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## **SELF-ESTEEM AND DECISION MAKING STYLES IN DECISION MAKING AS THE PREDICTORS OF CRITICAL THINKING DISPOSITIONS OF UNIVERSITY STUDENTS**

*Oğuzhan ÇOLAKKADIOĞLU\* - Sevda DOĞAN DOLAPÇIOĞLU*

### **ABSTRACT**

This study has been conducted to measure the effect of self-esteem and decision making styles of university students in decision making as the predictors of critical thinking dispositions. Study sampling is composed of a total of 435 students being trained in the Faculty of Education at Mustafa Kemal University during the spring term of 2016-2017 academic year. 224 students (51,5%) are female, 211 students (48,5%) are male and mean age of the population is 21.04. In this study “The California Critical Thinking Disposition Inventory” was applied to designate students' critical thinking disposition whereas “Melbourne Decision making Scale” was employed to detect self-esteem and decision making styles in decision making. In this study multiple regression analysis was harnessed so as to unveil the effect of self-esteem and decision making styles of university students in decision making as the predictors of critical thinking dispositions. At the end of multilinear regression analysis it was identified that self-esteem, vigilance, buck-passing, procrastination and hypervigilance subscales collectively predicted significantly their critical thinking disposition in any given decision making process. It was then put forth that these five variables explained 44% of critical thinking disposition. In this study a positive and significant relationship was measured between critical thinking and decision making; a positive and significant relationship between self-esteem and vigilance; a negative and significant relationship between buck-passing, procrastination and hypervigilance styles. In parallel with the increment of self-esteem level and vigilance style scores of students while making decisions, a corresponding rise was measured in their critical thinking disposition scores. On the other hand as their scores of buck-passing, procrastination and hypervigilance styles decreased there was an identical fall in their critical thinking disposition scores. It was thus concluded that group counseling activities at universities to hone

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students' decision making skills would correspondingly elevate their critical thinking skills.

## **STRUCTURED ABSTRACT**

### **Introduction**

Decision making and critical thinking skills are important concept during teaching and training processes especially at licence degree. Slavin also (2012) posits that one of the main objectives of schools is to improve students' critical thinking skills and decision-making ability in what to do and what to believe in. Critical thinking is a method grounded upon problem solving and questioning and since individuals with an effective utilization of critical thinking skills are endowed with higher skills such as considering others' points of views, collecting and testing data on the causes of events and presenting the supportive evidences to back up their argument in a discussion (Çokluk-Bökeoğlu & Yılmaz, 2005) this reflection would thus support individuals' decision making skills.

Critical thinking is assistive in a large part of human life. A simple decision such as deciding about what to eat for dinner or what to wear for the day are all reminiscent of critical thinking. Critical thinking integrates in itself all our daily-life decisions (Nosich, 2010). Decision making in general is defined by the researchers as the process of selecting a single choice from many alternatives (Miller & Byrnes, 2001; Scott, 2003). Mann, Harmoni and Power (1989) however note that decision making is a significantly complex process that is impacted by a myriad of variables like researching and processing, evaluating the reliability of information source, learning and memory. Decision making process is analyzed under five stages. The first stage is identifying the objective; the second one is forming the alternatives; the third one is collecting information on the alternative choices; the fourth one is manifesting the advantages and disadvantages of alternatives; and the last one is about planning, revision and application (Elias & Weissberg, 2000; Hastie & Dawes, 2001; Janis & Mann, 1977). According to Janis and Mann's (1977) theory of conflict, the ability of an individual to make decisions by following these steps is positive decision making style while the failure to follow these steps is negative decision making style.

Girot (2000) argues that decision making is a consequence of problem solving and thus mandates critical thinking. In a different saying critical thinking is a mental process followed in problem solving, reasonable decision making, information analysis and inferences. In an individual's execution of critical thinking skills, not only the autonomous development of mental process but the way to implement these skills in decision making is more important. Egan (2016) reports that a correlation exists between decision making and critical thinking and effective implementation of critical thinking skills is a challenge for individuals to make a choice in the existing case but it also assists in making conscious choices. Hence the writer argues that these individuals are able to make even better decisions. Finkelman (2001) stated that developing critical thinking was useful in making a decision before the problem soared and critical thinking supported us to objectively deal with the problem, to

better analyze the issue and to make a decision after weighing all the pros and cons.

