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The predictability of demographic characteristics on coaching efficacy

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ABSTRACT

Present study aimed to evaluate the predictability of demographic characteristics on coaching efficacy. Coaching efficacy was 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). Casual research design, fieldwork data collection, and descriptive and inferential (structural equation modeling) statistical method were applied for current study. Coaches (soccer, martial art, swimming, and weight lifting) held valid coaching certificate and had, at least, one year of coaching experience consisted the population. Sampling executed based on optimum participant needed for structural equation modeling (453 coaches after drops). Results showed that most of the coaches (213 coaches) had championship records in national level and 9 percent of them raised athletes who reached the Olympic or international medals. Moreover, years of coaching and playing experience affected the coaching efficacy. On the other hand, coach's education and prior success had no significant effects on coaching efficacy.

Key words: self efficacy, coaching efficacy, demographic characteristics

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INTRODUCTION

Coaching efficacy is the extent to which sport coaches believe they have the capacity to influence the learning and performance of their athletes. Two forms of coaching efficacy have received attention, and it is essential to differentiate between the two. One relates to coaches' confidence in their own abilities to facilitate the learning and development of their athletes, and the other relates to coaches' confidence in their players' abilities to perform given tasks [6, 8]. In this study, we have concentrated on earlier type which deals with the degree that coaches believe in their own capabilities.

Feltz, Chase, Moritz, and Sullivan (1999) developed a conceptual model for coaching efficacy which was based upon theorizing by Bandura (1977) as well as Denham and Michael's (1981) model of teacher efficacy, and it subsequently resulted in Coaching Efficacy Scale (CES). They theorized four dimensions (game-strategy efficacy, motivation efficacy, technique efficacy, and character-building efficacy) for this scale which were considered to be influenced by specific antecedents of coaching efficacy. It is also been suggested that dimensions of self efficacy will affect outcomes related to the coaching behavior [2, 6].

Feltz, Short, and Sullivan (2008) described that the concept of coaching efficacy comprised four dimensions: game strategy efficacy was defined as the confidence coaches have in their ability to coach during competition and lead their team to a successful performance. Motivation efficacy was defined as the confidence coaches have in their

ability to affect the psychological skills and states of their athletes. Technique efficacy was defined as the belief coaches have in their instructional/ diagnostic skill. Lastly, character building efficacy involved the confidence coaches have in their ability to influence positive attitude toward sport in their athletes [7].

In accordance Bandura theory (1997), coaches' efficacy expectations would be influenced by specific antecedent. Coaches' past experience of mastery and success, coaching experience, athletes' skill levels and social support from the school and community are among the predictors of coaching efficacy. Myers et al. (2008) found that variables such as team ability, social support from the athletes' parent and community, coaches' career winning percentage, and years of experience as head coach are significant sources of coaching efficacy [13].

In present study, we have tried to examine the anticipation ability of some demographics like coaching education, previous experience and prior success on coaching efficacy. Feltz and colleagues (1999) at the initial study on their self efficacy model, which implemented on high school male basketball coaches, found that years of coaching and past winning percentage, alongside some other factors, have significant predictability on dimensions of coaching efficacy and years of coaching experience is one of the strongest predicators of coaching efficacy [5, 7]. Marback and colleagues (2005) found slightly different result using coaching preparation, coaching experience, won/lost record, and gender as predicators of coaching efficacy. Coaching experience was the strongest predictor of three of four dimensions: game strategy, motivation, and character building efficacy [7].

Related to this field of research Shields (2002) investigated the sources and outcomes of coaching efficacy model. Result showed that winning percentage significantly was predicted by coaching efficacy. In other investigation Kavussanu and colleagues (2008) indicated that, years of coaching experience positively predicted technique coaching efficacy of basketball coaches and the mismatch in sex between athletes and their coaches negatively predicted perceived motivation and character building coaching effectiveness [9]. Moreover, Sullivan and colleagues (2012), using structural equation modeling, revealed that coach education significantly affected the multidimensional construct of coaching efficacy [15].

MATERIALS AND METHODS

The statistical sample of study had consisted of 453 Iranian coaches in four different sports (soccer, swimming, martial arts and weight lifting), who had valid certificate for coaching and, at least, one year experience in coaching. According to optimum number of participant needed for surveying in structural equation modeling method [14], (5 to 10 participants for each research variable), the researches of present study determined that 550 coaches should take part in this investigation; But after data gathering revealed that some of questionnaires were not completely filled and, also, few participants recognized ineligible for study, so, the real sample number reduced to 453 participants.

