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The coaching process evaluation scale used in nursing education

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Abstract

This study aims to develop the "Coaching Process Evaluation Scale" (CPES) to be used to assess the coaching process during nursing students' skill practices. This methodological study was carried out in several stages. The exploratory factor analysis was performed on the data collected during the process using the SPSS data package, and the validity and reliability data of the scale were obtained. In the analysis of the data, the Kaiser-Meyer-Olkin (KMO) coefficient of the scale was 0.96. According to the Barlett test, the p value was 0.000. For the reliability, the lowest and highest item total correlation values were 0.493 and 0.769 respectively, and the Cronbach Alpha score was 0.962. Analyses indicated that the validity and reliability of the "CPES" developed in the present study were high. The use of this scale in future studies and the confirmatory factor analysis will enhance these characteristics of the scale.

Keywords: Coaching; coaching process; evaluation; nursing education; scale.

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1. Introduction

Gaining professional skills is an important aspect of all health professions. Today, traditional methods such as demonstration and skill lists are used in gaining these skills. In addition, methods including real clinic scenarios, role playing, video displays, simulated patients, and standardized patients are also used (Mete & Uysal, 2010). In gaining skills, student experiences throughout the process and type of support received from the trainer as well as effective performance of education is important. In order to effectively carry out and assess the process of skill learning, a coach is often needed.

Learning and development constitute the focus of coaching. Coaching in education is defined as creating and increasing the coachee's personal awareness on strengths and resources and encouraging lifelong learning and development by focusing on the future and solutions (Hayes & Kalmakis, 2008; Purcek, 2014; Sezer & Sahin, 2015). A person who focuses on the student along with personal development in laboratory or clinical settings and who provides a safe environment for learning is identified as a coach (Laurie, 2000). A coach facilitates, encourages, and supports learning and provides feedback at the right time. The coachee is allowed to improve and shine, developing a sense of responsibility regarding decision making related to learning objectives (Kelton, 2014).

In a study by Mete and Uysal (2010), which was conducted with nursing students and lecturers providing skills training, it was reported that training in professional skills laboratories became mechanical for both the students and lecturers since the training focused on psychomotor aspects. Moreover, it was found that students did not use critical thinking and problem solving skills in skills laboratories and clinical practice, did not want to spend time at the laboratory and found the process boring, and had problems in transferring learned skills to practice (Mete & Uysal, 2010). Coaches also have an important function in terms of encouraging nursing students to gain critical thinking skills and follow the latest developments as well as gaining professional skills (Ay, 2007).

In order to educate students who are aware of personal development, can determine learning objectives, receive training in a safe learning environment, receive adequate support, and receive immediate feedback, coaches are needed. The degree of benefiting from coaching skills and strategies among students should be evaluated for ensuring that every student receives such support. In the literature, measures related to coaching types, models, and areas where coaching is used exist but a measure for evaluating the coaching process during skill learning could not be found (DeBourgh, 2011; Hayes & Kalmakis, 2008; Kelton, 2014; Kowalski & Casper, 2007; Laurie, 2000; Singh, Aggarwal, Tahir, Pucher & Darzi, 2015; Truijen & Woerkom, 2008).

In the current study, it was aimed to develop a valid and reliable "Coaching Process Evaluation Scale for evaluating the coaching process received by nursing students during skill learning.

2. Method

The current research was planned as a cross-sectional and methodological study. The Coaching Process Evaluation Scale was generated through multiple steps.

2.1. Step 1: Item generation and expert opinions

The literature regarding coaching practices for medical and nursing students (Bing-you, Bertsch & Thompson, 2009; Debourgh, 2001; Geissler, Hasenbein, Kontouri & Wegener, 2014; Hayes & Kalmakis, 2008; Hom, 2003; Kelton, 2014; Kim et al., 2010; Ladyshewsky, 2006; LeBlanc & Sherbino, 2010; Rego et al., 2009; Singh et al., 2015), the coaching process (Hayes & Kalmakis, 2008; Hom, 2003; Kowalski & Casper, 2007; Laurie, 2000; NHS Leadership Centre, 2005; Wang & Millward, 2014), characteristics a coach should have (Hayes & Kalmakis, 2008; Kowalski & Casper, 2007; Laurie, 2000; Linder-Pelz, 2014; Mott, 1992; NHS Leadership Centre, 2005), and coaching strategies (Hayes & Kalmakis, 2008; Kowalski & Casper, 2007; Mott, 1992; NHS Leadership Centre, 2005; Tofade, 2010) was searched for. An item pool consisting of 52 items was generated. Using the item pool, questions for evaluating the coaching

process were listed. The preliminary scale included 32 items scored by a 5 point Likert type scale was generated. In order to determine whether the items in the preliminary scale were qualitatively and quantitatively adequate for measuring the target behavior, expert opinions were taken. A panel of 10 experts (one linguistic scientists and nine medical faculty members) reported their opinions related to the wording, content, and suitability of the preliminary scale. Based on expert opinions, 2 items were removed from the scale, producing a 30-item version.

