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Original Article

Investigation of the Effect of Learning Styles on Critical Thinking Dispositions of Physiotherapy and Rehabilitation Students

Erhan SEÇER[1], **Derya ÖZER KAYA**[2]

[1]Department of Physiotherapy and Rehabilitation, Manisa Celal Bayar University, Faculty of Health Sciences, Manisa, Turkey
[2]Department of Physiotherapy and Rehabilitation, İzmir Kâtip Çelebi University, Faculty of Health Sciences, İzmir, Turkey

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ABSTRACT

Objective: This study was conducted to investigate the effects of learning styles on the critical thinking dispositions of physiotherapy and rehabilitation students.

Methods: In this study, 344 physiotherapy and rehabilitation students were included, which was planned as a cross-sectional design. The learning styles of students were assessed by the BIG16 Learning Styles Inventory and the critical thinking dispositions were assessed by the Marmara Critical Thinking Dispositions Scale.

Results: The dominant learning style of the students was observed to be visual (14.84 ± 5.93) and there was no significant difference between the auditory learning style scores of the students who did and did not do practical internships ($P = .039$). Also, the students' critical thinking dispositions were observed to be high (115.33 ± 11.59), and the level of the open-mindedness of senior students during critical thinking was higher than those of other grades ($P = .013$). However, no significant difference was found between the critical thinking dispositions of students with different learning styles ($P = .693$).

Conclusion: It is thought that the critical thinking dispositions of the students of the physiotherapy and rehabilitation department should be raised to a higher level in terms of all sub-dimensions in the undergraduate education process, and the course contents and practical internships of the department should be enriched visually and audibly. In addition, it is suggested that studies on physiotherapy and rehabilitation students consider students' learning styles and critical thinking dispositions by comparing face-to-face and distance education processes.

Keywords: Rehabilitation, learning, thinking, education

Introduction

Learning, which is a dynamic process that continues throughout life, is defined as permanent changes in the behavior of individuals through experiential or repetitive ways.[1] Learning styles, which are expressed as the learning path preferred by the individual in the process of obtaining and processing information, include various strategies that individuals use in this process.[2,3] Also, the basis of learning style is the idea that each individual's learning style can be different.[4] It is reported that learning styles have gained popularity in new education models that emphasize the importance of active learning in the education process.[5] These learning styles, which significantly affect the learning process of the individual and differ from individual to individual, can also change depending on the cognitive, sensory, and social development of individuals.[6] Thus, studies conducted in recent years show that individuals have different learning styles.[7]

Thinking, which is closely related to learning, is known as the ability to process the learned information correctly.[4] In other words, it includes the cognitive processing of the learned information. Critical thinking is known as a product and type of mental capital, which is the greatest wealth that individuals have.[8] Also, it is reported that thinking, which is accepted as a tool in the process of overcoming difficulties and accessing information, is an important aspect.[9] Critical thinking and problem solving are seen as important success indicators in the education process, while many factors must be taken into account in order to effectively maintain teaching and learning.[10,11] It is stated that the 2 main factors that determine problem-solving skills are learning styles and critical thinking.[11]

Corresponding author: Erhan SEÇER, e-mail: erhnscr86@hotmail.com

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Table 1. Demographic Characteristics, BIG16 Learning Styles Inventory Scores, and Marmara Critical Thinking Dispositions Scale Total and Sub-dimension Scores of Students

