

## CRITICAL THINKING DISPOSITION IN STUDENTS OF VOCATIONAL SCHOOL OF HEALTH SERVICES

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### ABSTRACT

The purpose of this study is to analyze the critical thinking dispositions of the students attending at the associate degree program of Vocational School of Health Services and to determine the factors affecting their critical thinking dispositions. All the students, attending at the associate degree program at Vocational School of Health Services of a university in 2010-2011 academic year, constituted the population of the study. 413 students, who were accessible and accepted to participate in the study, were included in sample group of the study. Data was collected using questionnaire form and the California Critical Thinking Disposition Inventory. It was determined that 66.8% of the students participating in the study were female, 30% were 19-year old and 59.1% were first-year students. The maximum participation was specified from the medical documentation and secretariat (24.5%) program. The critical thinking disposition scores of the students included within the scope of the study were 201.22±22.41 and at low level. As a result of the analyses performed, it was determined that there was no statistically significant difference between the critical thinking total mean scores according to the gender, age, program, grade and school achievement status ( $p>0.05$ ). The educators should try active learning strategies that provide meaningful learning in order to develop the critical thinking skills of the students in the vocational schools of health services.

**Keywords:** Critical thinking, disposition, health services, student

### SAĞLIK HİZMETLERİ MESLEK YÜKSEKOKULU ÖĞRENCİLERİNDE ELEŞTİREL DÜŞÜNME EĞİLİMİ

#### ÖZET

Bu çalışma, Sağlık Hizmetleri Meslek Yüksekokulu önlisans programında öğrenim gören öğrencilerin eleştirel düşünme eğilimlerini incelemek ve eleştirel düşünme eğilimlerini etkileyen faktörleri tespit etmek amacıyla gerçekleştirildi. Araştırmanın evrenini, bir Üniversitenin Sağlık Hizmetleri Meslek Yüksekokulu'nda 2010-2011 eğitim öğretim yılında önlisans eğitimi gören tüm öğrenciler oluşturdu. Araştırmanın örneklemine, ulaşılabilen ve araştırmaya katılmayı kabul eden 413 öğrenci alındı. Verilerin toplanmasında sosyo-demografik anket formu ve Kaliforniya Eleştirel Düşünme Eğilimi Ölçeği kullanıldı. Çalışmaya katılan öğrencilerin %66.8'inin kız, %30'unun 19 yaşında, %59.1'inin birinci sınıf olduğu saptandı. Katılımın en yüksek olduğu programın tıbbi dökümantasyon ve sekreterlik bölümü (%24.5) olduğu belirlendi. Araştırma kapsamına alınan öğrencilerin eleştirel düşünme eğilim puanları 201.22±22.41 olup düşük düzeydedir. Yapılan analizler sonucunda cinsiyet, yaş, okuduğu bölüm, sınıf ve okul başarı durumlarına göre eleştirel düşünme toplam puan ortalamaları arasında istatistiksel olarak anlamlı bir fark olmadığı saptandı ( $p>0.05$ ). Eğitimciler, sağlık hizmetleri meslek yüksekokullarında okuyan öğrencilerin eleştirel düşünme becerisini geliştirmek için anlamlı öğrenmeyi sağlayan aktif öğrenme stratejileri denemelidirler.

**Anahtar Kelimeler:** Eleştirel düşünme, eğilim, sağlık hizmetleri, öğrenci

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### Introduction

Critical thinking is defined as the period of interpreting and assessing current knowledge in order to understand the problem clearly before taking a decision about the problem (Özer, 2002). Thus, critical thinking is an important element for all the professional disciplines. It is deemed as a desirable educational outcome especially in the higher education graduates (Beşer ve Utku, 2005). During educational period, the students are expected to develop their critical thinking skills in order to gain an essential world view and to expand their points of view (Ulupınar, 1997).

The medical staff should have critical thinking skill in order to meet the requirements of the patient with a complex health problem and his/her family and to take rational decisions regarding the health care (Oerman, Truesdall, Ziolkowski, 2000). Medical staff's using this skill effectively in service delivery is an important factor in providing a reliable and effective care and increasing service quality (Oerman, Truesdall, Ziolkowski, 2000; Özer, 2002; Çiçek ve Akbayrak, 2004; Zaybak ve Khorshid, 2006). The complexity of the services given in different areas, increment of the evidence-based applications, multi-dimensional care including technological information and applications force the health care personnel for critical thinking and for being flexible. Hence, it is a known fact that critical thinking is crucial for the health care personnel who need to think more than one choice at the same time and give immediate decisions (Atay, Ekim, Gökkaya, Sağım, 2009).

