult to accomplish, and strengths: whether the level of efficacy are low or high.

Empirically defined antecedent conditions (the left box of the model) involve teacher training, teaching experience, system variables, personal variables, and attributions (Denham & Michael, 1981). First, teacher training may affect teacher sense

of efficacy by actual increase of teaching effectiveness, convincing teachers of acquiring a special knowledge, experience of shared hardship, feeling of being professionals, and program itself that are designed to increase the efficacy. Second, teaching experience mainly represents the process of becoming an educator, teaching successes and failure, and student feedback. Third, system variables include the career ladder of becoming a professional educator and supports from administration and peers. Fourth, personal variables involve teachers' motivation, gender, and ethnic background. Finally, attribution implies that the effects of other antecedent variables are mediated by certain attribution processes. For example, if teachers ascribe their teaching failures to external factors such as lack of school support, their sense of teacher efficacy may not alter much. On the other hand, if they attribute their failure to a lack of teaching ability, their sense of efficacy is likely to be decreased.

Measurable consequences (the right box of the model) are represented as teacher behaviors and student outcomes. Teacher behaviors involve classroom actions and manners, support of innovation, professional activities, and remaining in the teaching profession. Student behaviors can be categorized as achievement outcomes, affective outcomes, and behavioral outcomes.

Implications to Coaching Efficacy Model

Along with Bandura (1977)'s self-efficacy theory, the teacher efficacy model provides theoretical basis for establishing the conceptual model of coaching efficacy. Coaching efficacy model and teacher efficacy model have many things in common. Both models proposed sequential relationships between efficacy predictors, efficacy, and relevant outcomes. Teachers and coaches have similar roles in providing student

instruction, guidance, and feedback. These roles are more common in high school educational environments (Feltz et al., 1999). Therefore, the coaching efficacy model basically adapted most of the components of the teacher efficacy model.

For the sources of efficacy information, labeled antecedent conditions in teacher efficacy model, coaching experience, coaching education, and perceived social supports are (at least in-part) identical to teacher experience, teacher training, and system variables in teacher efficacy model. Also, the outcomes of coaching efficacy, coaching behavior and several player/team outcomes are conceptually consistent with teacher behavior and student outcomes in teacher efficacy model.

Working Model of Coaching Effectiveness

The working model of coaching effectiveness was developed by Horn (2008) in her effort to combine relevant theoretical and methodological approaches into one organized framework. The model adapted two previous coaching-related models as its theoretical bases: (a) multidimensional model of leadership (Chelladurai & Saleh, 1980) and (b) mediational model of leadership (Smoll & Smith, 1989).

Figure 4 shows the Horn (2008)'s working model of coaching effectiveness that proposes links between 10 variables that reflect the process of achieving coaching effectiveness.

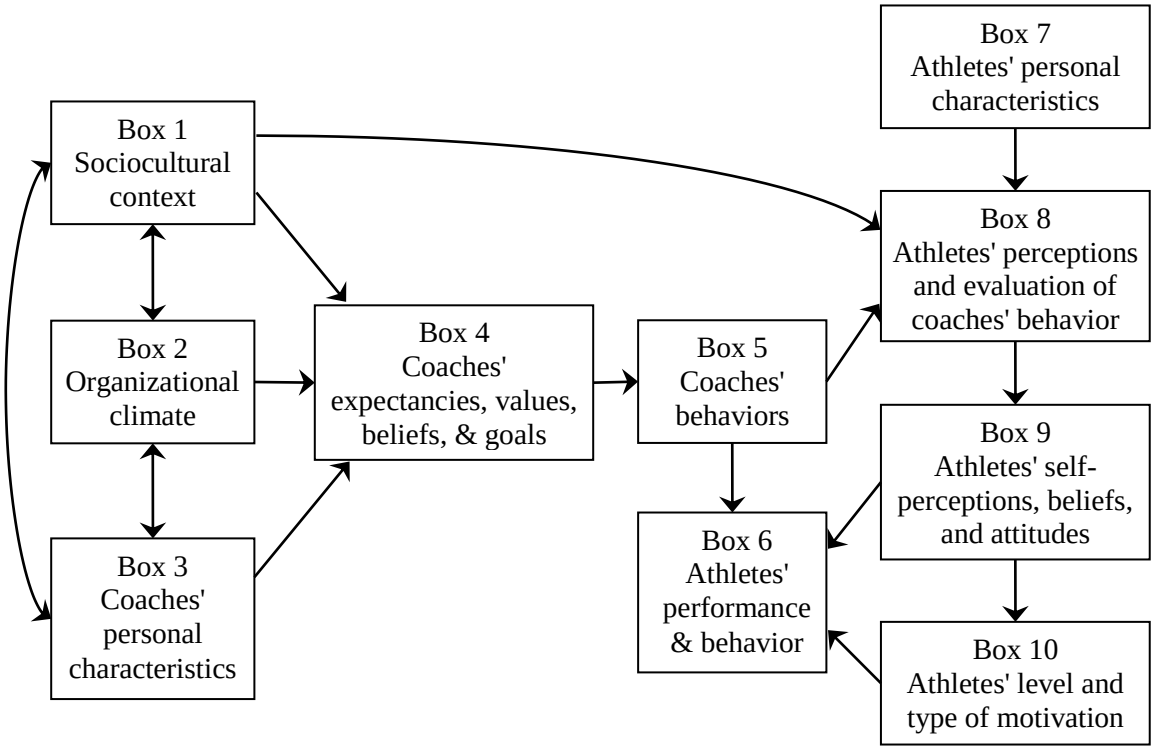

*Figure 4.*A working model of coaching effectiveness. Adapted from "Coaching Effectiveness in the Sport Domain," T. S. Horn, 2008, In T. S. Horn (Ed.), *Advances in sport psychology* (3rd ed.). (p. 243). Champaign, IL: Human Kinetics.

Major Ideas of the Model

The links between variables looks somewhat complicated; however, there are three major ideas encompassing the structure of the model (Horn, 2008). First, coach's behaviors (in games and practices) are led up to or influenced by three antecedents: sociocultural context (Box 1), organizational climate (Box 2), and coach's personal characteristics (Box 3). Sociocultural context involves coaches' gender and ethnicity; organizational climate indicates factors in relevance to the level of competition; and coaches' personal characteristics can include their diverse psychological orientations such as coaching efficacy. The influences of these factors on coaching behavior are, at least in part, mediated by coaches' expectancies, values, beliefs, and goals (Box 4).

Second, coaches' behaviors not only directly influence athletes' performance and behaviors (Box 6) but also indirectly influence their perceptions and motivation in various ways (Box 8 through Box 10). The indirect influence occurs when athletes' perception, interpretation, and evaluation of their coaches' behaviors (Box 8) influence their beliefs and attitudes (Box 9), which in turn, affect their level and type of motivation (Box 10). After all, all of these indirect influences also determine the level and type of the athlete's performance and behaviors.

Third, the effectiveness of coaching behavior (i.e., the effect of coaching behavior on athletes' performance and behavior) is mediated by factors representing situational and individual differences. These relationships or effects are not clearly specified in the model; however, Horn (2008) emphasizes that it is not reasonable to assume that "one set of coaching behavior will be effective for all athletes and in all sport situations" (p. 244).

Implications to the Present Study

One of the assumptions in the theoretical framework of this study is that coaching efficacy is influenced by coaches' gender, ethnicity, school size, and type of school assignment. The assumption was based on Horn (2008)'s coaching effectiveness model. In this model, coaching efficacy was set up as one of the coach's personal characteristics (Box 3) meaning that parallel relationships exist between coaching efficacy and factors relative to sociocultural context (Box 1) and organizational climates (Box 2). However, a different idea was suggested by other coaching efficacy studies (see Feltz et al., 2008; Sullivan et al., 2012) in that coaching efficacy can be regarded as a part of the coach's expectancies, values, beliefs, and goals (Box 4). This alternative idea has important implication on the present study. Based on this idea, it was theoretically possible to

assume that factors relative to sociocultural context (e.g., coaches' gender and ethnicity) and organizational climate (school size) are expected to be significant predictors of coaching efficacy.

Conceptual Model of Coaching Efficacy

The conceptual model of coaching efficacy, developed by Feltz et al. (1999), combines Bandura (1977)'s self-efficacy theory and the Denham and Michael (1981) teacher efficacy model. Before reviewing the conceptual model of coaching efficacy, the process of developing the concept of coaching efficacy and its measurement scale will be explained in detail.

Concept of Coaching Efficacy and its Measurement Scale

Coaching efficacy is defined as "the extent to which coaches believe they have the capacity to affect the learning and performance of their athletes" (Feltz et al., 1999, p. 765). The definition was in part drawn from the conceptual framework of teacher efficacy identifying students' learning as a core construct; however, within the coaching efficacy framework, more emphasis is placed on athletic performance (e.g., psychological, attitudinal, and teamwork skills of athletes). The authors argue that learning had less impact on high school level sports since the coach's focus is more on refining the athlete's existing skills rather than teaching new skills. In this context, they note that the dimensions of coaching efficacy might be different from those of teacher efficacy.

To identify the relevant coaching efficacy dimensions the authors along with eleven coaches resolved this issue by consulting pertinent academic sources (Feltz et al., 1999). These references include Park (1992)'s Coaching Confidence Scale, the National Standards for Athletic Coaches, and a survey of the effective coaching education

literature. From the discussions, they found several repeated key words that include: "teaching, discipline, tactics and strategies, motivation, character development, training and conditioning, and communication coaching" (Feltz et al., 1999, p. 766). Through the process of refining these words, four key components were selected to identify the dimensions of coaching efficacy. They include "teaching technique (which also includes discipline, training and conditioning, and organizing effective practices), game strategy, motivation (which also includes communication and relationship skills), and character building" (Feltz et al., 1999, p. 766-767). Each of the four efficacy dimensions are defined as follows:

- Game strategy: "the confidence coaches have in their ability to coach during competition and lead their team to a successful performance" (Feltz et al., 1999, p. 766).
- Motivation: "the confidence coaches have in their ability to affect the psychological skills and states of their athletes" (Feltz et al., 1999, p. 766).
- Technique: "the belief coaches have in their instructional and diagnostic skills (Feltz et al., 1999, p. 766).
- Character building: "the confidence coaches have in their ability to influence the personal development of and positive attitude toward sport in their athletes" (Feltz et al., 1999, p. 766).

Based on establishing the concept of coaching efficacy, Feltz et al. (1999) developed the Coaching Efficacy Scale (CES), which measures four dimensions of coaching efficacy. Initially, 41 items were generated for the scale; and 517 high school coaches from mid-west area of the United States participated in the two step factorial

validation of the scale. The first step was the Exploratory Factor Analysis (EFA) resulting in the reduction of the CES items from 41 to 24. For the second step, the Confirmatory Factor Analysis (CFA) revealed that the scale constituted "a hierarchical factor model representing four first-order factors and a second-order general factor representing coaching efficacy" (Feltz et al., 1999, p. 768). This means that the CES can be used to measure each of the four dimensions of coaching efficacy as well as the total efficacy, which is the compilation of all scale items. The final version of the CES includes 24 items measuring four dimensions of coaching efficacy: (a) motivation: 7 items, (b) game strategy: 7 items, (c) technique: 6 items, and (d) character building: 4 items. All the items were measured based on the 10-point Likert scale, ranging from 0 (*not at all confident*) to 9 (*extremely confident*).

The CES was originally developed within the context of high school sports (Feltz et al., 1999). This was justified by the authors' reasoning that "high school coaches' coaching efficacy has its great influence on coaching effectiveness because collegiate and professional coaches undoubtedly already have a high degree of confidence in their coaching" (Feltz et al., 1999, p. 767). However, the CES has been extensively used by other coaching efficacy studies dealing with different sports coaches such as club coaches, youth sports coaches, and college sports coaches.

Several studies have made an effort to revise the original CES to improve the efficiency of measure coaching efficacy. For example, the Coaching Efficacy Scale II - High School Teams (CES II-HST) was developed by Myers et al. (2008) to measure coaching efficacy factors specifically applicable to high school team head coaches. Several changes were made to the original CES. First, a new efficacy dimension, physical

conditioning, was added to the existing four coaching efficacy dimensions. Second, the total number of items was reduced from 24 to 18 based on the assumption that three to four items per each dimension would provide sufficient content coverage. Third, instead of using a 10-point Likert scale, a 4-rating scale was applied to the CES II-HST. This change was made to make it easier for participants to differentiate between the scale levels listed in each item (Myers et al., 2008). The CES II-HST includes 18 items measuring five dimensions of coaching efficacy: (a) motivation: 4 items, (b) game strategy: 4 items, (c) technique: 4 items, (d) character building: 3 items, and (e) physical conditioning: 3 items. Along with the scale development, each dimension of coaching efficacy was re-defined as follows:

- Motivation efficacy: "confidence a coach has in his or her ability to affect the psychological mood and skills of his or her athletes" (Myers et al., 2008, p. 1070).
- Game strategy efficacy: "confidence a coach has in his or her ability to lead during competition" (Myers et al., 2008, p. 1070).
- Technique efficacy: "confidence a coach has in his or her ability to use his or her instructional and diagnostic skills during practices" (Myers et al., 2008, p. 1070).
- Character building efficacy: "confidence a coach has in his or her ability to positively influence the character development of his or her athletes through sport" (Myers et al., 2008, p. 1070).
- Physical conditioning: "confidence a coach has in his or her ability to prepare her/his athletes physically for participation in his or her sport" (Myers et al., 2008, p. 1070).