Researcher made demographic characteristics questionnaire and coaching efficacy scale (CES) have been applied in this survey. Eight academic experts confirmed the validity of demographic characteristics questionnaire and, also, pilot study showed acceptable reliability according to internal consistency measured by Cronbach's alpha coefficient (0.81). Demographics questionnaire consists of three questions about coach's education, five questions about previous experience and two questions about prior success. More over there are three distinctive items in demographic questionnaire asking about gender, age and sport field of coaches.

Feltz, Chase, Moritz and Sullivan (1999) developed a model and a questionnaire to measure the confidence of coaches in their capabilities in affecting the learning and performance of their athletes. Coaching efficacy scale (also known as coaching confidence questionnaire) divided to four dimensions: game strategy efficacy, motivational efficacy, technique efficacy and character building efficacy. Tsorbatzoudis and et al (2003) conducted a survey to examine the psychometric properties of the Coaching Efficacy Scale. In Tsorbatzoudis' survey a first-order confirmatory factor analysis supported the basic factorial structure of the scale and examination of a higher order model of an overall coaching efficacy factor showed satisfactory fit, using second-order confirmatory factor analysis. Moreover, the scale showed satisfactory Cronbach of .82 and 30-day test-retest reliability of .73 [18, 19]. Sullivan et al (2012) reported that "Previous studies support the validity, reliability, and factor structure of this scale (Feltz et al., 1999; Myers et al., 2008)" [15].

In present study, descriptive statistics were applied for describing the main features of collected data and summarize the sample measures like central tendency and measures of variability or dispersion. In inferential part statistical analyze these methods were used: Kolmogorov-Smirnov test to confirm normal distribution of gathered data, two sample Student's t-test to determine if two sets of data in gender factor are significantly different from each other, analysis of variance (ANOVA) to analyze the differences between means of dissimilar age and sport groups, and finally, Structural equation modeling (SEM) for testing and estimating causal relations of coaching education, previous experience and prior success with coaching efficacy. Moreover, LISREL 8.80 and SPSS 14 used as statistical softwares.

RESULTS AND DISCUSSION

The demographic characteristics of samples are presented in Table 1. The frequency of participants in gender factor is almost equal and most of coaches had been 20 to 40 years old (345 coaches). The most frequent sport was soccer and the least one had been weight lifting. Table 2 shows the result of two sample t-test for gender differences and ANOVA for age and sport group's differences in coaching efficacy. The result of two sample Student's t-test on coaching efficacy and between male and female coaches shows that significance level of 0.058. Moreover analysis of variance on age and kind of sport factors resulted in significance of 0.102 and 0.9, respectively.

Table 1. Demographics

Sex			Age			Sport		
groups	frequency	percentage	groups	frequency	percentage	groups	Frequency	percentage
male	245	54.1	20-29	183	40.4	soccer	172	38
female	208	45.9	30-39	162	35.8	Martial arts	124	27.4
			40-49	66	14.6	Swimming	109	24.1
			50-59	30	6.6	Weight lifting	48	10.5
			60…	12	2.6			

Table 2. significance of variables

variable	gender	Age	Sport
Coaching efficacy	0.058	0.102	0.9

The education levels of coaches have been shown in table 3. Mostly, coaches had diploma (high school graduating degree) or bachelor degree. Moreover 258 coaches (57%) had studied in physical education and sport science and 195 coaches (43%) in other fields.

Table 3. education level of coaches

level	Frequency	Percentage
diploma	206	45.5
BSc	137	30.2
MSc	86	19.0
PhD	24	5.3

Table 4 is about playing and coaching years of experience. Most of coaches have at least had 6 to 10 years experience in playing and also coaching. Another data gathered in this area of demographic characteristics was club, institutional, and national years of coaching experience. For example, 83 coaches (18.3%) had between 6 to 10 years of experience in coaching sport clubs; or in institutional coaching, the records of 220 coaches (48.6%) were between 1 to 5 years; or as an instance, 341 coaches (75.3%) had no experience of national coaching at all. Highest championship level of coaches had been measured in order to examine the level prior success of coaches (table 5).

Table 4. playing and coaching records

years	Playing		Coaching	
	frequency	percentage	frequency	Percentage
0-5	49	10.8	185	40.8
6-10	169	37.3	167	37.1
11-15	133	29.4	47	10.4
15-20	82	18.1	18	4.0
20…	20	4.4	35	7.7

Table 5. highest championship level of coaches

level	Frequency	Percentage
Olympic, world, continent	32	7.1
international	81	17.9
national	213	47
state	115	25.4
unanswered	12	2.6

Some statistical characteristics of dimensions of coaching efficacy are shown in table 6. Moreover the total Cronbach's alpha of self efficacy was equal to 0.892 and significant amount of self efficacy obtained from Kolmogorov-Smirnov normal distribution test was 0.989 which shows normal distribution.