This study aims to seek an answer to the question, "To what extent do self-esteem and decision making styles in decision making contribute to explaining university students' critical thinking skills?"

### **Method**

#### **Research Model**

This study has been conducted to measure the effect of self-esteem and decision making styles of university students in decision making as the predictors of critical thinking dispositions. This is a descriptive research employing correlational survey model. Dependent variable of the research is critical thinking, while independent variables are self-esteem and decision making styles in decision making.

#### **The Study Group**

Research population is composed of a total of 435 students being trained at different classes and programs in the Faculty of Education at Mustafa Kemal University during the spring term of 2016-2017 academic year. 224 students (51,5%) are female while 211 students (48,5%) are male and mean age of the population is 21.04. Selection of students was based on sampling method.

#### **Data Collection Tools**

*The California Critical Thinking Disposition Inventory (CCTDI)*, this inventory was designated to identify critical thinking dispositions of humans. Adapted to Turkish by Kökdemir (2003) this inventory's construct validity and criteria-based validity tests have been completed. It was detected upon factor analysis that Turkish form included 6 subscales and 51 items.

*Melbourne Decision Making Scale (MDMS)*, Melbourne Decision Making Scale was developed by Mann, Burnett, Radford and Ford, (1997) in order to identify self-esteem and decision making styles in decision making. This twenty eight-item scale was formed of two parts and 5 subscales. The first part of this scale detects self-esteem level in decision making and second part identifies decision making styles. Deniz (2004) adapted this scale into Turkish and preliminary validity and reliability test has been conducted. Second test for validity and reliability has been performed by Çolakkadioğlu and Deniz (2015). At the end of conducted factor analysis it was identified that Turkish form exhibited a structure compliant with the original form.

#### **Data Collection**

To initiate the study, the required official grant was obtained from Mustafa Kemal University Deanship of Faculty of Education and measurement tools were then employed. For that purpose once the classes ended researchers conducted the study by paying heeds not to hindering students' curriculum. During the application stage participants were informed about the necessity to complete the data form correctly. Data were collected during the spring term of 2016-2017 academic year. Applications lasted approximately 30-35 minutes. In this process 451 students were accessed. 16 students having filled the survey incompletely or inaccurately were excluded from the evaluation hence analyses were applied over 435 students.

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### Findings

Prior to multiple regression analysis detecting the variables that predicted critical thinking dispositions of prospective teachers, the relations between variables were examined. According to the results of Pearson Correlation Coefficient there are positive and significant relations between critical thinking disposition scores and self-esteem in decision making ( $r = .57$ ;  $p < .01$ ) and scores of vigilance style in decision making ( $r = .47$ ;  $p < .01$ ). However negative and significant relations were measured between scores of buck-passing ( $r = -.45$ ;  $p < .01$ ), procrastination ( $r = -.43$ ;  $p < .01$ ), and vigilance ( $r = -.52$ ;  $p < .01$ ) styles in decision making. In order to designate the variables detecting critical thinking disposition of university students, regression analysis was conducted. At the end of multi linear regression analysis aiming to display how university students' critical thinking dispositions are predicted by self-esteem and decision making styles in decision making, it was manifested that self-esteem, vigilance, buck-passing, procrastination and hypervigilance variables in decision making explained 44% of the changes in critical thinking disposition scores. According to standardized regression coefficients, relative importance order of predictive variables on critical thinking disposition is as self-esteem ( $\beta = .266$ ), hypervigilance ( $\beta = -.222$ ), vigilance ( $\beta = 0.161$ ), buck-passing ( $\beta = -.103$ ) and procrastination ( $\beta = -.103$ ). As we consider significance tests of regression coefficients it becomes evident that all variables are significant predictors of critical thinking disposition scores.

