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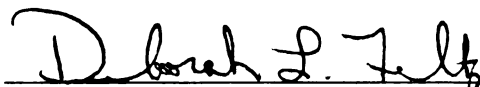
EXTENDING VALIDITY EVIDENCE FOR THE COACHING
EFFICACY SCALE
WITH VOLUNTEER YOUTH SPORT COACHES.

presented by

Nathan Roman

has been accepted towards fulfillment
of the requirements for the

M.S. M.S. degree in Kinesiology



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**EXTENDING VALIDITY EVIDENCE FOR THE COACHING EFFICACY SCALE
WITH VOLUNTEER YOUTH SPORT COACHES.**

By

Nathan Roman

A Thesis

**Submitted to
Michigan State University
in partial fulfillment of the requirements
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ABSTRACT

EXTENDING VALIDITY EVIDENCE FOR THE COACHING EFFICACY SCALE WITH VOLUNTEER YOUTH SPORT COACHES

By

Nathan Roman

The purpose of this study was to validate the structural validity of the Coaching Efficacy Scale (CES), developed by Feltz et al. (1999) with youth sport coaches. The CES has four dimensions: motivation, strategy, technique, and character building. Coaches ($N = 395$) from various sports such as hockey, volleyball, basketball, and football participated in the study using a condensed scale as suggested by Myers et al. (in press). Using confirmatory factor analysis, the scale was found to be in line with previous studies (Feltz et al., 1999; Lee et al., 2002; Myers et al., 2005; Sullivan & Kent, 2003). Multivariate multiple regression results showed sources of efficacy such as team improvement and athlete support were significant predictors of motivation, strategy, and technique efficacy. Years of playing experience was a significant predictor of strategy and technique efficacy.

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CHAPTER 1

INTRODUCTION

Nature of the Problem

Participation in non-school youth sports is prevalent in America today as millions of children participate in programs sponsored by recreation departments, Little League baseball, Pop Warner football, and many other organized groups. These are programs that are organized by adults for children and youth, typically between the ages of 7 and 18 years, which have designated coaches, organized practices, and scheduled competitions (Gould, 1982). Approximately 2.5 million coaches volunteer each year to help teach and lead approximately 13 million children who participate in youth sports (Seefeldt & Ewing, 1996). These youth sport coaches are integral in properly teaching the foundational aspects of sport, and their role is similar to the role teachers have with their students. They can have a strong influence on the benefits, negative experiences, and motivation surrounding youth sports participation (Gould, Hodge, Peterson, and Giannini, 1989; Guivernau & Duda, 2002). Research has shown that a coach's effectiveness in fostering the foundational and beneficial aspects of sport is influenced by self-efficacy (or self-confidence) beliefs for coaching (Feltz, Chase, Moritz, & Sullivan, 1999; Myers, Vargas-Tonsing, & Feltz, 2005). However, the coaching efficacy of coaches at the youth sport levels has not been studied despite its potential influence on the sport experience of children and youth.

Coaching efficacy is the belief coaches have on effecting the learning and performance of their athletes (Feltz et al., 1999). Feltz et al. developed a model of

coaching efficacy comprised of four dimensions of coaching: game strategy, motivation, teaching techniques, and character building. These dimensions were based on Bandura's (1997) self-efficacy theory and Denham and Michael's (1981) model of teacher efficacy. Game strategy efficacy is the confidence that coaches have to lead their teams to a successful outcome, such as being able to understand the competitive strategies of the sport and recognizing the strengths and weaknesses of the opposing team. Motivation efficacy involves the belief that coaches have to affect the psychological attributes of their athletes, such as how well they can motivate the athletes and build team confidence and cohesion. Teaching Technique efficacy is concerned with the ability to effectively demonstrate skills, recognize talent, and diagnose skill errors. Finally, Character Building efficacy is defined as the confidence that coaches have in their ability to foster a sense of fair play and responsibility toward sport and other participants. They also proposed a unidimensional conceptualization, total coaching efficacy, that combines all four factors.

Within the coaching efficacy model, Feltz et al. (1999) hypothesized that coaching efficacy has an influence on coaching behavior, player/team satisfaction, player/team performance, and player/team efficacy. Preliminary findings showed more confident coaches display more frequent uses of positive reinforcement and general encouragement behavior, having higher winning percentages, and having more satisfied athletes. Other studies have shown the Coaching Efficacy Scale (CES) dimensions to be correlated with leadership styles (Sullivan & Kent, 2003), and athletes' self-efficacy, satisfaction with the coach, and team performance in line with tenets of the coaching efficacy model (Myers et al., 2005; Vargas-Tonsing, Warners, & Feltz, 2003).

Coaching efficacy, in turn, was proposed, by Feltz et al. (1999), to be influenced by coaches' extent of coaching experience/preparation, prior success (won-lost record), perceived skill of athletes, and school/community support. In addition to the sources of coaching efficacy proposed by Feltz et al. (1999), Chase and her colleagues (Chase, Feltz, Hayashi, & Hepler, 2005) identified additional sources of coaching efficacy information through structured interviews with coaches. They found that coaches also relied on evidence of player improvement and development, support from their players, and their own previous playing experience to judge their coaching efficacy. Sullivan, Gee, and Feltz (in press) also found that coaches' own playing experience uniquely predicted Game Strategy efficacy.

Feltz et al. (1999) developed an instrument to measure the four dimensions of coaching efficacy. One component to developing the measure was a seminar involving 11 coaches who were graduate students in sport psychology. The seminar lasted 5 weeks and the coaches had varying coaching education backgrounds. The four dimensions that emerged from the seminar with coaches and former coaches of high school sports -- game strategy, motivation, technique, and character building -- led to the generation of 41 items. Nine collegiate and scholastic coaches evaluated the relevance of the items and determined that all were potentially important indicators of coaching efficacy. However, 17 of the original items were later dropped as a result of factor analysis (Feltz et al., 1999).

Confirmatory factor analysis (CFA) of the 24-item CES with its four dimensions demonstrated psychometric fit indexes that were minimally acceptable but consistent in samples of high school and small-college level coaches. Fit indices ranged from .87-.89

for Comparative Fit Index (CFI), and .080-.085 for Root Mean Square Residual Error of Approximation (RMSEA) across four studies for the multidimensional model (Feltz et al. 1999; Lee, Malet, & Feltz, 2002; Myers, Wolfe, & Feltz, 2005; Sullivan & Kent, 2003). Feltz et al. (1999) also tested the fit of the unidimensional model. Slightly greater misfit was observed for this model, $\chi^2 = 844$, non-normed Fit Index (NNFI) = .87, CFI = .88, and RMSEA = .09, as compared to the multidimensional model but is still useful in instances when coaching efficacy is but one of a host of variables used to predict a general outcome (e.g., performance), and/or when subscale scores are highly related and likely to cause problems associated with multicollinearity within the specified data analysis (Myers et al., 2005).

Myers et al. (2005) also examined the degree to which high school and small-college level coaches employed the original 10-category rating scale structure of the CES (where 0 signified “not at all confident” and 9 signified “extremely confident”) systematically. They reported that coaches did not employ the original rating scale structure systematically because they were being asked to distinguish between too many levels of coaching efficacy, which was congruent with previous findings for the optimal structure of an ordered response efficacy scale (Zhu et al., 1997) and long-standing recommendations for Likert scales (Likert, 1932). A post-hoc analysis suggested that a 4-category structure was optimal for the Myers et al. sample. Accordingly, they suggested that subsequent users of the CES should use a condensed rating scale structure.

For youth sport coaches concentrating on the fundamentals of the sport, the factor structure of the measure may not be appropriate due to the dimensions that may vary depending on the age and level of the athlete or level of the coach. Youth-sport coaches

have an impact on athletes during the developmental stages of sports participation. Their influence includes teaching the rules and strategies of the sport, the fundamental skills needed to perform, and even developing the character to handle social-emotional situations in sport (i.e. sportsmanship). In addition, many youth sport organizations downplay the emphasis of outcome goals such as winning. Thus, the factor structure of the CES should be examined through CFA before hypotheses within the coaching efficacy model are tested with volunteer youth-sport coaches.

In addition, youth-sport coaches may rely on different sources of efficacy information on which to base their confidence in coaching than high school or small college coaches. If outcome goals are downplayed in youth sports, a coach's perceptions of the team's ability may not be as important as perceptions of how the team has improved from one season to the next. Past winning record and school/community support may be of no importance, but parental and player support may be very important. Thus, the most salient sources of efficacy information for youth-sport coaches should also be examined to help expand the model and aid in helping coaches enhance their coaching efficacy.

Purpose of the Study

The purpose of this study was to examine the structural validity of the CES (Feltz et al., 1999) with youth sport coaches using a condensed rating scale structure. The CES is currently the only instrument for measuring coaching efficacy, thus it is important that the measurement is validated for the assessment of youth sport coaches' coaching efficacy. In addition, the sources of coaching efficacy proposed by Feltz et al. (1999) and Chase et al. (2005), namely, years of coaching experience, extent of coaching education,

parent, organizational, and player support, and previous playing experience, will be examined as predictors of coaching efficacy.