Major Components of the Model

The conceptual model of coaching efficacy was developed based on Bandura (1977)'s self-efficacy theory and the Denham and Michael (1981) teacher efficacy model. Basically, the model speculates that there is a sequential relationship between efficacy sources, coaching efficacy dimensions, and relevant outcomes.

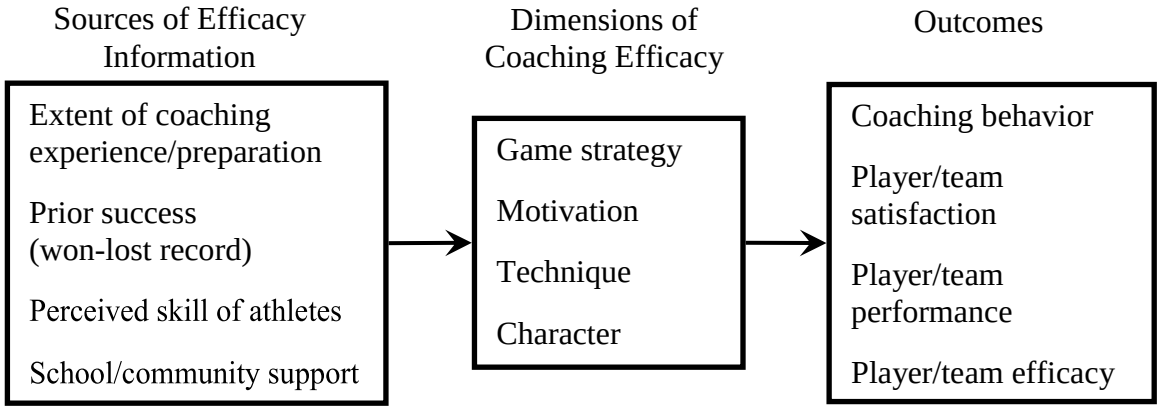

*Figure 5.*Conceptual model of coaching efficacy. Adapted from "A Conceptual Model of Coaching Efficacy: Preliminary Investigation and Instrument Development," by D. L. Feltz, M. A. Chase, S. E. Moritz, & P. J. Sullivan, 1999, *Journal of Educational Psychology, 91,* p. 765-776.

Figure 5 shows that four dimensions of coaching efficacy are influenced by four sources of efficacy information: (a) coaching experience/preparation, (b) prior success (e.g., won-lost record), (c) perceived skill of athletes, and (d) school/community support. According to Feltz et al. (1999), the first two sources are consistent with personal mastery experience identified as the strongest source of self-efficacy (Bandura, 1977). The last two sources were adapted from various teacher efficacy studies. The conceptual model of coaching efficacy illustrates four outcomes of coaching efficacy: (a) coaching behavior, (b) player/team performance, (c) player/team satisfaction, and (d) player/team

confidence. These outcomes were, in part, adapted from the Denham and Michael (1981) teaching efficacy model and from other managerial efficacy studies (Feltz et al., 1999).

A number of studies support the empirical evidence one can derive from the conceptual model of coaching efficacy. Some of the studies examined the existing sources and outcomes in different sport settings, and the others have explored new factors that are categorized as either sources of efficacy information or outcomes of coaching efficacy.

Sources of coaching efficacy. The four sources proposed in the combined coaching efficacy model were empirically tested using a sample of 69 high school basketball coaches from the mid-Michigan area (Feltz et al., 1999). Each of the sources was measured in a specific manner. The first source, the extent of coaching experience/preparation, was a tabulation of coaching experience. The second source, prior success, was measured as won-lost record for the last season. The third source, perceived skill of athletes, was measured as coach's perception of the team's overall ability using a 10-point Likert scale ranging from 0 (*very poor*) to 9 (*excellent*). The fourth source, social support, was measured by five 10-point Likert scales, ranging from 0 (*not at all supportive*) to 9 (*extremely supportive*), representing coaches' perceived supports from athletic director, faculty, students, parents, and community. In general, significant positive relationships were found between the four sources and one or more of the coaching efficacy dimensions. However, perceived social supports originating from athletic director, faculty, and student were not significantly related to any of the coaching efficacy dimensions.

Since the development of the combined efficacy model, many studies have examined the original sources in different sport settings (Myers, Vargas-Tonsing, & Feltz, 2005; Marback, Short, Short, & Sullivan, 2005). Other coaching efficacy studies have explored new sources of efficacy information. In particular, Chase et al. (2005) proposed several additional sources that can be added in the source category of the original model. They include player improvement, player support, and previous playing experience. Detailed reviews dealing with these sources will be presented in the next section: predictors of coaching efficacy in previous research.

Outcomes of coaching efficacy. As outlined in the conceptual model of coaching efficacy, there are four outcomes of coaching efficacy including (a) coaching behavior, (b) player/team satisfaction, (c) player/team performance, and (d) player/team confidence. To identify the relevancy of these outcomes, Based on identifying the CES scores, Feltz et al. (1999) divided the sample of 30 coaches into two coach groups (high-efficacy coaches versus low-efficacy coaches). Individual samples t-tests were conducted to determine whether there were any differences of those outcome variables between the two coach groups. The results showed that higher player/team performance, satisfaction, and confidence were found in the high-efficacy coach group compared to the low-efficacy coach group. In addition, Feltz et al (1999) observed coaching behavior between the two coach groups by employing the Coaching Behavior Assessment System (CBAS; Smith, Smoll, & Hunt, 1977) measuring three types of coaching behavior: (a) praise and encouragement, (b) instruction and organization, and (c) punish and control. The results showed that more praise and encouragement behavior was associated with high-efficacy coach group while more instructional and organized behavior was exhibited by the low-

efficacy coach group. No meaningful differences of punish and control behavior were found between the two coach groups.

A number of coaching efficacy studies examined the four outcomes in different sport settings. A few studies provided empirical supports for the athlete/team outcomes (e.g., player/team performance, satisfaction, and confidence). For example, Myers et al. (2005) focused on the gender difference of the collegiate coaches and found that these outcomes are significantly influenced by coaching efficacy only when male coaches coached men's teams. In another example, Vargas-Tonsing, Warners, and Feltz (2003) found significant influence of coaching efficacy on other efficacy beliefs such as athletes' self-efficacy and teams' collective efficacy. In spite of the empirical supports provided by the above studies, inconsistent results was presented regarding what specific efficacy dimensions predicted the athlete/team-oriented outcomes.

Considerable attention has been given to examining coach-oriented outcomes. Some of these outcomes were separate from the coaching behavior proposed in the original model of coaching efficacy. For example, the Kent and Sullivan (2003) study measured three types of organizational commitment (affective, continuance, and normative) to examine their associations with coaching efficacy among intercollegiate coaches in the United States or Canada. The results show that all of the three commitment types had a positive correlation with the total coaching efficacy, and specifically to the efficacy dimensions of motivation and character building. In another example, a study involving amateur ice hockey coaches demonstrated a positive relationship between total coaching efficacy and coaching satisfaction (Paiement, 2006).

Coaching behavior as an outcome of coaching efficacy, studies use different measurements. For example, the CBAS was used in the Feltz et al.'s (1999) study, and the Efficacy-Enhancing Behaviors Scale (EEBS; Gould, Hodge, Peterson, and Giannini, 1989) was used in Myers et al. (2005). In the studies of Sullivan and Kent (2003) and Sullivan et al. (2012), the Leadership Scale for Sports (Chelladurai & Saleh, 1980) and the Revised Leadership Scale for Sports (RLSS; Zang, Jensen, & Mann, 1997) were employed to measure coaches' leadership behavior.

Implications to the Present Study

The theoretical framework of the present study was primarily based on the conceptual model of coaching efficacy: Particular attention was given to the relationships between sources of efficacy information and coaching efficacy dimensions. The model has evolved to include additional sources of efficacy information (e.g., playing experience and perceived athlete improvement) and dimensions of coaching efficacy (e.g., physical conditioning efficacy).

Predictors of Coaching Efficacy in Previous Research

The concept of coaching efficacy has been established by Feltz et al. (1999) with the development of its measurement scale (CES) and theoretical model (conceptual model of coaching efficacy). Since its establishment, many studies have tried to investigate coaching efficacy from a different perspective; however, only a few published studies examine the sources of coaching efficacy or other factors expected to influence coaching efficacy (Feltz et al., 2008).

This section will review previous coaching efficacy studies dealing with the effect of efficacy sources on coaching efficacy based on identifying each of the six source

categories: (a) coaching experience, (b) playing experience, (c) prior success, (d) perceived athlete ability, (e) perceived athlete improvement, and (f) perceived social support. In addition, the review will deal with several coaching efficacy studies examining the effect of coaches' gender on their coaching efficacy.

Coaching Experience

Theoretically, coaching experience represents the most important source of coaching efficacy (Feltz et al. 2008); and therefore, this source, mostly represented in terms of the number of coaching years, has been most often studied in coaching efficacy research. Coaching experience has been a significant predictor of total coaching efficacy among intercollegiate coaches (Myers et al., 2005), British university coaches (Kavussanu, Boardley, Jutkiewicz, Vincent, & Ring, 2008) and scholastic coaches in Botswana (Malete, Sullivan, & Forge, 2013). However, coaching experience was not a significant predictor of total coaching efficacy among high school basketball head coaches (Feltz et al., 1999) and volunteer youth soccer coaches (Kowalski, Edginton, Lankford, Waldron, Roberts-Dobie, & Nielson, 2007). In general, there has been a limitation of investigating gender effect on coaching efficacy because most of the relevant studies have involved small number of female coaches as compared to the number of male coaches.

For each coaching efficacy dimension, studies have found inconsistent results on what dimensions were specifically predicted by coaching experience. Table 1 below shows the list of studies that examine whether the level of each coaching efficacy dimension differs depending on coaches' gender.

Table 1

List of Studies Examining the Effect of Coaching Experience on Coaching Efficacy Dimensions

Author (publication year)	Sample (*N*)	Efficacy dimensions predicted by coaching experience
Feltz et al. (1999)	High school basketball head coaches (69)	ME & GSE
Marback et al. (2005)	Intercollegiate coaches (187)	ME, GSE, & CBE
Myers et al. (2005)	Division II & III college head coaches (135)	GSE
Sullivan et al. (2006)	Canadian curling coaches (81)	ME, GSE, TE, & CBE
Kavussanu et al. (2008)	British university coaches (26)	TE
Malete & Sullivan (2009)	Scholastic coaches in Botswana (181)	ME, GSE, TE & CBE
Feltz, Helper, Roman, & Paiement (2009)	Volunteer youth sports coaches (492)	ME, GSE, & TE
Myers et al. (2011)	High school head coaches (799)	ME, GSE, & TE

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy.

With respect to studies that involve high school coaching efficacy, coaching experience anticipated motivation and game strategy efficacies in the Feltz et al. (1999) study, and motivation, game strategy, and technique efficacies in the Myers et al. (2005) study.

Playing Experience

The Chase et al. (2005) study identified playing experience as the source of coaching efficacy, and this finding was empirically tested by several other studies. Only one study examined the effect of playing experience on total coaching efficacy: No significant effect was found among volunteer youth soccer coaches (Kowalski, Edginton, Lankford, Waldron, Roberts-Dobie, & Nielsen, 2007).

Several other studies have examined the effect of playing experience on the dimensions of coaching efficacy (see Table 2).

Table 2

List of Studies Examining the Effect of Playing Experience on Coaching Efficacy Dimensions

Authors (Publication year)	Samples (*N*)	Efficacy dimensions predicted by playing experience
Sullivan, Gee, & Feltz (2006)	Canadian curling coaches (69)	GSE
Malete et al. (2009)	Scholastic coaches in Botswana (181)	ME, GSE, & TE
Feltz et al. (2009)	Volunteer youth sports coaches (492)	GSE, & TE
Myers et al. (2011)	High school head coaches (799)	GSE, & TE

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy.

All studies shown in Table 2 show that playing experience significantly predicted game strategy efficacy. Except for Sullivan et al. (2006)'s study, the source was also a significant predictor of technique efficacy.

Prior Success

Prior success was initially identified as won/lost record (winning percentage) of the last season (Feltz et al., 1999); however, it was measured in terms of career winning percentage in later coaching efficacy studies. The effect of prior success on total coaching efficacy was significant among intercollegiate coaches (Myers et al., 2005); however, for high school basketball head coaches, the effect was not statistically significant (Feltz et al., 1999).

For each coaching efficacy dimension, the results regarding the effect of winning percentage on each efficacy dimension were inconsistent (see Table 3).

Table 3

List of Studies Examining the Effect of Winning Percentage on Coaching Efficacy Dimensions

Authors (Publication year)	Samples (*N*)	Efficacy dimensions predicted by winning percentage (period)
Feltz et al. (1999)	High school basketball head coaches (69)	ME & GSE (last season)
Marback et al. (2005)	Intercollegiate coaches (187)	None (career)
Myers et al. (2005)	Division II & III college head coaches (135)	ME & GSE (career)
Myers et al. (2011)	High school head coaches (799)	GSE & PCE (last season) ME (career)

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, PCE = Physical Conditioning Efficacy.

In terms of high school coaches' coaching efficacy, motivation and game strategy were the two efficacy dimensions that were positively predicted by last season's winning percentages (Feltz et al., 1999). For the Myers et al. (2011) study, the two efficacy

dimensions plus physical efficacy dimension were predicted by career and last season's winning percentage.

