AN INVESTIGATION INTO THE CRITICAL THINKING SKILLS OF UNIVERSITY STUDENTS

ÜNİVERSİTE ÖĞRENCİLERİNİN ELEŞTİREL DÜŞÜNME BECERİLERİNİN İNCELENMESİ

Asude BİLGİN*, Jale ELDELEKLİOĞLU**

ABSTRACT: The aim of the present study was to investigate into the critical thinking skills of late adolescent Turkish university students. The subjects of the study were the 39 students from the Department of Counseling Psychology and Guidance, Faculty of Education, Uludağ University. Two separate discussion groups, each including five students, were composed to discuss the chosen topics in class for five weeks. While the first group was asked to develop ideas in favor of the given topic, the other was asked to develop counter arguments against it. Discussions were held during a class hour of 50 minutes. The recorded discussions were analyzed using a content analysis method. The speeches of students were placed into one of the four categories defined beforehand as: 'Indicating a person/people as reference', 'Indicating a document as proof', 'Making rational speech' and 'Making emotional speech'. The data analyses revealed that university students had a tendency to speak emotionally most of the time. This was followed, in order of frequency, by 'Speaking rationally', 'Indicating a document as proof', and 'Indicating a person/people as reference'. The results are discussed in the light of the related literature.

Keywords: critical thinking, student, content analysis

ÖZET: Bu araştırmanın amacı, Türkiye deki geç ergenlik dönemindeki üniversite öğrencilerinin eleştirel düşünme becerilerini incelemektir. Araştırmaya Uludağ Üniversitesi Eğitim Fakültesi PDR bölümünde okuyan 19–22 yaşları arasında 39 öğrenci (% 42 kız, % 58 erkek) katılmıştır. Araştırmanın amacına yönelik olarak verilen konuları sınıf ortamında toplam beş hafta boyunca tartışmak üzere her konu için beşer kişilik iki tartışma grubu oluşturulmuştur. Birinci gruptan verilen konuyu savunması, ikinci gruptan ise aynı konuda karşı savunma geliştirmesi istenmiştir. Her biri 50 dakikalık ders saatinde yapılan tartışmalar araştırmacılar tarafından ses bantlarına kaydedilmiş, daha sonra bu tartışmalar içerik analizi yöntemi ile çözümlenmiştir. İçerik analizi ile öğrencilerin tüm konuşmaları daha önceden araştırmacılar tarafından, kanıt gösterme, kişiyi kaynak gösterme, mantıklı konuşma ve duygusal konuşma olarak belirlenen dört içerik kategorisine yerleştirilmiştir. Yapılan analizler sonucunda ergenlerin tezlerini savunurken daha çok duygusal konuştukları görülmüştür bunu sırası ile mantıklı konuşma, belgelere dayanarak konuşma ve kişiden alıntı yaparak konuşma izlemektedir. Bulgular yazınlık bilgileri ışığında tartışılmış ve bazı öneriler sunulmuştur.

Anahtar Sözcükler: eleştirel düşünme, öğrenci, içerik analizi

1. INTRODUCTION

Thinking is unique to human beings in the sense that the ability to think makes them the most developed creatures of the world. It serves as the connection between the individual's cognitive functions and external stimuli and is the integrative part of our behavior pattern in the world (Elder & Paul 2001). A person cannot always overcome new situations by means of automatic and simple reactions. Especially in ambivalent situations, factors like limited knowledge and time force a person to think in certain ways (Kökdemir 2005). To put it differently, individuals do not think randomly; rather the thinking process becomes applied for a specific purpose. The wishes, needs, interests and values of the thinking person clarify this purpose. Every thing we do and produce, in other words our quality of life, depends on our thoughts (Scriven & Paul 2004). On the other hand, most of our thoughts are subjective, partial, prejudiced and somehow distorted. Vinacke (1952) defined the

---

* Assoc. Prof. Dr., Uludag University, Faculty of Education, asudebilgin@uludag.edu.tr

** Assist. Prof. Dr., Uludag University, Faculty of Education, Counseling Psychology and Guidance, eldelek@uludag.edu.tr

thinking process as subjective, emotional, intuitive and introverted thinking on one side, and objective, realistic, deductive and inductive thinking on the other side of a continuum.

In the 1980's, cognitive psychologists and educationalists started to search for an answer to the question 'What is critical thinking?' In fact, the concept of critical thinking has been discussed since ancient times. The term first appeared as a Greek word "critic" or "kritike". Then the word passed into Latin as "criticus" and spread to some other languages and became used to mean "The art of judgment". Even around 600 B.C. Socrates defined critical thinking as "evaluating something with bad and good sides" and introduced it as a method of inquiry (Ruppel 2005).

There is no single and universally agreed definition of critical thinking. Piaget discussed critical thinking as a developmental process, which goes from concrete thinking to abstract thinking. Dewey suggested that critical thinking is already at the basis of all thinking. Bloom defined critical thinking as a cognitive skill, which improves in a hierarchical manner (as cited in Kaya 1997).

Watson and Glaser (1964) defined critical thinking as the combination of knowledge, attitudes and skills and specified that this process contains the following qualifications:

- Becoming aware of the problem, asking and searching proofs for the presented knowledge.
- Making rational generalization and abstraction from several kinds of evidences.
- Developing the skill of exercising this knowledge and behavior.

Watson and Glaser (1964) developed an instrument including five subscales to measure the critical thinking and these subscales are inference, definition of suggestions, induction, interpretation of findings and assessment of arguments (as cited in Gadzella & Baloğlu 2003).