In the recent years, there has been an increase in the number of the studies conducted about the critical thinking levels of the students who are studying at different disciplines, such as nursing and education faculties, in our country. It is known that critical thinking skill are important and compulsory for all the health care personnel (Atay, Ekim, Gökkaya, Sağım, 2009). Nevertheless, it is observed that sufficient studies have been not conducted on critical thinking dispositions of the students at the departments within body of Vocational Schools of Health Services which aim to train qualified assisting health care personnel in health sector. Geriatric Care Technicians who give care to the elderly people, Dialysis Technicians who give care to the patients with renal insufficiency, Paramedics graduates who provide emergency care within the field and medical staff who work in various departments of the hospitals are trained within the body of the Vocational School of Health Services. It is important to increase the critical thinking dispositions of the students who will graduate from these schools and give urgent and important medical decisions. Therefore, this study was conducted to investigate the critical thinking dispositions of the students attending at the associate degree program of the Vocational School of Health Services and to determine the factors that affect the critical thinking dispositions.

### Methods

#### Type of the Study

This study was carried out as a descriptive study.

#### Participants of the Study

All the students (N=626) studying in the associate degree program in 2010-2011 academic year at the Vocational School of Health Services of a university constituted the population of the study. 413 students who were accessible and accepted to participate in this study were included in sample group of the study. The response rate is 66.0%.

#### Data Collection Tools

Data was collected using questionnaire form and the California Critical Thinking Disposition Inventory. Questionnaire form consists of 7 questions including the age, gender, grade, department,

school achievement status, working status and the high school type of the students. The school achievement status is assessed according to the students' own statements.

In the study, the California Critical Thinking Disposition Inventory (CCTDI), developed by Facione, Facione and Giancarlo in 1994, was used in order to determine the critical thinking dispositions of the students. This inventory, which was adapted to Turkish by Kökdemir (2003), was chosen since it is a favorite inventory preferred in the studies on critical thinking dispositions in Turkey and is suitable for the students at university level (9). This inventory has been used in various studies on the purpose of measuring the critical thinking disposition (Kökdemir, 2003; Aybek, 2007; Zayif, 2008). The original version of the inventory consists of 75 items and 7 sub-scales. Its adaptation to Turkish and its validity and reliability studies in Turkey were conducted by Kökdemir (2003). Almost none of the items translated to Turkish had any incompatibility but small differences were restructured according to the recommendations of a professional translator. For the new inventory with 6 sub-scales and 51 items; the total internal consistency coefficient (alpha) is .88 and internal consistency coefficient of the sub-scale "analyticity" is .75, internal consistency coefficient of the sub-scale "open-mindedness" is .76, internal consistency coefficient of the sub-scale "inquisitiveness" is .78, internal consistency coefficient of the sub-scale "self-confidence" is .77, internal consistency coefficient of the sub-scale "truth-seeking" is .61, and internal consistency coefficient of the sub-scale "systematicity" is .63. The total variance of the inventory is 36.13% (Kökdemir, 2003). In this study, the total Cronbach's alpha coefficient of the inventory was 0.79. The Cronbach's alpha coefficient of the sub-scales was 0.37 for truth-seeking, 0.75 for open-mindedness, 0.71 for analyticity, 0.22 for systematicity, 0.62 for self-confidence and 0.62 for inquisitiveness. Kökdemir specified that differences had occurred in the number of item and sub-scales of the new form of CCTDI after the adaptation studies to Turkish, thus it may be used with the CCTDI-T title in order to prevent confusion (Kökdemir, 2003).

The inventory is a 6-point Likert type and evaluated in a such way that 1 point is used for "strongly disagree", 2 for "disagree", 3 for "partially disagree", 4 for "partially agree", 5 for "agree" and 6 for "strongly agree". As in the original inventory, the answers given to 6-point Likert type scale were added, the raw scores for each sub-scale were calculated, and after these raw scores were divided into the number of questions, they were multiplied by 10 and converted to a standard score with the lowest score of 6 and the highest score of 60. The possible lowest and highest values for all the sub scales are constant.