Research Questions

1. Can the factor structure of the CES be replicated with a sample of volunteer youth sport coaches using a condensed rating scale structure?
2. What are the strongest dimensions of coaching efficacy among male and female volunteer youth-sport coaches?
3. What are the strongest predictors of coaching efficacy among the sources measured?

Definitions

1. CES- Coaching Efficacy Scale developed by Feltz et al. (1999) assesses the dimensions of game strategy, motivation, teaching technique, and character building.
2. Character-building Efficacy–Coach’s belief that he or she can foster a sense of fair play and responsibility toward sport and other participants.
3. Coaching Efficacy- Extent to which coaches believe they have the capacity to effect the learning and performance of their athletes (Feltz et al., 1999).
4. Game Strategy Efficacy-Coach’s belief he or she can lead the team to a successful outcome, effectively pinpoint opponents’ weaknesses, and make in game adjustments.
5. Motivation Efficacy-Coach’s belief he or she can build team cohesion, increase confidence, and motivate athletes.

6. Teaching Technique Efficacy-The coach's belief he or she can teach fundamental techniques in sport and recognize talent, and diagnose skill deficiencies in the athlete(s).
7. Youth Sport Coach- Usually a person who volunteers his or her time to coach children whose ages range from 4 to 12 years.

Delimitations

The study was delimited to volunteer youth sport coaches in the United States. Results of this study may not generalize to other types of coaches, such as high school, college, or paid club-level coaches or to coaches outside of the U. S.

Limitations

The study was limited in terms of nonrandom selection of coaches, potentially causing a subject self-selection bias. A non-representative sample was the most likely threat to external validity in this study. This can occur when participants are selected on some basis other than random assignment. In the present study, the investigator sought coaches of various youth sports. The sports were hockey, basketball, volleyball, cheerleading, and football, however, 73% of the coaches came from the sport of hockey.

Basic Assumptions

1. Participants responded honestly to all questions on the survey.
2. Participants comprehended all questions on the survey.
3. The questionnaires constructed to measure sources of coaching efficacy accurately measured these sources.

CHAPTER 2

REVIEW OF LITERATURE

In this chapter, an overview of research on youth sport coaches is followed by a summary of the model of coaching efficacy, developed by Feltz et al. (1999).

Additionally, the development of the CES (Feltz et al., 1999) and the associated psychometric properties are presented. Finally a discussion on the need for further development of the CES for the youth sport coaching population is presented.

Youth Sports

Participation in non-school youth sports is widespread in America today. Between 13 and 20 million children participate in programs sponsored by recreation departments, Little League baseball, Pop Warner football, and many other organized groups (Martens, 1986; Seefeldt & Ewing, 1996). Youth sports benefit the development of today's children in many ways. The benefits include moral development (Chambers, 1991), perceptions of competence (Feltz & Ewing, 1987; Feltz & Petlichkoff, 1983), self-esteem (Weiss, 1987), and life skills such as developing self-control, persistence, teamwork, and learning to cooperate with teammates (Shields & Bredemeier, 1995; Weiss & Bredemeier, 1990).

The success of these programs depends on youth sport coaches to volunteer their time in an attempt to provide maximal development for the youth athletes.

Approximately 2.5 million coaches volunteer each year, usually following the sport involvement of their own children, but are equally important to the areas of youth development.

Youth Sport Coaches

Volunteerism has been the backbone of youth sport coaching. These coaches are present in the lives of these young athletes as they start their athletic careers, consequently these coaches have a potentially large impact on the sport experience of their athletes (Litherland, 1996). Coaches believe youth athletes should learn life skills, have fun, develop confidence, and learn how to be a part of the team (Lesyk & Kornspan, 2000). Research has evaluated the impact that a coach can have on an athlete in such areas as self-esteem, performance anxiety, and enjoyment (Scanlan & Lewthwaite, 1986; Smith & Smoll, 1997). Recent studies have shown that coaches do have an influence, both positive and negative, on their athletes' lives (Gould, Hodge, Peterson, & Giannini, 1989; Guivernau & Duda, 2002; Vargas-Tonsing et al., 2003). More research is needed to understand the types of behaviors, expectancies, and attitudes of coaches that impact young athletes in their sport experiences.

Coach effectiveness model.

Smoll, Smith, Curtis, and Hunt (1978) presented a model for conceptualizing and investigating coach-player relationships. Acknowledging the psychosocial impact that sport has on children and the effect a coach can have on a player, the authors set out to assess the interrelation of coaches' behaviors, players' perceptions of those behaviors, and player attitudes. Using the Coaching Behavior Assessment System (CBAS) and structured interviews of the players, results suggested that these athletes tended to engage in positive attitudes towards their coach, sport, and team when the coach exhibited supportive and instructional behaviors.

Later, Smith and Smoll (1991) set out to look at the behavioral research and intervention in youth sport. They recognized that adult leaders occupy a critical role in youth sports and the impact made on young athletes. To understand this athlete-coach relationship, Smith and Smoll used a multi-method approach.

The multi-method approach used included observer coding of overt behaviors, measures of player perception and recall of those same coaching behaviors, and measurement of players' evaluative reactions. To measure leadership behaviors in this study, the CBAS was again used. The coaches were given several self-report measures at the end of the season and data from 542 players were collected during individual interviews also conducted at the end of the season.

Scores revealed a relationship between coaches' scores on the behavioral dimensions and player measures. Players responded favorably to coaches who exhibited higher proportions of supportive and instructional behaviors. Consequently these same players liked their teammates more than players who did not play for a coach who developed a supportive environment. Final findings revealed a significant interaction between coach supportiveness and athletes' level of self-esteem.

Smoll, Smith, Barnett, and Everett (1993) set out to study the impact that a coach's behavior can have on an athlete's self-enhancement processes. In a previous study, Smith, Smoll, and Curtis (1978) discovered that athletes who played for coaches who were highly supportive had higher postseason scores on the Coopersmith's (1967) General Self-Esteem Scale. This study attempted to assess the change in boys' self-esteem before and after being coached by coaches who were trained in how to be highly supportive and in how to give quality instruction. Based on the self-enhancement model's

assumption that boys who have lower self-esteem would benefit from positive feedback and Smith and Smoll's (1990) previous finding that low self-esteem boys are highly responsive to variations in supportiveness and instruction, the authors developed their hypothesis for the study. Their hypothesis was that those who played for trained coaches would experience an increase in self-esteem more than boys who played for untrained coaches.

Participants were 18 male coaches and 152 male Little League Baseball players. Eight coaches comprised the experimental group and 10 made up the control group. The experimental group went through Coach Effectiveness Training (CET; Smoll & Smith, 1993).

The CET's goal was to increase four specific target behaviors: reinforcement, mistake-contingent encouragement, corrective instruction, and technical instruction. An intervention was designed to increase the supportiveness and instructional effectiveness of the coaches. Evaluation of the coaches' behaviors and boys' progress was accomplished by comparing the experimental and control groups' perceptions of their coaches' behaviors, their attitudes toward the coaches and other aspects of participation, and their levels of self-esteem.

Three major results came from the study. First, players perceived behavioral differences between trained and untrained coaches. Players thought the trained coaches were more positive than the untrained coaches. The second result revealed player evaluative responses favored the trained coaches who exhibited behavioral differences. They liked playing for the trained coaches more than the untrained coaches. Lastly, the

authors found a statistically significant increase in the boys' self-esteem for those who played for the trained coaches and who started with low self-esteem

Horn (1985) recognized the need to look at the relationship between coaching behaviors and athletes' self-perceptions. The purpose of her study was to observe the kind of feedback that female athletes received over the course of a season in combination with the skill mastery they achieved over that period of time.

Five coaches and 72 athletes from five junior high softball teams comprised the participants for this study. The CBAS was used to record and classify coaches' behaviors. To assess changes in the athletes' self-perceptions were the Perceived Competence Scale for Children (Harter, 1982), the Multidimensional Measure of Children's Perceptions of Control (Connell, 1980), and the Generalized Expectancy of Sport Success Scale (Coulson & Cobb, 1979), which measured the strength of the athletes' expectations for future athletic success. Determining success of performance was conducted through evaluation by teammates.

Results revealed a statistically significant relationship between a child's performance, adult's evaluation of the performance, and the development of the child's perceived competence. These results imply that the coach has the potential to influence how a child perceives success and failure based on evaluation that in turn can affect the child's own efficacy.

Coaching influence of prosocial attitudes.

In addition to influencing young athletes' perceptions of success, positive experience, and self-esteem, coaches can also influence prosocial attitudes and behaviors.

Studying the effects of team's collective norms on athletes' behaviors was done by Shields, Bredemeier, Gardner, and Bostrom (1995). The purpose of the study was to examine team norms about cheating and aggression in relation to leadership, cohesion, and demographic variables. Shields et al. alleged a player's likelihood to use unfair game tactics was the belief that their teammates would engage in the same tactics and the motivational orientation of their coach, which superceded their own motivational orientation.