### Conclusion, Discussion and Suggestion

At the end of conducted research it became obvious that highness of self-esteem level in decision making is a salient predictor in explaining one's critical thinking disposition. Self-esteem in decision making is a person's self-evaluation as regards a decision making case. It may be used interchangeably with general self-esteem too. Prior studies (Çolakkadioğlu & Güçray, 2007; Güçray, 2001; Josephs, et. al, 1992; Thunholm, 2004) also manifested that this concept maintained a positive relation with general self-esteem. Critical thinking is a learnt skill and is one of the major attributes of self-cultivated individuals (Cüceloğlu, 1995). Those with high levels of self-esteem welcome change; they are innovative, self-reliant and eager to learn new things (Kuzgun, 1999). Those who doubt their self-knowledge level and who constantly reach new information are also confident people in decision making situations. Self-confidence of a person has a positive effect in his/her self-esteem level in any decision making situation (Mann & etc., 1998).

A second variable explaining the critical thinking disposition in this study is vigilance as one of the positive coping styles employed in decision making. Byrnes (2005) reported that those with positive decision making style take the potential consequences into account and are able to evaluate the alternatives and fully equipped with information on the relevant case. Similarly İpşiroğlu (1992) and Ferrett (1997) state that those with a critical thinking disposition are able to think objectively, neutrally and comprehensively and they are the type of individuals with a curious, investigative, unbiased, and questioning mind (Vural, 2005) and always seeking solution methods. Based on these views the fact that one of the significant predictors of critical thinking disposition, namely

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positive coping style in decision making, is of great value since it is in consistency with findings of our study too.

In our research other variables explaining critical thinking disposition are hypervigilance, buck-passing and procrastination styles in decision making. Hypervigilance, buck-passing and procrastination are termed as negative coping styles in decision making. They are recognized as styles employed in decision making by those with a lower self-esteem and failure to utilize a positive coping style (Mann, Harmoni and Power, 1989). One of these styles, hypervigilance, relates to decisions that the individual makes without evaluating consequences for the sake of saving him/herself from stress; buck-passing relates to decisions that an individual makes by shifting responsibility to another person; procrastination relates to an individual's inclination to postpone the execution of a decision as if never existed. These attributions are not compliant with the inherent qualities of critical thinking disposition (Özden, 2014). Critical thinking refers to vigilance and a sound decision employed to solve the problem (McPeck, 2016). It is underscored in relevant literature that critical thinking and decision making processes are identical and both processes embody common skills (Adair, 2000; Churney, 2001). Barile also (2003) stated that problem solving and decision making activities affect critical thinking. Based on these views the fact that critical thinking disposition is predicted with negative coping styles in decision making is also in consistency with the results of present study.

According to the results of this study self-esteem and vigilance, buck-passing, procrastination and hypervigilance styles in decision making are predictors of critical thinking disposition of university students. Accordingly it can be suggested that group-counseling activities aiming to improve university students' decision making skills would correspondingly develop their critical thinking skills. In addition, within the context of developmental counseling, it is advised to organize psycho-education groups that could hone self-esteem. It would also be a great contribution to relevant literature if similar studies were reiterated on different samplings (high-schools, faculties aside from Education Faculties in universities, vocational schools, university graduates).

**Keywords:** Critical thinking, self-esteem in decision making, decision making styles, university students.

## **ÜNİVERSİTE ÖĞRENCİLERİNİN ELEŞTİREL DÜŞÜNME EĞİLİMLERİNİN YORDAYICISI OLARAK KARAR VERMEDE ÖZ SAYGI VE KARAR VERME STİLLERİ**

### **ÖZET**

Bu araştırma, üniversite öğrencilerinin eleştirel düşünme eğilimini karar vermede özsaygı ve karar verme stillerinin ne oranda yordadığını belirlemek amacıyla yapılmıştır. Araştırmanın örneklemini 2016-2017 eğitim-öğretim yılı bahar yarıyılında Mustafa Kemal Üniversitesi Eğitim Fakültesinde öğrenimine devam eden toplam 435 öğrenci oluşturmuştur.

