



Determining the Effects of Free Sessions on Epistemological Beliefs, Critical Thinking Disposition and Metacognitive Awareness of Nursing Students Taking Research Course

Serbest Oturumların Arařtırma Dersi Alan Hemřirelik
Öęrencilerinin Epistemolojik İnançlarına, Eleřtirel
Düşünme Eğilimlerine ve Üstbilişsel Farkındalıklarına
Etkisinin Belirlenmesi

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DETERMINING THE EFFECTS OF FREE SESSIONS ON EPISTEMOLOGICAL BELIEFS, CRITICAL THINKING DISPOSITION AND METACOGNITIVE AWARENESS OF NURSING STUDENTS TAKING RESEARCH COURSE

ABSTRACT:

Aim: This study was conducted to determine the effects of free sessions with philosophical sessions on the epistemological beliefs, critical thinking disposition and metacognitive awareness of nursing students taking research course.

Method: It was conducted using semi-experimental pretest-posttest design with 177 students. Ethical approval was taken. It used Epistemological Beliefs Scale, Metacognitive Awareness Inventory and Critical Thinking Disposition Scale. Research in Nursing course was implemented in a 10-week program as two hours of theory and two hours of practice.

Results: It was found that the posttest Epistemological Beliefs Scale total score, Metacognitive Awareness Inventory total score and was Critical Thinking Disposition Scale total score were significantly higher than their respective pretest total scores ($p=0.00$). A significant positive relationship was found between the posttest score of Critical Thinking Disposition Scale and posttest score of Metacognitive Awareness Inventory ($r=0.452$, $p=0.000$).

Conclusion and Suggestions: Free sessions with philosophical sessions were found to help students develop epistemological beliefs, metacognitive skills and critical thinking skills. It is recommended for nursing education to include free sessions in different course programs and to increase research on this subject.

Keywords: *Epistemological Beliefs; Metacognitive Awareness; Critical Thinking Disposition; Free Sessions; Nursing Education.*



SERBEST OTURUMLARIN ARAŞTIRMA DERSİ ALAN HEMŞİRELİK ÖĞRENCİLERİNİN EPİSTEMOLOJİK İNANÇLARINA, ELEŞTİREL DÜŞÜNME EĞİLİMLERİNE VE ÜSTBİLİŞSEL FARKINDALIKLARINA ETKİSİNİN BELİRLENMESİ

ÖZ:

Amaç: Bu çalışma, felsefi seanslarla yapılan serbest oturumların, araştırma dersi alan hemşirelik öğrencilerinin epistemolojik inançlarına, eleştirel düşünme eğilimlerine ve üstbilişsel farkındalıklarına etkisinin belirlenmesi amacıyla yapıldı.

mıştır.

Yöntem: Çalışma öntest- sontest yarı deneysel araştırma olarak 177 öğrenciyle yapılmıştır. Etik onay alınmıştır. Çalışmada Öğrencileri Tanımlayıcı Form, Epistemolojik İnançlar Ölçeği, Üstbilişsel Farkındalık Envanteri, Eleştirel Düşünme Eğilim Ölçeği kullanılmıştır. Araştırma dersleri; 10 hafta iki saat teorik ve iki saatte uygulama olarak yapılmıştır.

Bulgular: Sontest Epistemolojik İnançlar Ölçeği toplam puanı, Üstbilişsel Farkındalık Envanteri toplam puanı ve Eleştirel Düşünme Eğilim Ölçeği toplam puanı, öntest toplam puanlarından anlamlı düzeyde yüksek bulunmuştur ($p = 0.00$). Eleştirel Düşünme Eğilim Ölçeği sontest puanı ile Üstbilişsel Farkındalık Envanteri'nin sontest puanı arasında pozitif yönde anlamlı bir ilişki bulunmuştur ($r = 0.452$, $p = 0.000$).

Sonuç ve Önerileri: Çalışma sonucunda araştırma dersi kapsamında felsefi seanslarla yapılan serbest oturumların öğrencilerin epistemiyolojik inanaçlarını, üstbilişsel becerilerini ve eleştirel düşünme becerilerini geliştirmede yardımcı ve başarılı olduğu bulunmuştur. Hemşirelik eğitiminde farklı ders programlarına serbest oturumların müfredata dâhil edilmesi ve bu konuya yönelik araştırmaların artırılması önerilmektedir.