According to Victor (1992), the purpose of critical thinking is to understand the situation, to evaluate different points of view and to solve problems. These three fields require inquiry as a body (as cited by Lara, 2007). Kurland and Daniel (as cited by Fowler 2002) stated that critical thinking is connected with rationality, liberalism and clarity of mind while it is contrary to emotionality, mental inactivity and insularity. For this reason, critical thinking involves following proofs, thinking about all the possibilities, relying upon reasons instead of feelings, considering different points of view, taking into account the effects of prejudices, and not refusing popular opinions.

According to Ennis (1991), critical thinking means the evaluation of written or verbal expressions in reference to rational rules. Critical thinking denotes finding the meaning of an expression and deciding to accept or to deny it. Such a thinking process has 12 requirements:

- Comprehending the meaning of propositions or verbalizations.
- Judging the chain of reasoning to see if there is an ambiguity.
- Judging the given expressions to see if they are contradictory.
- Explaining the situation and trying to understand if it is possible to deal with a judgment.
- Deciding whether the expression is clear enough.
- Controlling the application of principles and rules.
- Determining the reliability of the results of observations.
- Arguing about results that are derived by means of induction.
- Revising the problem
- Judging the assumptions
- Judging the given definitions and the new organized definitions.
- Deciding about the acceptance or denial of the proposals that are presented by authorities.

According to Ennis (1991), a critical thinker is supposed to use most of these criteria and even all of them in some situations.

Paul, Binker, Jensen, and Kreklau (1990) reported that critical thinking strategies could be divided into three groups:

a) Affective Strategies
b) Cognitive Strategies-Macro-Abilities
c) Cognitive Strategies-Micro-Skills

Affective strategies include thinking independently, avoiding egocentricity or sociocentricity, exploring thoughts underlying feelings and feelings underlying thoughts, developing intellectual humility and suspending judgment, developing intellectual courage, developing intellectual good faith or integrity, developing intellectual perseverance, developing confidence in reason, and avoiding overgeneralizations and oversimplifications.

Cognitive strategies-macro-abilities involve comparing similar situations, transferring insights to new contexts, developing one's perspective, clarifying issues, conclusions, or beliefs, clarifying and analyzing the meanings of words or phrases, developing criteria for evaluation, clarifying values and standards, evaluating the credibility of information sources, questioning deeply, analyzing or evaluating arguments, interpretations, beliefs, or theories, generating new solutions, reading and listening critically, practicing Socratic discussion, and reasoning dialectically.

Cognitive Strategies-Micro-Skills consist of comparing and contrasting ideals with actual practice, using critical vocabulary, noting significant similarities and differences, examining or evaluating assumptions, distinguishing between relevant and irrelevant facts, evaluating evidence, and exploring implications and consequences

It would be ridiculous to accept the fact that people always use these criteria while thinking. Almost all people have irrational, nonsense, absurd, pointless or fantastic thoughts at some time in their lives. It is only a matter of degree. That is why, critical thinking skills need improving continuously (Scriven & Paul 2004).

1.1. The Characteristics of Critical Thinkers

Ming-Lee Wen (1999) claimed that a critical thinker can be identified by the following four activities s/he is involved in: investigation, extensive thinking, freethinking and reconstruction. Investigation is defined as inquiry, analysis, evaluation and explanation of assumptions. Extensive thinking means inquiring the reasons for true decisions. Freethinking is thinking independently. Reconstruction consists of the following three possibilities: (1) the individual approves the current value system, or (2) s/he reorganizes it, or (3) changes his or her beliefs.

Ferrett (1997) reported that a critical thinker asks appropriate questions, accepts his or her lacking of knowledge or conceptualization, is curious, has standards for analysis, listens to the others around, gives feedback, can compare beliefs and assumptions with facts, can postpone decisions to the end of this process, can rearrange these in case of new developments.

According to Beyer (1991), an individual with a critical spirit can define a problem in detail, thinks before taking action, searches for reasons and proofs, collects information in advance, does not decide until sufficient evidence is collected, and decides in the direction of the problem and the purpose rather than considers beliefs and wishes. In this case, a student with critical thinking skills correctly names the objects and opinions without using slang and asks his or her friends or teachers to give explanations about the words used. S/he revises the alternatives, examines the direction, makes plans, and asks questions when s/he has doubts, defines the problem again and divides it into sub problems. When s/he encounters a new problem, s/he compares it with the old ones.

Elder and Paul (2001) claimed that those who internalize and use continuously these questions are the critical thinkers: "Is my purpose clear, is it realistic, is it consistent, is it honest and fair and am I decided for it?".

1.2. The Factors that Influence the Power of Critical Thinking

There are individual differences regarding the development and presentment of critical thinking. The followings are two principal factors for this: The cognitive factors that have limitations related to hereditary properties and experiences gained by learning from the environment.

Intelligence, one of the most important of cognitive factors, plays a very important role in the development of critical thinking. Intelligence, empowering the strength of discernment, is not the only factor affecting problem solving and critical thinking. The factors which are learned from the

environment are generally emotional. Some of them affect the critical thinking process negatively. Generally these result from family relationships and can be listed as follows: Dependent personality features, feelings of inferiority, lack of conceptualization due to insufficient experiences, prejudices, identification with some specific ideas and groups and living in stressful environments, etc. (Kazancı 1989).