Perceived Athlete Ability

Studies have provide inconsistent results regarding the effect of perceived athlete ability on total coaching efficacy as well as each efficacy dimension. For example, for total coaching efficacy, its effect was not significant among high school basketball head coaches (Feltz et al., 1999), but significant among intercollegiate coaches (Myers et al., 2005).Studies demonstrate inconsistent results on identifying what efficacy dimensions significantly influenced by perceived athlete ability (see Table 4).

Table 4

List of Studies Examining the Effect of Perceived Athlete Ability on Coaching Efficacy Dimensions

Authors (Publication year)	Samples (*N*)	Efficacy dimensions predicted by perceived athlete ability
Feltz et al. (1999)	High school basketball head coaches (69)	ME
Myers et al. (2005)	Division II & III college head coaches (135)	ME, GSE, TE, & CBE
Feltz et al. (2009)	Volunteer youth sports coaches (492)	None
Myers et al. (2011)	High school head coaches (799)	ME, & TE

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy.

As seen in Table 4, perceived athlete ability had no influence on any of the coaching efficacy dimensions among youth volunteer coaches (Feltz et al., 2009) while it significantly influenced all dimensions of coaching efficacy among intercollegiate

coaches (Myers et al., 2009). According to Myers et al. (2005), this difference can be explained by the highly competitive nature of college sports, which is not applicable to most of the high school sports. Obviously, high level of athletic performance was of little or secondary importance in youth sports compared to high school or college sports. Focused on high school coaches, motivation was the only efficacy dimension that was predicted by perceived athlete ability in the relevant studies (Feltz et al., 1999; Myers et al., 2011).

Perceived Athlete Improvement

Through phone interviews with high school basketball head coaches, Chase et al. (2005) argued that perceived athlete improvement is a source of coaching efficacy not included in the original coaching efficacy model. Their finding was empirically tested by two other coaching efficacy studies. The two studies examined the effect of perceived improvement on each efficacy dimension rather than total coaching efficacy (see Table 5).

Table 5

List of Studies Examining the Effect of Perceived Athlete Improvement on Coaching Efficacy Dimensions

Authors (Publication year)	Samples (*N*)	Efficacy dimensions predicted by perceived athlete improvement
Feltz et al. (2009)	Volunteer youth sports coaches (492)	ME, GSE, TE, & CBE
Myers et al. (2011)	High school head coaches (799)	ME, GSE, TE, CBE, & PCE

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy.

As seen in Table 5, perceived athlete improvement was a strong predictor of all coaching efficacy dimensions. The Feltz et al. (1999)'s study used the original CES measuring four coaching efficacy dimensions while the Myers et al. (2011) study employed the CES II-HST measuring five dimensions of coaching efficacy.

Perceived Social Support

Studies have found inconsistent results on what kind of social supports significantly influence each efficacy dimension (see Table 6).

Table 6

List of Studies Examining the Effect of Perceived Social Support on Coaching Efficacy Dimensions

Authors (Publication year)	Samples (*N*)	Group	Efficacy dimensions predicted by perceived social support
Feltz et al. (1999)	High school basketball head coaches (69)	AD Students Faculty Parents Community	None None None ME ME, GSE, & CBE
Myers et al. (2005)	Division II & III college head coaches (135)	AD Faculty Student body Parents Community	None None None ME, GSE, TE, & CBE ME & CBE
Feltz et al. (2009)	Youth volunteer coaches (492)	Internal External	ME, GSE, & CBE TE
Myers et al. (2011)	High school head coaches (799)	Athletes AD Student body Community	ME, GSE, & PCE GSE ME ME

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy; Internal = support groups involving athletes and their parents, External = support groups involving organization and community.

As seen in Table 6, studies have identified different support groups related to these efficacy sources. Originally, Feltz et al. (1999) identified five potential support groups (athletic director, students, parents, faculty, and community), and found that supports from parents and the community are two significant predictors of total coaching efficacy. The finding was consistent with Myers et al. (2005); however, other studies have found different results regarding the issue.

For each efficacy dimension, studies show inconsistent results on the kinds of social supports that have a significant influence on each efficacy dimension. There was no consistent pattern in identifying specific efficacy dimension influenced by perceived social support from different groups. This may be due to differences in sport settings or subtle differences between support group categories.

Coach Gender

Although gender was not identified as a source of coaching efficacy, several coaching efficacy studies do take coach gender into consideration. Studies have provided inconsistent results regarding the effect of gender on total coaching efficacy and each efficacy dimension. For total coaching efficacy, no significant difference was found between female coaches and male coaches in British University sports (Kavussanu et al., 2008) and in volunteer youth soccer (Kowalski et al., 2007). Table 7 shows the list of studies that examined the difference in each dimension of coaching efficacy between male coaches and female coaches.

Table 7

List of Studies Examining the Effect of Gender on Coaching Efficacy Dimensions

Authors	Samples	*N* *(Female)*	Efficacy dimensions differed by gender
Marback et al. (2005)	Intercollegiate coaches	187 (52)	GSE
Lee, Malete, &Feltz (2002)	Youth sports coaches in Singapore	235 (66)	GSE
Campbell & Sullivan (2005)	Canadian novice coaches (1 - 3 coaching years)	213 (93)	**ME & CBE**
Kavussanu et al. (2008)	British university coaches	26 (g)	GSE

Note. ME = Motivation Efficacy, GSE = Game Strategy Efficacy, CBE = Character Building Efficacy; Bold letters represent the efficacy dimensions that female coaches had higher efficacy level than did male coaches.

For each efficacy dimension, studies also found inconsistent results. As seen in Table 7, three studies report that male coaches have a higher level of game strategy efficacy than did female coaches in diverse sport settings, However, Campbell and Sullivan's (2005) study involving Canadian novice coaches found that female coaches had higher level of motivation efficacy and character building efficacy than did male coaches.

CHAPTER III

METHODOLOGY

This study was designed to analyze the various factors associated with coaching efficacy among New Mexico high school team sports head coaches. The study employed a cross-sectional survey design, administering surveys to the study population at one point in time. Detailed descriptions of the research design and methodology will be presented in the following four sections: sample selection, instrumentation, data collection, and data analysis.

Sample Selection

The target population of the study was the New Mexico high school team sports head coaches from six different team sports: (a) football, (b) volleyball, (c) soccer, (d) basketball, (e) baseball, and (f) softball. This specific target was set up because the coaching efficacy measurement, Coaching Efficacy Scale II-High School Team (CES II-HST) was best applicable to team sports head coaches rather than individual sports and/or assistant coaches (Myers et al., 2008). Among the target population, the study could access 834 coaches who provided their valid contact information (e-mail addresses) to the New Mexico Activities Association (NMAA). The NMAA reported that most of the coaches listed in the contact information were New Mexico high school head coaches; however, it was not possible to identify the exact number of head coaches since their coaching positions (head or assistant) were not included in their contact information.

Among 246 coaches who participated in the survey, 239 coaches filled out all the items presented in the survey questionnaires. However, nine coaches who entered "0" for the head coaching experience were assumed to be assistant coaches, and were excluded

from the study. The total number of valid study participants was 230, with a survey response rate of 28%.

Instrumentation

Three types of survey questionnaires were employed in this study: (a) the Coaching Efficacy Scale II-High School Teams (CES II-HST), (b) demographic information questionnaire, and (c) coaching information questionnaire. The CES II-HST was adapted with permission, from the work of Myers et al. (2008). Both demographic and coaching information questionnaires were specifically built for this study to measure selected sociocultural/organizational factors and sources of coaching efficacy.

Coaching Efficacy Scale II-High School Teams

The Coaching Efficacy Scale II-High School Teams **(**CES II-HST) was developed by Myers et al. (2008) on the basis of revising the original Coaching Efficacy Scale (CES). The CES II-HST was specifically designed to measure coaching efficacy among high school team sports head coaches. The authors provided the following reasons as to why the scale was applicable to this coach population:

- Coaching efficacy has its greatest influence on coaching effectiveness in high school sports (Myers et al., 2008).
- The scale was best applicable to team sports because many of its items were originally developed within the context of team sports (Myers et al., 2008).
- Team sports head coaches have more opportunity to control and manage their athletes during competitions than individual sports coaches do (Myers et al., 2008).

The CES II-HST consists of 18 items measuring five dimensions of coaching efficacy: (a) motivation: four items, (b) game strategy: four items, (c) technique: four items, (d) character building: three items, and (e) physical conditioning: three items. Table 8 shows the content of each measurement item constituting the CES II-HST.

Table 8

Contents of the Items for the Coaching Efficacy Scale II-High School Teams

Motivation: 4 items
M1: Motivate your athletes
M2: Help your athletes to not become overly confident in their ability to perform when they are performing well
M3: Help your athletes to maintain confidence in their ability to perform when they are performing poorly
M4: Motivate your athletes for competition against a weak opponent
Game Strategy: 4 items
G1: Devise strategies that maximize the positive effects of your team's strengths during competition
G2: Make effective strategic decisions in pressure situations during competition
G3: Make effective personnel substitutions during competition
G4: Devise strategies that minimize an opposing team's strengths during competition
Technique: 4 items
T1: Teach athletes the complex technical skills of your sport during practice
T2: Detect subtle technique errors by your athletes during practices
T3: Teach athletes appropriate basic technique during practices
T4: Instruct all of the different positional groups of your athletes on appropriate technique during practices
Character Building: 3 items
C1: Effectively instill an attitude of respect for others in your athletes
C2: Positively influence the character development of your athletes
C3: Effectively promote good sportsmanship in your athletes
Physical Conditioning: 3 items
P1: Prepare an appropriate plan for your athletes' off-season physical conditioning
P2: Implement an appropriate endurance program for your athletes during the season
P3: Accurately assess your athletes' physical conditioning

Note. Adapted from "The Coaching Efficacy Scale II-High School Teams" by N. D. Myers, D. L. Feltz, M. A. Chase, M. D. Reckase, and G. D. Hancock, 2008, *Educational and Psychological Measurement, 68,* p. 1070.

The scale can be used to measure the efficacy dimensions separately or the Total Coaching Efficacy (TCE) by averaging the sum of all 18 items: both efficacy measurements were used in the present study. Each item was measured by 4-point Likert Scale ranging from *low confidence* to *complete confidence.*

In the initial development of the CES II-HST, the Myers et al. (2008) study involving 799 high school head coaches from the Michigan area reported α reliability coefficient for each of the five efficacy dimensions as follows: motivation = .74; game strategy = .80; technique = .83; character building = .73; and physical conditioning = .77. Table below shows the contents of measurement items divided by the five dimensions of coaching efficacy.

Demographic Information Questionnaire

For the demographic information questionnaire, three items were administered to measure coaches' gender, age, and ethnic background. First, Participants were asked to choose their gender based on two categories: male and female. Second, one open-ended item was administered to fill in the numerical value of their age. Finally, as recommended by the National Health Plan Collaborative (2008), participants were asked to choose one or more of the following six race/ethnicity categories: (a) American Indian or Alaska Native, (b) Asian or Pacific Islander, (c) Hispanic, (d) Black, not of Hispanic Origin, (e) White, not of Hispanic Origin, and (f) Other Race/Ethnicity.

Coaching Information Questionnaire

The coaching information questionnaire measured three organizational factors and six sources of efficacy information. For organization factors, coaches were asked to identify the type of sports that they were coaching, the size of the high school their teams

belong to, and the type of school assignment that they engaged in their schools. School size was identified as six high school classes based on the student enrollment census: (a) 5A = 1651 or above; (b) 4A = 901-1650; (c) 3A = 402-900; (d) 2A = 151-400; (e) 1A = 71-150; and (f) B = 70 or less. This classification was referenced by the Section 4 of the NMAA (2013)'s Hand Book. The type of school assignment was identified as four categories: (a) contract coaching, (b) coaching and teaching, (c) coaching and administration, and (d) coaching, teaching and administration. Contract coaching referred to coaching sports teams without having other school assignments.

The questionnaire also included six items to measure each of the six efficacy sources selected in this study. These items were adapted from the Myers et al. (2011) study and the Feltz et al. (2009) study. Several modifications were made to retain study consistency. To measure coaching experience, the questionnaire administered two sub-questions asking respondents to indicate the number of years for (a) total coaching experience as both an assistant and head coach and (b) head coach only. For playing experience, a single open-ended item was used to measure the number of years that a coach has played the same sport competitively either as a student athlete and/or as a professional athlete. Prior success was measured by two sub-questions asking about the winning percentage for entire coaching career as a head coach and the winning percentage for the last season (i.e., 2012 or 2013 season). Both perceived athlete ability and perceived athlete improvement were measured by a 5-point Likert scale, ranging from *very poor* to *excellent*. Finally, four sub-items using 4-point Likert scales, ranging from *completely unsupportive* to *completely supportive*, were employed to measure coaches' perceived social supports from four different groups: athletes, their parents,

school administrators, and local community members. For statistical analysis, the four sub-items were combined into two categories: (a) internal social support (from athletes and parents) and (b) external social support (from school administrators and local community members). These combinations were consistent with the work of Feltz et al. (2009).