Anahtar Kelimeler: *Epistemolojik İnançlar; Üstbilişsel Farkındalık; Eleştirel Düşünme Eğilimi; Serbest Oturumlar; Hemşirelik Eğitimi.*



INTRODUCTION

The ability of countries to keep up with changing world depends on qualified manpower. In this context, universities are institutions that have the mission and responsibility of training qualified manpower and professionals to produce solutions to the problems of society in addition to conducting scientific research. Therefore, the individuals and candidate professionals who grow up in this structure gains the contemporary knowledge, skills, attitudes and behaviors while adapting to the requirements of the changing society (Özden, 2005). In addition, it is very important to make rational decisions in all professions that demand rapid and accurate decision-making process in their activities. An accurate and rapid decision-making process in the nursing profession necessitates adding programs and courses to the education curriculum which teach the students how to make rational decisions.

In order for the nursing profession to adapt to the age and to develop, indivi-

duals in this profession must first have an idea of knowledge. Epistemology reveals the most accurate information about an individual's ideas. Studies showed that epistemological beliefs are the most important cognitive variable that affects learning-teaching processes. Research in this field shows that a college student with advanced epistemological beliefs has higher academic achievements, has more effective learning habits, and is more successful in checking their level of learning the new information they encounter. These studies also showed a relationship between the epistemological levels of students and their strategies for processing the information (Aypay, 2011; Aksan & Sözer 2007; Oguz, 2008; Orgun & Karaöz 2014; Yılmaz & Kaya 2010). Öngen, on the other hand, emphasized that for the development of epistemological beliefs in this context, the curriculum should be supported by courses that are important in both theory and practice (Öngen, 2003).

For an individual, advancing to the level of using the knowledge is as crucial as learning the information, and the concept of metacognition comes into play here. At the heart of the metacognition lie the concepts of being aware of oneself and one's learning methods, conscious behavior, self-control, self-regulation and self-evaluation, planning, monitoring how one learns, and learning how to learn (Gelen, 2003). It was found that metacognitive skills of the students improved when the nursing students read the class material (Eskiyurt et. al, 2016; Oguz & Ataseven, 2004).

A brain trying to learn the source of knowledge through epistemological beliefs would try to use this information with its metacognitive skills. Critical thinking, on the other hand, would reveal the accuracy of this information and how it should be used. Nurses are also forced to be flexible, to use the knowledge accurately and to think critically due to the complexity of the service they offer in different areas, due to the increased evidence-based practices, and multidimensional care which includes both technological knowledge and practice. Therefore, critical thinking is of great importance for nurses who often have to decide among multiple options and to make quick decisions (Lipe & Beasley, 2004). It is imperative to create teaching programs that support the development of critical thinking disposition and skills in nursing (Öztürk, 2006; Öztürk & Karayağız, 2005; McGrath, 2005). A study by American Psychological Association (APA) stated that even when the individuals have critical thinking skills, they may not be able to use it as efficiently as they should (APA 2013). The studies recommended that educational activities specially geared to improve the critical thinking of students could be useful and students should be provided with clinical scenario-based training that encourages them to read and to question (Haydeh & Hamooleh, 2016; Noonea & Seeryb, 2018).

Research in Nursing is a course where nursing students acquire and filter the knowledge and use it in different fields. To our best knowledge, there is no study in the literature investigating the impact of research courses on students' epistemo-

logical beliefs, metacognitive skills and critical thinking. In fact, there is no study in the literature in which this course was conducted with philosophical sessions. However, philosophy has supported and guided science and provided a deeper understanding of it wherever science flourished. Therefore, the aim of the present study was to determine the effect of the Research in Nursing course, which has a very important place in nursing, on the epistemological beliefs and metacognitive awareness of students and their disposition for the critical thinking by conducting free sessions.

Hypotheses:

H1: Free sessions have an impact on the epistemological beliefs of nursing students who take research course.

H2: Free sessions have an impact on the metacognitive awareness of nursing students who take research course.

H3: Free sessions have an impact on nursing students' critical thinking disposition of nursing students who take research course.