1.3. The Importance of Critical Thinking

Modern life, a prerequisite for the democratic life style in which the individuals make their own decisions and can express themselves freely, frequently causes people to come face to face with some important turning points, which require making serious decisions. For this reason, an individual has to evaluate the findings in the environment objectively so as to avoid from prejudice, and then make most effective decisions. Critical thinking helps to activate and improve the inner power of individuals, and so raises their self-confidence. It enables them to become more selective, so individuals start to become aware of the problems. They also gain the ability to argue about the recommendations and to search for alternative solutions. One more benefit of critical thinking is that it might protect individuals against the negative and disruptive effects of propaganda and advertisements. Thus, it helps them to become the citizens who can differentiate between good and bad and also right and wrong.

Since it is very important to describe the characteristics of the university students with critical thinking skills in Turkey, one of the developing countries of the world, the present study aimed to investigate into the critical thinking level of university students regarding some criteria developed in relation to the conceptual framework of the field. These criteria were defined as "Indicating a document as proof", "Indicating a person/people as reference", "Making rational speech" and "Making emotional speech". To reach this aim, the arguments that university students made on an issue were assessed according to the above-mentioned criteria.

2. METHOD

In this study, both qualitative and quantitative research methods were used.

2.1. Research Group

The participants of the study were the second year students (n=39) from the Department of Psychological Guidance and Counseling, Faculty of Education, Uludag University. They ranged in age from 19 to 22 years old (42 percent girls and 58 percent boys). Male and female students were not equal in number because of voluntary participation.

At the beginning of the study 50 students were volunteered to discuss the topics chosen together with the researchers, which continued for five weeks, in groups including 10 students. However, due to some reasons and excuses, some of them could not complete the discussions, and so only 39 of them completed the research.

2.2. Process

The study was carried out during the 2004-2005 academic year, using the course hours of the departmental must course 'Adolescent Psychology'. It lasted for 5 weeks. During each of the five weeks, only one group of students (10 volunteers) was asked to participate into the discussions. Each group was then divided into two subgroups, one (5 students) was given a thesis to defend and the other one (5 students) was directed to talk about the counter-thesis. The five topics given to the two subgroups to argue for or against were: "Education must be given against payment or not"; "Family planning has to be practiced or not"; "Turkey has to be a member of European Union or not"; "Gender discrimination has to go through or not"; "Our value system has to change or not". Before one week of

the discussion the topics were given to the students to prepare. During the discussion all the groups were informed that the sessions would be recorded to the audiotape. Every student was asked to prepare a five-minute talk; thus, a session lasted for 50 minutes. The speeches were recorded with a voice recorder. The other students who participated as listeners were asked to analyze the speeches considering the above-mentioned four criteria. These assessments were taken into consideration by the researchers. Throughout the study, no feedback was given to the participants. Then, the researchers analyzed the discussions after each session.

2.3. Content Analysis

Content analysis is used in two steps. The first step requires dividing the verbal expressions into analyzable units as defined before, and the second one entails the classification of these units into well-defined content categories (Livesley & Bromley, 1973, as cited in Bozkurt & Aydın, 2004). Regarding the rules of the content analysis operation, the present study, too, divided the verbal expressions of the students (342 sentences uttered) into the forms of analyzable units in the first step. Then in the second step, these sentences were put into the categories of critical thinking as defined beforehand. These categories were specified after a set of interpretations by the researchers following the review of the literature. The sentences including statistics, documents, newspapers, TV programs or magazine news were placed into the category 'Indicating a document as proof'. The sentences including citations from writers, theoreticians, or specialists, quotations from direct life experiences of a person and/or others were put into the category 'Indicating a person/people as reference'. Objective, rational, unbiased, coherent sentences were settled into the category 'Rational speech'. Finally, subjective, irrational, prejudiced, inconsistent sentences were put into the category 'Emotional speech'. At the end of this operation, 342 sentences were analyzed and put into the categories as defined before. These were evaluated for each week and numerical and percentile values were calculated. The two researchers made this analysis, and then two independent psychologists (who hold PhD degrees) were requested to repeat the same analysis. The analyses of them were harmonious largely with the researchers' (75 percent). When different judgments appeared, the majority's point of view was accepted. At the other side, the other students, participating as listeners to the study, were asked to give their judgments about the speeches of the students and the coherence was around .80 percent.

2.4. The Reliability of Content Analysis

Le Compte and Goetz (1982) recommended some strategies to check for the reliability of content analysis, such as asking more than one researcher for analyzing, and looking for the consistency between/ among them, and making a data analysis in relation to an explicitly defined conceptual framework (as cited in Yıldırım & Şimşek 2000).

In the present study, the sentence analyses that the participants (who participated as listeners to the in- class discussions) made were compared with those the researchers made, and a conformity was looked for. This proportion was nearly 80 percent. In addition to this, two independent psychologists were requested to make the same analyses. The conformity rate was found to be 75 percent between the researchers' analyses and these two judges. Livesley and Bromley (1973) stated that the conformity among the judges can change between 58 % and 95 % and these percentages were acceptable (as cited in Bozkurt & Aydın 2004).

3. RESULTS

First, the sentences (342 sentences) that the students uttered during the discussions were divided into analyzable units, and then, they were put into four categories.

The content analysis of the sentences, a student (who was an arguer in favor of the subject entitled 'Education Must Be Given against Payment') made during the first week, was given below in Table 1.