Data Collection

Data collection began after gaining approval from the dissertation committee and the University of New Mexico Institutional Review Board. The recruitment of study participants was made via e-mail. The e-mail address for each coach was obtained from the NMAA along with the permission to use the contact information. By using a survey website (www.surveymonkey. com), the survey was distributed to the accessible study population: 834 New Mexico high school coaches. Participants received an informed consent cover letter that described the purpose of the study, voluntary status of the study participation, and confidentiality of the information (see Appendix A).To ensure amenity, participants were asked not to provide any personal identification such as their name, phone number, and address.

The online survey consisted of three pages that appeared in the survey website (see Appendix B). The first page included an informed consent cover letter. The second page contained a questionnaire that involved both demographic and coaching information questions. The final survey page contained the CES II-HST. The scale was labeled "Coaching Confidence Scale" for administrative purposes.

Data Analysis

The Statistical Package for Social Science (SPSS) version 20 was used to conduct relevant data analyses. They include reliability analysis, descriptive statistics, one-way ANOVA (or independent samples t-tests), correlation analysis, simple linear regression, and stepwise multiple regression.

First, reliability analysis was conducted for the CES II-HST. Cronbach's α coefficients for each of the five efficacy dimensions were calculated to determine whether the items included in each dimension were internally consistent.

Second, descriptive statistics were employed to describe participant characteristics in accordance with the three study variables: sociocultural/organizational factors, sources of efficacy information, and coaching efficacy factors. Frequency, mean, and/or standard deviation were presented depending on the type of information.

Third a correlation analysis was conducted for all projected efficacy sources and all coaching efficacy factors. The correlation coefficient (Pearson's r) for each relationship between the above factors was displayed in a separate table. The table addressed *p*-values for the statistically significant correlations.

Fourth, a series of one-way ANOVA's or independent samples t-tests was conducted to explore the first research question: Does the level of coaching efficacy differ depending on sociocultural and organizational factors? The study initially identified four sociocultural/organizational factors: (a) gender, (b) ethnicity, (c) school size, and (d) type of school assignment.

Participants were divided into two or more groups in terms of the above four factors. For gender, the participants were grouped based on self-identification: male (*n* =

186) and female (*n* = 44). For ethnicity, the participants were divided into four ethnic groups: non-Hispanic White (*n* = 120), Hispanic (*n* = 77), American Indian or Alaska Native (*n* = 15), and Other (Multiple) Ethnicity (*n* = 18). For school size, the participants were divided into two groups: participants engaged in large schools (*n* = 122) and small schools (*n* = 108). The large school category includes 5A and 4A class schools (i.e., schools with more than 900 students enrolled), and the small school category includes 3A, 2A, 1A, and B class schools (i.e., schools with an enrollment of 900 or fewer students). Finally, for school assignment, two participant groups were established based on the type of school assignment: coaching only (contract coaching; *n* = 59) and multiple assignments (*n* = 171). The multiple assignments group was established based on combining three school assignment categories: coaching and teaching (*n* = 147), coaching and administration (*n* = 10), and coaching, teaching and administration (*n* = 14). This was set up because the latter two categories had insufficient participant numbers to conduct inferential statistics.

Based on the four participant classifications, relevant statistical values were addressed to determine whether there were any differences in six coaching efficacy factors (total coaching efficacy and each of the five dimensions of coaching efficacy) depending on gender, ethnicity, school size, and type of school assignment.

Fifth, a series of simple linear regression analyses was conducted to explore the second research question: What sources of efficacy information specifically predict their coaching efficacy? The study initially projected six efficacy sources: (a) coaching experience, (b) playing experience, (c) prior success, (d) perceived athlete skill level, (e) perceived athlete improvement, and (f) perceived social supports. Setting up these six

sources as independent variables, a series of simple regression analyses examined each of their effects on each of the six coaching efficacy factors: total coaching efficacy and each of the five dimensions of coaching efficacy.

Finally, a series of stepwise multiple regression analyses was conducted to explore the third research question: What is the best set of efficacy sources that predict coaching efficacy? The nine efficacy sources were entered according to their statistical contribution in explaining the variance in the dependent variable. In stepwise multiple regression, the independent variables are entered according to their statistical contribution as a way to explain the variance in the dependent variable. Through the identification of the most parsimonious set of efficacy sources predicting each of the six coaching efficacy factors, statistical values such as *F* value, *p* value, multiple correlation (*R*) and multiple correlation squared (R^2) were estimated.

CHAPTER IV

RESULTS

The purpose of the study was to analyze the various factors that may influence coaching efficacy among New Mexico high school team sports head coaches. The study employed a cross sectional survey design: The online surveys were distributed and collected through a survey website (www.surveymonkey.com) one point at a time. Among the accessible target population of 834 coaches, 230 individuals completed all survey questionnaire items (response rate: 28%).

Three research questions were explored among the study population: (a) Does the level of their coaching efficacy differ depending on sociocultural/organizational factors?, (b) Which specific efficacy sources influence their coaching efficacy?, and (c) What is the best set of efficacy sources that predict their coaching efficacy?

Tabulation of study data, derived from well-established statistical analysis procedures, provides the means to support answers to the above research questions. The data are organized into five sections: (a) reliability analysis, (b) correlation analysis, (c) participant description, (d) effect of sociocultural/organizational factors on coaching efficacy, (e) effect of efficacy sources on coaching efficacy, and (f) selection of set of efficacy sources best predicting coaching efficacy.

Reliability Analysis

A reliability analysis was conducted with Coaching Efficacy Scale II-High School Team (CES II-HST). The Cronbach's α coefficient for each of the five efficacy dimensions was calculated to determine the internal consistency of the measurement. The study followed the DeVellis' (1990) guidelines proposing that α coefficient values

between .70 to .80 is "respectable" and the α value between .80 to .90 is "very good" for psychometric tests. Table 9 shows the Cronbach's α coefficient for each efficacy dimension. The values of "α If Item Deleted" were presented to see whether each item increases the level of α when deleted.

Table 9

Cronbach's Alpha on each Dimension of Coaching Efficacy

Dimension	Item #	α If Item Deleted	Cronbach's α
Motivation	M1	.72	.73
	M2	.67	
	M3	.62	
	M4	.66	
Game strategy	G1	.72	.78
	G2	.69	
	G3	**.79**	
	G4	.71	
Technique	T1	.74	.82
	T2	.79	
	T3	.77	
	T4	.79	
Character building	C1	.64	.77
	C2	.70	
	C3	.72	
Physical conditioning	P1	**.71**	.70
	P2	.53	
	P3	.59	

Note. Bold numbers represent αvalues that increase the level of internal consistency if the items were deleted.

All α coefficient values shown in Table 9 were acceptable. The results for α If Item Deleted show increased αvalues for game strategy and physical conditioning when one item for each dimension (G3 and P1, respectively) was deleted. However, the two

items were not deleted because the increases were minimal, and it was better not to remove them as each dimension only contains three or four measurement items.

Participant Description

Study participants were 230 New Mexico high school head coaches who coach six different team sports: football (n = 41), volleyball (n = 41), soccer (n = 41), basketball (n = 64), baseball (n = 20), and softball (n = 23). Each participant was characterized by the following criteria: demographics, organizational factors, sources of efficacy information, and coaching efficacy factors.

Demographics

Demographics involved three factors: gender, age, and race/ethnicity. Table 10 below shows the frequency and percentile scores for the three factors. Gender and race/ethnicity were two sociocultural factors identified in the study framework.

Table 10

Participant Distribution by Demographic Characteristics

Factors		Frequency	Percent
Gender	Male	186	80.9
	Female	44	19.1
Age	20 - 29	25	10.9
	30 - 39	60	26.1
	40 - 49	85	37.0
	50 - 59	45	19.6
	60 & over	15	6.5
Race/Ethnicity	American Indian or Alaska native	15	6.5
	Hispanic	77	33.5
	White, not of Hispanic origin	120	52.2
	Other (multiple) race/ethnicity	18	7.8

Note. N = 230; M_{age} and SD_{age} = 43.0 and 9.98, respectively.

As seen in Table 10, 44 female coaches participated in this study, which represented less than 20% of the total study participants. Only one female coach coached a boys team (i.e., boys basketball), and, interestingly, her coaching efficacy scores were higher than average in all coaching efficacy dimensions and total coaching efficacy.

Participant ages ranged from 24 to 70 (M = 43.0, SD = 9.98). Many coaches were in their thirties and forties (n = 145, 63.1% of the total), and only 15 participants (6.5% of the total) were 60 or older. The second lowest age category was twenties (n = 25, 10.9% of the total participants).

With regards to race/ethnicity, 52.2% of the total participants (n = 120) were non-Hispanic White. This percentage seemed a little high when considering that this ethnic population consists of 40.5% of the total population in New Mexico (United States Census Bureau, 2010). Also, Hispanics represent 33.5% of the total participants (n = 77), the second largest population among the study participants. American Indian or Alaskan natives represent 6.5% of the total study participants (n = 15). Other (Multiple) Race/Ethnicity category involved Asian or Pacific Islander (n = 1), Black, not of Hispanic origin (n = 4), American Indian/Alaska native & Hispanic (n = 1), Asian/Pacific Islander & Hispanic (n = 1), Asian/Pacific Islander & White (n = 1), Hispanic & Black (n = 1), Hispanic & White (n = 3), and other race/ethnicity (n = 6). All of the race/ethnicity categories other than non-Hispanic White and Hispanic involved less than 15 participants each: These race/ethnic categories were not meaningfully considered in further inferential statistics due to their lack of participant numbers.

Organizational Factors

The study set up two organizational factors: (a) school size and (b) type of school assignment. Table 11 shows the frequency and percentile scores for participant numbers included in each of the organizational factor sub-category.

Table 11

Participant Distribution by School Size and Type of School Assignment

Factors		Frequency	Percent
School size*	5A	62	27.0
	4A	60	26.1
	3A	27	11.7
	2A	45	19.6
	1A	20	8.7
	B	16	7.0
School assignment	Contract coaching	59	25.7
	Coaching & teaching	147	63.9
	Coaching & administration	10	4.3
	Coaching, teaching, & administration	14	6.1

Note. N = 230. *School size is classified by the number of student enrollments: 5A = 1651 or above, 4A = 901-1650, 3A = 402-900, 2A = 151-400, 1A = 71-150, and B = 70 or less.

The largest number of participants (n = 62) were engaged in 5A class schools, but the number difference was not large compared to the participants from 4A schools as well as 3A schools. The number of participants generally decreased along with the school sizes; however, the number of participants from 2A schools was almost twice as many as the number of participants from 3A schools.

For school assignment, the highest number (n = 147) of participants were responsible for coaching and teaching assignments, which represent 63.9 % of the total

participants. The second highest number was the contract coaching category, having 59 participants (25.7% of the total). The other two school assignment categories had less than 15 participants each.

Sources of Efficacy Information

Table 12 shows the scores of mean, standard deviation, minimum, and maximum for each of the selected sources of efficacy information.

Table 12

Descriptive Statistics for Sources of Efficacy Information

		M	*SD*	Minimum	Maximum
Coaching experience	Total	14.56	9.29	1	44
	Head coach	9.12	8.08	1	42
Playing experience		11.25	9.22	0	41
Prior success (winning %)	Career	58.27	19.07	0	100
	Last season	54.15	24.21	0	100
Perceived athlete skill level		3.30	0.81	1	5
Perceived athlete improvement		3.87	0.73	1	5
Perceived social supports	Internal	3.21	0.63	1	4
	External	3.07	0.68	1	4

Note. $N = 230$.

Due to the sub-categories existing in several efficacy sources (e.g., coaching experience, prior success, and perceived social support), nine source categories were identified. In regards to coaching experience, the mean difference between total coaching years and head coaching years was 5.44, which indicates that most survey participants had approximately 5 years of assistant coaching experience.

For prior success, both career and last season's winning percentages were considerably higher than 50%. In particular, participants had approximately 4% higher career winning percentage compared to the winning percentage last season.

The mean scores for perceived athlete improvement (M = 3.87) was considerably higher than the mean scores for perceived athlete ability (M = 3.30). The participant estimated the overall ability of their athletes as close to "average" while they perceived their athletes had quite a "good" athletic skill improvement last season.

Finally, participants perceived higher internal supports (M = 3.21) than external supports (M = 3.07) although the mean scores were not significantly different. Roughly speaking, the participants perceived "somewhat supportive" for both type of social supports.

Coaching Efficacy Factors

Table 13 below shows the mean, standard deviation, minimum, and maximum for total coaching efficacy and each of the five efficacy dimension scores.

Table 13

Descriptive Statistics for Coaching Efficacy Scores

	M	*SD*	Minimum	Maximum
Total coaching efficacy	3.26	0.40	1.39	4.00
Motivation	3.11	0.49	1.00	4.00
Game strategy	3.23	0.51	1.75	4.00
Technique	3.35	0.51	1.50	4.00
Character building	3.50	0.51	1.67	4.00
Physical conditioning	3.13	0.58	1.00	4.00

In general, participants had a considerably higher level of coaching efficacy (M = 3.26). The highest average score among the five efficacy dimensions was character building, which is one of the most important developmental aspects of high school sports. The two lowest average scores were motivation (M = 3.11) and physical conditioning (M = 3.13).

Correlation Analysis

A correlation analysis was conducted for nine efficacy sources and six coaching efficacy factors, total coaching efficacy and five efficacy dimensions. The table 14 shows the correlation coefficients (Pearson's r) for each relationship between the above 15 study variables.