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Öğrencilerin 224'ü (51,5) kız ve 211'i (%48,5) erkek olup yaş ortalamaları 21.04'tür. Araştırmada öğrencilerin eleştirel düşünme eğilimini belirlemek için "California Eleştirel Düşünme Eğilimi Ölçeği", karar vermede özsayı ve karar verme stillerini belirlemek için "Melbourne Karar Verme Ölçeği" kullanılmıştır. Araştırmada eleştirel düşünme eğilimlerini, karar vermede özsayı ve karar verme stillerinin ne oranda yordadığını ortaya çıkarmak için çoklu regresyon analizi yapılmıştır. Çoklu doğrusal regresyon analizi sonucunda karar vermede özsayı, dikkatli, kaçınan, erteleyici ve panik alt ölçeklerinin birlikte, eleştirel düşünme eğilimini anlamlı olarak yordadığı görülmüştür. Söz konusu beş değişkenin eleştirel düşünme eğiliminin %44'ünü açıkladığı bulunmuştur. Çalışmada eleştirel düşünme ile karar vermede özsayı ve dikkatli stil arasında pozitif yönde, kaçınan, erteleyici ve panik stilleri arasında negatif yönde anlamlı ilişkiler bulunmuştur. Öğrencilerin karar vermede öz saygı düzeyi ve dikkatli stil puanları artıkça eleştirel düşünme eğilimi puanları da artmakta, kaçınan, erteleyici ve panik stilleri puanları azaldıkça eleştirel düşünme eğilimi puanları da azalmaktadır. Sonuç olarak üniversite öğrencilerinin karar verme becerilerini geliştirmeye yönelik yapılacak grup rehberliği çalışmalarının onların eleştirel düşünme becerilerini de artıracığı düşünülmektedir.

**Anahtar Kelimeler:** Eleştirel düşünme, karar vermede özsayı, karar verme stilleri, üniversite öğrencileri.

## INTRODUCTION<sup>1</sup>

Decision making and critical thinking skills are important concept during teaching and training processes especially at licence degree. Slavin also (2012) posits that one of the main objectives of schools is to improve students' critical thinking skills and decision-making ability in what to do and what to believe in. Critical thinking is a method grounded upon problem solving and questioning and since individuals with an effective utilization of critical thinking skills are endowed with higher skills such as considering others' points of views, collecting and testing data on the causes of events and presenting the supportive evidences to back up their argument in a discussion (Çokluk-Bökeoğlu & Yılmaz, 2005) this reflection would thus support individuals' decision making skills. Nosich (2010) argues that critical thinking is an affirmative reflective thinking style in which an individual focuses on deciding what to believe in or what to do. Critical thinking includes three components. The first one relates to the thinking style. Critical thinking is reflective and is unleashed once the individual interrogates his/her own way of thinking. Once we manage to distinguish regular thinking from critical thinking it would be easier to spot its integral flaws. The secondary one relates to the standards forged for thinking. In the absence of any standard it is infeasible to question the quality of any person's thinking style. The third one is ethics. Indeed practicing critical thinking skills mandates fair criticism (Egan, 2016).

In line with the arguments above Ennis (2000) also categorized critical thinking skills under five stages. The first one is clarification skills. This skill is concerned about focusing on one question, analyzing the discussions and directing various types and levels of questions to expose the events. In critical thinking process, asking a question is related to forging a problem. Second one is supporting skills. Supporting skills is about judging the reliability and survey reports of a given source. The last

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one is related to inference skills. This skill is concerned with reaching an inference from available data, deductive thinking and ability of forming value judgments. The fourth one is related to advanced clarification skills. Advanced clarification skills include identification of premises, describing and judging the terms. The fifth one is strategic and technical skills. This skill is also connected to communicating with others and deciding to adopt a particular action.