Variables	n	%
Gender		
Female	263	76.5
Male	81	23.5
Grade		
First grade	122	35.5
Second grade	90	26.2
Third grade	94	27.3
Fourth grade	38	11.0
Practical course (at least 1 semester)		
Yes	150	43.6
No	194	56.4
Practical internship (at least 3 weeks)		
Yes	54	15.7
No	290	84.3
Learning styles		
Auditory	60	17.5
Kinesthetic	38	11.0
Visual	246	71.5
	Min/Max	**Mean ± SD**
Age (years)	17/30	20.49 ± 1.79
BIG16 Learning Styles Inventory		
Auditory	–10/28	10.01 ± 5.84
Kinesthetic	–9/28	8.93 ± 6.17
Visual	–9/30	14.84 ± 5.93
Marmara Critical Thinking Dispositions Scale		
Scale total score	73/140	115.33 ± 11.59
Reasoning	9/30	24.79 ± 3.05
Reaching judgment	16/30	24.00 ± 3.18
Searching for evidence	8/20	16.71 ± 2.20
Searching for the truth	7/20	15.92 ± 2.23
Open-mindedness	11/20	17.24 ± 1.93
Systematicity	6/20	16.92 ± 2.05

Min/Max, minimum/maximum; SD, standard deviation.

Today, an important aim of the departments providing education in the field of health is to bring in professional professionals who think, learn, criticize, produce, and therefore, have a high level of problem-solving ability.[12] Accordingly, it is an important requirement to determine the learning styles and critical thinking dispositions that determine these skills and to examine whether different learning styles have an effect on critical thinking dispositions of students studying in the physiotherapy and rehabilitation (FTR) department, which aims to train health professionals who provide education in the field of health and have high problem-solving skills.

Table 2. Comparison of BIG16 Learning Styles Inventory Scores of Students Studying in Different Grades

Variables	n	Mean ± SD	F	*P*
Auditory			1.222	.302
First grade	122	9.48 ± 6.03		
Second grade	90	9.76 ± 5.41		
Third grade	94	10.38 ± 6.15		
Fourth grade	38	11.39 ± 5.35		
Kinesthetic			0.280	.840
First grade	122	8.72 ± 6.04		
Second grade	90	8.66 ± 6.53		
Third grade	94	9.32 ± 5.88		
Fourth grade	38	9.31 ± 6.51		
Visual			0.407	.748
First grade	122	15.06 ± 5.96		
Second grade	90	14.55 ± 5.90		
Third grade	94	15.12 ± 5.91		
Fourth grade	38	14.07 ± 6.10		

F, one-way analysis of variance test statistic; SD, standard deviation; $P < .05$.

In the literature, there are many studies examining the effects of learning styles of university students studying in different branches on their critical thinking skills, and the results differ.[13-15,16] Accordingly, Karadağ et al[13] reported that different learning styles affect critical thinking dispositions of midwifery and nursing students, Brudvig et al[16] reported that there is a weak relationship between learning styles and critical thinking skills of students at the beginning level of physical therapy doctorate, and Shirazi et al[15] reported that there was no relationship between the learning styles of nursing students and their critical thinking dispositions. However, it is seen that the number of studies conducted on students studying in the FTR department is limited.[9] Therefore, the aim of this study was to examine the effect of the learning styles on critical thinking dispositions of the students studying in the FTR department.

Methods

This cross-sectional study, which was carried out between March 2021 and April 2021, was conducted on 344 FTR students studying at Manisa Celal Bayar University. In line with the data obtained from the study, as

a result of the retrospective power analysis using the G*Power (3.1.9.2 version, Heinrich-Heine-Universität, Düsseldorf, Germany) program, it was concluded that at least 342 students should be included in the study for an effect size of 0.3 and a power of 86%.[17] Also, ethics committee approval was obtained from the İzmir Katip Çelebi University Social Studies Ethics Committee (2021-SAE-0030) before the study. Inclusion criteria of our study were as follows: to be studying in the FTR department of Manisa Celal Bayar University, to be willing to participate in the study, and to be able to read and understand Turkish; the exclusion criterion is to be studying in a different department.