All of the coaching efficacy factors were highly correlated with each other. There were significant correlations between some of the sources of efficacy. The highest correlation coefficients (r = .80) was between total coaching experience and head coaching experience. Interestingly, playing experience and perceived athlete improvement were negatively correlated, but the correlation was not significant.

Table 14

Correlation Matrix for Efficacy Sources, Total Coaching Efficacy, and Five Dimensions of Coaching Efficacy

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Coaching experience	-	.80**	.01	.36**	.18**	.11	.08	.12	.19**	.32**	.21**	.33**	.32**	.15*	.19**
2. Head coaching experience	.80	-	.07	.37**	.25**	.19**	.17*	.14*	.21**	.31**	.24**	.32**	.31**	.13*	.16*
3. Playing experience	.01	.07	-	.15	.10	.09	-.02	.04	.10	.13*	.11	.09	.15*	.00	.14*
4. Career winning percentage	.36**	.37**	.15*	-	.61**	.38**	.18**	.21**	.26**	.28**	.23**	.27	.24**	.17*	.16*
5. Last season winning percentage	.18**	.25**	.10	.61**	-	.62**	.38**	.26**	.26**	.21**	.14*	.22**	.21**	.15*	.07
6. Perceived athlete ability	.11	.19**	.09	.38**	.62**	-	.47**	.30**	.26**	.11	.10	.12	.16*	.01	.03
7. Perceived athlete improvement	.08	.17*	-.02	.18**	.38**	.47**	-	.42**	.20**	.24**	.21**	.24**	.16*	.17*	.12
8. Internal social support	.12	.14*	.04	.21**	.26**	.30**	.42**	-	.52**	.26**	.25**	.16*	.19**	.24**	.17*
9. External social support	.19**	.21**	.10	.26**	.26**	.26**	.20**	.52**	-	.20**	.17*	.14*	.16*	.24**	.10
10. Total coaching efficacy	.32**	.31**	.13*	.28**	.21**	.11	.24**	.26**	.20**	-	.82**	.86**	.81**	.60**	.75**
11. Motivation	.21**	.24**	.11	.23**	.14*	.10	.21**	.25**	.17*	.82**	-	.61**	.50**	.51**	.53**
12. Game strategy	.33**	.32**	.09	.27**	.22	.12	.24**	.16*	.14*	.86**	.61**	-	.69**	.31**	.61**
13. Technique	.32**	.31**	.15*	.24**	.21**	.16*	.16*	.19**	.16*	.81**	.50**	.69**	-	.37**	.49**
14. Character building	.15*	.13*	.00	.17*	.15**	.01	.17*	.24**	.24**	.60**	.51**	.31**	.37**	-	.25**
15. Physical conditioning	.19**	.16*	.14*	.16*	.07	.03	.12	.17*	.10	.75**	.53**	.61**	.49**	.25**	-

Note. $^{**}p < .00$ $^{*}p < .05$.

Effect of Sociocultural/Organizational Factors on Coaching Efficacy (RQ 1)

This section presents the statistical results related to the first research question: Does the level of coaching efficacy differ depending on sociocultural/organizational factors? A series of one-way ANOVAs or independent samples t-tests were conducted to compare mean scores for six coaching efficacy factors (i.e., total coaching efficacy and five dimensions of coaching efficacy) depending on gender, ethnicity, school size, and school assignment. For each efficacy factor, Cohen's *d* was calculated to measure the effect size of the mean score difference. According to Cohen (1988), Cohen's *d* values of 0.80, 0.50, and 0.30 are considered to be large, medium, and small effects, respectively.

Gender

Table 15 below is a summary statistics of independent t-tests comparing the mean scores of each of the coaching efficacy factors between male and female coaches. Significant differences in the TCE scores were found between male coaches and female coaches. For coaching efficacy dimensions, all of the scores except for the CBE score significantly differed between the two groups. With regards to the effect size, the mean score differences of the TCE and GSE represented medium-to-large effect (Cohen's *d* value between .50 and .80), and ME and PCE had small-to-medium effect (Cohen's *d* value between .20 and .50). For CBE, the effect size was very small (Cohen's $d = .07$).

Table 15

Comparison of the Total Coaching Efficacy and each of the Coaching Efficacy Dimension Scores between Male Coaches and Female Coaches

	Male[a]		Female[b]				
	M	*SD*	*M*	*SD*	*t*(228)	*P*	Cohen's *d*
TCE	3.30	0.38	3.08	0.44	3.341	.001*	0.54
ME	3.15	0.48	2.94	0.54	2.657	.008*	0.41
GSE	3.29	0.50	2.93	0.48	4.384	.000*	0.73
TE	3.38	0.50	3.21	0.54	1.999	.047*	0.33
CBE	3.51	0.50	3.47	0.59	0.434	.664	0.07
PCE	3.18	0.54	2.89	0.66	3.025	.003*	0.48

Note. [a]n = 186, [b]n = 44; TCE = Total Coaching Efficacy, ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy; *$p < .05$.

The results show that male coaches generally have a higher level of perceived coaching efficacy compared to female coaches. In addition, male coaches have higher efficacy beliefs on motivation, game strategy, technique, and physical conditioning as compared to female coaches. A medium-to-large gender effect was found for the mean score differences of the TCE and the GSE.

Ethnicity

The participants were divided into four ethnic groups: non-Hispanic White, Hispanic, American Indian or Alaska Native, and other (multiple) ethnicities. Table 16 below shows a statistical summary of a one-way ANOVA comparing the mean scores of each of the six coaching efficacy factors among the four ethnic groups.

Table 16

Comparison of the Total Coaching Efficacy and each of the Coaching Efficacy Dimension Scores among Four Ethnic Groups

	Non-Hispanic White[a]	Hispanic[b]	American Indian or Alaska Native[c]	Other (Multiple) Ethnicities[d]		
	M (*SD*)	*M* (*SD*)	*M* (*SD*)	*M* (*SD*)	*F*(3, 226)	*p*
TCE	3.30 (0.44)	3.18 (0.35)	3.18 (0.29)	3.35 (0.41)	1.870	.136
ME	3.14 (0.53)	3.04 (0.42)	3.02 (0.46)	3.31 (0.51)	1.856	.138
GSE	3.31 (0.54)	3.13 (0.47)	3.05 (0.37)	3.24 (0.55)	2.644	.050
TE	3.40 (0.51)	3.24 (0.51)	3.30 (0.42)	3.51 (0.50)	2.131	.097
CBE	3.48 (0.55)	3.52 (0.47)	3.47 (0.47)	3.59 (0.47)	0.293	.830
PCE	3.19 (0.61)	3.03 (0.56)	3.11 (0.43)	3.09 (0.48)	1.192	.314

Note. [a]n = 120, [b]n = 77, [c]n = 15, [d]n = 18. TCE = Total Coaching Efficacy, ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy; *p < .05.

As seen in Table 16, the result of the one-way ANOVA showed no significant mean score difference in any of the coaching efficacy factors among the four ethnic groups. However, the results of pairwise comparisons showed that significant mean score differences was found in TCE (p = .045), GSE (p = .015), and TE (p = .041) between Non-Hispanic White coaches and Hispanic coaches.

In general, the overall effect of coach ethnicity on coaching efficacy was not statistically significant; however, it was found that non-Hispanic White coaches perceived higher level of TCE, GSE, and TE compared to Hispanic coaches.

School Size

For school size, participants were divided into two categories: coaches who work in a large school and those who work at a small school. The large school category involves 5A and 4A classes (i.e., schools with more than 900 students enrolled), and the small school category includes 3A, 2A, 1A, and B classes (i.e., schools with 900 or fewer enrolled students). Table 17 shows the summary statistics for t-tests results and Cohen's *d* estimates that examines the effect of school size on six coaching efficacy factors.

Table 17

Comparison of the Total Coaching Efficacy and each of the Coaching Efficacy Dimension Scores between Large School Coaches and Small School Coaches

	Large school[a]		Small school[b]				
	M	*SD*	*M*	*SD*	*t*(228)	*p*	Cohen's *d*
TCE	3.33	0.38	3.18	0.41	2.834	.005*	0.38
ME	3.15	0.45	3.08	0.54	1.060	.290	0.14
GSE	3.32	0.49	3.12	0.52	2.962	.003*	0.40
TE	3.48	0.47	3.20	0.51	4.238	.000*	0.57
CBE	3.52	0.49	3.48	0.54	0.514	.608	0.08
PCE	3.19	0.60	3.06	0.55	1.755	.081	0.23

Note. [a]n = 122, [b]n = 108; TCE = Total Coaching Efficacy, ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy; *$p < .05$.

There was a significant difference in the total coaching efficacy scores between large school coaches and small school coaches. For each efficacy dimension, the difference was statistically significant in GSE and TE. Medium-to-large effect was found in technique efficacy (Cohen's d = .57); however, the effects for other coaching efficacy factors were small-to-medium or very small.

The results showed that coaches engaged in large high schools generally had higher overall coaching efficacy compared to coaches engaged in small high schools. In particular, the former coaches had higher efficacy beliefs in managing game strategy and teaching techniques than did the latter coaches.

Type of School Assignment

Two participant groups were established based on the type of school assignment: (a) contract coaching and (b) multiple assignments. Multiple assignments category involved coaches who have additional school assignments including classroom teaching and/or administrative works. Table 18 shows the summary statistics of independent t-tests comparing the scores of six coaching efficacy factors between the two groups.

Table 18

Comparison of the Total Coaching Efficacy and each of the Coaching Efficacy Dimension Scores between Contract Coaches (Coaching-Only) and Coaches with Multiple Assignments

	Contract coaching[a]		Multiple assignments[b]				
	M	*SD*	*M*	*SD*	*t*(228)	*p*	Cohen's *d*
TCE	3.24	0.42	3.26	0.40	-.326	.745	-0.01
ME	3.09	0.51	3.12	0.49	-.433	.665	-0.02
GSE	3.17	0.55	3.24	0.50	-.891	.374	-0.04
TE	3.34	0.51	3.35	0.51	-.080	.936	-0.01
CBE	3.56	0.48	3.48	0.52	1.029	.304	0.04
PCE	3.08	0.57	3.14	0.58	-.638	.524	-0.03

Note. [a]n = 59, [b]n = 171; TCE = Total Coaching Efficacy, ME = Motivation Efficacy, GSE = Game Strategy Efficacy, TE = Technique Efficacy, CBE = Character Building Efficacy, PCE = Physical Conditioning Efficacy; *p < .05.

There was no significant mean difference in any of the six coaching efficacy factors. Cohen's *d* values also showed that the effects of school assignment on each of the six coaching efficacy factor were very small.

Effect of Efficacy Sources on Coaching Efficacy (RQ 2)

This section provides statistical results for the second research question: What sources of efficacy information predict the total coaching efficacy and each of the five efficacy dimensions? Each of the six efficacy sources selected in this study were set up as independent variables to examine their effects on each of the six coaching efficacy factors: total coaching efficacy and each of the five efficacy dimensions. A series of simple regression analyses was employed to measure each effect. In particular, the effect size for each relationship was estimated based on the correlation coefficient (*r*). According to Cohen (1988)'s guideline, correlation coefficient (*r*) of .10, .30, and .50 is regarded as small, medium and large effect, respectively.

Effect of Coaching Experience

Coaching experience was divided into two categories: (a) total coaching experience and (b) head coaching experience. Table 19 below shows the summary results of simple linear regression analyses that examined the effects of two separate independent variables (total coaching experience and head coaching experience) on each of the six dependent variables (total coaching efficacy and each of the five efficacy dimensions).

Table 19

Summary Statistics for Simple Linear Regression: Effects of Coaching Experience on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	*β*	*t*(228)	*p*
Total coaching experience	TCE	.319	.101	25.740	.319	5.073	.000*
	ME	.207	.043	10.229	.207	3.198	.002*
	GSE	.332	.110	28.256	.332	5.316	.000*
	TE	.321	.103	26.261	.321	5.125	.000*
	CBE	.148	.022	5.131	.148	2.265	.024*
	PCE	.193	.037	8.801	.193	2.967	.003*
Head coaching experience	TCE	.307	.094	23.725	.307	4.871	.000*
	ME	.236	.056	13.447	.236	3.667	.000*
	GSE	.315	.099	25.130	.315	5.013	.000*
	TE	.310	.096	24.178	.310	4.917	.000*
	CBE	.132	.017	4.031	.132	2.008	.046*
	PCE	.160	.026	6.023	.160	2.454	.015*

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

The results indicated that both total coaching experience and head coaching experience significantly and positively predicted all coaching efficacy factors ($p < .05$). That is, coaches who had more coaching experience had high level of overall coaching efficacy and all efficacy dimensions.

With regards to the effect size, each correlation coefficient (*r*) did not indicate a large effect in any of the relationships. Medium-to-large effects (*r* values between .30 to .50) were found between coaching experience (both total and head coach) and TCE,

GSE, and TE. Besides that, all other relationships were found to be small-to-medium effects (*r* values between .10 to .30).

Effect of Playing Experience

Table 20 shows the summary results that examine the effects of playing experience on total coaching efficacy and each of the five efficacy dimensions.

Table 20

Summary Statistics for Simple Linear Regression: Effects of Playing Experience on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	β	*t*(228)	*p*
Playing experience	TCE	.134	.018	4.137	.134	2.034	.043*
	ME	.111	.012	2.842	.111	1.686	.093
	GSE	.091	.008	1.891	.091	1.375	.170
	TE	.151	.023	5.310	.151	2.304	.022*
	CBE	.002	.000	0.001	.002	.037	.970
	PCE	.145	.021	4.891	.145	2.212	.028*

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

Simple linear regression revealed strong and positive relationships between playing experience and the TCE, TE, and PCE ($p < .05$). However, the effects of their relationships were all small to medium (*r* values between .10 and .30).

