

Epistemological Belief Differences between Prospective Physical Education Teachers and Coaches With and Without Coaching Experience

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Abstract: Physical education teachers and coaches share similar pedagogical approaches in instructional activities. The philosophical perspective towards the nature of learning, how knowledge is acquired and how learning occurs might affect both teaching and coaching practices. The philosophical perspectives can be gained through formal education, experience or a mixture of both for physical education teachers and sports coaches. Therefore, the main purpose of this study was to examine epistemological differences between physical education teacher education (PETE) and coaching education (CE) students with respect to their educational program and coaching experience. A total of 128 PETE and 130 CE students participated in this study. Epistemological Belief Questionnaire (EBQ) composed of Learning depends on Ability (LDA), Learning depends on Effort (LDE), and Only One Unchanging Truth (OOUT) factors was used to collect data. Two-way MANOVA results indicated no significant interaction effect, but there were significant main effects of an education program on all three factors, and coaching experience on LDA and OOUT factors. PETE students had significantly more developed beliefs in all three factors of EBQ, and participants with coaching experience had significantly more developed beliefs in LDA and OOUT. These differences might be caused by the “scientist to practitioner” approach applied in CE programs in Turkey. Promoting controlled coaching practices and improving cooperative learning opportunities pave the way for creating and sharing knowledge for improving necessary skills as much as developing personal epistemology among prospective sports coaches and physical education teachers.

Keywords: *Coaching philosophy, coaching epistemology, physical education, teacher-coach*

1. Introduction

Epistemology is a key component of philosophy, concerned with the nature and scope of knowledge, and explicated as “individuals’ personal beliefs about the structure of knowledge, the stability of knowledge, and the source of knowledge” (Schommer-Aikins, 2004, p.20). These beliefs are composed of an individual’s views about the nature of knowledge and the process of developing knowledge, or how knowledge is acquired. In this scope, Schommer (1990) highlighted that an individual who has naive personal epistemological beliefs (PEB) perceive that knowledge is simple and learning depends on individuals ability, whereas individuals with sophisticated PEB generally believe that knowledge is ever-changing, complex, tentative and learning is constructed on individuals’ own effort. PEB is an important aspect of the coaching process, as it requires continually adopting and applying various types of knowledge and skills in a successful coaching process (Cushion, Armour, & Jones, 2003).

Epistemology has been noted as a foundation to provide and enable coaches to build their own coaching

knowledge, beliefs, and values (Abraham & Collins, 1998). Because beliefs about knowledge and learning are roots of interrelated decisions made about creation of learning environment for athletes, planning the practice and operation, eventually, these belief and value system towards knowledge, teaching, and learning affect the process of coaching behavior and practice in sport setting (Grecic, MacNamara, & Collins, 2013).

Coaching effectiveness defined as applying professional, interpersonal, and intrapersonal knowledge to improve athletes' connection, character, confidence, and competence (Cote & Gilbert, 2009). Moreover, Cote and Gilbert (2009) also indicated that the structure of knowledge is associated with expertise and effectiveness in the coaching context. PEB and the continuing decisions made based on those epistemological beliefs depicted as epistemological chain and it was previously stated as a reflection of the coaches’ experience and establishment (Grecic & Collins, 2012). The epistemological chain encompasses the sports coach’s planning processes, the creation of training and learning environment, the operational actions and the coach’s assessment performance (Grecic & Collins, 2013). Epistemological chain would help coaches by enabling them to “practicing

a useful framework by which to assess their own and others' actions and behavior" as well as enabling coaches to optimally apply new ideas to their own practice and can be used to direct the search for new coaching knowledge" (Grecic & Collins, 2013, p.151).

Given the importance of how coaching knowledge works, it is crucial to understand the process of shaping PEB for coaches. Thus, sources of knowledge that support coaches to develop their expertise and the process of developing coaching knowledge have become an increasingly popular lens through which to research coaching and talent development. Coaching education can appear through a mix of different structures, such as formal, informal, self-directed, directed, and experiential learning. To illustrate, sources of coaching knowledge were highlighted as coaching education programs, experiences, communication with other coaches and athletes, and experiences gained as athletes (Côté, 2006). Recent studies criticized formal coaching education programs as insufficient for fully meeting the learning needs of coaches in various aspects (Wright, Trudel, & Culver, 2007). Formal coaching education programs offer acquisition learning which enables experts to deliver information to prospective coaches who must acquire and then apply this information in their own settings. This process refrains coaches from learning through experience, which indicates opportunities participating in a number of activities with other individuals. Nash and Sproule (2012) reported that coaches evaluate coaching education programs as ineffective in terms of decision-making, pedagogy, and sport science aspects.