H4: There is a relationship between epistemological beliefs, critical thinking disposition and metacognitive awareness of nursing students who take research course.

METHOD

Study design

The study was conducted as a pretest–posttest semi-experimental study.

Setting

The study was conducted with 239 students who took Research in Nursing course in the 2018-2019 academic year in Turkey at Erciyes University, Faculty of Health Sciences.

Participants and sampling

The study was conducted on the whole population, i.e. no sampling was made. However, due to the data losses in the questionnaires, the study was completed with 177 students. The effect size of the study was found to be 99.0% in the posthoc power analysis performed in the G-POWER 3.1.94 program with a sample size of 0.282, a confidence interval of 0.05 and a sample size of 177.

Instruments

Student Description Form: A form of 10 questions which included students' sociodemographic characteristics and their views on the course was prepared by the researcher.

Epistemological Beliefs Scale (EBS): Chan and Elliot created this questionnaire as an adoption from Schommer's 63-point "Epistemological Beliefs Questionnaire" (Chan & Elliott, 2002; Chan & Elliott 2004). Aypay reduced the scale to a 30-item form, translated it to Turkish and conducted Turkish validity and reliability study (Aypay, 2011) and cronbach Alpha reliability value of the scale was found to be 0.70. In our study, cronbach Alpha reliability value of the scale was found to be 0.73. Higher scores indicate that epistemological beliefs are increasing. The subscales of EBS and items within them are as follows: Learning Process-Doubt on the Knowledge of Authority/Expert: (Eleven items) Items No: 4, 6, 8, 9, 10, 11, 12, 14, 20, 22 and 29; Innate ability: (Eight items) Items No: 1, 18, 21, 23, 24, 25 and 30; Quick Learning: (Five items) Items No: 2, 15, 16, 27 and 28; Certain knowledge: (Six items) Items No: 3, 5, 7, 13, 17 and 26.

Metacognitive Awareness Inventory (MAI): Metacognitive Awareness Inventory (MAI) was developed by Schraw and Dennison (1994), and its reliability and validity study studies were conducted by Akın et al. (Schraw & Dennison, 1994; Akın et. al. 2007). The test-retest reliability coefficient of the inventory was 0.95 for the whole inventory, and varied between 0.93 and 0.98 for its subscales. In our study, cronbach Alpha reliability value of the scale was found to be 0.95. The highest score of this five-point Likert-type inventory is 260 and the lowest score is 52. This inventory has no negative item, and higher scores indicate high level of metacognitive awareness (Akın et. al. 2007).

Critical Thinking Disposition Scale (CTDS): The scale was developed by researchers at the University of Florida in 1990, and its validity and reliability were studied by Ertaş (Ertaş, 2012). The internal consistency coefficient for the pretest and posttest of the scale were 0.881 and 0.888, respectively. In our study, cronbach Alpha reliability value of the scale was found to be 0.91. This Likert-type scale has the responses of (1) Strongly disagree, (2) Disagree, (3) Neither agree nor disagree, (4) Agree and (5) Strongly agree. The subscales of the scale are "Engagement", "Cognitive Maturity" and "Innovativeness". Higher scores show higher critical thinking ability (Kılıç & Şen, 2014). Engagement: Items No: 2,3,5,7,8,9,14,17,18,19,22; Cognitive Maturity: Items No: 1,13,16,20,24,25,26; Innovativeness: Items No: 4,6,10,12,15,21,23.

Intervention

Data collection

Students were subjected to data collection forms before and after the program. Students filled the forms in sessions, and they were given half an hour to fill the form and a rest time after each data form. In order to ensure that the students make their evaluations under the same conditions, the forms were given them simultaneously and evaluated in the same environment.

Application

Students were subjected to the following program: the courses were conducted as two hours of theoretical education and two hours of practice weekly for 10 weeks. The theoretical education included lectures about research subjects (research processes). In addition, the theoretical education included 30-45 minutes of training scenarios about epistemological beliefs, critical thinking and metacognitive awareness. Scenarios were: 1. How can the nurse access to the information? 2. Interpreting and analyzing the information reached 3. How can the nurse use the information in her problem? and 4. Planning and assessing the nursing initiative. The practice continued gradually and in a way in which all stages would be performed in each course. Phase one: students were divided into groups of 10-12 people, and each group determined a research topic according to their own interest. Literature search and group discussions were performed on the topic in each week. Phase two: the practice was continued along with the two-hour theoretical education in each week, and the theoretic education and the subjects identified by the students as a group were integrated. Stage three: a post-graduate philosophy student attended to these courses and participated in the discussions (Figure 1.). Researcher were used teaching methods and techniques that lecture method, question-answer, discussion, case study, problem solving, project, brainstorming methods in training scenarios (Gökalp, 2019).

