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Critical Thinking Dispositions in Business World: Mixed Method on Employees and Managers[1]

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Abstract

The aim of the study is to explain the Critical Thinking Dispositions (CTD) of managers and white-collar employees and to understand the factors that may affect their critical thinking and their possible effects. The research was designed according to the mixed method exploratory sequential design, where both quantitative and qualitative data are collected. Quantitative data were obtained with the California Critical Thinking Disposition Scale and qualitative data were obtained with semi-structured interview questions. A total of 220 managers and white-collar employees working in Istanbul participated in the study and the quantitative data were analyzed with the SPSS24 program. The working group in which qualitative data was collected consisted of 15 managers and white collar, content analysis was used in the analysis of the data. The findings showed that managers (174.14 points) and white-collar employees (173.13 points) had moderate CTD and there was no significant difference between the two groups. However, qualitative findings showed that there were differences between the two groups, managers were cautious about employees' CTD, they even perceived this as a threat and disrespect, employees have anxiety about loosing their jobs and felt themselves unworthy due to their CTD. In the light of the findings, suggestions were made for educators and practitioners to improve their CTD.

Keywords: *Critical thinking, Manager, White-collar employee, Mix method*

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İş Dünyasinda Eleştirel Düşünme Eğilimi: Çalışanlar ve Yöneticiler Üzerine Karma Yöntem Araştırması

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Öz

Araştırmanın amacı, yöneticilerin ve beyaz yakalı çalışanların eleştirel düşünme eğilimlerini açıkla-mak ve eleştirel düşüncelerini etkileyebilecek faktörleri ve olası etkilerini anlamaktır. Araştırma, nicel ve nitel verilerin toplandığı karma yöntem desenlerinden keşfedici ardışık desene göre tasarlanmıştır. Nicel veriler Kaliforniya Eleştirel Düşenme Eğilimi Ölçeği ile nitel veriler ise yarı-yapılandırılmış görüşme soruları ile elde edilmiştir. Araştırmaya, İstanbul'da farklı sektörlerde çalışan toplam 220 yönetici ve beyaz yakalı çalışandan katılmış ve nicel veriler SPSS24 programı ile analiz edilmiştir. Nitel verilerin toplandığı çalışma grubu ise 15 yönetici ve beyaz yakalıdan oluşmuştur, verilerin analizinde içerik analizi kullanılmıştır. Nicel verilerin bulguları, yöneticiler (174,14 puan) ile beyaz yakalı çalışanların (173,13 puan) orta eleştirel düşünme eğilimine sahip olduklarını ve iki grup arasında anlamlı bir fark olmadığını göstermiştir. Ancak, nitel bulgular, iki grubun eleştirel düşünme bakış açıları arasında farklılıklar olduğunu, yöneticilerin, çalışanların eleştirel düşünme eğilimlerine temkinli yaklaştığını, hatta bunu bir tehdit ve saygısızlık olarak algıladıklarını, çalışanların eleştirel düşünme eğilimlerinden dolayı iş kaybetme kaygısı yaşadıklarını ve kendilerini değersiz hissettiklerini göstermiştir. Bulgular ışığında, eleştirel düşünme eğilimlerinin iyileştirilmesi kapsamında eğitimciler ve uygulayıcılar için önerilerde bulunulmuştur.

Anahtar Kelimeler: *Eleştirel Düşünme, Yönetici, Beyaz Yakalı Çalışan, Karma Yöntem*

Introduction

Changes in societies and complex situations necessitate individuals to use new ways of thinking in their daily lives. In this regard, all individuals who want to be successful in the modern world have to develop different thinking skills (Sherman, 2009, p.14). One such skill, critical thinking, is a competence required of all individuals who have achived a university degree (Ocansey et al., 1992, p.66-69). In addition, though, to the academic perspectives that students must acquire, today's business world requires managers and employees to possess advanced thinking skills. In the World Economic Forum's projection for 2030, critical thinking is shown among the three most important features that employees should possess (WEFORM, 2018). The reason for its import lies in the reality that the two most prominent characteristics of the environmental dynamics of organizations are complexity and uncertainty (Yaşar and Sundu, 2017). Watkins (2004, p.43-44) argues that critical thinking and emotional intelligence are among the basic requirements of being a successful manager. It is seen that the rapidly increasing complex situations in working life cause managers to spend a significant amount of time on the resolution of conflicts and anger management. However, managers' styles of solving problems and their mindset might enable them to use their time more efficiently (Facione, 1990, p.11; Fisher, 2005, p.65-68; Sherman, 2009, p.16).

From this perspective, critical thinking is considered an important competence for individuals to formulate ideas and make the right decision in strategic situations (Barry and Rudinow, 2008, p.11; Naktiyok and Çiçek, 2014, p.173-174). Individuals who have this competence may have knowledge of the causal antecedents underlying any given situation as well as evidence for them. In addition, they will have the capability to look from different perspectives and find the best solution (2008, p.66). The reason for this is that such individuals have learned how to access the right information using critical thinking. Moreover, individuals can gain insight into what to believe or how to apply any given method through critical thinking (Hunter, 2009, p.228). National literature shows that managers who have these characteristics have been successful in managing their careers (Günay and Çarıkçı, 2018; Yeşiltaş et al., 2014, p.1288).

In this line, both a literature review of this field and developments in the business world show that critical thinking is of great importance for both

white-collar employees and managers. A review of the literature reveals several studies analyzing the critical thinking dispositions of students, teachers, and nurses. However, it appears that not enough research has been done on the critical thinking disposition of white collar employees and managers. In this vein, determining the nature of managers' and white collar employees' critical thinking disposition will greatly contribute to organizations as well as the literature.