2.1.1. Step 2: Pilot testing

The preliminary scale was pilot tested on 30 nursing students. Student opinions regarding the understandability of the scale items, response time, and applicability of the items were taken. As a result of pilot testing, significant modifications were not needed.

2.1.1.1. Step 3: Scale administration

The scale was administered between October and December in 2015. Skills training begins in the second year of nursing education, while in the second and third year of study, lecturers provide training using the demonstration method in one-on-one or small-group format. Thus, students in the second and third year of study were accepted as the study universe. It was aimed to reach a sample size at least ten times greater than the number of items. Students were informed about the study and were invited to participate in the study. A total of 237 second year and 219 third year students volunteered to participate in the study. Thus, a sample size 15.2 times greater than the number of items was reached.

Prior to data collection, oral informed consent was obtained from the participants. For each class, the question form was distributed and individually answered by the students in one session. Ethical permission to conduct the study was granted from the Ege University Faculty of Nursing Ethics Committee (document dated 01/10/2015 /numbered 27344949/508-2911).

2.1.1.1.1. Step 4: Psychometric analyses

The scale was completed by 456 students. In psychometric analyses, exploratory factor analysis was conducted for testing validity and Cronbach alpha analysis was done for testing reliability of the scale. The SPSS 18.0 software was used for statistical analysis.

3. Results

After administering the 30-item Coaching Process Evaluation Scale, which was generated according to expert opinions and pilot test results, data on validity and reliability was obtained.

3.1. Results of the exploratory factor analysis

3.1.1 Eigenvalue scree plot results

An eigenvalue is a coefficient used for calculating the amount of variance explained by factors and for deciding the number of important factors. In factor analysis, factors with an eigenvalue equal to or greater than 1 are initially considered important (Buyukozturk, 2006). Factor analysis is a procedure conducted in order to evaluate whether scale items can be grouped under different dimensions or not. The goal of factor analysis is to represent a large number of items as a smaller number of factors. Items closely associated with each other constitute factors and each of these factors represent a theoretical construct underlying measurement (Aksayan et al., 2002). The eigenvalue scree plot results were shown in Figure 1. The first immediate change in the eigenvalue scree plot slope occurred in the 4th factor. Accordingly, it was decided that the scale may consist of 4 factors. Although the scree plot slope is very useful, it was indicated that choice of factors should not solely be based on this criterion

(Tekin & Yaman, 2008). Therefore, principal components analysis using varimax rotation was conducted for accurate factor choice.

3.1.1.1 Exploratory factor analysis

Higher factor loadings of items grouped under a factor provide a criterion. If a cluster of items that are highly correlated with each other exist within a factor, then it can be assumed that these items together measure a concept-construct-factor (Buyukozturk, 2006). Suitability of data for factor analysis was tested using the Kaiser-Meyer-Olkin (KMO) coefficient and the Bartlett's test of Sphericity. A KMO value greater than .60 and a significant Bartlett's test result indicate that data is suitable for factor analysis (Buyukozturk, 2006). In the current study, the KMO coefficient was found to be 0.96. According to the Bartlett's test results, the p value was 0.000. It was found that the 1st factor explained 28.83% of the total variance, the 2nd factor 18.91%, the 3rd factor 10.92%, and the 4th factor explained 9.85% of the total variance. Each item had a factor loading greater than .30, thus none of the items were removed from the scale. The factor analysis resulted in a 30-item scale. This final version of the scale included four factors (Table 1).

3.1.1.1.1. Principal components analysis with Varimax rotation

After factor rotation, it was found that the 12 items in Factor 1 (items 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30) had factor loadings between .602 and .725, the 11 items in Factor 2 (items 5, 6, 7, 8, 9, 10, 11, 15, 16, 17, 18) had factor loadings between .431 and .697, the 4 items in Factor 3 (items 1, 2, 3, 4) had factor loadings between .508 and .785, and the 3 items in Factor 4 (items 12, 13, 14) had factor loadings between .567 and .776.

3.1.1.1.2. Naming factors

The factors were named according to the content of included items. All items in Factor 1 were related to utilizing/benefiting from the coaching process, thus Factor 1 was named "Utilization of the coaching process". All items in Factor 2 were about the coaching skills observed by students during coaching practices, thus factor 2 was named "Observed coaching skills". All items in Factor 3 were about the feelings experienced by students during coaching practices, therefore Factor 3 was named "Emotions". Finally, all items in Factor 4 were related to coaching skills anticipated by students during coaching practices, thus this factor was named "Expected Coaching Skills". Thereby, the Coaching Process Evaluation Scale consisted of 4 subscales.