Criteria for Participating in the Research;

-Taking the Research in Nursing course for the first time

Extraction Criteria;

-Lack of attendance in more than two hours of Research in Nursing course

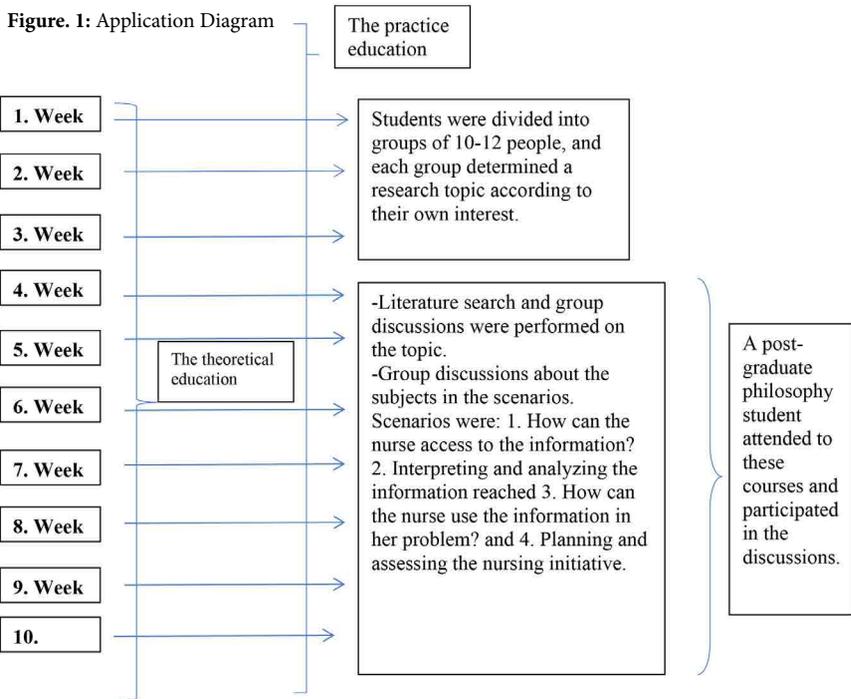
-Failure to complete pre- and posttests of the study.

Ethical considerations

For conducting the research, academic approval was taken from Erciyes University Faculty of Health Sciences, and ethical approval was taken from Social and Humanities Ethics Board (26.03.2019; no: 56). In addition, oral, written consents and informed consent form was obtained by signing were taken from the students.

Statistical analysis

In the evaluation of data in the study, the IBM SPSS Statistics 22.0 software was used (IBM Corp., Armonk, New York, USA). $p < 0.05$ was considered statistically significant. Scores of the scales were evaluated by Shapiro-Wilk normality test. Wilcoxon test was used in the analysis of scale scores since the scores did not have normal distribution. The relationship between the scales was evaluated using Spearman Correlation Analysis.



RESULTS

Table 1 contains the data related to socio-demographic characteristics of the students. According to the table, 41.2% of the students were 21 years old, 47.5% lived with their parents, 46.9% them had a grade point average between 2.51-3.00.

Table 1. Socio-demographic characteristics of the students

Demographic Characteristics	n	%
Age		
20 age	45	25.4
21 age	73	41.2
22 age	27	15.3
23 age and upper age	32	18.1
Place of residence		
Dorm	77	43.5
At home with family	84	47.5
At home with friends	16	9.0
Grade Point Average		
2.00 - 2.50	73	41.2
2.51- 3.00	83	46.9
3.01- upper	21	11.9
Total	177	100

The total post-test score of the EBS was significantly higher compared to the pretest score ($p < 0.05$). The differences between post- and pretest scores of other variables were not significant ($p > 0.05$) (Table 2).