Within the scope of the study, the "Google Forms" application was used, and the form created through this application was sent to the students via the internet (e-mail) and the students studying in the FTR department were allowed to participate in the study. A general information text about the purpose of the study and the possibility of voluntarily participating in this study options, "I want to participate in this study voluntarily" and "I do not want to participate in this study," comprised the first section of the form. Students who chose the option "I want to participate in this study voluntarily" were able to move on to the other section of the form. The questions including the socio-demographic information of the students (age, gender, grade of education, etc.), BIG16 Learning Styles Inventory (LSI), and Marmara Critical Thinking Dispositions Scale (MCTDS) comprised the second, third, and fourth sections of the form, respectively.

BIG16 Learning Styles Inventory is a scale that evaluates the learning styles of individuals and was adapted into Turkish by Şimşek.[18] The scale is of 5-point Likert type, contains 16 items for each learning style, and consists of 48 items in total.[9] Items, according to the Likert scale, are scored as "absolutely agree (2), agree (1), undecided (0), disagree (−1), absolutely disagree (−2)" and answers such as "disagree and absolutely disagree" indicate that learning style is not preferred.[9] If the total scores from the subtests are between 8 and 32, "the student has that style, if it is between −8 and −32, the student is responsive to that style."[18,19]

Marmara Critical Thinking Dispositions Scale was developed by Özgenel et al[8] and the scale consists of 6 sub-dimensions such as "reasoning" (6 questions), "reaching judgment" (6 questions), "searching for evidence" (4 questions), "searching for the truth" (4 questions), "open-mindedness" (4 questions), and "systematicity" (4 questions) and a total of 28 items. Items, according to the Likert scale, are scored as "never" (1), "rarely" (2), "sometimes" (3), "usually" (4), "always" (5). There is no reverse item in the scale and the high score obtained from each sub-dimension of the scale indicates that the individual has the characteristic evaluated by the relevant sub-dimension. The scale also gives a total score of critical thinking dispositions. While scoring the scale, the average of the sub-dimensions and the total score is taken.[8]

Statistical Analysis

The Statistical Package for the Social Sciences version 21 (IBM SPSS Corp., Armonk, NY, USA) package program was used for data analysis, and the normality of the variables was determined with the Kolmogorov–Smirnov test. For determining the differences between subgroups, independent samples *t*-test (if the number of groups is 2) and one-way analysis of variance (if the number of groups is more than 2) were used. After comparing more than 2 groups, when it was determined that there was a statistically significant difference between the groups, Tukey's test was used to determine which group caused this difference.

Results

Three hundred forty-four FTR students' filled forms created through the "Google Forms" application and sent to 624 FTR students and provided feedback to us, their demographic characteristics, the total and sub-dimension scores of BIG16 LSI and MCTDS are given in Table 1. Accordingly, it was concluded that the dominant learning style of the students was visual (14.84 ± 5.93), secondary learning style was auditory (10.01 ± 5.84), and tertiary learning style was kinesthetic (8.93 ± 6.17). However, the MCTDS total scores were high (115.33 ± 11.59); among the sub-dimensions of the scale, open-mindedness (17.24 ± 1.93) and systematicity (16.92 ± 2.05) scores were found to be higher.

Table 3. Comparison of BIG16 Learning Styles Inventory Scores of Students Who Took/Did Not Take Practical Course and Students Who Did/Did Not Do Practical Internship

	n	Mean ± SD	T	*P*
According to took/did not take practical course				
Auditory			0.926	.355
Took	150	10.34 ± 6.06		
Did not take	194	9.75 ± 5.67		
Kinesthetic			0.831	.407
Took	150	9.25 ± 6.19		
Did not take	194	8.69 ± 6.15		
Visual			0.348	.728
Took	150	14.71 ± 5.75		
Did not take	194	14.93 ± 6.08		
According to did/did not do practical internship				
Auditory			2.069	**.039***
Did	54	11.51 ± 5.70		
Did not	290	9.73 ± 5.83		
Kinesthetic			0.223	.098
Did	54	9.11 ± 5.50		
Did not	290	8.90 ± 6.29		
Visual			1.661	.824
Did	54	13.61 ± 5.32		
Did not	290	15.06 ± 6.02		

T, independent samples *t*-test; SD, standard deviation; *$P < .05$.