Critical thinking is assistive in a large part of human life. A simple decision such as deciding about what to eat for dinner or what to wear for the day are all reminiscent of critical thinking. Critical thinking integrates in itself all our daily-life decisions (Nosich, 2010). Decision making in general is defined by the researchers as the process of selecting a single choice from many alternatives (Miller & Byrnes, 2001; Scott, 2003). Mann, Harmoni and Power (1989) however note that decision making is a significantly complex process that is impacted by a myriad of variables like researching and processing, evaluating the reliability of information source, learning and memory. Decision making process is analyzed under five stages. The first stage is identifying the objective; the second one is forming the alternatives; the third one is collecting information on the alternative choices; the fourth one is manifesting the advantages and disadvantages of alternatives; and the last one is about planning, revision and application (Elias & Weissberg, 2000; Hastie & Dawes, 2001; Janis & Mann, 1977). According to Janis and Mann's (1977) theory of conflict, the ability of an individual to make decisions by following these steps is positive decision making style while the failure to follow these steps is negative decision making style.

Girot (2000) argues that decision making is a consequence of problem solving and thus mandates critical thinking. In a different saying critical thinking is a mental process followed in problem solving, reasonable decision making, information analysis and inferences. In an individual's execution of critical thinking skills, not only the autonomous development of mental process but the way to implement these skills in decision making is more important. Egan (2016) reports that a correlation exists between decision making and critical thinking and effective implementation of critical thinking skills is a challenge for individuals to make a choice in the existing case but it also assists in making conscious choices. Hence the writer argues that these individuals are able to make even better decisions. Finkelman (2001) stated that developing critical thinking was useful in making a decision before the problem soared and critical thinking supported us to objectively deal with the problem, to better analyze the issue and to make a decision after weighing all the pros and cons. Dongen et al. (2005) highlighted that critical thinking skills that integrated an analysis on the nature of the connection between hints and inference played salient role in the process and on the effect size of decision making. Bosch and Helsdingen (2002) noted that in tactical decision making process critical thinking disposition rendered a positive effect and likewise Helsdingen et al. (2010) concluded that individuals having received critical thinking education possessed improved forecasting, forming reason-result connection, discussion and decision making skills. Similarly decision making skills underscore thinking and explaining relevant alternatives, reasons, results, decision criteria and necessitates meaningful learning (Casteel & Sathl, 1997). Critical thinking also a skill that encompasses effective learning, ethical thinking and values, comprehension, application, analysis, synthesis, interpretation, knowledge, experience, judgment, evaluation, personal awareness, learning through mistakes, and personal awareness. Being salient components of problem solving and decision making processes these skills should be further polished (Finkelman, 2001). Casteel and Sathl (1997) and Smith (2003) suggested that in university education critical thinking and decision making skills should not be limited with instructors' efforts but rather be improved in an extensive curriculum and these authors shared a myriad of teaching suggestions. Duffy (1998) reported that university students could face with a number of decision making cases not only during their education but as regards their professional career too. He suggested that a number of critical

thinking models, Ennis model in particular, would play critical role in career decisions of university students.

Critical thinkers are expected to make reasonable decisions that integrate controlling, planning and evaluation and in order to process complex information on hand, they are supposed to utilize critical thinking skills. Despite the increase in the numbers of problems faced by decision makers and the accentuated role of critical thinking in overcoming these problems, there is a void of relevant studies in literature. An analysis of studies on critical thinking and decision making reveals that generally the highlighted topics are effect of context of decision making on critical thinking skills, role of critical thinking in decision making, role of critical thinking in evaluating the results of decision, relationship between decision making and critical thinking and role of undergraduate education in various department for the betterment of decision making and critical thinking skills (Barile, 2003; Duffy, 1998; Girot, 2000; Jackson, 1994; Noohi & Karimi-Noghondar & Haghdoost, 2012; Shin, 1998; Smith, 2003; Swiger, 2005). However there was not any paper detected that directly analyzed to what extend critical thinking skills of university students explained their decision making skills. Thereby it was deemed essential to measure the effects of self-esteem and decision making skills on critical thinking while making a decision. Within this framework this study aims to seek an answer to the question, "To what extend do self-esteem and decision making styles in decision making contribute to explaining university students' critical thinking skills?"