Baseball ($n=182$) and softball ($n=116$) players from six community colleges and six high schools were recruited for the study. A demographic questionnaire was given along with the Group Environment Questionnaire (GEQ), the Team Norm Questionnaire, and three versions of the Leadership Scale for Sports (LSS). These were given out the last third of the regular season and administered by the researchers.

Assessment of the leadership styles of the coaches (as perceived by the athletes) appears to determine the team norms of aggression and sanctioning of cheating. Also of interest were female athletes who had a female coach. These athletes had a lower expectation of team norms for cheating and aggression than female athletes who had a male coach. Adding to this, female athletes coached by women believed behaviors of cheating and aggression were less accepting than male coaches. These findings suggest that the coach can impact an athlete's moral judgment.

Guivernau and Duda (2002) found athletes' coaches influenced them more than any other significant individual listed when determining the athletes' likelihood to aggress in soccer. They reason that moral reasoning maturity has an inverse correlation with aggressive tendencies because individuals do not live in a vacuum. Interactions with

the community affect their decisions and ultimately their behaviors. These interactions with significant others (i.e. parents, coaches, and teammates) influence athletes' attitudes, decisions, and actions.

Guivernau and Duda examined the relationship between the atmosphere of athletic teams to the athletes' self-described likelihood to aggress (SLA). One additional purpose was to assess whether there was a "predominant figure most influential to athletes' SLA."

Participants were 194 male and female soccer players ranging in age from 13 to 19 years of age who played for the same coach on average of 1 to 3 years. The study was administered during a mid-western university's summer camp, and the instruments consisted of demographic information, Judgments about Moral Behavior in Youth Sport Questionnaire (JAMBYSQ), and Team Norm Questionnaire (TNQ).

Results revealed support for the hypotheses. A significant positive correlation was found between athletes' perceived team pro-aggressive norms and their SLA. In regards to the influence of significant others on athletes' aggressive tendencies, the data revealed that the coach was most influential in the athletes' decision to engage in an inappropriate act. These findings support Shields et al. (1995) who said team norms sanctioning, cheating, and aggression may be influenced by leadership style.

Horn's coaching effectiveness model.

Horn (2002) developed a model to explain the relationship between coaching effectiveness and the athlete (see Figure 1). Horn's coaching effectiveness model gives a comprehensive look at a coach's effect on athletes. The model comprises 10 boxes with

the coaches' expectancies, values, beliefs, and goals as the central box (Box 4). The antecedents for these (Boxes 1-3 respectively) are socio-cultural context, organizational climate, and coaches' personal characteristics that have an interrelation between the three as well as on Box 4. Coaches' behavior (Box 5) is influenced by Box 4 and has an impact on athletes' performance and behavior (Box 6) and athletes' perceptions, interpretation, and evaluation of their coaches' behavior (Box 8). Athletes' personal characteristics (Box 7) have an effect on Box 8 as well leading to an effect on athletes' self-perceptions, beliefs, and attitudes (Box 9). This leads to an affect on athletes' level and type of motivation (Box 10) and both Boxes 9 and 10 have an effect on athletes' performance and behavior (Box 6). The only effect Box 6 has in the model is on the coaches' expectancies, values, beliefs, and goals (Box 4). Horn laid out a model of the interrelationship between various variables in sport on coaches and athletes; she also looked at coaches' feedback and its effect on children's perceptions of physical competence. The model incorporated the Feltz et al. (1999) model of coaching efficacy. The Feltz et al. model is the only one that has a measure of coaching efficacy expectations.

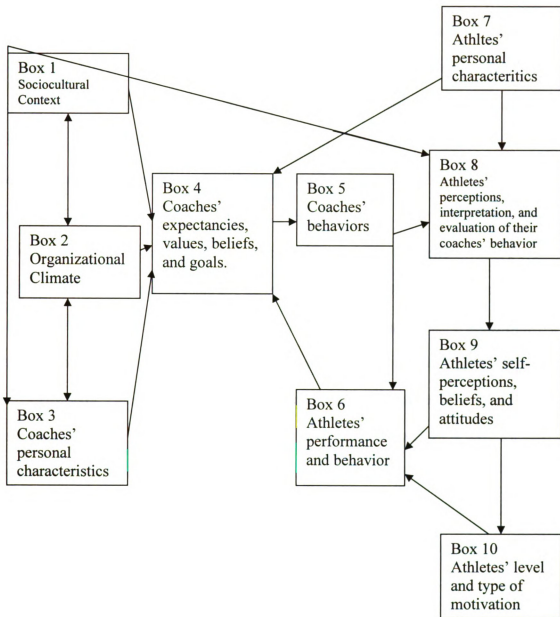


Figure 1. Horn's Model of Coaching Effectiveness

Coaching Efficacy

Bandura (1986) states efficacy to be, “peoples’ judgments of their capabilities to organize and execute courses of action required to attain designated types of performances. It is concerned not with the skills one has but with judgments of what one can do with whatever skills one possesses” (pg. 391). Feltz et al. (1999) developed a model of coaching efficacy based on Bandura’s construct of self-efficacy and models of teaching efficacy (e.g., Denham & Michael, 1981). Feltz et al. used the teacher efficacy model as a basis from which to develop their own because teachers and coaches have similar end goals for their students and athletes respectively. Denham and Michael (1981) defined teaching efficacy as, one’s sense that the ideal teaching can bring about positive changes in a student than their assessment of their abilities to bring such changes.

However, Feltz et al. considered the teacher efficacy model to be inadequate for the study of coaching efficacy because coaches have unique objectives in the development of athletes’ performance and they are also influenced by different organizational variables (e.g., voluntary participation). For instance, the actual level of importance placed on performance and performance measures may be more salient in sport, because performance in sport, even at the youth level, is typically a public event. Therefore, Feltz et al. (1999) defined coaching efficacy as “the extent to which coaches believe they have the capacity to effect the learning and performance of their athletes” (p.765).

In examining the teacher efficacy literature, Feltz et al. (1999) found a number of relationships that could extend to coaches. For instance, teachers’ behaviors are

influenced by their efficacy (Coladarci, 1994; Denham & Michael, 1981; Fisher, et al., 1978; Gibson & Dembo, 1984; Hoy & Woolfolk, 1993; Stinnet, 1970). Hoy and Woolfolk (1993) suggest that teachers who possess high levels of efficacy believe they can motivate even the most difficult students. A teacher's ability to be flexible with his or her plans is related to high efficacy (Fisher et al., 1978), suggesting an efficacious teacher adjusts his or her behavior according to the goals set out (i.e. give feedback when appropriate, create a task-oriented atmosphere, etc.) and does not solely adhere to a strict set of guidelines. Teacher dropout appears to be influenced by efficacy as well according to Stinnet (1970). Other studies give support to efficacy's impact on teachers' behaviors.

Denham and Michael (1981) sought to investigate teacher efficacy and its effects on teaching effectiveness. Through the literature, consulting with various specialists in the fields of psychology, sociology, and education they developed a model to describe Teacher Sense of Efficacy. A teacher's cognitive and affective components have a reciprocal effect on their consequences and antecedent convictions. The cognitive aspect is comprised of a sense of likelihood a teacher can bring about positive change in a student and an assessment of their own ability to bring about such changes. The affective aspect is a teacher's sense of efficacy and the pride or shame associated with the sense of efficacy. Measurable consequences were defined as teacher behaviors and student outcomes. Sense of efficacy, in particular the cognitive component, was composed of two phenomena: the extent to which a teacher believes an ideal or normative teacher can help a student change positively given circumstances and the extent to which that teacher believes he or she can bring about positive changes in a student under given circumstances.

Antecedents for teaching efficacy are similar to antecedents for coach efficacy: teacher training, teaching experience, system variables, personal variables, and causal attributions (Denham & Michael, 1981; Fuller, Wood, Rapport, & Dornbusch, 1982; Hoy & Woolfolk, 1993; Park, 1992; Ramey-Gassert, Shroyer, & Staver, 1996). Teacher training is to have increased efficacy by giving them knowledge they feel essential to teaching and directly increasing their sense of self-efficacy.

Throughout scholarly literature, a theme was represented that alluded to the fact that the more experience a teacher had in the field the more efficacy that came from it. Learning from failures and feedback from students helped in forming the experience (Denham & Michael, 1981; Gibson & Dembo, 1984).

Teacher behaviors and student behaviors comprise measurable consequences. Teacher behaviors include classroom behaviors, support of innovation, professional activities, and commitment to teaching. Student behaviors are achievement outcomes, affective outcomes, and behavioral outcomes. More efficacious teachers were found to spend more time instructing/teaching, maximizing the time students spend in productive activities (Bandura, 1997; Gibson & Dembo, 1984).

The most prominent finding in these studies was the strong relationship between teacher efficacy and improved student performance and the students' gain in learning. As a teacher, the goal is to see improvements in the pupils and learning to occur. According to Berman et al. (1977) teacher efficacy has a strong relationship with the variables concerned.

Coaching efficacy stems from the research done in teaching efficacy. Coaching is similar to teaching as coaches give instruction, are concerned with the learning and

performance of their athlete, and give feedback. Much of the teacher efficacy literature was used to develop the Feltz et al. (1999) model of coaching efficacy. The model consists of four sources of coaching efficacy information: 1) extent of coaching experience/preparation, 2) prior success (won-loss record), 3) perceived skill of athletes, and 4) school/community support. These affect the four dimensions of coaching efficacy 1) game strategy, 2) motivation, 3) teaching technique, and 4) character building.