Table 1: A Sample Analysis for a Student who Participated in the Discussions during the First Week according to the Criteria 'Indicating a document as proof', 'Indicating a person/ people as reference', 'Making rational speech' and 'Making emotional speech'

Student: Sevinç Subject: 'Education must be given against payment or not' 1st week			
Indicating a document as proof	**Indicating a person/ people as reference**	**Rational speech**	**Emotional speech**
- I watched on TV that no univerities in Turkey (including the highly ranked ones such as METU, Bilkent, and the University of Bosphorus) are equivalent to those in Europe and the US.	- At a primary school, a student beside me asked the headmaster of the school for a piece of chalk and the headmaster said, "We have no chalk because we have not been able to raise any cash from the students yet." (experience)	- A family with two children can allocate more for a child than a family with more children.	In Germany, education is without fee and many scholarships are available, but in Turkey, it is impossible for the government to do this due to the high population of young people.
- I watched on a program named 'Kampus' on CNBC-E, and in this program an Austrian Prof. Dr. said, "Our education system is different from yours in that we rely on practical education."	- The headmaster of the school (where we had been doing our placement) said, "the government pays only one manservant. (experience)	- You cannot ask a teacher in a public school to teach better because their possibilities are limited. However, you can ask a teacher in a private school to do better. This, of course, increases the quality of education in private schools.	- We love the young population very much, but since our country cannot afford all of them, the rich ones should take education.
	- At our computer class, ten students share a computer. (experience)	- The classes are very crowded at public schools. For this reason, a teacher can handle only with the hardworking and the hard-to-control students, and so the rest are usually wasted.	- Some friends of ours have 10-14 brothers/sisters. It is their problem. They should not have had so many children.
		- Almost all students attend a private course at least once in their school life in Turkey, and this indicates the poor quality of education in public schools. This fact also indicates that families can find money for education.	- Many parents are smoking cigarettes. They should give it up and allocate this amount of money for their children's education.
		- The students who can afford to pay the fee should pay and the ones who cannot should not. The poor students should be supported with scholarships.	- No education without fee is provided in any part of the world.
			- The bosses of the textile industry in Bursa send their children to Hungary for a better education, but despite this, the education they take is not so good.
Total: 2	3	5	6

In the second step of the study, the classified sentences were presented in numerical and percentile values, using the content analysis method.

Table 1 presents the numerical and percentile distribution values of the sentences (that were divided into four categories after the content analysis) that students made in favor of the subject entitled 'Education Must Be Given against Payment' during the first week.

Table 2: The Numerical and Percentile Distribution of Student Discussions in the 1st Week According to the Criteria "Indicating a document as proof", "Indicating a person/people as reference", "Making rational speech" and "Making emotional speech". (Education must be Given against Payment or not)

Number of responses / Students	Indicating a Document as Proof		Indicating a person/people as reference		Rational Speech		Emotional Speech		Total	
	f	%	f	%	f	%	f	%	f	%
1	2	2,43	3	3,65	5	6,09	6	7,3	16	19,47
2	0	0	1	1,21	4	4,88	3	3,65	8	9,74
3	3	3,65	1	1,21	2	2,43	2	2,43	8	9,72
4	2	2,43	0	0	3	3,65	7	8,54	12	14,62
5	2	2,43	0	0	1	1,21	8	9,75	11	13,39
6	1	1,21	0	0	2	2,43	2	2,43	5	6,07
7	0	0	1	1,21	1	1,21	2	2,43	4	4,85
8	0	0	1	1,21	4	4,88	3	3,65	8	9,74
9	3	3,65	0	0	2	2,43	5	6,09	10	12,17
Total	13	15.80	7	8 ,49	24	29.21	38	46.5	82	100

From the discussions of the first week, totally 82 sentences were analyzed. 38 of them were evaluated as making emotional speech (46.5 %), 24 of them were evaluated as making rational speech (29.21 %), 13 of them were evaluated as indicating a document as proof (15 %), and 7 of them were evaluated as indicating a person/people as reference (8.49 %).

Table 3 presents sentence analysis for the discussion about 'Family planning has to be practiced or not' during the second week.

Table 3: The Numerical and Percentile Distribution of Student Discussions in the 2nd Week According to the Criteria 'Indicating a document as proof', 'Indicating a person/people as reference', 'Making rational speech' and 'Making emotional speech'.(Family planning has to be practiced or not)

Number of responses / Students	Indicating a Document as Proof		Indicating a person/people as reference		Rational Speech		Emotional Speech		Total	
	f	%	f	%	f	%	f	%	f	%
1	0	0	0	0	6	9,09	2	3,03	8	12,12
2	2	3,03	0	0	7	3,03	0	0	4	6,06
3	1	1,51	0	0	2	10,60	0	0	8	12,12
4	5	7,57	0	0	0	0	5	7,57	10	15,15
5	2	3,03	0	0	8	12,12	5	7,57	15	22,72
6	0	0,00	0	0	0	0	5	7,57	5	7,57
7	2	3,03	0	0	1	1,51	9	13,63	12	18,18
8	0	0	0	0	1	1,51	3	4,54	4	6,06
Total	12	18,2	0	0	25	38	29	43,9	66	100

When Table 3 was examined, it was observed that there were totally 66 sentences which appeared to belong to three distinct categories as 'emotional speech' (29; 43.93 %), 'rational speech' (25; 38.04 %) and 'indicating a document as proof' (12; 18.17 %). No sentences appeared to belong to the category 'indicates a person/people as reference'.

Table 4 gives the frequencies and percentiles of sentences related to the discussion 'Turkey has to be a member of the European Union or not'.