## **METHOD**

### **Research Model**

This study has been conducted to measure the effect of self-esteem and decision making styles of university students in decision making as the predictors of critical thinking dispositions. This is a descriptive research employing correlational survey model. Dependent variable of the research is critical thinking, while independent variables are self-esteem and decision making styles in decision making.

### **The Study Group**

Research population is composed of a total of 435 students being trained at different classes and programs in the Faculty of Education at Mustafa Kemal University during the spring term of 2016-2017 academic year. 224 students (51,5%) are female while 211 students (48,5%) are male and mean age of the population is 21.04. Selection of students was based on sampling method.

### **Data Collection Tools**

*The California Critical Thinking Disposition Inventory (CCTDI)*, the inventory was designed as one output of Delphi Project organized in 1990 by American Philosophical Society. This inventory was designated to identify critical thinking dispositions of humans. This seventy five-item inventory was formed of 7 subscales. Items are evaluated by selecting one out of 6 categories defined as; 1 (I totally disagree), 2 (Disagree), 3 (I partially disagree), 4 (Partially agree), 5 (Agree) and 6 (I totally agree). Adapted to Turkish by Kökdemir (2003) this inventory's construct validity and criteria-based validity tests have been completed. It was detected upon factor analysis that Turkish form included 6 subscales and 51 items. Accordingly the lowest score to receive in this inventory is 51, the highest score is 306. In the original study internal consistency of inventory (Cronbach's alpha) was determined to be .88, whereas in this study it was measured as .75.

*Melbourne Decision Making Scale (MDMS)*, Melbourne Decision Making Scale was developed by Mann, Burnett, Radford and Ford, (1997) in order to identify self-esteem and decision making styles in decision making. This twenty eight-item scale was formed of two parts and 5

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subscales. The first part of this scale detects self-esteem level in decision making and second part identifies decision making styles. Self-esteem in decision making subscale is composed of 6 items and items are scored as selecting one category out of 3 as 2 (Correct), 1 (Occasionally correct) and 0 (Incorrect). In this subscale Items 2., 4. and 6. are reversely scored hence maximum score would be 12 and minimum score would be 0. Second part of the scale included vigilance, buck-passing, procrastination and hypervigilance decision making styles. In these subscales self-esteem is scored as a subscale in decision making. In vigilance and buck-passing subscales there are 6 items while maximum score to receive is 12 and minimum score is 0. In procrastination and hypervigilance subscales there are 5 items each and maximum score to receive is 10, minimum score is 0. The highness of score indicates that relevant decision making style has been employed. Deniz (2004) adapted this scale into Turkish and preliminary validity and reliability test has been conducted. Second test for validity and reliability has been performed by Çolakkadıoğlu and Deniz (2015). At the end of conducted factor analysis it was identified that Turkish form exhibited a structure compliant with the original form. Cronbach's alpha internal consistency coefficients of the scale were computed as .80 for self-esteem in decision making .82 for vigilance, .77 for buck-passing, .75 for procrastination and .72 for hypervigilance.

### **Data Collection**

To initiate the study, the required official grant was obtained from Mustafa Kemal University Deanship of Faculty of Education and measurement tools were then employed. For that purpose once the classes ended researchers conducted the study by paying heed not to hindering students' curriculum. During the application stage participants were informed about the necessity to complete the data form correctly. Data were collected during the spring term of 2016-2017 academic year. Applications lasted approximately 30-35 minutes. In this process 451 students were accessed. 16 students having filled the survey incompletely or inaccurately were excluded from the evaluation hence analyses were applied over 435 students.

### **Data Analysis**

Firstly basic statistical analyses were applied to (CCTDI, MDMS) scores received from all the scales utilized in the research. In the first part of analyses Pearson Correlation coefficients were examined in order to investigate the relation between variables; next multiple regression analysis was conducted. Prior to conducting the analysis it was identified that this sampling met "linearity" and "normality" premises. In outlier analysis Mahalanobis distance values  $p < .001$  were taken as the criteria and not any extreme values were measured. Also multi-collinearity, tolerance value and variance inflation factor were examined among variables. It was then identified that obtained values met these criteria. In the analysis of significance of findings .05 significance value was the recognized criterion.