The dimensions of coaching efficacy were developed as a result of a 5-week seminar, a review of the National Standards for Athletic Coaches, a review of the coaching education literature, and preliminary work done by Park (1992). Teaching technique efficacy is the confidence a coach has in teaching the skills of the sport and includes discipline, training, and conditioning. Game strategy is a coach's confidence in identifying an opponent's weakness and making in-game adjustments. Motivation efficacy involves the belief that coaches have to affect the psychological attributes of their athletes, such as how well they can motivate the athletes and build team confidence and cohesion. Character building efficacy is defined as the confidence that coaches have in their ability to foster a sense of fair play and responsibility toward sport and other participants. From these four dimensions the Coaching Efficacy Scale (CES) was developed.

The CES emerged from this study as an instrument to be used to measure the nature of coaching efficacy. The instrument includes the stem, "How confident are you in your ability to..." then the sentence is completed with an item regarding one of the dimensions. The CES originally was scored on a 10-point Likert scale ranging from 0 (not at all confident) to 9 (extremely confident). A total of 24 items for the four

dimensions comprise the survey. There are a total of eight items for teaching technique efficacy for example, “How confident are you in your ability to demonstrate the skills of your sport?” Eight items for game strategy; “How confident are you in your ability to recognize opposing team’s strengths during competition?” motivation efficacy: “How confident are you in your ability to help athletes maintain confidence in themselves?” and character building efficacy; “How confident are you in your ability to instill an attitude of fair play among your athletes?” Subsequent studies led to refinements of coaching efficacy sources.

Four sources of coaching efficacy were proposed in the initial study by Feltz, et al. (1999) and other studies have added to these sources (Feltz, Hayashi, & Hepler, (2005); Lirgg, DiBrezzo, & Smith, 1994; Lee, Malette, & Feltz, 2002; Myers, Vargas-Tonsing, & Feltz, 2005; Sullivan, Gee, & Feltz, in press). Myers, Vargas-Tonsing, and Feltz (2005) examined the proposed sources of efficacy information on dimensions of coaching efficacy among college coaches. Their study was conducted as an extension of the coaching efficacy literature because none of the prior research provided a comprehensive test for the proposed model in non-high school settings.

Participants were 179 head coaches from Division II and III universities from several mid-western states. The coaches were sent packets at two different points in the season. At Time 1 a packet containing a questionnaire of demographic items, measures of proposed sources, and the CES were sent to the coaches. At Time 2, at the three-quarter mark of the season the coaches that responded after Time 1 (75%) were sent the packets once again. The packets contained the same items with the addition of a questionnaire

looking at their perceptions of their efficacy-enhancing behaviors with athletes, athlete satisfaction with their head coach, and winning percentage for the current season.

Findings from the study support previous research as a significant relationship between the sources and dimensions of coaching efficacy was found. Specifically, important sources of coaching efficacy were found to be perceived team ability, social support from the athletes' parents and the community, career winning percentage, and experience as a collegiate head coach.

Feltz, Hayashi, and Hepler (2005) looked to expand on previous research by interviewing 12 coaches from the Feltz et al., (1999) study. The purpose of the study was to identify additional sources of coaching efficacy that these coaches use.

Participants consisted of 12 coaches from phase two of the Feltz et al. (1999) study. A set of questions was asked of the coaches with appropriate probing to get in-depth analysis. Results found player improvement and development, support from their players, and past playing experiences contribute to sources of coaching efficacy as well what Feltz et al. proposed.

Coaching behavior, in turn, is affected by coaching efficacy (Feltz, Chase, Moritz, & Sullivan, 1999; Fung, 2003; Myers, Vargas-Tonsing, & Feltz, 2005; Sullivan & Kent, 2003). Fung (2003) found that coaches with low game strategy efficacy would be hesitant to apply their knowledge and Myers, Vargas-Tonsing, and Feltz, (2005) found coaches exhibited higher perceptions in these areas had a higher winning percentage, and scored higher in their Coaching Efficacy Scale scores. Coaches with a higher sense of coaching efficacy gave more praise and encouragement than coaches with a lower sense of coaching efficacy (Feltz et al, 1999; Sullivan & Kent, 2003). This behavior includes

positive reinforcement to a desirable performance, positive contingent reinforcement plus technical instruction, spontaneous encouragement that does not follow a mistake, and mistake contingent encouragement.

Sullivan and Kent (2003) sought to look at the link between coaching efficacy and its behavioral outcomes. This study differed from Feltz et al. (1999) as Sullivan and Kent focused on perceptions of leadership style of coaches measured through the Leadership Scale for Sport (LSS) allowing for a greater in-depth examination of the relationships between efficacy and leadership. Along with this the authors also looked to examine the generalize-ability of coaching efficacy.

The sample comprised of intercollegiate coaches from America and Canada. Surveys were mailed to 570 coaches (300 American coaches and 270 Canadian coaches). The instruments included in the packets were the Coaching Efficacy Scale (Feltz et al., 1999) and the LSS. The response rate was 165 male and 58 female coaches (39.3%).

Results showed the collegiate coaches scores on the CES dimensions correlated with leadership styles. Motivation and teaching efficacy predicted training, instruction, and positive feedback use by the coaches; the higher their coaching efficacy the more likely coaches would use appropriate training and instruction. Winning percentage was higher for coaches with high efficacy. Coaches with lower coaching efficacy ratings provided more instructional and organizational behaviors and had a lower winning percentage.

Myers, Vargas-Tonsing, and Feltz (2005) found total coaching efficacy to influence coaches' efficacy-enhancing behaviors (increasing confidence as in verbal persuasion) with athletes. Winning percentage and team satisfaction were also found to

increase with high total coaching efficacy. In regards to women's teams total coaching efficacy only predicted coaching behavior. These behaviors may have an effect on the athletes.

Coaching efficacy is shown to have an effect on athletes (Feltz, Chase, Moritz, & Sullivan, 1999; Myers, Vargas-Tonsing, & Feltz, 2005; Short & Short, 2004; Vargas-Tonsing, Warners, & Feltz, 2003). Player satisfaction was found to be correlated with high coaching efficacy possibly due to coaches with higher efficacy exhibiting coaching styles more preferred by athletes (Feltz et al., 1999).

Vargas-Tonsing, Warners, and Feltz (2003) said efficacy was found to be a significant predictor of team efficacy and team satisfaction. Using Feltz et al. is (1999) model the authors set out to study the efficacy of the players both individually and as a team as it correlates with the coaches' own efficacy; their hypothesis was coaching efficacy would predict team and player efficacy.

Participants were 133 female varsity athletes and head coaches from 12 high school volleyball teams from a mid-west state. The athletes were given a self-efficacy and team-efficacy questionnaire while the coaches were given the Coaching Efficacy Scale (Feltz et al., 1999).

Results revealed a significant relationship between coaching efficacy to be a predictor of team efficacy but not of self-efficacy. The authors concluded this may be because in team sports it is easier to assess the team's accomplishments as a whole than to asses individual accomplishments. The results imply the need for coaches to be aware of their efficacy's influence on their team as a whole.

The literature has supported coaching efficacy to have an impact on young athletes' lives. An instrument such as the Coaching Efficacy Survey may help in assessing any deficiencies in coaches and lead to improvements in the coaching education literature. To validate the current CES a series of statistics will be implemented similar to what was already done in previous validations.

Psychometric Properties of the CES

Confirmatory factor analysis (CFA) of the 24-item CES with its four dimensions demonstrated psychometric fit indexes that were minimally acceptable but consistent in samples of high school and small-college level coaches. Fit indices ranged from .87-.89 for Comparative Fit Index (CFI), and .080-.085 for Root Mean Square Residual Error of Approximation (RMSEA) across four studies for the multidimensional model (Feltz et al., 1999; Lee, Malete, & Feltz, 2002; Myers, Wolfe, & Feltz, 2005; Sullivan & Kent, 2003). Feltz et al. (1999) also tested the fit of the unidimensional model. Slightly greater misfit was observed for this model, $\chi^2 = 844$, Nonnormed Fit Index (NNFI) = .87, CFI = .88, and RMSEA = .09, as compared to the multidimensional model but is still useful in instances when coaching efficacy is but one of a host of variables used to predict a general outcome (e.g., performance), and/or when subscale scores are highly related and likely to cause problems associated with multicollinearity within the specified data analysis (Myers et al., 2005).

Myers et al. (2005) also examined the degree to which high school and small-college level coaches employed the original 10-category rating scale structure of the CES (where 0 signified "not at all confident" and 9 signified "extremely confident")

systematically. They reported that coaches did not employ the original rating scale structure systematically because they were being asked to distinguish between too many levels of coaching efficacy, which was congruent with previous findings for the optimal structure of an ordered response efficacy scale (Zhu et al., 1997) and long-standing recommendations for Likert scales (Likert, 1932). A post-hoc analysis suggested that a 4-category structure was optimal for the Myers et al. sample. Accordingly, they suggested that subsequent users of the CES should use a condensed rating scale structure.