Table 4: The Numerical and Percentile Distribution of Student Discussions in the 3rd Week According to the Criterion "Indicating a document as proof", "Indicating a person/people as Reference", "Making rational speech' and 'Making emotional speech".("Turkey has to be a member of the European Union or not")

Number of responses / Students	Indicating a Document as Proof		Indicating a person/people as referenc		Rational Speech		Emotional Speech		Total	
	f	%	f	%	f	%	f	%	f	%
1	3	6,38	2	4,25	2	4,25	3	6,30	10	21,38
2	2	4,25	2	4,25	5	10,60	0	0	9	19,50
3	0	0	0	0	1	2,10	1	2,10	2	4,25
4	0	0	0	0	1	2,10	3	6,30	4	8,30
5	0	0	1	2,10	1	2,10	3	6,30	5	10,50
6	0	0	0	0	0	0	3	6,30	3	6,30
7	0	0	0	0	0	0	2	4,25	2	4,25
8	0	0	0	0	2	4,25	5	10,60	7	14,80
9	0	0	1	2,10	1	2,10	3	6,30	5	10,50
Total	5	10,5	6	12,6	13	27,4	23	48,4	47	100

Table 4 showed that 23 out of total 47 sentences were evaluated as emotional speech (48.4 %), 13 sentences as 'rational speech' (27.4 %), 6 sentences were found to be related to 'indicating a document as proof' (%12.6) and 5 sentences were related to 'indicating a person/people as reference' (10.5 %).

Table 5 indicates the analysis related to the discussion 'Gender discrimination has to go through or not'.

Table 5: The Numerical and Percentile Distribution of Student Discussions in the 4th Week According to the Criterion 'Indicating a document as proof', 'Indicating a person/people as Reference', 'Making rational speech' and 'Making emotional speech'.("Gender discrimination has to go through or not")

Number of responses / Students	Indicating a Document as Proof		Indicating a person/people as reference		Rational Speech		Emotional Speech		Total	
	f	%	f	%	f	%	f	%	f	%
1	1	1,07	0	0	3	3,61	0	0	4	4,81
2	6	7,22	0	0	4	4,81	1	1,07	11	13,25
3	5	6,02	0	0	4	4,81	0	0	9	13,25
4	5	6,02	0	0	7	8,43	1	1,07	13	10,84
5	2	2,40	1	1,07	0	0	7	8,43	10	12,04
6	3	3,61	0	0	4	4,81	4	4,81	11	13,25
7	3	3,61	2	2,40	1	1,07	8	9,63	14	16,86
8	0	0	0	0	1	1,07	10	12,04	11	13,25
Total	25	29.97	3	3,47	24	28,61	31	37,05	83	100

In Table 5, it was observed that emotional speeches had the highest frequencies in total of 83 sentences (31; 37.5 %). It was followed by sentences that were 'indicating a document as proof' (25; 29.7 %). Rational speeches were placed as the third (24; 28.6 %), and sentences classified as 'indicating a person/people as reference' had the lowest frequency (3;%3.47).

The analysis of sentences about the discussion 'our value system has to change or not' was shown in Table 6.

Table 6: The Numerical and Percentile Distribution of Student Discussions in the 4th Week According to the Criterion 'Indicating a document as proof', 'Indicating a person/people as Reference', 'Making rational speech' and 'Making emotional speech'. ("Our value system has to change or not")

Number of responses Students	Indicating a Document as Proof		Indicating a person/people as reference		Rational Speech		Emotional Speech		Total	
	F	%	f	%	f	%	f	%	f	%
1	4	6,25	0	0	7	10,94	2	3,12	13	20,31
2	4	6,25	2	3,12	6	9,37	1	1,56	13	20,31
3	5	7,81	1	1,56	4	6,25	2	3,12	12	18,74
4	0	0	0	0	3	4,68	7	10,90	10	15,58
5	0	0	0	0	1	1,56	11	17,19	12	18,75
6	0	0	0	0	0	0	4	6,25	4	6,25
Total	13	20,3	3	4,68	21	32,8	27	42,18	64	100

Table 6 was similar to Table 5. Emotional speech category had the highest frequency with 27 sentences out of total 64 sentences (42.8 %), then with the second highest frequency rational speech category came with 21 sentences (32.8 %), the category 'indicating a document as proof' had the third highest frequency with 13 sentences (20.3 %), and 'indicating a person/people as reference' category had the lowest frequency with three sentences (4.68 %).

In Table 7, the total distribution of analysis is given about the discussions during five weeks.

Table 7: The Total Distribution of Analysis is Given About the Discussions During Five Weeks

Number of responses Weeks	Indicating a Document as Proof		Indicating a person/people as reference		Rational Speech		Emotional Speech		Total	
	f	%	f	%	f	%	f	%	f	%
1	13	3,80	7	2,04	24	7,20	38	11,11	82	23,97
2	12	3,50	0	0	25	7,30	29	9	66	19,29
3	5	1,46	6	1,75	13	3,80	23	7	47	13,74
4	25	7,30	3	0,90	24	7,20	31	9	83	24,26
5	13	3,80	3	0,90	21	6,10	27	8	64	18,71
Total	68	20,88	19	5,5	107	31,28	148	43,27	342	100

The results showed that 148 (43.27 %) out of 342 sentences were found to belong to 'Emotional speech' category. 'Making rational speech' category was placed as the second in order with 107 sentences (31.28%). 'Indicating a document as proof' category was the third in order with 68 sentences (20.88%). 'Indicating a person/people as reference' category had the lowest frequency with 19 sentences (5.5%).