### **FINDINGS**

Prior to multiple regression analysis detecting the variables that predicted critical thinking dispositions of prospective teachers, the relations between variables were examined. Table 1 exhibits arithmetic means, standard deviation values and Correlation values of the employed variables.

**Table 1. Arithmetic means, standard deviation values and correlation values of the employed variables.**

	1	2	3	4	5	6
1 Critical Thinking	-					
2 Self-esteem	.57**	-				
3 Vigilance	.47**	.55**	-			
4 Buck-passing	-.45**	-.47**	-.45**	-		
5 Procrastination	-.43**	-.42**	-.41**	.40**	-	
6 Hypervigilance	-.52**	-.55**	-.34	.47**	.48**	-
<b>X</b>	189.74	4.87	4.21	6.40	5.05	4.89
<b>Ss</b>	51.02	3.75	3.84	3.34	2.48	2.60

N= 435 \*\*p&lt;.01

As seen in Table 1, according to the results of Pearson Correlation Coefficient there are positive and significant relations between critical thinking disposition scores and self-esteem in decision making ( $r = .57$ ;  $p < .01$ ) and scores of vigilance style in decision making ( $r = .47$ ;  $p < .01$ ). However negative and significant relations were measured between scores of buck-passing ( $r = -.45$ ;  $p < .01$ ), procrastination ( $r = -.43$ ;  $p < .01$ ), and vigilance ( $r = -.52$ ;  $p < .01$ ) styles in decision making. In order to designate the variables detecting critical thinking disposition of university students, regression analysis was conducted and obtained findings are as seen in Table 2.

**Table 2. Results of multiple regression analysis about predicting critical thinking disposition**

Variable	B	Standard Error	B	T	p	Dual r	Partial r
Constant	205.562	8.537	-	24.079	.000	-	-
Self-esteem	3.630	.676	.266	5.370	.000	.572	.251
Vigilance	2.147	.608	.161	3.533	.000	.474	.168
Buck-passing	-1.638	.682	-.107	-2.400	.017	-.452	-.115
Procrastination	-2.127	.902	-.103	-2.359	.019	-.433	-.113
Hypervigilance	-4.358	.926	-.222	-4.708	.000	-.524	-.222
R=0.662	R <sup>2</sup> =0.438						
F <sub>(5-429)</sub> =66.991	p=0.000						

As shown in Table 2, at the end of multi linear regression analysis aiming to display how university students' critical thinking dispositions are predicted by self-esteem and decision making styles in decision making, it was manifested that self-esteem, vigilance, buck-passing, procrastination and hypervigilance variables in decision making explained 44% of the changes in critical thinking disposition scores. According to standardized regression coefficients, relative importance order of predictive variables on critical thinking disposition is as self-esteem ( $\beta = .266$ ), hypervigilance ( $\beta = -.222$ ), vigilance ( $\beta = 0.161$ ), buck-passing ( $\beta = -.103$ ) and procrastination ( $\beta = -.103$ ). As we consider significance tests of regression coefficients it becomes evident that all variables are significant predictors of critical thinking disposition scores.

## CONCLUSION, DISCUSSION AND SUGGESTION

At the end of conducted research it became obvious that highness of self-esteem level in decision making is a salient predictor in explaining one's critical thinking disposition. Self-esteem in decision making is a person's self-evaluation as regards a decision making case. It may be used interchangeably with general self-esteem too. Prior studies (Çolakkadioğlu & Güçray, 2007; Güçray, 2001; Josephs, et. al, 1992; Thunholm, 2004) also manifested that this concept maintained a positive relation with general self-esteem. Critical thinking is a learnt skill and is one of the major attributes

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of self-cultivated individuals (Cüceloğlu, 1995). Those with high levels of self-esteem welcome change; they are innovative, self-reliant and eager to learn new things (Kuzgun, 1999). Those who doubt their self-knowledge level and who constantly reach new information are also confident people in decision making situations. Self-confidence of a person has a positive effect in his/her self-esteem level in any decision making situation (Mann & etc., 1998). Hence it can be argued that those individuals aiming to improve themselves and endowed with high levels of self-esteem possess a critical thinking disposition. In parallel with the findings of our research, prior studies (Dutoğlu & Tuncel, 2008; Suliman & Halabi, 2007) having identified a significant and positive relation between critical thinking and self-esteem can thus be validated.