Table 2. Students' scores for epistemological beliefs questionnaire (EBS)

Scale Score	Median	25%-75% Scores	z	p
Last learning process	43.0	40.0- 46.0		
First learning process	42.0	39.0- 44.0	-2.782	0.005
Last innate talent	17.0	14.0 - 20.5		
First innate talent	17.0	14.0 - 20.0	-0.743	0.457
Last Quick Learning	19.0	16.0 - 20.0		
First Quick Learning	18.0	16.0 - 20.0	-1.723	0.085
Last Certain knowledge	15.0	13.0 - 17.0		
First Certain knowledge	14.0	12.0 - 16.0	-1.778	0.075
Last EBS Total	93.00	87.5- 99.5		
First EBS Total	91.00	85.0- 98.0	-3.572	0.000

*Wilcoxon analysis test

Students' Metacognitive Awareness Inventory scores are given in Table 3. Accordingly, mean posttest MAI total score of the students was significantly higher than the average pretest total MAI score ($p < 0.001$).

Table 3. Students' metacognitive awareness inventory (MAI) scores

Scale Score	Median	25%-75% Scores	z	p
Last MAI total	189.0	170.0 - 207.0	-5.495	0.000
First MAI total	179.0	160.0 - 198.0		

*Wilcoxon analysis test

Table 4. Students' scores of critical thinking disposition scale (CTDS)

Scale Score	Median	25%-75% Scores	z	p
Last Engagement	41.0	39.0 - 44.0	-4.214	0.000
First Engagement	40.0	37.0 - 43.5		
Last Cognitive maturity	24.0	23.0 - 25.0	-3.688	0.000
First Cognitive maturity	24.0	22.0 - 25.0		
Last Innovativeness	26.0	25.0 - 28.0	-3.619	0.000
First Innovativeness	26.0	24.0 - 28.0		
Last CTDS total	95.0	91.0 - 102.0	-4.689	0.000
First CTDS total	93.0	88.0 - 99.5.0		

*Wilcoxon analysis test

Scores of students for Critical Thinking Disposition Scale are given in Table 4. Posttest scores of Engagement, Cognitive maturity and Innovativeness subscales were all significantly different from their respective pretest scores ($p < 0.001$). Besides, posttest total CTDS score of the scale was significantly different from the pretest total CTDS score ($p < 0.001$).

Table 5. Relationships between students' epistemological beliefs questionnaire (EBS), critical thinking disposition scale (CTDS) and metacognitive awareness inventory (MAI)

	Last MAI Total	Last CTDS Total	Last EBS Total
Last MAI Total	-	-	-
Last CTDS Total	$r=0.54$ $p=0.00$	-	-
Last EBS Total	$r=0.18$ $p=0.01$	$r=0.09$ $p=0.22$	-

*Spearman Correlation Analysis

A positive and significant relationship was found between the posttest CTDS total score and posttest MAI total score ($r=0.54$, $p=0.00$). Posttest MAI total score and posttest EBS total scores were also positively and significantly correlated ($r=0.18$, $p=0.01$). On the other hand, posttest CTDS total score did not have significant relationship with posttest EBS total score ($r=0.09$, $p=0.22$) (Table 5).

DISCUSSION

Many recent studies in the field of education explain that the structure of the epistemological beliefs of students in various disciplines has a significant impact on change of these beliefs (Aypay, 2011; Aksan & Sözer 2007). During the study, there was a statistically significant change in the Learning Process subscale score and total score of the scale ($p < 0.05$). In addition, there were positive changes in Knowledge certainty and Quick learning subscales before and after the course implementation, but the difference was not significant. In our study, only the innate ability subscale did not change significantly. These findings showed that the process of altering the innate/fixed abilities is difficult, but in parallel with the previous studies, the programs and practices in the present study helped and succeeded in developing students' epistemological beliefs (Orgun & Karaoz, 2014; Yılmaz & Kaya, 2010; Öngen, 2003). In this case, the H1 hypothesis of our study was confirmed. Many studies similarly emphasized that students who develop epistemological beliefs are more successful in learning (Orgun & Karaoz, 2014; Deryakulu & Buyukozturk, 2005). In this respect, the present study provided a discussion environment for nursing students where they could participate together with philosophy students and where different opinions can be included. This environment, supported by the practice, was thought to lead to a change in students' epistemological beliefs.