In Figure 1, the results were given as a summary graphic.

Figure 1: General Comparison of Categories
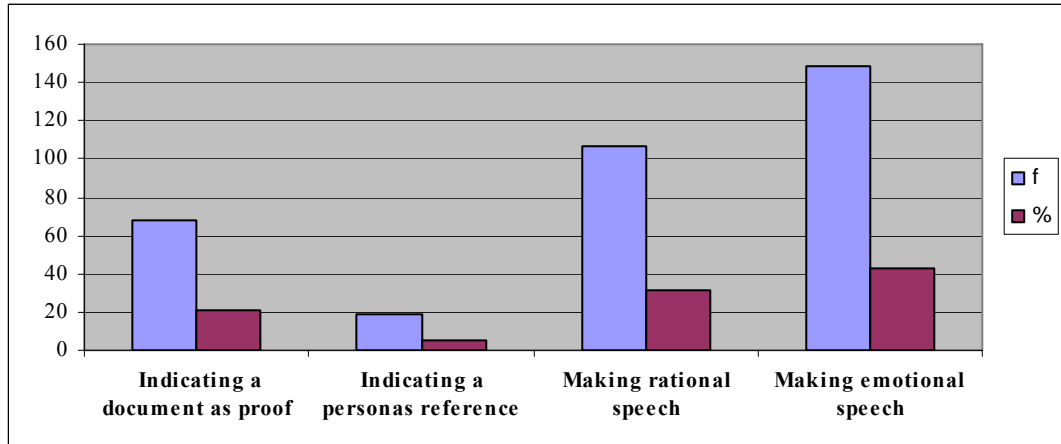
4. DISCUSSION

This study aimed to determine the critical thinking levels of the late adolescent university students (19-22 years old) studying at the Department of Counseling Psychology and Guidance, Faculty of Education, Uludağ University, starting with the assumption that the sentences the individuals produce while they defend their viewpoints and thoughts are reflections of their critical thinking power. To reach this aim, the speeches of the students were divided into analyzable units and then they were classified into the already defined categories, such as 'Indicating a document as proof', 'Indicating a person/people as reference', 'Rational speech' and 'Emotional speech'.

Critical thinking needs taking the proofs and reasons into consideration and behaving in an objective and unbiased way. Critical thinkers can explain the reasons and proofs, and they do not defend the thoughts that could not be based upon the reasons and proofs (Kuzgun, 2001). For this reason, the categories 'Indicating a document as proof', 'Indicating a person/people as reference' and 'Rational speech' were defined as the indicators of critical thinking while subjective, prejudiced and unsupported speeches, which were evaluated as 'Emotional speeches', were not accepted as the signals of critical thinking.

The results showed that the late adolescent university students had a tendency towards using emotional sentences more frequently (43.27 %) during their discussions. This was followed, in decreasing frequency, by rational speech (31.28 %), speaking based on some documents (20.88 %), and speaking as referencing somebody (5.5 %). Emotional speeches of the students contained frequently- made overgeneralizations, and rigid judgments. The speeches in the 'Indicating a document as proof' category were generally depended upon TV programs or newspapers. 'Indicating a person/people as reference' category included speeches, which were generally related to the speakers' own life experiences rather than writers', philosophers' or specialists' points of view. Only some of them were the quotations or extractions from the courses provided at the university. Therefore, it can be concluded that the critical thinking skills of most of the participants were not developed properly. It must be added that in Turkey there was not enough study on this field, so that the findings were very limited to compare and interpret.

During the discussions, it was observed that the students from rural areas and lower socio economic status (SES) group generally used emotional speeches. This variable was not taken into consideration during the design stage of the study, but recorded during the administration stage of the study. In fact, most of the students studying at Faculty of Education, Uludag University belonged to the low or middle SES groups.

This observation was consistent with the findings by Chau-Klu et al. (2001). The effects of social status on motivation, learning and success of students were frequently revealed. Chau-Klu et al. (2001) analyzed the data obtained from 577 Hong Kong University students and found that critical thinking and complex learning dispositions of upper socio economic status and bourgeois students were higher than the ones in the other socio economic status groups. In addition to this, it was found that inner motivations of these students were higher than low socio economic status students. The direct effect of upper social class is due to the pecuniary resources. Low income may cause the student to work on extra jobs, and then he/she cannot find enough time to read and think. Of course, economical difficulties cause stress and anxiety, and then these feelings distract the person's critical thinking concentration.

Besides these variables, university education itself has a strong effect on the improvement of critical thinking (Nisbett, Lehman, Fong & Cheng, 1993). Therefore, the results of the present study imply the necessity to think over and make urgent revisions on our current educational system, which still keeps the traditional approach. In the current system, the teacher is active while the students are passive. The success of students depends on how well they memorize. Because of this, they do not feel the necessity to read, think, and discuss about the course content. Moreover, they do not feel like reading and learning. Although some modifications have been made on the contents of the course books in recent years, the financial difficulties many schools experience and the mentality of many teachers still appear to a great obstacle in front of these kinds of improvements. The low frequencies obtained from the 'Indicating a document as proof' category and the 'Indicating a person/people as reference' category may be related to these variables.