As the score obtained from the scale increases, the critical thinking disposition also increases. Facione, Facione, and Giancarlo (1994) states that those having a score less than 40 for each sub-scale have a low critical thinking disposition in the said sub-scale and those with a score above 50 have high critical thinking disposition (Kökdemir, 2003).

Kökdemir (2003) stated that when CCTDI-T was evaluated as a whole, people having scores less than 240 had a low general critical thinking disposition and people having scores above 300 had high general critical thinking disposition. According to CCTDI-T, having less than 240 scores is defined as low critical thinking disposition, having a score between 240 and 300 is defined as medium critical thinking disposition and having more than 300 scores is defined as high critical thinking disposition (Kökdemir, 2003).

### Data Collection

The study data was obtained from the voluntary students who continued their courses between November and December 2010 and participated in the study. Data was obtained from the questionnaire forms that were distributed to students in the classes by the researchers and then collected after they were filled. Before the questionnaire, the students were informed about the purpose of the study and voluntary participation. It was assumed that the students, who had completed

and returned the questionnaires, had given approval for the participation. Before commencing the study, a written permission was received from the management of school where the study was conducted and verbal permissions were taken from the participants.

#### Data Analysis

SPSS 18.0 software program was used to conduct statistical analyses. Percentage distributions, arithmetic average  $\pm$  standard deviation, independent groups t-test, One Way ANOVA test were used to evaluate data of the study.

#### Results

Critical thinking is one of the important skills of the health personnel in offering qualified health care services. This study investigated the critical thinking dispositions of the students attending at the vocational school of health services and examined its relationship with the variables such as their age, grade and school achievement status etc. Of the students participating in the study; 66.8% (n=276) were female, 33.2% (n=137) were male, 22.3% (n=92) were 18-year old and younger, 30% (n=124) were 19-year old, 26.2% (n=108) were 21-year old and older. It was determined that 59.1% (n=244) of the students were studying at the first class, 65.6% (n=271) were graduated from the medical vocational high school, 16.7% was working (Table 1). The program with the highest rate of participation was medical documentation and secretariat (24.5%).

**Table 1:** Distribution of the Socio-Demographic Characteristics of the Students

Characteristics	N (%)
<b>Department</b>	
Anesthesia	18 (4.4)
Dental prosthesis technology	20 (4.8%)
Geriatric care	25 (6.1%)
Physiotherapy	30 (7.3%)
Medical Imaging techniques	47 (11.4%)
Dialysis	49 (11.9%)
First and emergency aid	53 (12.8%)
Medical Laboratory Techniques	70 (16.9%)
Medical documentation and secretariat	101 (24.5%)
<b>Year</b>	
1 <sup>st</sup> Year	244 (59.1%)
2 <sup>nd</sup> Year	169 (40.9%)
<b>Age</b>	
18-year old and younger	92 (22.3%)
19-year old	124 (30.0%)
20-year old	89 (21.5%)
21-year old and older	108 (26.2%)
<b>Gender</b>	
Female	276 (66.8%)
Male	137 (33.2%)
<b>High School from which they were graduated</b>	
General high school	95 (23.0%)
Medical vocational high school	271 (65.6%)
Vocational technical high school	29 (7.0%)

Other	18 (4.4%)
<b>Working status</b>	
Working	69 (16.7%)
Not working	344 (83.3%)
<b>School achievement status</b>	
Excellent	28 (6.8%)
Good	196 (47.5%)
Average	179 (43.3%)
Poor	10 (2.4%)
<b>Total</b>	<b>413 (100.0%)</b>

The critical thinking disposition scores of the students included in the scope of the study are  $201.22 \pm 22.41$  and at low level. When their mean scores for each sub-scale of the inventory are considered, it is observed that, except for the sub scales Open-mindedness and Analyticity, they have low critical thinking dispositions (Table 2). In this study, the scores of the students are respectively  $25.59 \pm 5.12$  in sub-scale "Truth-seeking",  $44.07 \pm 9.78$  in sub-scale "Open-mindedness",  $49.51 \pm 7.72$  in sub-scale "Analyticity",  $21.22 \pm 4.08$  in sub-scale "Systematicity",  $27.27 \pm 5.45$  in sub-scale "Self-confidence", and  $33.54 \pm 5.76$  in sub-scale "Inquisitiveness". In these studies conducted by Zaybak and Khorshid (2006), Öztürk and Ulusoy (2008), Şenturan and Alpar (2008), Atay et al. (2009), Bulut et al. (2009), Kantek et al. (2010) on the levels of critical thinking of the nursing students they also found that the students had low mean scores of the critical thinking. Considering the mean scores obtained in the studies, it could be stated that the critical thinking dispositions of the students in the departments related to health services are not at the desired level.