The dimensions of coaching efficacy may vary, however, depending on the age and level of the athletes or level of the coach. The factor structure of the measure may not be appropriate for youth sport coaches who are concentrating more on the fundamentals of the sport. Youth-sport coaches have an impact on athletes during the developmental stages of sports participation. Their influence includes teaching the rules and strategies of the sport, the fundamental skills needed to perform, and even developing the character to handle social-emotional situations in sport (i.e., sportsmanship). In addition, many youth sport organizations downplay the emphasis of outcome goals such as winning. Thus, the factor structure of the CES should be examined through CFA before hypotheses within the coaching efficacy model are tested with volunteer youth-sport coaches.

In addition, youth-sport coaches may rely on different sources of efficacy information on which to base their confidence in coaching than high school or small college coaches. If outcome goals are downplayed in youth sports, a coach's perceptions of the team's ability may not be as important as perceptions of how the team has improved from one season to the next. Past winning record and school/community support may be of no importance, but parental and player support may be very important.

Thus, the most salient sources of efficacy information for youth-sport coaches should also be examined to help expand the model and aid in helping coaches enhance their coaching efficacy.

CHAPTER 3

METHOD

Participants

The research subjects comprised 394 volunteer youth sport coaches from the mid-west region of the United States. Youth sport coaches were defined to be a person who coaches children between the ages of 7 and 12 years. The sample included both head coach and assistant coaches. The sample was 94% male, 6% Caucasian, and 52% had a minimum of a bachelor's degree. The age of coaches ranged from 17-72 years ($M = 38.8$, $SD = 8.8$) and years of coaching experience from 0-30 years ($M = 3.59$, $SD = 4.11$). Coaches represented a number of sports including ice hockey (73%), basketball (18%), soccer (4%), volleyball (3%), football (1%), softball (.3%), and other (.3%).

Measures

Demographic measures. Demographics were collected including the coaches' gender, age, ethnicity, educational background, sport background, primary sport coached, years of coaching primary sport, years playing in primary sport, hours spent coaching primary sport, and volunteer or paid status. Coaches were also asked about the age and gender of the team they are coaching.

CES. As explained in Chapter 1, the *CES* measures total coaching efficacy, as well as subsets within the instrument including: teaching technique efficacy (TE), game strategy efficacy (GSE), motivation efficacy (ME), and character building efficacy (CBE). As recommended by Myers et al. (2005), a condensed rating scale structure was employed in this study where "1" was no confidence, "2" low confidence, "3" moderate

confidence, “4” high confidence, and “5” complete confidence. Unlike the Myers et al. study, which advocated for a 4-category structure with high school and collegiate coaches, in this study a 5-category structure was deemed appropriate because it included a category for “no confidence”, which was reasonable in the given sample, because many of the participating coaches (8%) had no prior experience coaching. Additionally (27%) had no experience playing the sport coached.

Procedure

Permission was obtained from the Institutional Review Board. Coaches were recruited from coaching clinics, tournaments and league meetings. The first group of data was collected at a youth ice hockey coaching clinic in the northeast. Surveys were handed out to the coaches before their workshops and 496 coaches responded. Coaches who responded coached athletes whose ages ranged from 6 to 17 years. Participant responses were discarded if the criteria were not met leaving 387 responses. To get the number of coaches down to a number that would be statistically acceptable to add with other data and not thoroughly dominate the analysis, every fourth participant was deleted from the data. The final number of ice hockey responses were 289.

Responses were also collected from youth sport coaches in other sports in a mid-western state. Numerous phone calls and emails were sent to various leagues throughout the State inquiring their willingness to allow contact with their coaches for the study. Those who responded were contacted for specific information as to where and when the events occurred. At various basketball tournaments 69 coaches responded to the survey. At a volleyball tournament 13 youth sport coaches responded to the survey. Soccer coaches from a local recreation league and club league were approached and all (16)

responded to the survey. A local youth football league agreed to help and submitted a list of coaches available to contact for the study. Numerous phone calls and emails were made and sent resulting in five agreeing to participate in the study. The surveys were administered in their respective homes and completed promptly. A volleyball and cheerleading coach were recruited at a coach's education meeting held in a mid-west rural town. In the end, 105 youth sport coaches in sports other than ice hockey participated in the study. A total of 394 responses were gathered from the participants.

An explanation of the study was presented and informed consent was obtained from all coaches. An explanation of the study was provided to the coaches. They were told the following survey was to assess coaching confidence. All youth sport coaches approached agreed to participate in the study. The investigator was not present as the participants filled out the surveys.

To minimize the threat of data loss from unanswered questions, the investigator examined completed questionnaires to assure all questions were answered and if any questions were skipped the investigator brought this to the attention of the respondent and the overlooked question was then answered. For coaches hesitant to take the survey, the administrator assured the participants that the process would take no more than 7 minutes.

Treatment of Data

In order to answer the first question, "Can the factor structure of the CES be replicated with a sample of volunteer youth sport coaches?" a CFA utilizing maximum likelihood procedures with the covariance matrix as input was performed using AMOS

(Arbuckle, 1996). As proposed by Feltz et al. (1999), hierarchical-factor model representing four first-order factors and a second-order general factor was tested with all of the factors specified as correlated with one another. The fit of the model to the data was evaluated using the chi-square statistic (χ^2), the NNFI, the CFI, and the RMSEA. These indices were chosen because they are appropriate for CFAs with maximum-likelihood procedures (Tabachnick & Fidell, 2001) and have been used previously with the CES.

The second question, “What is the strongest dimension of coaching efficacy among volunteer male and female youth-sport coaches?” could not be addressed because of the low number of female respondents. The third question, “What are the strongest predictors of coaching efficacy among the sources measured?” was examined using a multivariate multiple regression (MMR) analysis with eight sources of coaching efficacy (perceived team ability, perceived team improvement, social support, years as a volunteer coach, and years of experience as an athlete as predictor variables and the four dimensions of coaching efficacy as dependent variables. In the case of a significant overall multivariate effect, follow-up univariate multiple regression analyses were conducted on each efficacy dimension.

A *t*-test was conducted between ice hockey coaches and all other sport coaches. Due to the high number of ice hockey coaches ($n=289$) compared to all other sports coaches ($n=105$) there may be a significant difference between the two groups and an independent sample *t*-test would best assess this.

CHAPTER 4

RESULTS

Confirmatory Factor Analysis

To test the factorial validity of the CES (the first research question of this study) a CFA was performed utilizing maximum likelihood procedures with the covariance matrix as input using AMOS (Arbuckle, 1996). As proposed by Feltz et al. (1999), a hierarchical factor model representing four first-order factors and a second-order general factor representing coaching efficacy, was tested with all the factors specified as correlated with one another. In terms of the global indices of fit, the chi-square was large, $\chi^2 (248) = 929.22, p < .001$ and $\chi^2/df = 929.22/248 = 3.75$. The NNFI = 0.86 CFI = 0.89 RMSEA = 0.084. This model did not fit the data as well as the first-order model representing the just the first-order factors, $\chi^2 (246) = 809.22, p < .001, \chi^2/df = 3.29$, NNFI = 0.89, CFI = 0.91, RMSEA = 0.076. Although the indices were considered only marginally acceptable according to Hu and Benler (1999) and Browne and Cudeck (1993), they were in line with what others have found (Feltz et al., 1999; Lee et al., 2002; Myers et al., 2005; Sullivan & Kent, 2003). The means, standard deviations, and frequency distribution for each item are presented in Table 1 and means and standard deviations for the CES subscales are presented in Table 2.

Sources of Coaching Efficacy

The sources of coaching efficacy included coaching experience, athlete ability, improvement of athletes over time, years of playing experience, perceived support from the organization, athletes, and community support. Pearson correlations between the

sources and the CES subscales are contained in Table 3. To determine the predictive strength of the sources on the subscales of coaching efficacy, the sources and the CES subscales were entered into a MMR analysis. Results indicated that the overall multivariate test was significant Wilk's; $\lambda = 0.46$, $F(4, 329) = 96.48$, $p < 0.001$. The univariate regression analyses showed that all four equations were significant ($p < .001$), for motivation, strategy, technique, and character building [$F_s(8, 332) = 10.34, 17.46, 20.71, 5.25$, respectively]. A summary of the MMR is presented in Table 4 along with the standardized beta coefficients for the predictor variables. As can be seen from the table, perceived ability, parent support, and community support did not predict any of the dimensions, and organizational support was a weak predictor of technique efficacy only. In contrast, perceived team improvement and athlete support were significant predictors of motivation, strategy, and technique efficacy. Years of playing experience was a significant predictor of strategy and technique efficacy, but not motivation and character building. The only significant predictor of character building efficacy was athlete support.