In a democratic life style, the most important developmental task of the individuals is to strengthen their egos. Ego (as used by Freud) is a kind of social reasoning that tries to find new ways to satisfy the needs of individuals without breaking the social rules and without hurting anybody. These individuals with strong egos are expected to value viewpoints of others, to evaluate the situation without being prejudiced, and to try to obtain evidences before making a decision (Kuzgun 2001). These will also qualify them with the power of empathy. Actually, democratic life presents alternatives and takes a person to certain turning points frequently. Therefore, it is necessary to raise our children to become individuals who know how to reach knowledge, then analyze and organize it objectively and finally to transfer it into new situations.

There were some limitations of this study. Some were limitations of time and in the quantity of students we could study. There are, therefore, limitations in the richness of the data collected. With more time and small student groups we could have conducted data in greater depth. At the other side it would be better if these results have to be supported by quantitative methods of analyzing.

Critical thinking is no doubt necessary in every field of life, but especially for professions that occupy with people. Finkelman (2001) took the attention and emphasized the importance that the people who work in the field of human health, especially the people who directly intervene to the person's life like psychologists, counselors and educationalists have to be critical thinkers in both practice and management. In order for teachers and counselors to be able to implement critical thinking into their classrooms they must first be committed to critical thinking and its philosophy.

5. FURTHER RESEARCH

This field needs more research, because it carries great importance to raise the contemporary citizens. Further research is needed to suggest that it may be appropriate to add the critical thinking skills to the list of factors which effects the motivation, learning and success of students. For improving the critical thinking skills of the students at every educational level, different critical thinking program has to be developed which helps teachers make critical thinking an integral part of classroom instruction. These programs can be diffused to the regular courses or can be applied as separate programs. It can be put into the form of a credited lesson as "critical thinking".

REFERENCES

Aylesworth, T. G. & Reagan, G. M. (1969). *Teaching for Thinking.* GardenCity, NY: Doubleday & Company.

Bailin, S., Case, R., Coombs, J.R., & Daniels, L.B. (1999). Conceptualizing Critical Thinking. *Journal of Curricilum Studies. 31*(3), 285–302.

Beyer, B. K. (1991). *Teaching thinking skills: A handbook for elementary school teachers.* Boston: Allyn and Bacon.

Bozkurt, S. A. & Aydın, O. (2004). Temel yükleme hatasının değişik yaş ve iki alt kültürde incelenmesi. *Türk Psikoloji Dergisi. 19*(54), 91–104.

Chau-Klu, C., Rudowicz, E., Graeme, L., Xiao, D. Y. & Kwan, A.S.F. (2001). Critical thinking among university students: Does the family background matter*? College Student Journal, 35*(4), 577-598.

 Dreyfus, H. L. & Dreyfus, S. E. (1986). *Mind over Machine: The Power of Human Intuition and Expertise in the Era of the Computer.* New York: Free Press.

Elder, L. & Paul, R. (2001). Critical thinking: Thinking to some purpose. *Journal of Developmental Education, 25*(1), 40.

Ennis, R. H. (1991). Critical thinking: A streamlined conception, *Teaching Philosophy, 14*(1), 5–25.

Ferrett, S. K. (1997). *Peak Performance: Success in College and Beyond.* New York: Glencoe McGraw-Hill.

Finkelman, A. W. (2001). Problem solving, decision making, and critical thinking: How do they mix and why bother? *Home Care Provider, 12*, 194–198.

Fowler,   B.   (2002).   *Definitions   of   Critical   Thinking.*   Retreived   January   11,   2003,   from http://www.kcmetro.cc.mo.us/longview/ctac/definitions.html

Gadzella, B. M. & Baloğlu, M. (2003). Psychometric of Watson- Glaser Critical Thinking Appraisal for a Sample of Education Majors. *Psychol Rep. 92*(3), 1249–54.

Kaya, H. (1997). *Üniversite öğrencilerinde eleştirel akıl yürütme gücü.* Unpublished doctoral dissertation, İstanbul Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul.

Kazancı, O. (1989). *Eğitimde eleştirici düşünme ve öğretimi.* Ankara: Kazancı Kitap Ticaret A.Ş.

Kökdemir, D. (2005). *Eleştirel Düşünme: Bilim ve Sahte Bilim. Popüler Bilim. 13*(131), 21–22.

Kuzgun, Y. (2001).*Yayınlanmamış ders notları.* Ankara: ÖSYM.

Ming- Lee Wen, S. (1999). Critical Thinking and Professionalism at the University Level. *Paper Presented at the British Educational Research Association Conference, University of Sussex, at Brighton*, 2–5 September.

Nisbett, R., Lehman, D. R., Fong, G. T., & Cheng, P. W. (1993). Teaching reasoning. In R.E. Nisbett (Ed.), *Rules for reasoning* (pp.297-314). Hillsdale, NJ: Lawrence Erlbaum.

Paul, R. A., Binker, J. A., Jensen, K. & Kreklau, H. (1990). *Critical Thinking Handbook 4th.-6th grades a guide for remodellingg lesson plans,in langıage, arts,social studies & science. Rohnert Park, CA: Foundation for Critical Thinking.* Sonoma State University.

Ruppel, R. (2005). The intellectual foundations of critical thinking. *Critical Thinking at Viterbo.* Retrieved March 7, 2005 from http://www.viterbo.edu/personalpages/faculty/RRuppel/CritThink.html

Scriven, M. & Paul, R. (2004). Defining critical thinking: A draft statement for the 'National Council for Excellence in Critical Thinking. Retreived March 03, 2005, from http://www.criticalthinking.org/aboutCT/definingCT.shtml

Serdar, B. (1999). Lise öğretmenlerinin öğrencilere bilimsel düşünmeyi kazandırmaya yönelik tutumları ve görüşleri (Polatlı Örneği). Unpublished doctoral dissertation, Afyon.