Comparison of the BIG16 LSI scores of the students studying in different grades are given in Table 2. Accordingly, it was observed that there was no significant difference between the BIG16 LSI auditory, kinesthetic, and visual learning style scores of students studying in different grades ($P = .302$, $P = .840$, $P = .748$, respectively).

The comparison of the BIG16 LSI sub-scores of the students who took or did not take any face-to-face practical course for at least 1 semester and who did or did not do a practical internship in a health institution/clinic for at least 3 weeks is given in Table 3. Accordingly, it was observed that there was no significant difference between the auditory, kinesthetic, and visual learning styles scores of the students who took and did not take the practical course and between the kinesthetic and visual learning styles scores of the students who did and did not do practical internships ($P = .355$, $P = .407$, $P = .728$, $P = .098$, $P = .824$, respectively). However, a significant difference was found between the auditory learning style scores of the students who did and did not do practical internships ($P = .039$). Accordingly, it was determined that the students who did practical internships had higher auditory learning style scores.

The comparison of the total and sub-dimension scores of the MCTDS of the students studying in different grades is given in Table 4. Accordingly, it was determined that there was a significant difference between the MCTDS open-mindedness scores of the students studying in different grades ($P = .013$). It was seen that the students studying in the fourth grade had higher MCTDS open-mindedness scores than the students studying in other grades. However, there was no significant difference between the total scores and the scores of the other 5 sub-dimensions of the MCTDS of the students studying in different grades ($P = .336$, $P = .115$, $P = .052$, $P = .308$, $P = .130$, $P = .177$, respectively).

The comparison of the total and sub-dimension scores of MCTDS of the students who took or did not take any face-to-face practical course for at least 1 semester and who did or did not do a practical internship in a health institution/clinic for at least 3 weeks is given in Table 5. Accordingly, it was observed that there was no significant difference between the sub-dimension and total scores of the MCTDS of the students who took and did not take the practical course ($P = .401$, $P = .189$, $P = .328$, $P = .624$, $P = .788$, $P = .115$, $P = .825$, respectively). Also, it was observed that there was no significant difference between the sub-dimension and total scores of the MCTDS of the students who did and did not do practical internships ($P = .476$, $P = .426$, $P = .331$, $P = .943$, $P = .066$, $P = .653$, $P = .271$, respectively).

Comparison of critical thinking dispositions of students with different learning styles is given in Table 6. Accordingly, it was observed that there was no significant difference between the critical thinking dispositions of students with different learning styles ($P = .693$, $P = .906$, $P = .629$, $P = .269$, $P = .209$, $P = .485$, $P = .423$, respectively).

Table 4. Comparison of Marmara Critical Thinking Dispositions Scale Total and Sub-dimension Scores of Students Studying in Different Grades

	n	Mean ± SD	F	*P*
Scale total score			1.133	.336
First grade	122	115.82 ± 11.97		
Second grade	90	115.76 ± 10.90		
Third grade	94	115.60 ± 11.27		
Fourth grade	38	112.07 ± 12.61		
Reasoning			1.991	.115
First grade	122	24.90 ± 3.32		
Second grade	90	25.28 ± 2.62		
Third grade	94	24.47 ± 3.11		
Fourth grade	38	24.02 ± 2.80		
Reaching judgment			2.767	.052
First grade	122	23.65 ± 3.30		
Second grade	90	24.28 ± 3.09		
Third grade	94	24.55 ± 2.93		
Fourth grade	38	23.07 ± 3.37		
Searching for evidence			1.204	.308
First grade	122	16.92 ± 2.17		
Second grade	90	16.83 ± 2.19		
Third grade	94	16.45 ± 2.24		
Fourth grade	38	16.36 ± 2.18		
Searching for the truth			1.898	.130
First grade	122	16.30 ± 2.03		
Second grade	90	15.62 ± 2.27		
Third grade	94	15.78 ± 2.21		
Fourth grade	38	15.78 ± 2.68		
Open-mindedness			5.186	**.013***
First grade	122	17.27 ± 2.06[a]		
Second grade	90	17.03 ± 1.89[a]		
Third grade	94	17.03 ± 1.86[a]		
Fourth grade	38	18.15 ± 1.49[b]		
Systematicity			1.653	.177
First grade	122	16.77 ± 2.12		
Second grade	90	16.70 ± 1.95		
Third grade	94	17.29 ± 2.00		
Fourth grade	38	17.00 ± 2.07		