In addition to the regression procedures, the relationship between the two perceptual sets (i.e. sources and dimensions of coaching efficacy) was examined via canonical correlation analysis (see Table 5). Canonical correlation was used because the coaching efficacy model specifies that a set of sources are related to a set of coaching efficacies (first-order dimensions). Two significant canonical relationships were observed between the two perceptual sets ($R_{c1} = .59$, $R_{c1}^2 = .35$; $R_{c2} = .37$, $R_{c2}^2 = .13$). However, the redundancy index that measured the amount of variance predicted in the coaching efficacy dimensions from the set of predictors was 19.52% for the first canonical

relationship and only 3.24% for the second canonical relationship. Therefore, only the first canonical relationship was interpreted.

Canonical loadings were examined to determine the variables that most contributed to the multivariate relationship between the two sets. Inspection of the canonical loadings in Table 5 shows that for the sources of coaching efficacy, all of them were important contributors to the relationship (i.e., loadings were greater than .30) with playing and coaching experience contributing most to the relationship. The loadings for the coaching efficacy dimensions also indicate that all dimensions were important contributors to the canonical set and that technique and strategy dimensions were the most important. Thus coaches who perceived higher ability and improvement in their athletes, who perceived greater support, and who had more experience in playing and coaching were more confident in their coaching, especially in terms of the technique and strategy aspects.

T-test results revealed a significant difference between ice hockey coaches and all other sports coaches on most efficacy sources (Table 8) and all efficacy dimensions (Table 9). Efficacy sources of parental support $t(388) = -1.62, p < .05$, community support, $t(384) = -5.23, p < .05$, organization support, $t(387) = -1.79, p < .05$, and athlete support ($t(386) = -1.32, p < .05$) were found to be significantly different. For efficacy dimensions, significance was found in all four dimensions; motivation efficacy ($t(382) = -5.83, p < .05$), game strategy efficacy ($t(384) = -7.40, p < .05$), character building efficacy ($t(389) = -5.12, p < .05$), and teaching technique ($t(388) = -7.88, p < .05$). Results for both efficacy sources and efficacy dimensions ice hockey coaches had lower

results than all other coaches. These results indicate the findings in this study may only generalize to ice hockey coaches.

CHAPTER 5

DISCUSSION

The purpose of this study was to assess validity of the CES for use with youth sport coaches and to examine the influence of proposed sources of coaching efficacy on dimensions of coaching efficacy beliefs. Considering the results as a whole, there is evidence to support the use of the CES as a multidimensional scale to assess the coaching efficacy of youth sport coaches. The fit indices, though considered marginal by some psychometricians (Hu & Bentler, 1999), are slightly better than what previous studies have found and are consistent with those studies (Feltz et al., 1999; Lee et al., 2002; Myers et al., 2005; Sullivan & Kent, 2003). Furthermore, Marsh, Hau, and Wen (2004) have argued that Hu and Bentler's proposed cut-off values for testing goodness of fit indices were intended to be guidelines rather than 'golden rules' such as those used in traditional hypothesis testing. Given the consistency of fit indices across studies, different sample characteristics, and sample sizes, and given the predictive validity of the measure, continued use of the CES is reasonable with youth sport coaches as well as high school and Division II and III collegiate coaches.

In addition, Myers et al. (2005) recommended the use of a condensed scale of the CES because their analysis of the original rating scale structure indicated that coaches were being asked to distinguish between too many levels of coaching efficacy. The present study was the first to test the factor structure of the CES using a condensed, 5-category scale (i.e., no, low, moderate, high, and complete confidence). Based on Linacre (2002), Myers et al. (2005) indicated that a category (e.g., no or low) should attract at least 10 observations at the item level for testing a model's fit against the data. Results

showed, however, that very few coaches reported having no confidence on any of the items. In speculating, once coaches have made the decision to take a coaching position, even a volunteer one, they perceive that they have at least some confidence to do the job. As Feltz et al. noted, individuals would probably not enter or remain in coaching if they had little or no confidence in their coaching ability. Thus, a 4-category scale that excludes a “no confidence” category may be more appropriate for future research using the CES with youth sport coaches.

In addition to few responses in no confidence category, the mean values for each of the four dimensions were around the ‘high confident’ category. These values are consistent with previous research (Feltz et al., 1999). The high confidence responses do not mean that these coaches were necessarily highly qualified to coach, just that they were confident.

Sources of Coaching Efficacy

In terms of the most salient sources of efficacy information for youth sport coaches, the canonical correlation analysis revealed that coaching and playing experience were most strongly associated with technique and strategy efficacy beliefs. In terms of sources of coaching efficacy, the results support previous findings regarding coaching experience as a strong and consistent predictor of coaching efficacy across all levels of coaching (Feltz et al., 1999; Marback, Short, Short, & Sullivan, 2004; Myers et al., 2005; Sullivan et al., in press).

Playing experience also was a strong predictor of coaching efficacy. Prior to Sullivan et al. (in press), studies had not included playing experience as a possible source

of coaching efficacy. Sullivan et al. found that playing experience (controlling for coaching experience) was a significant predictor of game strategy efficacy but not other efficacy dimensions. For youth sport coaches, who, on average, have relatively less coaching experience than high school and college coaches, playing experience may provide the sport-specific knowledge of the skills, rules, vocabulary, and strategy of how the game is played as a basis for coaching efficacy beliefs. Unfortunately, playing experience may also be masked as expertise in coaching and coaches may rely on “accepted knowledge” of coaching from their own experience rather than knowledge based on pedagogy (Rushall, 2004). As stated previously, the youth sport coaches in this study considered themselves, on average, to be highly confident on all four dimensions even though 38% had less than 2 years of coaching experience. It is possible that as coaches gain more coaching experience, playing experience becomes less important. Future longitudinal research is needed to help tease out the strength of these predictors. Future research also should examine the relationship between coaching efficacy and actual coaching competence to determine if coaches become more accurate in their self-assessments as they gain coaching experience.

Although the results support previous findings (e.g., Feltz et al., 1999; Myers et al., 2005) in that all predictors and efficacy dimensions were strong contributors to the relationship, perceived team improvement and athlete support were unique significant predictors of coaching efficacy among youth sport coaches. Myer et al. found that, with collegiate coaches, the strongest predictor of coaching efficacy was perceived team ability. As Myer et al. noted, perhaps the major influence of perceived team ability has to do with the more competitive nature of collegiate sports compared to youth sports. In

youth sports, seeing one's athletes improve in their playing ability appears to provide success information that the coach is doing a good job of teaching the skills and strategies of the game.

As for athlete support, it was the strongest form of social support in predicting coaching efficacy, especially motivation and character building efficacy. Surprisingly, support from parents was not as strong in informing coaches' efficacy beliefs. Perhaps the support from athletes is more visible, immediate, and positive with athletes at these ages. Young athletes are more apt to display their affections toward their teammates and coaches (i.e. hugging, laughing, etc.). When they display positive actions coaches might infer their athletes are learning positive character building skills. If an athlete displays negative actions (i.e. yelling, hitting, etc.) the coach might then infer the athlete is not developing character building skills. Additionally, because the emphasis is more on fun and skill development and less on winning and elite performance, parents may not be as vocal about the coach's ability as they might be with high school, elite, or college-level play.

Furthermore, in terms of salient dimensions of coaching efficacy, it makes sense that volunteer youth sport coaches would find technique and game strategy efficacy to be more influenced by efficacy sources because these dimensions represent the basics of the sport. Motivation and character building are efficacy dimensions that may become more salient with more experience and higher level coaching. As Feltz, Short, and Sullivan (in press) noted, the relationships between the sources of coaching efficacy and the dimensions may vary by coaching level. The relationship between years of coaching/playing and Technique and Game strategy may be more important at the youth

level; years in coaching and Game strategy and Motivation efficacy may be more important at the high school level; and, the association between perceived team ability and Motivation and Character building efficacy may be more important at the college level. A systematic study of these relationships by coaching level within the same sports awaits further research.

Although the results suggest that youth sport coaches rely most strongly their own playing and coaching experience for their confidence, the best methods to improve their confidence and competence is through coaching education (Woodman, 1993). The empirical literature on coaching education as a source of coaching efficacy is small, but consistent. Coaches who have participated in a coaching education program are more confident in all aspects of coaching efficacy compared to either a control group of coaches who have not taken a course and/or their pre-course confidence levels (Campbell & Sullivan, 2005; Lee et al., 2002; Maleté & Feltz, 2000). Coaching education programs may be especially important for improving motivation and character building competence and confidence because coaches may not get this information as readily from playing and coaching experience alone. However, the coaching education backgrounds of the coaches in this study were not assessed.

Intuitively it is important for fundamental skills of the sport to be taught to young athletes but neglecting skills that build character in young athletes is a detriment to their overall development. Sport can be miss-characterized as an activity that innately teaches character to all participants. Sport should be looked at as a tool that, when used properly, can be potent and effective to teach basic character principles. Unfortunately beginning level coaches may not take into consideration the need for conscious modification of their

coaching to use sport as a tool rather than assuming that the sport in and by itself will teach the young athletes character. Coaching education can bring awareness to coaches of this problem and assist them in becoming better coaches in this area.