Table 6. scores of self efficacy dimensions

variables	min	max	mean	SD	Cronbach's alpha	Significant coefficient (SIG)	t-statistics (T)
Game strategy efficacy	1	5	2.9014	0.73118	0.810	0.0004	-2.870
Motivational efficacy	1	5	3.3271	0.77734	0.805	0.001	8.956
Technique efficacy	1	5	2.6274	0.83239	0.781	0.001	-9.528
Character building efficacy	1	5	2.9007	0.70559	0.761	0.003	-2.996

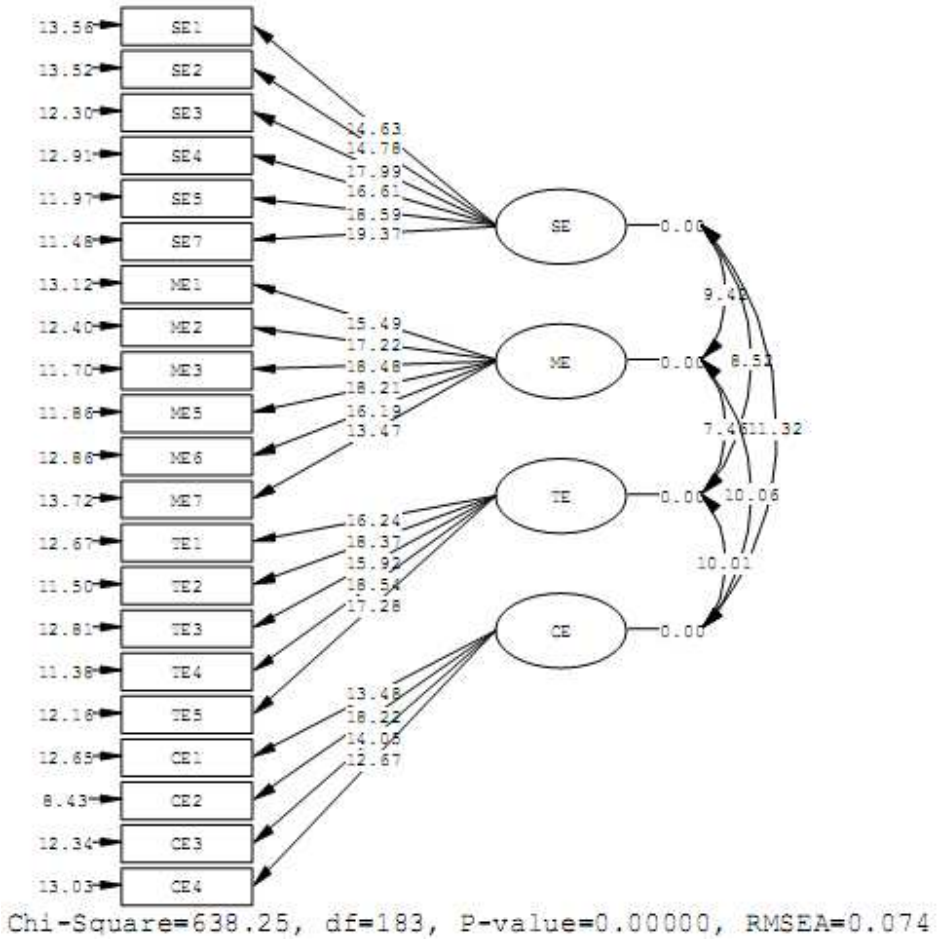
In figure 1, LISREL output revealed the significance amount of each questions of coaching efficacy scale and relations of dimensions with another obtained of confirmatory factor analysis statistical method which is used to determine the reliability of coaching efficacy scale. Also, statistical analysis about the questionnaire showed following amounts:

Chi square: 638.25 (which high Chi square was, maybe, because of high number of participants), degree of freedom (df): 183, the root mean square error of approximation (RMSEA): 0.074, goodness of fit index (GFI): 0.87, adjusted goodness of fit (AGFI): 0.85, and normed fit index (NFI): 0.93. Also, table 7 shows correlation (r) and significant coefficient between dimensions of coaching efficacy.