**Table 2:** Distribution of mean scores obtained by students from California Critical Thinking Disposition Inventory and Its Sub-Scales

<b>CCTDI</b>	<b>X±SD</b>
Truth-seeking	$25.59 \pm 5.12$
Open-mindedness	$44.07 \pm 9.78$
Analyticity	$49.51 \pm 7.72$
Systematicity	$21.22 \pm 4.08$
Self-confidence	$27.27 \pm 5.45$
Inquisitiveness	$33.54 \pm 5.76$
<b>Total</b>	<b><math>201.22 \pm 22.41</math></b>

Considering the distribution of the critical thinking mean scores of the students in terms of age (Table 3), the critical thinking mean score of the students of 18 years and below is  $199.20 \pm 18.90$ , it is  $203.01 \pm 25.09$  for 19-year old students, it is  $199.82 \pm 24.66$  for 19-year old students, is  $202.04 \pm 19.90$  for the students of age 21 and above; as a result of the statistical analysis, there was no significant difference between mean scores ( $p > 0.05$ ). In this study, there was no statistically significant between the age and total score of critical thinking. In the study conducted by Rodriguez (2000) on the graduate

nurses, there was a significant positive relation between the age and total score of critical thinking disposition, scores of open-mindedness and maturity.

**Table 3:** Distribution of mean scores obtained by students from California Critical Thinking Disposition Inventory and Its Sub-Scales in terms of Age

CCTDI	18 year old and ↓	19 year old	20 year old	21 year old and ↑	F	p
	X±SD	X±SD	X±SD	X±SD		
Truth-seeking	25.67±5.26	25.99±5.24	25.76±5.45	24.92±4.54	0.901	p>0.05
Open-mindedness	43.39±9.38	43.58±9.91	43.71±9.78	45.50±9.96	1.054	p>0.05
Analyticity	48.92±6.78	50.21±7.88	49.42±7.90	49.27±8.19	0.557	p>0.05
Systematicity	21.16±3.51	21.35±4.70	21.38±4.33	21.00±3.54	0.192	p>0.05
Self-confidence	27.01±4.83	27.81±5.46	26.71±5.84	27.35±5.63	0.789	p>0.05
Inquisitiveness	33.04±5.26	34.04±6.23	32.80±5.41	33.98±5.88	1.237	p>0.05
<b>Total</b>	<b>199.20±18.90</b>	<b>203.01±25.09</b>	<b>199.82±24.66</b>	<b>202.04±19.90</b>	<b>0.676</b>	<b>p&gt;0.05</b>

Considering the mean scores obtained by the students in terms of their grade (Table 4), the mean score is 202.65±24.36 in 1st year students, and 199.15±19.13 in 2nd year students. As a result of the analysis, it is determined that there is statistically no significant difference between the mean scores in terms of grade (t=1.635, p>0.05). When the distribution of the CCTDI subscale mean scores in terms of grade is examined, there was statistically no significant difference between the sub-scale mean scores (p>0.05). In their study, Atay et al. (2009) stated that although the mean scores were increasing by grade, there was statistically no significant difference between the grades. In their study, Güneş and Kocaman (2005) determined that in the nursing students the critical thinking disposition scores were significantly low in first year; and although they increased in the 2nd and 3rd years, they were low in the final year. In their study, Beşer and Utku (2005) determined that there was a significant increase in the critical thinking disposition scores of the nursing students with increase in their year. In a study conducted by Topçu and Beşer (2005), they identified that in the undergraduate nursing students, the critical thinking disposition mean scores of the 2nd and 3rd year students were significantly higher in comparison to compared to the 1st year students, and they were low in the final year.