Limitations

A few limitations were present in this study. Due to convenience sampling there was an over sampling of ice hockey coaches. About 73% of the participants in this study were coaches recruited at a USA Ice Hockey coach's clinic. This was a concern about oversampling because USA Ice Hockey typically has more education requirements of its coaches than other youth sports programs. The over representation of hockey coaches may have inflated the efficacy results. However, although there were significant differences between the hockey and all other coaches on most of the descriptives and CES dimensions, the hockey coaches had significantly less playing experience, had significantly less social support from parent, community, the organization, and athletes, and had significantly lower ratings of efficacy on CES dimensions than did all other sport coaches.

Also, because ice hockey traditionally attracts male coaches very few respondents were females. One of the questions this study sought to answer was what dimensions of the CES were strongest amongst male and female coaches? This question was not answered due to the underwhelming number of female participants.

Another limitation was the non-inquiry of coaching education background of the participants. Many of these coaches may have gone through coaching education courses giving them a solid foundation of awareness and knowledge of coaching issues.

Compared to others without similar coaching education backgrounds these coaches would be predicted to have higher coaching efficacy.

Future Directions

Although this thesis examined the antecedents of the Feltz et al. (1999) model with youth sport coaches, it did not investigate the consequences of the coaching efficacy dimensions. Feltz et al. hypothesized that coaches with higher efficacy scores would use more positive coaching, have more players satisfied with their playing experience, have higher winning percentages, and higher efficacy levels among athletes and teams. Most of these outcomes would be appropriate to study at the youth level as well as high school and college levels. However, given that winning is not usually the most emphasized aspect of successful coaching at the youth level, future research should examine additional outcomes of coaching efficacy that are more appropriate to youth sports. For instance, do young athletes of high efficacy coaches improve more in their skills over the course of a season than athletes who play for low efficacy coaches? Do young athletes of high efficacy coaches self-report having more fun than those who play for low efficacy coaches?

Secondly, because sportsmanship and fair play are usually at the forefront of purposes of youth sports, future research should examine the explicit relationships between sources and consequences of CBE. For instance, coaches' character-building efficacy should predict their emphasis on sportsmanship in their instructions to athletes and their role modeling with referees, which should, in turn, predict their athletes'

sportsmanship attitudes and behavior. Youth sport coaches also might be interviewed to explore what they perceive as the most potent sources of CBE.

APPENDICES

APPENDIX A

Coaches Background Information Questionnaire

Please check only one answer per question-

1. Your sex: _____(1) Male, _____(2) Female
2. Primary sex of your team: _____(1) Male , _____(2) Female _____(3) co-ed
3. Level/Age group of team coaching. (e.g. U-19, Pee-wee): _____
4. Your ethnic affiliation: _____(1) Caucasian,
_____ (2) African American
_____ (3) Native North American Indian
_____ (4) Asian American
_____ (5) Hispanic
_____ (6) Other _____
5. Your Age: _____
6. Educational Background: (check highest level completed)
_____ (1) Did not complete High School _____(2) High School graduate
_____ (3) Less than 2 years college/tech _____(4) 2 or more years college
_____ (5) Bachelor's degree _____(6) Some Master Level work
_____ (7) Master's degree _____(8) Some Doctoral level work
_____ (9) Completed Doctorate
7. If attended college, what was undergraduate major? _____, Master's
major _____
Doctorate degree? _____.
8. Check the primary sport you coach. **(Please check only one)**
_____ (1) Basketball _____(2) Hockey _____(3) Football
_____ (4) Tennis _____(5) Baseball _____(6) Softball
_____ (7) Swimming _____(8) Golf _____(9) Volleyball
_____ (10) Track and Field _____(11) Wrestling _____(12) Soccer
_____ (13) Cross Country _____(14) Other
9. Total numbers of years coaching this sport _____.
10. Present position. _____(1) Head, _____(2) Assistant
11. Number of years of playing experience in this sport at each level
_____ (1) Youth _____(2) High School
_____ (3) College _____(4) Professional

12. Approximately how many hours per week do you spend involved in fulfilling your coaching duties, planning etc. ? In season _____ Out of season _____

13. Are you paid for your present coaching services? _____(1)NO _____(2) Yes

14. How would you rate the overall ability of the athletes on your team this year? **Poor** **Excellent**
 0 1 2 3 4 5 6 7 8 9

15. How would you rate the overall improvement of your athletes over the course of the season?
 0 1 2 3 4 5 6 7 8 9

16. In comparison with your perception of the ideal youth sports program, how would you rate the support given to you by the parents of your athletes?
 0 1 2 3 4 5 6 7 8 9

17. In comparison with your perception of the ideal youth sports program How would you rate the community support for your team?
 0 1 2 3 4 5 6 7 8 9

18. In comparison with your perception of the ideal youth sports program How would you rate the support given to you by the organization that runs your program?
 0 1 2 3 4 5 6 7 8 9

19. In comparison with your perception of the ideal youth sports program, how would you rate the support given to you by your athletes?
 0 1 2 3 4 5 6 7 8 9

APPENDIX B

Coaching Confidence Questionnaire

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 coach. Rate your confidence for each of the items below. Your answers will be kept completely confidential.

How confident are you in your ability to--

	No Confidence	Low	Moderate	High	Complete
1. help athletes maintain confidence in themselves?	1	2	3	4	5
2. recognize opposing team's strengths during competition?	1	2	3	4	5
3. mentally prepare athletes for game strategies?	1	2	3	4	5
4. understand competitive strategies?	1	2	3	4	5
5. instill an attitude of good moral character?	1	2	3	4	5
6. build the self-esteem of your athletes?	1	2	3	4	5
7. demonstrate the skills of your sport?	1	2	3	4	5
8. adapt to different game/meet situations?	1	2	3	4	5
9. recognize opposing team's weakness during competition?	1	2	3	4	5
10. motivate your athletes?	1	2	3	4	5
11. make critical decisions during competition?	1	2	3	4	5
12. build team cohesion?	1	2	3	4	5
13. instill an attitude of fair play among your athletes?	1	2	3	4	5
14. coach individual athletes on technique?	1	2	3	4	5
15. build the self-confidence of your athletes?	1	2	3	4	5
16. develop athletes' abilities?	1	2	3	4	5
17. maximize your team's strengths during competition?	1	2	3	4	5
18. recognize talent in athletes?	1	2	3	4	5
19. promote good sportsmanship?	1	2	3	4	5
20. detect skill errors?	1	2	3	4	5
21. adjust your game strategy to fit your team's talent?	1	2	3	4	5
22. teach the skills of your sport?	1	2	3	4	5

23.	build team confidence?	1	2	3	4	5
24.	instill an attitude of respect for others?	1	2	3	4	5

APPENDIX C
INFORMED CONSENT

Coaching-Efficacy Study Coaches Consent Form

You are being asked to participate in a study conducted by graduate student Nathan Roman under the supervision of Deborah Feltz, Ph.D., from Michigan State University, title "EXTENDING VALIDITY EVIDENCE FOR THE COACHING EFFICACY SCALE WITH VOLUNTEER YOUTH SPORT COACHES." The purpose of this study are to examine structural validity of the CES (Feltz et al., 1999) on youth sport coaches using a condensed rating scale structure. It is believed that the project will have practical applications within coaching education.

As part of this research, you will be asked to complete a questionnaire about your coaching confidence. The questionnaires (approximately 10 minutes to complete) will contain items specific to coaching confidence and behaviors.

Your participation in this study will remain private, confidential, and anonymous, no one except the principal investigators will have access to these responses or to participation records. After participating, you will not be able to be identified. At the end of the project, responses will be presented at the group level to ensure the confidentiality of individual responses, and coaches will not be identified. Group-based findings will be made available to those who are interested. Your privacy will be protected to the maximum extent allowable by law.

Your participation in this study would be greatly appreciated. However, please know that you may refuse to participate or withdraw from the project at any time and without penalty. You may also refuse to answer any specific question. If you would like to participate, please sign this form and return it to the investigators.

If you have any question concerning this study, please contact Dr. Deborah Feltz, at 517.355.4732 [dfeltz@msu.edu] or Nathan Roman at 517.432.7121 [romannat@msu.edu]. Additionally, if you have any questions or concerns regarding your rights as a study participant, or are dissatisfied at any time with any aspects of this study, you may contact-anonymously, if you wish- Peter Vasilenko, Ph.D., Chair of the University Committee on Research Involving Human Subjects (UCRIHS) by phone: 517.355.2180, fax: 517.432.4503, email address: ucrihs@msu.edu, or regular mail: 202 Olds Hall, East Lansing, MI 48824.

Thank you for your time and cooperation,

Dr. Deborah Feltz, Principal Investigator

Date

Nathan Roman, Graduate Student

Date

I, _____, have been informed of and voluntarily agree to participate in the above-mentioned study.