Table 7. correlation and significant between dimensions

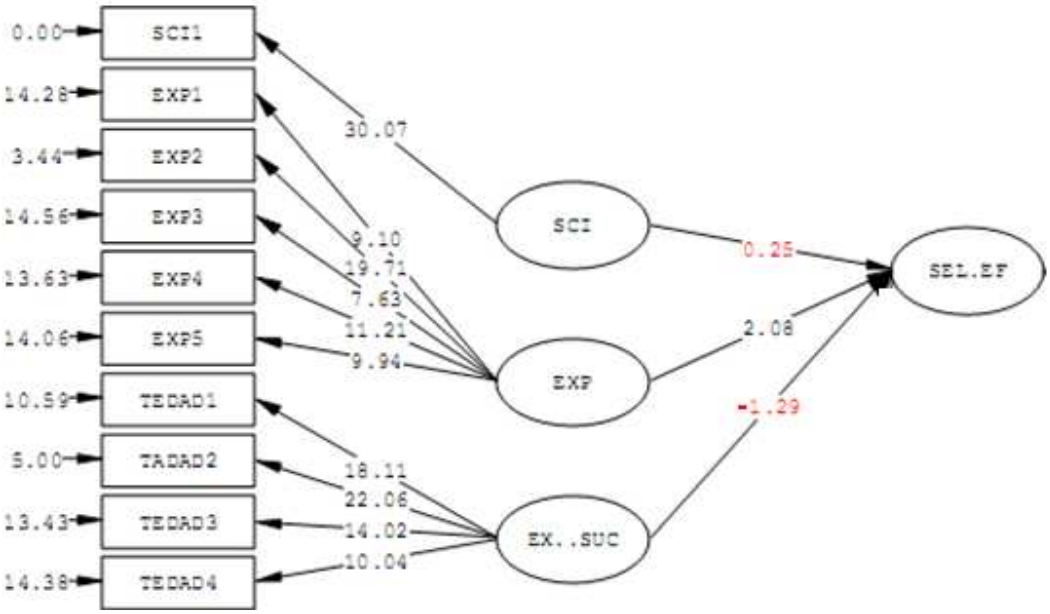
	GSE		ME		TE		CBE	
	r	SIG	r	SIG	R	SIG	r	SIG
Game strategy efficacy (GSE)	1	1	-	-	-	-	-	-
Motivational efficacy (ME)	0.43	9.42	1	1	-	-	-	-
Technique efficacy (TE)	0.40	8.52	0.36	7.46	1	1	-	-
Character building efficacy (CBE)	0.51	11.32	0.47	10.06	0.47	10.01	1	1

Figure 1. LISREL output of coaching efficacy confirmatory factor analysis



Structural equation modeling (figure 2) had been used for testing the hypothesis (demographics effect on coaching efficacy). Result revealed confirmation of null hypothesis about effect of coach's education (SCI) and prior success (EX.SUC) on coaching efficacy, respectively with the significance of 0.25 and -1.29, but null hypothesis about effect of previous experience on coaching efficacy denied, so, previous experience predicted coaching efficacy.

Figure 2. LISREL output of structural equation modeling



CONCLUSION

Demographic characteristics, in the present study, have three subsets: coach's education, previous experience, and prior success. Statistical result that showed that coach's education and prior success have no significant effects on dimensions of coaching efficacy, in order to that, the null hypothesis about these two subsets confirmed. On the other hand, structural equation modeling revealed that previous experiences have effect on coaching efficacy. Feltz et al (1999) examined high school male basketball coaches and found years in coaching, in congruence with current study, significantly predict the dimensions of coaching efficacy [5, 6].

It seems that number of years that coaches have been active in playing and coaching, which called previous experiences, is one of the main and effective factor of predicting coaching efficacy. Reviewing the literature in this area reveals that, almost, most of researches have recognized previous experience as a strong predictor of coaching effectiveness. According to other researches, experiences as a player have not direct effect on coaching efficacy, but once accompanied with acceptable level of coaching experiences could be accounted as an effective factor [7, 17]
One of the potential predictor, which is taken less attention, is coach's education. Having coaching licenses, graduating from physical education and sport science academic programs, and/or level of academic degree are among the subsets of coach's education. In many settings, coaching licenses are only assumed as a permission to work in sport clubs and teams, and developing of coach's abilities during the license courses is not really considered as main goal. However graduating an academic program in physical education and sport science provides valuable information, do not necessarily supply the main requirements on coaching effectiveness [10, 15].

In theoretical framework, prior success has a strong effect on coaching efficacy, inasmuch as it is mentioned as the most powerful predictor of coaching efficacy. The problematic issue about prior success is measuring it. First of all, restricting successful performance of a coach to win and loss records does not properly reflect the coaching efficacy essence. Secondly, since not much reliable documented records usually exist, researchers should trust coach's self reported data which are often biased in this particular matter [11, 12].

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