On the other hand, socio-ecological models explained the development of coaching knowledge more extensively. Jones, Armour, and Potrac (2004) indicated that coaching is both a social and individual process, and developing coaching knowledge is embedded in both as well. Stoszkowski and Collins (2016) explained that the process of developing coaching knowledge includes engaging in both formal modes of learning and informal activities. To illustrate, engagement in social interactions which provides experience and opportunities for sharing knowledge about the field is reported as the most common way of acquiring knowledge among coaches (Cushion, 2011). Similarly, peer interactions and real-world practices are effective ways of enhancing the social construction of coaching knowledge (Nash, 2003). MacDonald, Beck, Erickson, and Côté (2016) indicated that coaches' own experiences and peer interactions are the most common source of knowledge among Canadian coaches of athletes with intellectual disabilities. Although the social context is a very powerful source of developing knowledge (Billett & Somerville, 2010), it is not the only source for coaches (Olsson, Cruickshank, & Collins, 2017).

Although physical education teachers and sports coaches have distinctive occupational aims, they share many commonalities such as pedagogical approaches, the background of sport and philosophical perspectives (Konukman et al., 2010). In fact, researchers utilized the

results of studies conducted on the educational context in order to explain how coaches' epistemological belief system affects the learning atmosphere for athletes, as there is a lack of study conducted on coaching context related to PEB (Grecic and Collins, 2013). Similar to coaches, physical education teachers experience a process of forming PEB through formal education. However, these processes are analogous due to differences in formal teacher and coaching education programs. Moreover, some of the prospective physical education teachers and coaches find the opportunity to experience the coaching process, which enables them to develop their pedagogical approaches and teaching philosophies. Different types of knowledge developing processes and the mix of these processes, as a source of knowledge, might be related to the quality of outcomes among athletes and students through differentiating components of the integrative definition of coaching effectiveness. The main purpose of this study was to examine the epistemological belief differences between prospective physical education teachers and coaches who have varied educational background encompasses different subjects, and experiences in terms of coaching athletes. Based on the aim of this study, the following research question was investigated: Do educational programs and coaching experience affect the PEB in an interactive and univariate way among prospective physical education teachers and coaches?

2. Method

2.1. Procedures

A descriptive survey model was implemented for this study. Directors of the physical education and teaching education departments and coaching education departments from different universities received proper information and invitation. After all, departments agreed to participate in this study, students of the physical education teacher program and coaching education program were then informed about the purpose of the study and invited to complete the survey. The dependent variables of this study were PEBs of the participants, while independent variables were education program and coaching experience. University Ethical Committee approved this study. All participants provided informed consent forms prior to the study.

2.2. Participants

A total of 258 students (female $n = 94$, male $n = 164$) in the faculty of sports sciences voluntarily participated in this study, and 128 of the students were in the PETE program and the other 130 were in coaching education department. Only 55 students had coaching experience in the PETE program, whereas 66 students in the coaching education department had coaching experience. All students with coaching experience reported that they were coaching at the developmental stage of youths for various

sports such as basketball, football, volleyball, taekwondo, track, and field. All participants were in their senior year.

2.3. Data Collection Materials

In this study, personal information such as gender, department (teaching education-coaching education), grade level, coaching status were collected with a self-developed tool, and the 5-point Likert type (1, Strongly Agree, to 5, Strongly Disagree) Epistemological Belief Questionnaire (EBQ) was used to collect PEB data. Deryakulu and Büyüköztürk (2005) conducted reliability and validity process of EBQ developed by Schommer (1990), serves as an effective tool to assess students' beliefs regarding the nature of knowledge and learning. The original version of the questionnaire developed in English and consisted of four factors represented by 63 items. The factors in the original version were "Simple Knowledge", "Certain Knowledge", "Quick Learning", and "Innate Ability". The first two factors measure beliefs about knowledge and the other two factors measure beliefs about learning.

Unlike the original version, the Turkish version had three factors and consisted of 35 items. Deryakulu and Büyüköztürk (2005) reported that the factor structure of the Turkish version of EBQ is quite different from the original version. Due to this difference, the factors in the Turkish version were relabeled. The first factor of the scale, "learning depends on effort" (LDE), consists of 18 items. The second factor, "learning depends on ability" (LDA), consists of nine items. Lastly, the third factor, "there is only one unchanging truth" (OOUT) consists of eight items. Deryakulu and Büyüköztürk (2005) also reported that the dual correlations between the factor scores of the scale show that factors are independent of each other, which means that the scale assesses different dimensions related to epistemological beliefs. In the EBQ, low mean scores obtained from the factors were interpreted as developed/matured/sophisticated epistemological beliefs, high means were explained as undeveloped/immature/naive epistemological beliefs (Schommer-Aikins, 2004). Cronbach's Alpha was calculated as 0.76 for LDA, 0.79 for LDE, 0.74 for OOUT and the total value was calculated as 0.78.