Şahinel, S. (2002). *Eleştirel düşünme*. Ankara: Pegem A Yayınları.

Yıldırım, A. ve Şimşek, H. (2000). *Sosyal bilimlerde nitel araştırma yöntemleri.* Ankara: Seçkin Yayınevi.

Lara, V. (2007). *Professional Development Module on Critical Thinking Skills. Retrieved* on January 7, 2007, from http://www.texascollaborative.org/criticalthinking.htm

Vinacke, W. E. (1952). *The psychology of thinking.* NY: McGraw-Hill.

Extended Abstract

According to Beyer (1991), an individual with a critical spirit can define a problem in detail, thinks before taking action, searches for reasons and proofs, collects information in advance, and does not decide until sufficient evidence is collected, and decides in the direction of the problem and the purpose rather than considers beliefs and wishes.

Modern life, a prerequisite for the democratic life style, frequently causes people to come face to face some important turning points, which require making serious decisions. For this reason, an individual has to evaluate the findings in the environment objectively so as to avoid from prejudice, and then make most effective decisions. Critical thinking enables individuals to become more selective, so they start to become aware of the problems. They also gain the ability to argue about the recommendations and to search for alternative solutions.

Since it is very important to describe the characteristics of the university students with critical thinking skills in Turkey, one of the developing countries of the world, the present study aimed to investigate into the critical thinking level of university students regarding some criteria developed in relation to the conceptual framework of the field. These criteria were defined as 'Indicating a document as proof', 'Indicating a person/people as reference', 'Making rational speech' and 'Making emotional speech'. To reach this aim, the arguments university students made on an issue were assessed according to the above-mentioned criteria.

The participants of the study were the second year students (n=39) from the Department of Psychological Guidance and Counseling, Faculty of Education, Uludag University. They ranged in age from 19 to 22 years old (42 percent girls and 58 percent boys).

The study was carried during the 2005-2006 academic year. It lasted for 5 weeks. During each of the five weeks, only one group of students (10 volunteers) was asked to participate into the discussions. Each group was then divided into two subgroups, one (5 students) was given a thesis to defend and the other one (with 5 students) was directed to talk about the counter-thesis. The five subjects given to the two subgroups to argue for or against were: 'Education must be given against payment or not'; 'Family planning has to be practiced or not'; 'Turkey has to be a member of European Union or not'; 'Gender discrimination has to go through or not'; 'Our value system has to change or not'. All the groups were informed that the sessions would be recorded to the audiotape. Each student was asked to prepare a five-minute talk; thus, a session lasted for 50 minutes. The speeches were recorded with a voice recorder. Then, the researchers analyzed them after each session. During the discussions, the other students who participated as listeners were asked to analyze the speeches considering the above-mentioned four criteria. Throughout the study, no feedback was given to the participants.

Content analysis is used in two steps. The first step requires dividing the verbal expressions into analyzable units defined before, and the second one entails the classification of these units into well-defined content categories.

In the present study, the sentence analyses the participant students made were compared with those the researchers made, and conformity was looked for. This proportion was around 80 percent. In addition to this, two independent psychologists (who hold PhD) were requested to make the same analyses. The conformity rate was found to be 75 percent between the researchers' analyses and these two judges. Livesley and Bromley (1973) stated that the conformity among the judges can change between 58 % and 95 % and these percentages were acceptable (as cited in Bozkurt & Aydın, 2004).

First, the sentences that the students made during the discussions were divided into analyzable units, and then, they were put into four categories. In the second step of the study, the classified sentences were presented in numerical and percentile values, using the content analysis. The tables present the numerical and percentile distribution values of the sentences (that were divided into four categories after the content analysis) that students made in favor of the subjects.

The results showed that 148 (43.27 %) out of total 342 sentences were found to belong to 'Emotional speech' category. 'Making rational speech' category placed the second order with 107 sentences (31.28%). 'Indicating a document as proof' category was the third in order with 68 sentences (20.88%). 'Indicating a person/people as reference' category had the lowest frequency with 19 sentences (5.5%).

Critical thinking needs taking the proofs and reasons into consideration and behaving in an objective and unbiased way. Critical thinkers can explain the reasons and proofs, and they do not defend the thoughts that could not be based upon the reasons and proofs (Kuzgun, 2001). For this reason, the categories 'Indicating a document as proof', 'Indicating a person/people as reference' and 'Rational speech' were defined as the indicators of critical thinking while subjective, prejudiced and unsupported speeches, which were evaluated as 'Emotional speeches', were not accepted as the signals of critical thinking.

The results showed that the late adolescent university students, ranging in age from 19-22 years old, had a tendency towards using emotional sentences more frequently (43.27 %) during their discussions. This was followed, in decreasing frequency, by rational speech (31.28 %), speaking based on some documents (20.88 %), and speaking as referencing somebody (5.5 %). Emotional speeches of the students contained frequently-made overgeneralizations, and rigid judgments. The speeches in the 'Indicating a document as proof' category were generally depended upon TV programs or newspapers. 'Indicating a person/people as reference' category included speeches, which were generally related to the speakers' own life experiences rather than writers', philosophers' or specialists' points of view. Only some of them were the quotations or extractions from the courses provided at the university. Therefore, it can be concluded that the critical thinking skills of most of the participants were not developed properly. The current educational system, which still keeps the traditional approach, was contempted as a cause of this lacking point.