Effect of Prior Success

Prior success was divided into two categories: (a) career winning percentage and (b) winning percentage last season. Table 21 below shows the summary results that identify the effects of two prior success indicators and six coaching efficacy factors.

Table 21

Summary Statistics for Simple Linear Regression: Effects of Prior Success on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	β	*t*(228)	*p*
Career winning percentage	TCE	.280	.079	19.466	.280	4.412	.000*
	ME	.230	.053	12.691	.230	3.562	.000*
	GSE	.271	.073	18.061	.271	4.250	.000*
	TE	.239	.057	13.778	.239	3.712	.000*
	CBE	.167	.028	6.503	.167	2.550	.011*
	PCE	.162	.026	6.125	.162	2.475	.014*
Winning percentage last season	TCE	.212	.045	10.731	.212	3.276	.001*
	ME	.144	.021	4.856	.144	2.204	.029*
	GSE	.224	.050	12.034	.224	3.469	.001*
	TE	.213	.045	10.810	.213	3.288	.001*
	CBE	.153	.023	5.453	.153	2.335	.020*
	PCE	.071	.005	1.146	.071	1.071	.286

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

As seen in the results, both independent variables significantly and positively predicted all of the coaching efficacy factors, except for the relationship between winning percentage last season and the PCE ($p = .286$). The effects of all the relationships were small-to-medium (r values between .10 and .30) or very small (r values less than .10).

Effect of Perceived Athlete Ability

Table 22 below shows the summary results of simple linear regression analyses examining the effects of perceived athlete ability on six efficacy factors.

Table 22

Summary Statistics for Simple Linear Regression: Effects of Perceived Athlete Ability on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	β	*t*(228)	*p*
Perceived	TCE	.109	.045	10.731	.109	1.660	.098
athlete	ME	.101	.010	2.357	.101	1.535	.126
ability	GSE	.120	.014	3.318	.120	1.822	.070
	TE	.158	.025	5.869	.158	2.423	.016*
	CBE	.014	.000	0.044	-.014	-.210	.834
	PCE	.026	.001	0.150	.026	.388	.698

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

A significant and positive relationship was found between perceived athlete ability and TE; however, all other relationships were not statistically significant. The effects of the relationships were all roughly small (*r* values less than .160).

Effect of Perceived Athlete Improvement

Table 23 shows the summary results of simple linear regression analyses examining the effects of perceived athlete improvement on six efficacy factors.

Table 23

Summary Statistics for Simple Linear Regression: Effects of Perceived Athlete Improvement on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	β	*t*(228)	*p*
Perceived athlete improvement	TCE	.237	.056	13.585	.237	3.686	.000*
	ME	.214	.046	10.990	.214	3.315	.001*
	GSE	.244	.060	14.433	.244	3.799	.000*
	TE	.161	.026	6.054	.161	2.460	.015*
	CBE	.168	.028	6.652	.168	2.579	.011*
	PCE	.120	.014	3.320	.120	1.822	.070

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

Simple linear regressions revealed statistically significant positive relationships between perceived athlete improvement and all of the five coaching efficacy factors but not CBE. In general, coaches who perceived their athletes' skills being highly improved had higher coaching efficacy in all efficacy aspects except for the physical conditioning efficacy. The effects of all relationships, however, were not considerably large. (All of the *r* values were less than .30).

Effect of Perceived Social Support

Perceived social support was identified as having two sub-categories: (a) internal social support and (b) external social support. Table 24 below shows the results of simple linear regressions examining the effect of internal and external social supports on six efficacy factors.

Table 24

Summary Statistics for Simple Linear Regression: Effects of Perceived Social Support on Total Coaching Efficacy and each of the Five Efficacy Dimensions

		Model summary			Regression coefficients		
IV	DV	*r*	r^2	*F*	β	*t*(228)	*p*
Internal social support	TCE	.258	.066	16.204	.258	4.025	.000*
	ME	.245	.060	14.600	.245	3.821	.000*
	GSE	.164	.027	6.300	.164	2.510	.013*
	TE	.192	.037	8.756	.192	2.959	.003*
	CBE	.239	.057	13.762	.239	3.710	.000*
	PCE	.165	.027	6.415	.165	2.533	.012*
External social support	TCE	.203	.041	9.831	.203	3.135	.002*
	ME	.169	.029	6.729	.169	2.594	.010*
	GSE	.139	.019	4.489	.139	2.119	.035*
	TE	.155	024	5.647	.155	2.376	.018*
	CBE	.237	.056	13.556	.237	3.682	.000*
	PCE	.099	.010	2.274	.099	1.508	.133

Note. TCE = Total Coaching Efficacy; ME = Motivation Efficacy; GSE = Game Strategy Efficacy; TE = Technique Efficacy; CBE = Character Building Efficacy; PCE = Physical Conditioning Efficacy; *$p < .05$.

The results showed statistically significant positive relationships between each independent variable and all dependent variables, except for the relationship between external social support and PCE. Coaches who perceived higher level of internal social supports had higher level of coaching efficacy in all efficacy aspects. The level of perceived external social support was also increased along with the increased level of all coaching efficacy aspects except for physical conditioning efficacy. The effects of all relationships, however, were not considerably large. (All *r* values were less than .30).

Selection of Set of Efficacy Sources Best Predicting Coaching Efficacy (RQ 3)

This section examines the statistical information in relation to the third research question: What is the best combination of coaching efficacy sources that predict coaching efficacy factors? A series of stepwise multiple regression analyses were employed to determine the most parsimonious set of efficacy sources predicting each of the six coaching efficacy factors: total coaching efficacy and five efficacy dimensions.

Set of Efficacy Sources Predicting Total Coaching Efficacy

Table 25 below shows the summary results of stepwise multiple regression showing the best set of efficacy sources predicting total coaching efficacy.

Table 25

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Total Coaching Efficacy

Selected independent variables	Model Summary		Regression Coefficients		
	Accumulated R^2	R^2 *change*	β	*t*	*p*
Total coaching experience	.101	.101	.239	3.703	.000*
Internal social support	.150	.048	.143	2.126	.035*
Career winning percentage	.170	.020	.141	2.136	.034*
Athlete improvement	.184	.014	.132	1.987	.048*

Note. DV = Total coaching efficacy; Model fit: $F(4, 225) = 12.672$, $p = .000$; *$p < .05$.

Among the nine source categories entered in the analysis, four sources (total coaching experience, internal social support, career winning percentage, and athlete improvement) were selected in the regression model (model fit: $F(4, 225) = 12.672$, $p = .000$). The accumulated R^2 was .184, indicating that approximately 18.4% of the variance of total coaching efficacy was accounted for by the set of four sources.

Set of Efficacy Sources Predicting Motivation Efficacy

Table 26 below shows the summary results of stepwise multiple regressions indicating the best set of efficacy sources predicting motivation efficacy.

Table 26

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Motivation Efficacy

Selected independent variables	Model Summary		Regression Coefficients		
	Accumulated R^2	R^2 *change*	β	*t*	*p*
Internal social support	.060	.060	.216	3.403	.001*
Total coaching experience	.102	.041	.205	3.232	.001*

Note. DV = Motivation efficacy; Model fit: $F(2, 227) = 12.825$, $p = .000$; *$p < .05$.

Among the nine source categories entered in the analysis, only two sources (internal support and total coaching experience) were selected in this regression model that best predicted the motivation efficacy (model fit: $F(2, 227) = 12.875$, $p = .000$). The accumulated R^2 showed that 10.2% of the variance of motivation efficacy was accounted for by the combined set of the two sources.

Set of Efficacy Sources Predicting Game Strategy Efficacy

Table 27 below shows the summary results of stepwise multiple regression indicating the order of entry for selected efficacy sources, which consisted of the most parsimonious set of efficacy sources predicting game strategy efficacy.

Table 27

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Game Strategy Efficacy

Selected independent variables	Model Summary		Regression coefficients		
	Accumulated R^2	R^2 *change*	β	*t*	*p*
Total coaching experience	.110	.110	.266	4.100	.000*
Athlete improvement	.158	.047	.197	3.203	.002*
Career winning percentage	.174	.017	.140	2.136	.034*

Note. DV = Game strategy efficacy; Model fit: $F(3, 226) = 15.891$, $p = .000$; *$p < .05$.

Three efficacy sources, total coaching experience, perceived athlete improvement and career winning percentage, were selected in the regression model. The accumulated R^2 was .174, indicating that 17.4% of the variance of game strategy efficacy was accounted for by the linear combination of the three sources.

Set of Efficacy Sources Predicting Technique Efficacy

Table 28 below shows the summary results of stepwise multiple regression selecting the set of efficacy sources best predicting technique efficacy.

Table 28

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Technique Efficacy

Selected independent variables	Model Summary		Regression Coefficients		
	Accumulated R^2	R^2 *Change*	β	*t*	*p*
Total coaching experience	.103	.103	.294	4.711	.000*
Winning percentage last season	.128	.025	.147	2.338	.020*
Playing experience	.146	.018	.134	2.170	.031*

Note. DV = Technique efficacy; Model fit: $F(3, 226) = 12.885$, $p = .000$; *$p < .05$.

Three efficacy sources including total coaching experience, internal social support, career winning percentage, and athlete improvement were selected in the regression model. The accumulated R^2 was .184, indicating that approximately 14.6% of the variance of technique efficacy was accounted for by the set of three efficacy sources.

Set of Efficacy Sources Predicting Character Building Efficacy

Table 29 shows the summary results of stepwise multiple regression indicating the most parsimonious set of efficacy sources predicting character building efficacy.

Table 29

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Character Building Efficacy

Selected independent variables	Model Summary		Regression Coefficients		
	Accumulated R^2	R^2 *Change*	β	*t*	*p*
Internal social support	.057	.057	.158	2.116	.035*
External social support	.074	.017	.141	2.068	.040*

Note. DV = Character building efficacy; Model fit: $F = 9.119$, $p = .000$; *$p < .05$.

The two efficacy sources (internal social support and external support) were selected in the regression model. The accumulated multiple correlation squared (R^2) was .74, indicating that approximately 7.4% of the variance of character building efficacy was accounted for by the linear combination of the two sources.

Set of Efficacy Sources Predicting Physical Conditioning Efficacy

Table 30 below shows the summary results of stepwise multiple regression indicating the order of entry for selected efficacy sources, which consisted of the most parsimonious set of efficacy sources predicting physical conditioning efficacy.

Table 30

Summary Statistics for Stepwise Multiple Regression: Set of Efficacy Sources Predicting Physical Conditioning Efficacy

Selected independent variables	Model Summary		Regression Coefficients		
	Accumulated R^2	R^2 *Change*	β	*t*	*p*
Total Coaching Years	.037	.037	.175	2.711	.007*
Playing Years	.058	.021	.138	2.150	.033*
Internal Social Support	.076	.019	.137	2.130	.034*

Note. DV = Physical conditioning efficacy; Model fit: $F(3, 226)= 6.227$, $p = .000$; *$p < .05$.

The three efficacy sources (total coaching experience, years of paying experience and internal social support) were selected in the regression model. The accumulated multiple correlation squared (R^2) was .74, indicating that approximately 7.4% of the variance of character building efficacy was accounted for by the linear combination of the two sources.

Results Summary

To analyze various factors that are expected to influence coaching efficacy, this study was conducted with 230 New Mexico high school head coaches of football, volleyball, soccer, basketball, baseball, and softball. Several demographic and organizational factors were addressed. For gender, male coaches (n = 186) had a higher representation than female coaches (n = 44). For race/ethnicity, the highest represented ethnic group was White. Not of Hispanic origin (n = 120), and the next most numerous ethnic group was Hispanic (n = 77). The participants' ages (M = 43.0, SD = 9.98) were widespread, ranging from 24 to 70. For school size, the number of participants generally

decreased along with the school sizes. Many high school coaches (n = 147) coach sports teams and teach students as well; however, some contract coaches (n = 59) do not have other school duties.

With regards to the efficacy sources, the participants had about 15 years of total coaching experience and 9 years of head coaching experience in average. Their winning percentage was above 50% in both career and last season. The participants estimated the overall ability of their athletes as close to "average" while they thought that their athletes had quite a "good" skill improvement. Also, participants perceived that the support from their athletes, athletes' parents, school administrators, and local community members was "somewhat supportive."

The participants had a considerably high level of coaching efficacy in general (M = 3.26). Among the five efficacy dimensions, character building (M = 3.50) had the highest average score, and motivation (M = 3.11) and physical conditioning (M = 3.13) had the two lowest average scores.

Relevant inferential statistics were conducted to explore the following research questions: (a) Does the level of coaching efficacy differ depending on sociocultural and organizational factors?, (b) What sources of efficacy specifically influence their coaching efficacy?, and (c) What is the combination of coaching efficacy sources that best predict their coaching efficacy?