SD, standard deviation; F, one-way analysis of variance test statistic; *$P < .05$, Superscripts a and b show the difference between groups. Groups with the same letters are statistically similar.

Discussion

As a result of this study, it was seen that the students had a predominantly visual learning style, the students who did practical internship had higher auditory learning style scores, students' critical thinking dispositions are high, and students with different learning styles, the critical thinking dispositions of the students who took and did not take practical courses and who did and did not do practical internship did not differ. However, it was observed that the fourth-grade students had a higher level of open-mindedness during critical thinking.

According to the current literature review, the variables most associated with the learning styles variable are observed to be "learning strategies" and "critical thinking" at a rate of 85%.[20] Thus, when we look at the literature, there are many studies examining the learning styles and critical thinking dispositions of students studying in different fields.[21-23] Accordingly, Avaroğulları et al[21] concluded that the learning styles of the students studying in the department of social sciences teaching differ, the learning styles and critical thinking dispositions of the students who continue their education in different grades do not differ, there is no relationship between their learning styles and critical thinking dispositions, and their critical thinking dispositions are at a moderate level. Açışlı[22] reported that the learning styles of the students studying in the elementary school teaching department differ, the learning styles and critical thinking dispositions of the students who continue their education in different grades do not differ, and different learning styles have an effect on their critical thinking disposition. Tümkaya[23] reported that science students' learning styles differ, their critical thinking disposition is low in general, the critical thinking dispositions of the students who continue their education in different grades are similar, and different learning styles have no effect on their critical thinking dispositions. Considering the results of the studies, it is seen that students studying in different fields have different learning styles, and their learning

Table 5. Comparison of Marmara Critical Thinking Dispositions Scale Total and Sub-dimension Scores of Students Who Took/Did Not Take Practical Course and Students Who Did/Did Not Do Practical Internship

	n	Mean ± SD	T	*P*
According to Took/Did Not Take Practical Course				
Total MCTDS score			0.221	.825
Took	150	115.18 ± 11.68		
Did not take	194	115.45 ± 11.54		
MCTDS reasoning			0.840	.401
Took	150	24.63 ± 3.08		
Did not take	194	24.91 ± 3.01		
MCTDS reaching judgment			1.318	.189
Took	150	24.26 ± 3.12		
Did not take	194	23.80 ± 3.22		
MCTDS searching for evidence			0.979	.328
Took	150	16.58 ± 2.21		
Did not take	194	16.81 ± 2.19		
MCTDS searching for the truth			0.491	.624
Took	150	15.86 ± 2.35		
Did not take	194	15.97 ± 2.14		
MCTDS open-mindedness			0.301	.788
Took	150	17.27 ± 1.82		
Did not take	194	17.21 ± 2.02		
MCTDS systematicity			1.582	.115
Took	150	17.12 ± 2.00		
Did not take	194	16.76 ± 2.07		
According to did/did not do practical internship				
Total MCTDS score			1.102	.271
Did	54	113.74 ± 11.66		
Did not	290	115.63 ± 11.57		
MCTDS reasoning			0.713	.476
Did	54	24.51 ± 2.75		
Did not	290	24.84 ± 3.10		
MCTDS reaching judgment			0.798	.426
Did	54	23.68 ± 3.26		
Did not	290	24.06 ± 3.17		
MCTDS searching for evidence			0.973	.331
Did	54	16.44 ± 1.90		
Did not	290	16.76 ± 2.25		
MCTDS searching for the truth			0.071	.943
Did	54	15.90 ± 2.61		
Did not	290	15.93 ± 2.16		
MCTDS open-mindedness			1.953	.066
Did	54	17.68 ± 1.75		
Did not	290	17.15 ± 1.95		
MCTDS systematicity			0.450	.653
Did	54	17.03 ± 1.99		
Did not	290	16.90 ± 2.06		