2.4. Data Analyses

The Two-way Multivariate Analysis of Variances (Two-way MANOVA) was used to compare differences in the factors of EBQ across the education program and coaching experience group. Before running statistical analyses, all groups were tested in terms of parametric test assumptions. Kolmogorov-Smirnov test results indicated no significant differences across groups for all dependent variables, and distributions were normal. Levene's test indicated that the assumption of homogeneity of variances not violated for all factors, $p > 0.05$.

3. Results

Descriptive statistics indicate that coaching education program students had the highest score in LDA, LDE and OOUT factors comparing to the PETE students. Participants without any coaching experience had a higher mean score in LDA and OOUT factors than participants with coaching experience. All descriptive values were shown in Table 1.

A two-way MANOVA was run with two independent variables (education program and coaching experience) and three dependent variables (factors of EBQ). The interaction effect between the two independent variables was not statistically significant, $[F(3, 241) = 1.028, p = 0.381, Wilks \Lambda = 0.987]$. Follow up univariate results indicated main effects of education program on LDA $[F(1, 243) = 4.785, p = 0.030]$, LDE $[F(1, 243) = 8.111, p = 0.005]$, and OOUT $[F(1, 243) = 4.722, p = 0.031]$. Univariate results also indicated the main effect of coaching experience on LDA $[F(1, 243) = 5.355, p = 0.021]$, and OOUT $[F(1, 243) = 4.802, p = 0.029]$. Accordingly, participants in the PETE program had significantly more developed beliefs in all three factors of EBQ. Furthermore, participants with coaching experience had significantly more developed beliefs in LDA and OOUT.

4. Discussion

The main purpose of this study was to examine the PEB

Table 1. Descriptive statistics of LDA, LDE, and OOUT across all independent groups

Factor	Education Program	Coaching Experience (M±SD)		Total
		Coach	No-Coach	
LDA	PETE	31.32±7.49	33.83±6.53	33.12±6.88
	Coaching Education	33.72±5.43	35.11±5.73	34.33±5.58
	Total	32.88±6.30	34.29±6.26	
LDE	PETE	29.07±6.11	28.57±5.11	28.71±5.39
	Coaching Education	30.15±5.03	31.50±4.92	30.74±5.01
	Total	29.77±5.43	29.62±5.22	
OOUT	PETE	22.36±5.89	23.92±5.49	23.48±5.63
	Coaching Education	23.91±5.31	25.61±5.56	24.65±5.46
	Total	23.37±5.54	24.53±5.56	

Note: M = Mean; SD = Standard Deviation; LDA = Learning Depends on Ability; LDE = Learning Depends on Effort; OOUT = Only One Unchanging Truth.

differences between prospective physical education teachers and sports coaches with respect to their educational background and coaching experience. Results indicated that PETE students had more sophisticated PEB in all factors compared to coaching education students. Schommer-Aikins (2004) explicated that individuals with sophisticated epistemological beliefs have a perspective that concepts can be learned gradually through the reasoning process, knowledge can be constructed by the learner and knowledge is complex and uncertain. On the other hand, individuals with naive epistemological beliefs have a perspective of knowledge that it resides in authorities and it is unchanging, learning is an innate ability and concepts are learned quickly or not at all. These results could be attributed to the educational content of the programs in the Turkish setting. PETE program in Turkish higher education promotes constructivist approach of sport pedagogy, which places an emphasis on interaction with others, reflective participation in the authentic learning situations, and enabling individuals to develop their knowledge and understanding (Light & Wallian, 2008), and provides more sources and opportunities to develop PEB for those in PETE program in a way that individuals can experience the knowledge construction process by experiencing.

The coaching education program students had the most naive epistemological development. These results could be attributed to the content of the coaching education program implemented in Turkey. The coaching education program in the Turkish setting contained a wide variety of content includes sport science, but only two pedagogical courses that might allow prospective coaches to develop sophisticated comprehension about the nature of knowledge and learning. The formal coaching education programs were structured around some specific topics such as coaching theory, sport-specific tactics, and techniques and supervised coaching practice, and coaches gain knowledge through the classroom-based curriculum. Thus, these approaches in coaching education programs might enhance the technical aspect of coaching behavior, while the philosophical perspective of the teaching and learning process is not so developed as the technical aspect.