The metacognitive abilities, described as making students ask questions about "how" and "what" they understand and making them answer these questions, can be improved in many ways. The teaching the learning strategies and reflective thinking activities are among the methods used to develop metacognitive skills (Oguz & Ataseven 2016). In the present study, the total MAI score of the students after the implementation of the course was significantly higher compared to the score before the course ($p = 0.00$). In a similar study, Eskiuyurt et al. concluded that reading books with psychiatry-specific content helped students understand the subjects of the course, increased their interest in the course and improved their scores for metacognitive skills (Eskiuyurt et al. 2016). In their study, Oguz and Ataseven found that a one-month course on reading and learning strategies made a significant difference in students' metacognitive skills (Oguz & Ataseven, 2016). Another study found that metacognitive strategies had an impact on the performance among nursing students and that metacognitive strategies had strong and significant relationships with performance (Salari et al., 2013). Ata and Abdelwahid found that metacognitive thinking of nursing students was significantly and positively associated with their target orientation and academic motivation (Ata & Abdelwahid, 2019). In this case, the H2 hypothesis of our study was confirmed. Considering the positive changes in the students for average scores of epistemological beliefs after the application, it could be stated that trying to question, set goals and find solutions help increasing the students' metacognitive activities.

Just because an individual has the ability to think does not mean that s(he) will use these skills.

Therefore, employment of different methods could be necessary for the development and use of critical thinking (Kılıç & Şen, 2014). Total score for critical thinking improved significantly after the application conducted in the study compared to the pretest total score ($p=0.00$). Furthermore, scores of Engagement, Cognitive Maturity and Innovativeness subscales of the Critical Thinking Disposition Scale improved significantly after the study compared to the pretest scores ($p=0.00$). In this case, the H3 hypothesis of our study was confirmed. Similarly, studies conducted by methods applied differently from the classic system found differences in critical thinking skills. In their meta-analysis, Yue et al. found that concept maps used in studies improved students' critical thinking skills (Yue et al. 2017). Gholami et al. and Carbogim et al. found that a significant improvement was observed in students' critical thinking skills after a problem-based learning course (Gholami et al. 2016; Carbogim et al. 2018). Lia et al. carried out a study dealing with case-based learning in nursing and Zhanga and Chenb in clinical practicum found that critical thinking scores of the post-course experimental group improved significantly (Lia et al. 2019; Zhanga & Chenb 2020).

A positive and significant relationship was found between the posttest critical thinking score and the posttest MAI total score ($r=0.54$, $p=0.00$). Similarly, a positive and significant relationship was found between posttest MAI total score and the posttest EBS total score in the present study ($r=0.18$, $p=0.01$). It could be stated that the change in the score of Epistemological Beliefs Scale was translated into metacognitive scores of the students, which in turn improved critical thinking. In this case, the H4 hypothesis of our study was confirmed. Various studies similarly found that the students with high-level cognitive skills also had high critical thinking skills (Ku & Ho, 2010; Magno, 2010; Moores et al. 2006).

Limitations: This study cannot be generalized because it included only the students who took the Research in Nursing course within the specified education period.

CONCLUSIONS

As a result of the study, free sessions conducted within the scope of the Research in Nursing course were found to be helpful and successful in improving students' epistemological beliefs, metacognitive skills and critical thinking skills. It was also been concluded that the change in epistemological beliefs is reflected in students' metacognitive scores, which in turn improves critical thinking. In line with these results, it is recommended to include free sessions in the contents of other courses to improve students' epistemological beliefs, metacognitive skills and critical thinking skills, and to increase research on this subject.

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Conflict of Interest:

No conflict of interest was declared by the authors.

CRedit author contributions: Filiz Özkan:

Conceptualisation, Methodology, Investigation, Resources, Data Curation, Formal analysis, Writing– Original Draft, Writing – Review & rEditing, Visualisation; Handan Zincir: Conceptualisation, Methodology, Investigation, Resources, Application, Data Curation, Visualisation; Derya Dağdelen: Methodology, Writing – Original Draft, Writing – Review & Editing.

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