A second variable explaining the critical thinking disposition in this study is vigilance as one of the positive coping styles employed in decision making. Vigilance is defined as in any given decision making situation the ability of the person to vigilantly research a series of alternatives and to evaluate the pros and cons of all the alternatives on hand (Friedman & Mann, 1993). Byrnes (2005) reported that those with positive decision making style take the potential consequences into account and are able to evaluate the alternatives and fully equipped with information on the relevant case. Similarly İpşiroğlu (1992) and Ferrett (1997) state that those with a critical thinking disposition are able to think objectively, neutrally and comprehensively and they are the type of individuals with a curious, investigative, unbiased, and questioning mind (Vural, 2005) and always seeking solution methods. Finkelman also (2001) reported that critical thinking disposition has a contributing effect on decision making skills and a flexible mind that is cultivated through critical thinking disposition helps us to objectively view and analyze the problem thereby reaching a verdict upon weighing its pros and cons.

Dongen et al. (2005) state that decision makers supported with critical thinking skill are, when faced with conflicts, insecurity, multi dimensionality and non-informative clues, able to grasp issue and via questioning clues, alternatives and conflicts they can solve a problem and reach to a decision. The same author concluded in his study that decision makers supported with critical thinking skill are, compared to those with no support, able to make more accurate decisions on a higher quantity of hypotheses. However he also added that critical thinking support further delayed the decision making process. Helsdingen et al. (2010) reported that critical thinking education impacted the result of any decision rather than decision making process itself. Based on these views the fact that one of the significant predictors of critical thinking disposition, namely positive coping style in decision making, is of great value since it is in consistency with findings of our study too.

In our research other variables explaining critical thinking disposition are hypervigilance, buck-passing and procrastination styles in decision making. Hypervigilance, buck-passing and procrastination are termed as negative coping styles in decision making. They are recognized as styles employed in decision making by those with a lower self-esteem and failure to utilize a positive coping style (Mann, Harmoni and Power, 1989). One of these styles, hypervigilance, relates to decisions that the individual makes without evaluating consequences for the sake of saving him/herself from stress; buck-passing relates to decisions that an individual makes by shifting responsibility to another person; procrastination relates to an individual's inclination to postpone the execution of a decision as if never existed. These attributions are not compliant with the inherent qualities of critical thinking disposition (Özden, 2014). Critical thinking refers to vigilance and a sound decision employed to solve the problem (McPeck, 2016). It is underscored in relevant literature that critical thinking and decision making processes are identical and both processes embody common skills (Adair, 2000; Churney, 2001). Barile also (2003) stated that problem solving and decision making activities affect critical thinking. Likewise Shin (1998) argued that undergraduate education could develop critical thinking and decision making styles and a correlation

existed between both skills. He then suggested that critical thinking skills should be honed via undergraduate education. Scheid (2014) reported that utilizing critical thinking in administrative process enhanced the effect of decision and suggested that it would be better to further generalize critical thinking beliefs and employing them in diversified types of organizations. Based on these views the fact that critical thinking disposition is predicted with negative coping styles in decision making is also in consistency with the results of present study.

According to the results of this study self-esteem and vigilance, buck-passing, procrastination and hypervigilance styles in decision making are predictors of critical thinking disposition of university students. Accordingly it can be suggested that group-counseling activities aiming to improve university students' decision making skills would correspondingly develop their critical thinking skills. In addition, within the context of developmental counseling, it is advised to organize psycho-education groups that could hone self-esteem. It would also be a great contribution to relevant literature if similar studies were reiterated on different samplings (high-schools, faculties aside from Education Faculties in universities, vocational schools, university graduates).

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