With regards to the first research question, a series of one-way ANOVA or one-way ANOVA or independent samples t-tests was employed to explore the effects of coaches' gender and ethnicity, school size, and type of school assignment. First, male coaches perceived higher level of all coaching efficacy factors than did female coaches,

except for the level of character building efficacy. Second, non-Hispanic White coaches had higher scores on three coaching efficacy factors (total coaching efficacy, game strategy efficacy, and technique efficacy) compared to Hispanic coaches. Third, coaches engaged in large schools had higher level of total coaching efficacy, game strategy efficacy, and technique efficacy than did coaches in small schools. Finally, there was no meaningful difference in the level of coaching efficacy between coaches who have different types of school assignments.

To explore the second research question, a series of simple regression analyses was used to identify the effects of each efficacy source on each of the six coaching efficacy factor. For total coaching efficacy, all efficacy sources except for perceived athlete ability significantly predict coaching efficacy. Each efficacy source predicts different efficacy dimensions. First, with regards to coaching experience, both total coaching experience and head coaching experience significantly predicted all coaching efficacy factors. Second, playing experience significantly predicted three coaching efficacy factors including total coaching efficacy, game strategy efficacy, and physical conditioning efficacy. Third, for prior success, both career winning percentage and last season's winning percentage significantly predicted all efficacy dimensions. One exception was that winning percentage last season did not predict physical conditioning efficacy. Fourth, perceived athlete ability did not predict any of the coaching efficacy factors, except for technique efficacy. Fifth, perceive athlete improvement significantly predicted all coaching efficacy factors, except for character building efficacy. Finally, for perceived social support, both internal and external social supports significantly predict

all coaching efficacy factors. One exception of non-significant effect was between external social support and physical conditioning efficacy.

With regards to the third research question, a series of stepwise multiple regressions revealed that different efficacy sources were selected for the best set of sources predicting each of the six coaching efficacy factors. For total coaching efficacy, the best set of predictors included four efficacy sources: total coaching experience, internal social support, career winning percentage, and athlete improvement. For coaching efficacy dimensions, a different set of predictors were selected for each of the five efficacy dimensions: (a) motivation efficacy was predicted by internal social support and total coaching experience; (b) game strategy was predicted by total coaching experience, perceived athlete improvement, and career winning percentage; (c) technique efficacy was predicted by total coaching experience, winning percentage last season, and playing experience; (d) character building efficacy was predicted by internal and external social support; and (e) physical conditioning efficacy was predicted by total coaching experience, playing experience, and internal social support.

CHAPTER V

DISCUSSION

This chapter discusses the study based on what particular information was gained, why it is important, and how the information can be used in further research or practical coaching fields. The chapter consists of the following three sections: (a) discussions of the results, (b) implications to coaching education, and (c) recommendations for future research.

Discussions of the Results

Participant Description

The results of the descriptive statistics showed several interesting findings. First, both career and seasonal winning percentages were considerably higher than 50%. Given the results, there may be a sample selection bias that coaches with high winning percentages may have had a stronger will to participate in this survey than did coaches with low winning percentages. Otherwise, the results might represent that there was a possibility of involving social desirability bias, which refers to the fact in self-reports, that respondents often provide skewed information to present themselves in the best possible light (Fisher, 1993).

Second, the mean scores for perceived athlete improvement (M = 3.87) was considerably higher than the mean scores for perceived athlete ability (M = 3.30). The participants might think they highly improved their athletes despite the lack of their athletic ability. It might also indicate social desirability bias in that they might want to project a favorable image for their coaching skills to relevant others.

Finally, participants perceived higher internal supports (M = 3.21) than external supports (M = 3.07). From this result, we might assume that they felt they communicated well with internal team members without outsiders' help or supports. But, this interpretation may be farfetched since the mean scores for the two categories were not significantly different.

The Effects of Sociocultural/Organizational Factors

This study explored the effects of four sociocultural/organizational factors on coaching efficacy. Except for gender, there was no research dealing with the other sociocultural/organizational factors (ethnicity, school size, and type of school assignment) within the context of coaching efficacy.

Gender. The study found significant effects of gender on all coaching efficacy factors, except for character building efficacy. The result was inconsistent with the previous findings. Game strategy was the only efficacy dimension that male coaches had higher efficacy level compared to female coaches. Moreover, Campbell and Sullivan's (2005) study involving Canadian novice coaches found that female coaches had higher efficacy level on motivation and character building than did male coaches. Campbell and Sullivan (2005) noted female coaches tended to have less coaching experience compared to male coaches, and therefore, they controlled for this variable to examine the gender effect. Although this issue was not considered in the study, their argument was somewhat evident in the present study. On average, years of total coaching experiences for male coaches and female coaches were 15.27 and 11.55, respectively, and head coaching experiences were 9.20 and 8.75.

Ethnicity. With regards to coach ethnicity, the study found that non-Hispanic White coaches had higher scores on total coaching efficacy, game strategy efficacy, and technique efficacy than did Hispanic coaches. The result was quite interesting because no reasonable explanations were found in the previous literature. For game strategy and technique efficacies, both are pertinent to the ability of practical coaching in physical terms. Based on the finding, it is assumed that non-Hispanic White coaches have more confidence in their ability to boost athletic performance than do Hispanic coaches; however, due to a lack of previous studies, more empirical evidence is needed to explore the relevant issues.

School size. As previously mentioned in the statement of the problem section, large schools tend to have a bigger pool of potential athletes, more available funds, and better facilities compared to small schools. Considering these favorable coaching environments, it was expected that large school coaches would have higher level of coaching efficacy compared to small school coaches, and the results generally supported this expectation. In particular, the levels of game strategy efficacy and technique efficacy were higher for large-school coaches compared to small school coaches. This was somewhat anticipated because small school coaches tend to have additional school assignments such as teaching and administrative duties. It seems that small schools care less about boosting athletic performance and/or winning the games. In addition, due to the small number of students, some small schools may not have team sports that need a large number of players (e.g., football), which derive a greater public interest compared to individual sports.

Type of school assignment. The study explored the effect of type of school assignment on coaching efficacy. Although no empirical evidence exist regarding the issue, it was assumed that coaches with multiple school assignments would have higher coaching efficacy compared to contract coaches who do not have other school duties. The major reason for this assumption was that contract coaches tend to receive very small amount of salaries so that they may be engaged in other full-time jobs. From this view point, full-time high school coaches (coaches having additional full-time school assignments such as classroom teaching) were expected to have more commitment to the schools and teams, which in turn, may create higher levels of coaching efficacy. Overall, the study found no significant difference in the level of coaching efficacy between coaches who have other school assignments and who do not have such assignments. The study initially identified four types of school assignments; however, the effect of each assignment type on coaching efficacy could not be examined due to the lack of study participants in two types of school assignments: (a) coaching and administration (n = 10) and (b) coaching, teaching, and administration (n = 14).

Identifying the Effects of Efficacy Sources

Unlike sociocultural/organizational factors, a considerable amount of studies have provided empirical evidence on identifying the effects of efficacy sources on coaching efficacy: The sources investigated in this study were already proven to be significant predictors of coaching efficacy. In this respect, the results of the study will be compared to findings from previous relevant research; however, rather than comparing each effect case by case, the focus is on discussing several major ideas deducted from the comparisons.

The first thing to note is that it was not possible to identify efficacy sources that are specifically applicable to New Mexico high school coaches. This was because nearly all efficacy sources significantly predicted all coaching efficacy factors, except for perceived athlete ability. Perceived athlete ability was only predicted by technique efficacy, and the result was quite interesting when considering the competitive nature of high school sports. The previous findings indicated that perceived athlete ability predicted all efficacy dimensions among intercollegiate coaches (Myers et al., 2005) while it did not predict any of the efficacy dimensions among youth volunteer coaches (Feltz et al., 2009). Given that high school sports have been regarded as highly competitive, the results seemed to be somewhat contradictory.

The second discussion is related to the low predictability of efficacy sources on physical conditioning efficacy. All efficacy dimensions were significantly predicted by nearly all efficacy sources (at least seven out of nine source categories); however, physical conditioning efficacy was predicted by five efficacy sources: total coaching experience, head coaching experience, playing experience, career winning percentage, and internal social support. The discussion is more evident in that the relevant stepwise multiple regression analysis showed that only 7.6% of the variance of this efficacy was accounted for by a set of three efficacy sources: coaching experience, playing experience, and perceived internal support. Physical conditioning was recently added to the dimensions of coaching efficacy by Myers et al. (2008). Although it was theoretically proven to be one of the dimensions of coaching efficacy, more empirical research is needed to support it being a significant sub-construct of coaching efficacy.

The third discussion is related to the most frequently involved source in the set of efficacy sources best predicting each coaching efficacy factors, which was total coaching experience. This was theoretically relevant in that previous accomplishments (or personal mastery experience) are regarded as the most powerful source of one's efficacy belief (Bandura, 1977). In this context, however, it is interesting to note that head coaching experience was not selected in any of the regression model. This was due to the unique process of selecting variables in stepwise multiple regression analysis. In the analysis, the first independent variable is selected when it has the highest correlation to the dependent variable, and the next variable is selected based on its power to add meaningful variance to the regression model (involving the first independent variable). Because of the high correlation between total coaching experience and head coaching experience (r = .80), one must be excluded when the other is entered. In other words, the second-entered independent variable will not add meaningful variance to the regression model if it is highly correlated with the first-entered independent variable. In this study, total coaching experience was always chosen by the regression models prior to head coaching experience because its correlation to each coaching efficacy factor was always higher than head coaching experience. Then, there was no chance for head coaching experience to be selected in the regression model. After all, for this study, total coaching experience was a more powerful source of coaching efficacy than head coaching experience.

Finally, the fourth discussion is related to the low explanatory power of efficacy sources on each coaching efficacy factor. From the results of stepwise regressions, the coefficient of determination (R^2) for each analysis ranged between .074 to .184. These low variance values were somewhat unexpected when considering the consistent efforts

in identifying and exploring sources of coaching efficacy and validating them through various empirical settings. In this respect, it may be argued that more research is needed to identify additional sources of efficacy information that powerfully predict coaching efficacy as well as its relevant efficacy dimensions.

Implications to Coaching Education

The information gained from the study can be a valuable source in coaching education for secondary school coaches. Given that the five dimensions of coaching efficacy basically represent the important constructs in coaching education, the information may be used to educate coaches in several different ways.

The information can help identify what educational components are needed in coaching education. For example, the results of the study showed that New Mexico high school coaches perceived low confidence in their ability to successfully induce athletes' motivation and effectively manage athletes' physical preparation for their sport participation. Simply put, they may need more education regarding the relevant constructs as compared to other efficacy dimensions such as game strategy, technique, and character building.

Identification of the effect of diverse factors on coaching efficacy can help coaching educators verify what kind of educational construct is needed for different classes of people. For example, female coaches (rather than male coaches) may need more education on the relevant constructs regarding motivation, game strategy, technique, and physical conditioning. For small school coaches, the results showed that they may need to improve actual coaching practices such as effectively teaching advanced techniques and managing game strategies.

Finally, the information can help identify the situations where coaches feel more confident in their coaching, and this may also help educators develop more advanced educational content. For example, from the results, we may assume that high school coaches perceived high coaching efficacy not because their athletes already had outstanding athletic abilities, but because they feel they improved their abilities. This may indicate that the term, "winning at all costs", did not seem completely applicable in high school sports, and thus may indicate that the purpose of coaching education in high school sports is not only to improve coaching sports skills, but also to foster other psychological developments such as motivation and character building, or even support athletes' academic achievements.

Recommendations for Future Research

This study tried to investigate diverse aspect of coaching efficacy among New Mexico high school team sports head coaches. Several meaningful findings were suggested to help develop more sophisticated contents in coaching education as well as to contribute the extension of the knowledge in relevant research fields. On the other hand, this study had several limitations in selecting samples and choosing research methods. The following recommendations are suggested for future research to overcome such limitations.

- Further research is recommended to include larger sample size in comparing diverse group effects on coaching efficacy. Involving 230 study participants, this study had difficulty in securing sufficient number of samples to identify multiple relevant groups regarding ethnicity and type of school assignments.

- Further qualitative research is recommended to explore the effects that were not theoretically supported by previous literature. The obvious example would be the effect of ethnicity on coaching efficacy. For this study, White coaches had higher level of coaching efficacy than did Hispanic coaches; however, no reasonable explanation could be provided due to a lack of relevant theoretical background. In this case, in-depth interviews with those ethnic groups would be required to explore why they perceived different level of coaching efficacy.
- Further research is recommended to explore additional efficacy sources or factors that are expected to influence coaching efficacy. For this study, factors such as ethnicity, school size, and type of their school assignment were explored within this context, and addressed meaningful findings that help better understand diverse aspects of coaching efficacy among high school coaches.
- Further research is recommended to involve samples from other cultural backgrounds and/or different regions apart from the United States. In those cases, coaching efficacy scales may be modified or restructured because the scales have been developed on the sole basis of applying American coaching situations. The dimensions of coaching efficacy may be added or removed in accordance with the different coaching environments.

REFERENCES

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84,* 191-215.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice- Hall, Inc.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Bandura, A. (1999). A social cognitive theory of personality. In L. Pervin & O. John (Ed.), *Handbook of personality* (2nd ed., pp. 154-196). New York: Guilford Publications.

Campbell, T., & Sullivan, P. J. (2005). The effect of a standardized coaching education program on the efficacy of novice coaches. *Avante, 11,* 56-68.

Chase, M. A., Feltz, D. L., Hayashi, S. W., & Hepler, T. J. (2005). Sources of coaching efficacy: The coaches' perspective. *International Journal of Sport and Exercise Psychology, 3,* 27-40.