**Table 4:** Distribution of mean scores obtained by students from California Critical Thinking Disposition Inventory and Its Sub-Scales in terms of Grade

CCTDI	1 <sup>st</sup> year (n=244) X±SD	2 <sup>nd</sup> year (n=169) X±SD	t	p
Truth-seeking	25.97±5.40	25.04±4.63	1.827	p>0.05
Open-mindedness	44.36±9.63	43.65±10.01	0.718	p>0.05
Analyticity	49.63±8.08	49.33±7.20	0.385	p>0.05
Systematicity	21.45±4.32	20.89±3.68	1.386	p>0.05
Self-confidence	27.54±5.48	26.89±5.41	1.175	p>0.05
Inquisitiveness	33.68±5.91	33.32±5.56	0.628	p>0.05
<b>Total</b>	<b>202.65±24.36</b>	<b>199.15±19.13</b>	<b>1.635</b>	<b>p&gt;0.05</b>

Considering the distribution of the critical thinking disposition mean scores of the students in terms of school achievement status (Table 5), the critical thinking mean score of those defining their school achievement as excellent is 194.32±19.51, of those defining their school achievement as good is 202.49±22.78, of those defining their school achievement as average is 200.76±22.20, and of those defining their school achievement as poor is 203.90±25.59; and as a result of the statistical analysis, there is no significant difference between the mean scores ( $p>0.05$ ). Considering the scores of the students obtained from the sub-scales according to their school achievement status, the students, defining their school achievement status as excellent and good, received significantly lower scores from the sub-scales "truth-seeking" and "open-mindedness" and had significantly higher scores from the sub-scales "analyticity" and "self-confidence" in comparison to those that defined their achievement status as average and poor, ( $p<0.05$ ). In their study, Güneş and Kocaman (2005) stated that there was no difference between the critical thinking disposition and school achievement mean scores of the nursing students.

**Table 5:** Distribution of mean scores obtained by students from California Critical Thinking Disposition Inventory and Its Sub-Scales in terms of School Achievement Status

CCTDI	Excellent X±SD	Good X±SD	Average X±SD	Poor X±SD	F	p
Truth-seeking	24.21±4.77	25.33±5.47	25.89±4.67	29.10±5.36	2.653	<b><math>p&lt;0.05</math></b>
Open-mindedness	38.78±11.54	43.06±9.68	45.66±9.13	50.20±9.94	6.561	<b><math>p&lt;0.05</math></b>
Analyticity	49.28±9.58	50.58±7.70	48.62±7.11	45.10±10.45	3.203	<b><math>p&lt;0.05</math></b>
Systematicity	20.07±2.96	21.31±4.20	21.30±4.16	21.40±2.63	0.804	$p>0.05$
Self-confidence	27.82±6.20	27.97±5.41	26.54±5.23	25.10±6.59	2.809	<b><math>p&lt;0.05</math></b>
Inquisitiveness	34.14±6.85	34.21±5.65	32.73±5.73	33.00±3.77	2.228	$p>0.05$
<b>Total</b>	<b>194.32±19.51</b>	<b>202.49±22.78</b>	<b>200.76±22.20</b>	<b>203.90±25.59</b>	<b>1.169</b>	$p>0.05$

There was no significant difference between the critical thinking disposition scores of the students in terms of gender, department, working status and the high school where they graduated from ( $p>0.05$ ). In a study conducted by Atay et al (2009), they stated that there was statistically no significant difference between the critical thinking dispositions in terms of the departments of the students. The lack of a significant difference may be associated with to the fact that the admission points of the departments are close to each other, educational methods and techniques used in all the departments are the same and education is taught by the same instructors. In their study, Topçu and Beşer (2005) reported that in the inquisitiveness sub-scale of the critical thinking disposition inventory, the scores of the students who are not working are significantly higher compared to those who are working; in the truth-seeking sub-scale the scores of the vocational high school graduates are significantly higher compared to those who are graduates of Anatolian/super/science high school.

### Conclusions

The "Critical Thinking Disposition Inventory" mean scores of the students included in the scope of the study were determined to be low. It was also identified that there was statistically no significant difference between the mean scores obtained by students according to the departments and grades. In order to develop the critical thinking skill of the students who study at the vocational schools of health services, and are the future assistant medical staff, the educators should turn towards active learning strategies that provide meaningful learning instead of traditional learning strategies. The students studying in the departments of vocational schools of health services are mostly graduates of the medical

vocational high school and they either come with open admission system or are placed in these departments with very low scores. These students need to feel that they are receiving university education and be able to do what is required by this education and the diploma they receive. It is required that the assisting health staff, who are the greatest supporters of the doctors and the nurses at hospitals and will work at significant positions in public service in the field, gain the critical thinking skills.

### Recommendations

In the light of these results, it could be recommended that the educators and school administrators review their curricula and plan interventions to develop the critical thinking skills of the students.

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