3.2. Reliability analysis

In order to test the reliability of the Coaching Process Evaluation Scale, Cronbach alpha analysis was carried out. A Cronbach alpha coefficient greater than 0.70 or higher is accepted sufficient for the reliability of scale scores (Buyukozturk, 2006). In the present study, the Cronbach alpha coefficient of the total scale was found to be 0.96. This finding showed that the scale is a reliable instrument. The Cronbach alpha coefficient of factors was found as 0.94, 0.91, 0.82, and 0.80; respectively.

3.3. Item total correlation analysis

Item total correlation analysis for each factor was conducted since the scale did not yield total scores. Factor item total reliability coefficients (r) were calculated and ranged between 0.49 and 0.76 (Table 2).

As a result of statistical analyses, it was determined that the Coaching Process Evaluation Scale had a total of 30 items and 4 subscales. Since the total score of the 30-item scale did not correspond to a theoretically meaningful interpretation, subscale scores were calculated rather than a total score. It was difficult to compare subscale scores because the number of items in each subscale was not equal. For this reason, subscale scores were standardized in order to facilitate comparisons. Each subscale score ranged from 0 to 100. Higher subscale scores indicate that the degree of satisfaction regarding the relevant subscale increases.

4. Conclusion

In the current study, it was aimed to develop a valid and reliable “Coaching Process Evaluation Scale” (CPES) for evaluating the coaching process received by nursing students during skill learning. According to the study findings, the CPES is a valid and reliable instrument for nursing students who receive skills training. This scale would enable researchers to evaluate the coaching process applied in student education starting from professional skills laboratories and continuing with clinical training, coaching skills observed by students and their related feelings, expectations regarding the coaching process, and utilizing the coaching process in general. It is recommended for future studies to conduct the confirmatory factor analysis of the scale by administering it to students studying health sciences other than nursing.

Table 1. Subscales and factor structure of the CPES

Factors	Subscales	Item Number	Eigenvalue	Explained Variance %	Factor Loadings
F1	Utilization of the coaching process	12	14.62	28.83	.602-.725
F2	Observed coaching skills	11	1.61	18.91	.431-.697
F3	Emotions	4	1.58	10.92	.508-.785
F4	Expected Coaching Skills	3	1.22	9.85	.567-.776

Table 2. Subscale item total correlations of the CPES

Subscale	Item total correlation	Items
Observed coaching skills $\alpha = 0.91$	0.69	5. The coach established a secure relationship.
	0.74	6. The coach provided constructive feedback based on his/her observations.
	0.61	7. The coach was respectful.
	0.62	8. The coach questioned my need for support.
	0.76	9. The coach gave the support I needed.
	0.72	10. The coach actively listened to me.
	0.74	11. The coach showed a holistic approach through my learning process.
	0.71	15. I received constructive feedback in courses conducted with an accompanying coach.
	0.69	16. I received help whenever I needed in courses conducted with an accompanying coach.
	0.40	17. I was able to communicate using technologies in courses conducted with an accompanying coach.
Emotions $\alpha = 0.82$	0.63	18. Courses conducted with an accompanying coach developed my leadership skills.
	0.58	1. Learning with an accompanying coach reduced my anxiety.
	0.77	2. Learning with an accompanying coach increased my motivation.
	0.74	3. Learning with an accompanying coach increased my self-esteem.
Utilization of the coaching process $\alpha = 0.94$	0.55	4. Learning with an accompanying coach made me feel like part of a clinic team during hospital practice.
	0.76	19. Courses conducted with an accompanying coach increased communication with the lecturer/trainer.
	0.74	20. Face-to-face interaction with the lecturer/trainer was made in courses conducted with an accompanying coach.
	0.77	21. Courses conducted with an accompanying coach enabled effective learning.
	0.70	22. Courses conducted with an accompanying coach developed my interpersonal relationships.
	0.76	23. Courses conducted with an accompanying coach helped me take up responsibility for my own learning.
	0.77	24. Courses conducted with an accompanying coach contributed to my personal development.
	0.69	25. For me, courses conducted with an accompanying coach contributed to showing respect, love, and tolerance for other people.
	0.74	26. Working with a coach enabled me to set realistic goals.
	0.70	27. Working with a coach made me realize my own strengths and weaknesses.
	0.79	28. Working with a coach set me in motion in terms of learning.
	0.76	29. Working with a coach contributed to my skill regarding prioritizing in my professional life.
	0.74	30. I find courses conducted with an accompanying coach are beneficial.
	Expected Coaching Skills $\alpha = 0.80$	0.55
0.75		13. The coach should possess self-evaluation skills.
0.68		14. The coach should be able to make a holistic evaluation of the education program

$$\frac{\text{Number of subscale items} - 1}{4} \times 100$$

The diagram shows the formula with a bracket on the right side of the fraction labeled 'Subscale total score'. Below the denominator '4', there is a horizontal line and the number '4' centered under it, indicating the value of the number of subscale items.

Figure1. Formula

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