Although the comprehensive coaching education programs have been developed in many countries, researchers emphasized these programs as insufficient for fully meeting the learning needs of coaches (Trudel & Gilbert, 2006), and their inability to modify coaching behaviors in the field (Abraham & Collins, 1998). Similar to the Turkish coaching education context, coaching education programs have been also previously criticized for a compartmentalized, decontextualized approach that provides sports science content, and a lack of courses for transferring holistic pedagogical knowledge (Nelson, Cushion, & Potrac, 2006). In other words, coaching education program is lack of previously proved quality improving contents such as placing emphasis on facilitating coaches' interpersonal behavior (Lefebvre, Evans, Turnnidge, Gainforth, & Cote, 2016),

incorporating behavior change theories into the coaching education programs (Allan, Vierimaa, Gainforth, & Cote, 2017), applying systematic evaluation frameworks to monitor and guide the improvement of these programs (Evans, McGuckin, Gainforth, Bruner, & Cote, 2015), and transferring transformational coaching approaches to students (Turnnidge & Cote, 2017). Only transferring the essential technical knowledge to prospective coaches is not sufficient for developing holistic coaching approaches, which highlights the importance of personal learning and teaching characteristics for athletes and coaches.

The teaching approaches implemented in coaching education programs are also critical for developing a sophisticated perspective about personal epistemology. Cote (2006) addressed the "scientist to practitioner" approach that used in coaching education programs for the possible reason of lack of transfer of essential skills and mentality. Stephenson and Jowett (2009) claimed that coaching applications derived from someone else's practice may bring undesired ramifications in the development process of coaches. In contrast to the "scientist to practitioner" approach, adopting and applying constructivist approaches magnifies the complexity of learning, which engenders obstacles for facilitators and program designers about recognizing and meeting individual learning needs and preferences (Light, 2008). The aforementioned constructivist approach is neglected in coaching education programs in Turkey. Thus, the implemented "scientist to practitioner" process in coaching education programs might mitigate the sophistication of PEB among Turkish prospective coaches.

Results also depicted that those with coaching experience had more sophisticated PEB in LDA and OOUT factors comparing to their counterparts without any coaching experience. This finding also could be associated with the constructivist structure of living and learning context. Kidman (2001) indicated that philosophies are highly individualized and based on personal objectives founded on experiences. Coaching behaviors are influenced by dynamically changing environments that allow coaches to interact with others in the environment to shape their knowledge. Similar to this explanation, Howard, McGee, Schwartz, and Purcell (2000) reported that training programs that allow a teacher to interact with each other and combining contents with a living and learning context caused a change in PEB. Morgan, Jones, Gilbourne, and Lewellyn (2013) argued that the content delivered to prospective coaches in higher education institutions may not develop the pedagogical skills, in turn, lack of necessary teaching skills might also affect the philosophical standpoint of coaches towards the learning process. In contrast to formal coaching education, informal learning processes of coaches have been supported in various aspects such as transfer of knowledge, learning opportunities from observations and others experiences (Paquette, Hussain, Trudel, & Camire, 2015).

The epistemological chain is a function as a link between the personal philosophy, beliefs about knowledge and learning and their coaching practice, the learning climate of athletes. Clear epistemological chaining was evident among elite-level coaches (Grecic & Collins, 2012). Moreover, Grecic, MacNamara, and Collins (2015) indicate talent development environment also should be aligned with coaches' own deep held philosophies in order to allay the dissonance that impacts coaching behavior. Therefore, it becomes important to support prospective coaches for developing their own coaching epistemology and guide them to aware of the foundations of their PEB to support their epistemological chaining. Promoting controlled coaching practices and improving cooperative learning opportunities would pave the way for developing and sharing knowledge for improving necessary skills as much as developing personal epistemology among sports coaches and physical education teachers. Similarly, prospective coaches may benefit from constructivist applications such as observing, communicating and interacting with athletes, physical education teachers, and other coaches in order to structure their own knowledge base. More and more, it is worth to note that Cassidy Jones and Potrac (2008) indicated that developing personal coaching philosophy is crucial for effective practice, yet developing it in a short time of period is not possible.

While the results of this study indicate significant main effects of the education program and coaching experience on PEB, this study has some methodological limitations. First of all, the demographic data collection tool did not indicate the years of coaching experience and type of sport, which might be influential on PEB. Secondly, the sample size of the study is considerably small, and the sample represents only the central region of Turkey. Future studies should consider these methodological limitations.

Author Disclosure Statement

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