T, independent samples *t*-test; SD, standard deviation; MCTDS, Marmara Critical Thinking Dispositions Scale; *$P < .05$.

styles and critical thinking tendencies do not differ according to the grade level. However, studies report different results on the effects of learning styles on critical thinking dispositions.

Considering that critical thinking, problem-solving, and decision-making are the important skills that health professionals should have in providing a quality health service, it is an important requirement to determine the critical thinking dispositions of the students who continue their education in the field of health and to examine the effects of the learning styles they adopted on their critical thinking dispositions during their education. However, when we look at the literature, it is seen that there are few studies involving students studying in the field of health.[9,13,15] Accordingly, Karadağ et al[13] concluded that the learning styles of the students studying in nursing and midwifery departments differ, the learning styles of the students who continue their education in different grades do not differ, their critical thinking dispositions are low, and different learning styles affect their critical thinking dispositions. Also, Hüzmeli et al[9] reported that the learning styles of FTR department students who continue their education in different grades do not differ, their critical thinking dispositions are low, and their learning styles and critical thinking dispositions are related. However, Shirazi et al[15] reported that nursing department students had low critical thinking dispositions and that there was no relationship between students' learning styles and critical thinking dispositions.

Table 6. Comparison of Critical Thinking Dispositions of Students with Different Learning Styles

	n	Mean ± SD	F	*P*
MCTDS reasoning			0.186	.906
Auditory	60	24.73 ± 3.29		
Kinesthetic	38	24.73 ± 3.17		
Visual	246	24.80 ± 2.98		
MCTDS reaching judgment			0.580	.629
Auditory	60	23.53 ± 3.51		
Kinesthetic	38	24.21 ± 3.64		
Visual	246	24.08 ± 3.03		
MCTDS searching for evidence			1.316	.269
Auditory	60	16.30 ± 2.82		
Kinesthetic	38	16.44 ± 2.03		
Visual	246	16.84 ± 2.04		
MCTDS searching for the truth			1.520	.209
Auditory	60	15.56 ± 2.68		
Kinesthetic	38	15.68 ± 2.16		
Visual	246	16.04 ± 2.11		
MCTDS open-mindedness			0.817	.485
Auditory	60	17.50 ± 1.94		
Kinesthetic	38	16.89 ± 2.07		
Visual	246	17.22 ±1.91		
MCTDS systematicity			0.938	.423
Auditory	60	17.16 ± 2.05		
Kinesthetic	38	16.60 ± 1.95		
Visual	246	16.90 ± 2.06		
Total MCTDS score			0.485	.693
Auditory	60	114.46 ± 12.92		
Kinesthetic	38	114.23 ± 12.74		
Visual	246	115.68 ± 11.09		

SD, standard deviation; MCTDS, Marmara Critical Thinking Dispositions Scale; F, one-way analysis of variance test statistic; $P < .05$.