Chelladurai, P., & Saleh, S. D. (1980). Dimensions of leader behavior in sport: Development of leadership scale. *Journal of Sport Psychology, 5*, 371-380.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences (2nd ed.). Hillsdale, NJ: Erlbaum.

Denham, C. G., & Michael, J. J. (1981). Teacher sense of efficacy: A definition of the construct and model for future research. *Educational Research Quarterly, 6,* 39-63.

DeVellis, R.F. (1991). *Scale development*. Newbury Park, NJ: Sage Publications.

Feltz, D. L., Chase, M. A., Moritz, S. E., & Sullivan, P. J. (1999). A conceptual model of coaching efficacy: Preliminary investigation and instrument development. *Journal of Educational Psychology, 91,* 765-776.

Feltz, D. L., Hepler, T. J., Roman, N., & Paiement, C. A. (2009). Coaching efficacy and volunteer youth sport coaches. *The Sport Psychologist, 23,* 24-41.

Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport: Research and strategies for working with athletes, teams, and coaches*. Champaign, IL: Human Kinetics.

Gould, D., Hodge, K., Peterson, K., & Giannini, J. (1989). An exploratory examination of strategies used by elite coaches to enhance self-efficacy in athletes. *Journal of Sport & Exercise Psychology, 11,* 128-140.

Horn, T. S. (2008). Coaching effectiveness in the sport domain. In T.S. Horn (Ed.), *Advances in Sport Psychology* (3rd Ed., pp. 239-268). Champaign, IL: Human Kinetics.

Kavussanu, M., Boardley, I. D., Jutkiewicz, N., Vincent, S. & Ring, C. (2008). Coaching efficacy and coaching effectiveness: Examining their predictors and comparing coaches' and athletes' reports. *The Sport Psychologist, 22,* 383-404.

Kent, A., & Sullivan, P. J. (2003). Coaching efficacy as a predictor of university coaches' commitment. *International Sports Journal, 7,* 78-88.

Kowalski, C. L., Edginton, C. R., Lankford, S., Waldron, J., Roberts-Dobie, S. R., & Nielsen, L. (2007). Coaching efficacy and volunteer youth soccer coaches. *Asian Journal of Exercise & Sports Science, 4,* 9-13.

Lee, K. S., Malete, L., & Feltz, D. L. (2002). The strength of coaching efficacy between certified and noncertified Singapore coaches. *International Journal of Applied Sport Science, 14,* 55-67.

Malete, L., & Sullivan, P. J. (2009). Sources of coaching efficacy in coaches in Botswana. *International Journal of Coaching Science, 3,* 17-27.

Malete, L., Sullivan, P. J., & La Forge, K. (2013). The relationships between coaching efficacy, experience, and behaviors among scholastic coaches in Botswana. *International Journal of Coaching Science, 7,* 40-55.

Marback, T. L., Short, S. E., Short, M. W., & Sullivan, P. J. (2005). Coaching confidence: An exploratory investigation of sources and gender differences. *Journal of Sport Behavior, 28,* 18-34.

Myers, N. D., Feltz, D. L., & Chase, M. A. (2011). Proposed modification to the conceptual model of coaching efficacy and additional validity evidence for the Coaching Efficacy Scale II-High School Teams (CES II-HST). *Research Quarterly for Exercise and Sport, 82,* 79-88.

Myers, N. D., Feltz, D. L., Chase, M. A., Reckase, M. D., & Hancock, G. R. (2008).The Coaching Efficacy Scale II-High School Teams (CES II-HST). *Educational and Psychological Measurement, 68,* 1059-1076.

Myers, N. D., Vargas-Tonsing, T. M., & Feltz, D. L. (2005). Coaching efficacy in collegiate coaches: Sources, coaching behavior, and team variables. *Psychology of Sport & Exercise, 6,* 129-143.

National Health Plan Collaborative. (2008). *What Categories of Race/Ethnicity to use?* Retrieved from http://www.rwjf.org/content/rwjf/en/research-publications/find-rwjf-research/2008/09/the-national-health-plan-collaborative-toolkit/chapter-3-what-categories-of-race-ethnicity-to-use.html

New Mexico Activities Association. (2013). *Section 4: Alignment & classifications.* Retrieved from http://www.nmact.org/file/Section_4.pdf

Paiement, C. A. (2006). *An assessment of the factors predicting coaching efficacy and coaching satisfaction in youth sports* (Unpublished doctoral dissertation). Michigan State University, East Lansing.

Park, J. K. (1992). *Construction of the coaching confidence scale* (Unpublished doctoral dissertation). Michigan State University, East Lansing.

Sage, G. H. (1987). The social world of high school athletic coaches: Multiple role demands and their consequences. *Sociology of Sport Journal 4*, 213-228.

Scantling, E. & Lackey, D. (2005). Coaches under pressure: Four decades of studies, *Journal of Health, Physical Education, Recreation, and Dance, 76,* 25-28.

Smith, R. E., Smoll, F. L., & Hunt, E. (1977). A system for behavioral assessments of athletic coaches. *Research Quarterly, 48,* 402-407.

Smoll, F. L., & Smith, R. E. (1989). Leadership behaviors in sport: A theoretical model and research paradigm. *Journal of Applied Social Psychology, 19,* 1522-1551.

Sullivan, P. J., Gee, C. J., & Feltz, D. L. (2006). Playing experience: The content knowledge source of coaching efficacy beliefs. In A.V. Mitel (Ed.), *Trends in Educational Psychology* (pp. 185-194). New York: Nova Science Publishers.

Sullivan, P. J., Paquette, K. J., Holt, N. L., & Bloom, G. A. (2012). The relation of coaching education to coaching efficacy and perceived leadership behaviors in youth sport. *The Sport Psychologist, 26,* 122-134.

Theyberg, D. *The average salary of high school coaches in the United States.* Retrieved on June, 15, 2013, from http://www.ehow.com/about_7625066_average -school-coaches-united-states.html#ixzz2W6oC9pgk.

United State Census Bureau. (2012). *State & county quickfacts.* [Data File]. Retrieved from http://quickfacts.census.gov/qfd/states/35000.html

Vargas-Tonsing, T. M. (2007). Coaches' preferences for continuing coaching education. *International Journal of Sports Science & Coaching, 2,* 25-35.

Vargas-Tonsing, T. M., Warners, A. L., & Feltz, D. L. (2003). The predictability of coaching efficacy on team efficacy and player efficacy in volleyball. *Journal of Sport Behavior, 26,* 396-406.

Wang, J., Yang, G., & Sabatelle, M. (2011).Coaching psychology: Every high school coach should know. *Journal of Youth Sports, 6,* 18-23.

Zhang, J., Jensen, B. E., & Mann, B. L. (1997). Modification and revision of the Leadership Scale for Sport. *Journal of Sport Behavior, 20,* 105-122.

APPENIDX A

IRB Approval Letter

UNM

Institutional Review Board
Human Research Protections Office

April 12, 2013

David Scott
dscott@unm.edu

Dear Dr. Scott and Mr. Lee:

On 4/12/2013, the HRPO reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Analysis of factors associated with coaching efficacy among New Mexico high school coaches
Investigator:	David Scott
Study ID:	13-156
Funding:	None
Grant ID:	None
IND, IDE, or HDE:	None
Documents Reviewed:	Application v.02.26.13 Research Protocol D.Scott (J.Lee) v.04102013 Informed Consent Cover Letter v.04122013

The IRB approved the study from 4/12/2013.

Category:	EXEMPTION: Categories (2) Tests, surveys, interviews, or observation
Determinations/Waivers:	None

Because it has been granted exemption, this research project is not subject to continuing review. It is the responsibility of the Principal Investigator to inform the IRB of any changes to the approved documents associated with the research. A change in the research may disqualify this project from exempt status.

Sincerely,

J. Scott Tonigan, PhD
IRB Chair

APPENDIX B

Electronic Version of the Survey Questionnaires

THE UNIVERSITY of NEW MEXICO

Analysis of Factors Associated with Coaching Efficacy among New Mexico High School Coaches

(Page 1/3) Informed Consent Cover Letter

Dear participants:

My name is Jungkyu Lee, a doctoral candidate in sport administration at the University of New Mexico. The purpose of this study is to explore the relationships between New Mexico high school coaches' coaching efficacy beliefs and various factors including efficacy sources and coaches' demographic and organizational information.

To participate in this study, you are being asked to fill out the attached questionnaire, which will take approximately 10 minutes to complete. Participation of the study is strictly voluntary and you may refuse to participate at any time.

There are no known risks in this study. No personal nformation will be identified in the questionnaire. The uestionnaires will be viewed only by the researcher and will be used for academic purposes only. All data collected from the questionnaires will be destroyed after conducting the study analysis.

Although there will be no direct benefit to you from participating in this study, it is expected that information gained from the study will help coaches understand diverse factors associated with their coaching efficacy. Also, results of the study will be used to help advise and improve coaching education for secondary school coaches.

If you have any questions about this research, please feel free to contact me at (505) 514-4866 or my faculty advisor, David Scott, at (505) 277-2925. If you have questions regarding your legal rights as a research subject, call the UNM Human Research Protections Office at (505) 272-1129.

By returning this questionnaire, you will be agreeing to participate in the above described research. Thank you in advance for taking time to assist this study.

Jungkyu Lee
Doctoral Candidate
Sport Administration
The University of New Mexico

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THE UNIVERSITY of NEW MEXICO

Analysis of Factors Associated with Coaching Efficacy among New Mexico High School Coaches

(Page 2/3) Demographic & Coaching Information: 12 items

Please complete the following questions by writing or check your answer in the space provided.

1. Gender

- ○ Male
- ○ Female

2. Age

Years ☐

3. Race/Ethnicity (Check all that applies)

- ☐ American Indian or Alaska native
- ☐ Asian or Pacific Islander
- ☐ Hispanic
- ☐ Black, not of Hispanic Origin
- ☐ White, not of Hispanic Origin
- ☐ Other Race or Ethnicity

4. As a head coach, what sport are you primarily coach? (Check one sport)

- ○ Football
- ○ Volleyball
- ○ Boy's Soccer
- ○ Girl's Soccer
- ○ Boy's Basketball
- ○ Girl's Basketball
- ○ Baseball
- ○ Softball

5. School Class (Check one class)

- ○ 5A
- ○ 4A
- ○ 3A
- ○ 2A
- ○ 1A
- ○ B (or 6 & 8 man football)

6. School Assignment

- ○ Contract Coaching
- ○ Coaching & Teaching
- ○ Coaching & Administration
- ○ Coaching, Teaching, & Administration

7. How many years have you been coaching for this sport?

Years Total (Assistant & Head): ☐

Years as a Head coach: ☐

8. How many years have you played this sport competitively as a student-athlete and/or professional athlete?

Years ☐

9. What was your winning percentage as a head coach for this sport? (Not applicable for winning percentage as an assistant coach)

Career percentage (0-100%): ☐

2012 or 2013 season (0-100%): ☐

10. How would you rate the overall ability of your athletes in 2012 or 2013 season?

Very poor	Poor	Average	Good	Excellent
○	○	○	○	○

11. How would you rate the degree to which your athletes have improved their athletic skills in 2012 or 2013 season?

Very Poor	Poor	Average	Good	Excellent
○	○	○	○	○

12. In comparison with ideal high school sports program, how would you rate the support given to you by the following groups?

	Completely unsupportive	Somewhat unsupportive	Somewhat supportive	Completely supportive
Parents of your athletes	○	○	○	○
Your athletes	○	○	○	○
High school administrators	○	○	○	○
Other community members	○	○	○	○

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Analysis of Factors Associated with Coaching Efficacy among New Mexico High School Coaches

(Page 3/3) Coaching Confidence Scale: 18 items

Coaching confidence refers to the extent to which coaches believe that they have the capacity to affect the learning and performance of their athletes.
Think about how confident you are as a head coach of the team that you are currently coaching.

For each of the items below, click the appropriate answer to rate your coaching confidence.

	Low Confidence	Moderate Confidence	High Confidence	Complete Confidence
1. Devise strategies that maximize the positive effects of your team's strengths during competition?	○	○	○	○
2. Prepare an appropriate plan for your athletes' off-season physical conditioning?	○	○	○	○
3. Motivate your athletes?	○	○	○	○
4. Teach athletes the complex technical skills of your sport during practices?	○	○	○	○
5. Detect subtle technique errors by your athletes during practices?	○	○	○	○
6. Effectively instill an attitude of respect for others in your athletes?	○	○	○	○
7. Teach athletes appropriate basic technique during practices?	○	○	○	○
8. Positively influence the character development of your athletes?	○	○	○	○
9. Make effective strategic decisions in pressure situations during competition?	○	○	○	○
10. Help athletes to not become overly confident in their ability to perform when they are performing well?	○	○	○	○
11. Implement an appropriate endurance program for your athletes during the season?	○	○	○	○
12. Instruct all of the different positional groups of your athletes on appropriate technique during practices?	○	○	○	○
13. Effectively promote good sportsmanship in your athletes?	○	○	○	○
14. Make effective personnel substitutions during competition?	○	○	○	○
15. Accurately assess your athletes' physical conditioning?	○	○	○	○
16. Devise strategies that minimize an opposing team's strengths during competition?	○	○	○	○
17. Help your athletes maintain confidence in their ability to perform when they are performing poorly?	○	○	○	○
18. Motivate your athletes for competition against a weak opponent?	○	○	○	○

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