Signature

Date

APPENDIX D
IRB APPROVAL

APPENDIX E TABLES

Table 1**Means, standard deviations and frequency of response for each item.**

Item	M	SD	Frequency per Category of Confidence Response					
			No Response	Zero	Low	Moderate	High	Complete
ME 1	3.99	0.62	0	0	1	94	308	89
ME 3	3.53	0.77	1	3	25	232	180	51
ME 6	4.28	0.62	1	0	1	47	274	169
ME10	4.03	0.71	1	0	10	99	271	111
ME12	3.89	0.76	2	1	11	141	239	98
ME15	4.08	0.66	4	0	5	75	292	116
ME23	4.09	0.71	2	1	4	85	267	133
GS2	3.67	0.84	3	2	29	171	212	75
GS4	3.65	0.85	2	1	38	172	200	79
GS8	3.56	0.84	3	1	37	212	174	65
GS9	3.68	0.85	2	2	28	174	200	86
GS11	3.61	0.81	1	2	33	181	213	62
GS17	3.64	0.79	0	2	22	196	206	66
GS21	3.59	0.83	1	2	35	194	193	67
TE7	3.79	0.98	0	1	42	156	151	142
TE14	3.79	0.87	0	1	31	140	214	106
TE16	3.79	0.74	1	1	10	152	256	72
TE18	4.13	0.71	0	0	4	77	266	145
TE20	3.70	0.80	4	1	22	171	213	81
TE22	3.84	0.90	2	2	29	136	206	117
CB5	4.36	0.63	1	0	0	44	238	209
CB13	4.29	0.68	0	0	5	46	241	200
CB19	4.52	0.59	2	0	0	25	195	270
CB24	4.41	0.63	0	0	2	38	219	233

Table 2**Descriptive statistics for the proposed sources of coaching efficacy, coaching efficacy dimensions, and team variables. (*N* = 394)**

	M	SD	Minimum	Maximum
Total coaching efficacy	3.92	0.53	1.92	5.00
Motivation efficacy	3.98	0.54	2.00	5.00
Character building efficacy	4.39	0.52	3.00	5.00
Game strategy efficacy	3.63	0.68	1.14	5.00
Technique efficacy	3.84	0.67	2.00	5.00
Support form community	6.34	1.83	1.00	9.00
Support from parents	6.67	1.68	2.00	9.00
Support from organization	6.75	1.83	1.00	9.00
Support from athelets	7.25	1.29	2.00	9.00
Perceived athlete ability	5.55	1.50	1.00	9.00
Perceived athlete improvement	6.69	1.34	2.00	9.00
Years coaching	3.60	4.11	0.00	30.00
Years playing experience	5.06	5.46	0.00	20.00

Table 3**Correlations of sources with total coaching efficacy and dimensions of coaching efficacy**

	TCE	ME	CBE	GSE	TE
Support from community	.24	.23	.22	.17	.22
Support from parents	.30	.30	.23	.23	.23
Support from organization	.27	.25	.21	.21	.22
Support from athletes	.39	.40	.32	.31	.32
Perceived athlete ability	.25	.26	.13	.24	.13
Perceived team improvement	.31	.31	.20	.25	.20
Years playing experience	.32	.09	.10	.34	.10
Years coaching experience	.33	.23	.12	.35	.12

Table 4

Summary of the MMR Analysis and Standardized Beta Coefficients for Predictors CES Efficacy ($N = 394$)

Predictor Variable	Motivation	Standardized Beta Coefficients for		
		Coaching dimensions		
		Strategy	Technique	Character
Perceived ability	-.004	.07	-.02	-.09
Team improvement	.16**	.14*	.19**	.11
Parental support	.09	-.003	.05	.03
Community support	-.36	-.04	-.008	.06
Organizational support	.07	.07	.12*	.05
Athlete support	.22**	.11	.04	.21**
Years of coaching	.15**	.27**	.19**	.04
Years of playing	.03	.30**	.41**	.06
Univariate Fs	10.34**	17.46**	20.71**	5.25**
R ²	.20	.30	.33	.11
Adjusted R ²	.18	.28	.32	.09

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

Table 5**Summary of the Canonical Correlation Analysis Between Sources of Coaching Efficacy and Coaching Efficacy Subscales**

Variables	Standardized Canonical Loadings	
Sources		
Community Support	.31	
Parental Support	.39	
Organizational Support	.37	
Team Support	.47	
Perceived Team Ability	.31	
Perceived Team Improvement	.43	
Years Coaching	.58	
Years Playing Sport	.75	
Percentage of Variance		22.32%
Redundancy		7.89%
Coaching efficacy subscales		
Motivation	.56	
Game strategy	.90	
Technique	.97	
Character Building	.40	
Percentage of Variance		55.27%
Redundancy		19.52%
Canonical correlation	.59	

Table 6
Descriptive Information Years of Coaching and Playing Experience

Sport	n	Yrs Coaching				Yrs Playing			
		X	SD	Min	Max	X	SD	Min	Max
Soccer	16	6.13	8.93	2	15	2.13	5.82	0	12
Volleyball	13	4.23	4.90	1	16	5.46	4.39	0	14
Football	5	5.67	3.27	1	8	2.00	1.79	0	6
Basketball	69	4.93	5.55	0	30	4.90	4.86	0	17
Ice Hockey	289	3.17	3.60	0	26	5.07	5.53	0	20
Softball	1	5.00	0	5	5	6.00	0	6	6
Other	1	1.00	0	1	1	6.00	0	6	6

Table 7
Descriptive Information for Hours of Preparation In-Season and Out-of-Season.

Sport	n	In-Season Preparation (Hours per Week)				Out-of-Season Preparation (Hours per Week)			
		X	SD	Min	Max	X	SD	Min	Max
Soccer	16	14.50	9.13	5	30	9.29	9.19	0	28
Volleyball	13	11.92	6.30	4	20	1.15	3.00	0	10
Football	5	13.80	1.64	12	15	4.00	1.00	3	5
Basketball	69	6.99	8.40	0	50	1.99	1.99	0	30
Ice Hockey	289	6.45	10.89	0	40	0.84	2.20	4	20
Softball	1	15.00	0.00	15	15	10.00	0.00	10	10
Other	1	10.00	0.00	10	10	5	0.00	5	5

Table 8
Descriptive Comparisons Of Efficacy Sources Between Ice Hockey Coaches and Other Sport Coaches

	N	X	SD	t	df	p< .05
In-Season Prep (Hours/Week)						
Hockey	288	6.45	10.89	-2.24	387	*
Other Sports	101	9.11	8.34			
Out-Season Prep (Hours/Week)						
Hockey	289	0.84	2.20	-5.41	389	*
Other Sports	102	3.09	6.06			
Years Coached						
Hockey	288	3.17	3.60	0.01	392	
Other Sports	104	4.67	5.11			
Years Played						
Hockey	289	5.07	5.53	0.18	392	
Other Sports	105	4.29	4.91			
Perceived Athlete Ability						
Hockey	288	5.51	1.45	-0.69	387	
Other Sports	101	5.63	1.65			
Perceived Athlete Improvement						
Hockey	284	6.63	1.29	-1.40	382	
Other Sports	100	6.85	1.44			
Perceived Parental Support						
Hockey	289	6.45	1.59	-1.62	388	*
Other Sports	101	7.31	1.62			
Perceived Community Support						
Hockey	285	6.06	1.74	-5.23	384	*
Other Sports	101	7.12	1.75			
Perceived Organization Support						
Hockey	288	6.50	1.76	-1.79	387	*
Other Sports	101	7.47	1.72			
Perceived Athlete Support						
Ice Hockey	287	7.08	1.25	-1.32	386	*
Other Sports	101	7.71	1.28			

Table 9
Descriptive Comparisons of Efficacy Dimensions Between Ice Hockey Coaches and Other Sport Coaches

	N	X	SD	t	df	p < .05
Motivation Efficacy						
Ice Hockey	280	3.89	0.52	-5.83	382	*
Other Sports	104	4.24	0.52			
Game Strategy Efficacy						
Ice Hockey	286	3.49	0.64	-7.40	384	*
Other Sports	100	4.03	0.60			
Character Building Efficacy						
Ice Hockey	286	4.32	0.51	-5.12	389	*
Other Sports	105	4.61	0.47			
Teaching Technique Efficacy						
Ice Hockey	285	3.69	0.65	-7.88	388	*
Other Sports	105	4.25	0.54			

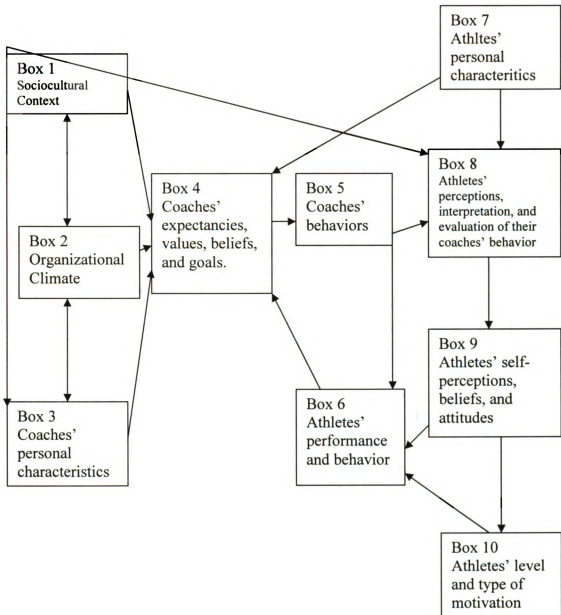


Figure 1. Horn's Model of Coaching Effectiveness

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