As a result of our study, it was concluded that the dominant learning style of the students was visual, secondary learning style was auditory, and tertiary learning style was kinesthetic learning style. In other words, it was determined that 71.5% of the students preferred visual, 17.5% auditory, and 11.0% kinesthetic learning styles. Accordingly, it was observed that the students adopted different learning styles. This result we found is similar to the literature.[13,21-23] However, contrary to some studies in the literature, our study concluded that students who continue their education in the field of health have high critical thinking dispositions.[9,13] This result may be due to the evaluation of critical thinking dispositions with different scales in studies. Also, FTR department curricula in different universities differ, which may be effective in this result. However, in our study, it was seen that both the learning styles and generally (except for the open-mindedness subdimension) critical thinking dispositions of the students studying in different grades did not differ. This result of our study is also similar to the results of previous studies.[9,13,21-23] However, these results obtained from the studies and especially the fact that critical thinking dispositions remained at a similar level throughout the undergraduate period indicate that the curricula of departments providing education in different fields should be reviewed.

Also, as a result of our study, it was seen that the level of open-mindedness during critical thinking of fourth-grade students was higher. Although the other results of our study point out that the critical thinking dispositions of the students studying in different grades, took and did not take practical courses and did and did not do practical internships do not differ; the high level of open-mindedness, which is the sub-dimension of MCTDS, of fourth-grade students can be interpreted as high self-confidence of these students. This situation can be explained by the positive cumulative effect of the theoretical and practical courses that these students took until the last year and the experiences they gained during their practical internships.

Practical courses and internships are included in the curriculum of the departments providing education in the field of health and have an important role in the development of students' professional skills.[24] Accordingly, different from the literature, in our study, students' learning styles and critical thinking dispositions were also examined in terms of whether they took any face-to-face practical course for at least 1 semester and whether they did a practical internship in a health institution/clinic for at least 3 weeks. However, it was observed that the critical thinking dispositions of the students who took or did not take practical course and who did or did not do practical internship did not differ in general. Within the scope of the study, although the criterion of the students' practical courses they took and their internships face-to-face is taken into account, this result suggests that students continuing their undergraduate education as distance education during the pandemic period negatively affects their critical thinking dispositions. However, it was determined that the students who did the practical internship had higher auditory learning style scores than the students who did not do the practical internship. It is thought that the information that the supervisor verbally conveyed to the students during the practical internship and the patient history taken within the scope of the evaluation of the patients was effective on this result.

Another subject examined within the scope of our study is whether the different learning styles of the students have an effect on their critical thinking dispositions. As a result of our study, it was seen that the critical thinking dispositions did not differ according to the different learning styles of the students. Similarly, Tümkaya[23] reported that different learning styles of students had no effect on their critical thinking dispositions. However, Karadağ et al[13] concluded that the different learning styles of the students who continue their education in the field of health are effective on their critical thinking dispositions. Also, Hüzmeli et al[9] reported that FTR students' critical thinking dispositions were related to their learning styles. It is thought that the different results obtained from the studies are due to the students who have different critical thinking dispositions and learning styles individually.

FTR department students included in the study continued their education as distance education due to the pandemic on the dates of the study, students studying in other departments providing education in the field of health are not included in the study, no analysis by gender was done, the number of those who do and do not do internships is not similar and this situation may affect the analysis, although the applied courses as the curriculum content of the department are generally in the third and fourth grades, the sub-analysis was not made according to the grades which are the limitations of the study. Especially, the distance education system implemented during the pandemic period may have negatively affected the learning styles and critical thinking tendencies of the students. Therefore, it is thought that this detail should be taken into account in future studies.

Conclusion

As a result of this study, it was seen that the students had a dominant visual learning style and the students who did the practical internship adopted the auditory learning style. Also, it was observed that critical thinking dispositions were high and fourth-grade students preferred open-mindedness during critical thinking. Accordingly, it is thought

that the critical thinking dispositions of FTR department students, who will serve as health professionals after graduation, should be increased in terms of all sub-dimensions, and the department course contents and practical internships should be enriched visually and audibly. Also, it is suggested that studies on FTR students should consider students' learning styles and critical thinking dispositions by comparing face-to-face and distance education processes.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of İzmir Katip Çelebi University (Date: February 26, 2021, Decision Number: 2021-SAE-0030).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

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