Conceptual Framework

Philosophers and psychologists have defined the concept of thinking in many different ways. According to Heidegger's philosophy, thinking is the natural behaviour of men. Therefore, people can never sabotage themselves by stopping thinking (Stenstad, 2006, p.45-46). As a matter of fact, one starts thinking from the moment he is born. In other words, thinking is an unstoppable process of mind. Aristotle, the Greek philosopher, defined thinking as the act of associating ideas or elements formed through images (Kallet, 2014, p.3). According to Halpern (2003, p.27), when we begin to think, we begin to use our knowledge to achieve a purpose. In this sense, the ability to think is the basic fact of our lives.

One way that we can use the thinking capacity of our minds, critical thinking dates back to ancient Greece. The etymological origin of critical thinking comes from the Greek word 'krinein'. This word refers to 'kritikos' which means separating, selecting, and analyzing (Paul et al., 1997, p.12). Halpern (1996, p.77) stated that critical thinking results from the combination of strategy and skills. In this respect, critical thinking is directed towards a purpose. This way of thinking requires the use and acquisition of certain strategies and skills. According to Facione (1990, p.11), these skills are the steps of problem solving: collecting, segregating, and analyzing information, and evaluating the results. This increases critical thinking to the level of skills that require a higher level of thinking for problem solving. Drawing attention to the use of critical thinking by employees in the social service sector, Gibbons and Gray (2004, p.20) purport that critical thinking skills can only be refined through systematic practice – education – in real life situations. On the other hand, Adeyemi (2012, p.157) suggests that critical thinking should be tackled as a

type of critical analysis, a disciplined intellectual criticism that combines research, historical context knowledge, and balanced judgment. According to Fisher and Scriven (1997, p.18), critical thinking is related to the skillful and effective interpretation and evaluation of observations, communication, information, and arguments.

Critical thinking skills are divided into macro-cognitive and micro-cognitive skills (Pau et al., 1989, p.58). Macro-cognitive abilities are generally expressed as those that require an extended use of cognitive skills, emphasizing the importance of expanded discovery of ideas, perspectives, and key issues, while micro-cognitive skills are defined as skills that emphasize a particular, often brief, critical movement. The pedagogy of critical thinking was born out of these theoretical frameworks based on the work of Socrates, Benjamin Bloom, William Perry, Richard Paul, and Bernard Lonergan (Baxter & Magolda, 1992, p.203). Analysis of critical thinking and theories reveals that theories are related to models. The most often used models are presented below.

One model, Bloom's Taxonomy, is a critical thinking model based on the levels of cognitive domain. In 1956, Bloom and his colleagues codified a systematic classification of learning and teaching, and used it as a tool to both assess educational objectives and activities and to improve curricula (Krathwohl, 2004, p.244). In the Intellectual Development Model, critical thinking was seen by Pery as a tool for intellectual development in the 1970s through which various steps were defined in the solution of problems (Kallet, 2014, p.8). Formed by the Johnson Foundation, the Model of Thinking Dimensions was developed as a result of studies conducted to determine the right method for educators to teach thinking (Kaya, 1997, p.34). In this context, the Model of Skill Acquisition presented by Dreyfus and Dreyfus focuses on intuitive decision-making based on experience (Kaya, 1997, p.39). Developed by Rubenfeld and Schaffer (2000, p.354), the Thinking Model is useful for beginner level students and includes the five components: remembering, habits, inquiry, creativity, and thinking.

Cotton (1991), who reviewed 56 studies on thinking skills between 1980 and 1990, showed that thinking skills are a teachable concept and these skills increase academic achievement. Magnussen et al. (2000, p.247-250) used the Watson-Glaser Critical Thinking Appraisal Test to measure the effects of the

inquiry-based teaching system on students' critical thinking skills. Test results showed that there was a significant positive difference between the critical thinking skills of freshmen and senior students. Walsh and Hardy (Cited by Eşer et al., 2007, p.18-20) applied the California Critical Thinking Disposition Inventory (CCTDI), which was also used in our study to investigate the differences between the education departments and critical thinking dispositions and gender of university students. As a result of the study, they found that the applied departments scored higher than the non-applied departments at universities. Reed (1998, p.172-178) measured students' critical thinking dispositions and skills in history courses in the US using CCTDI. The research determined that critical thinking skills could be increased by one course and also that gender and age were important in the students' development of such skills. Hayran (2000, p.77-85) conducted research on critical thinking dispositions in 240 elementary school teachers working in the city of Usak, Turkey. There, a significant difference in teachers' tendency towards critical thinking skills was found in terms of their gender, the universities they graduated from, their branches, and their professional experiences

Methodology

The aim of this study is to explain the critical thinking disposition of white collar employees and managers and understand both the factors that may affect this disposition as well as the possible effects of such factors. In addition, the critical thinking dispositions of white collar employees and managers were compared and contrasted in order to fill a gap in the literature. Within this framework, the study mainly focused on determining the level of critical thinking disposition of white-collar employees and managers and the variables that differentiated their levels of critical thinking. In the context of this aim, answers were sought for the following questions:

i. Do white-collar employees and managers' critical thinking dispositions change according to demographic characteristics?
ii. What are the critical thinking dispositions of white collar employees and managers?
iii. Is there a difference between white-collar employees and managers' critical thinking dispositions?

iv. What do white-collar employees and managers think about individuals with a critical disposition?

Since the study sought answers to both exploratory and explanatory questions, quantitative and qualitative approaches were used in the research design. Correspondingly, quantitative and qualitative data were collected and the sequential descriptive mixed research method was used in the data collection stage. In the literature, it is pointed out that the quantitative and qualitative research methods have different strengths and weaknesses and thus, the mixed research method improves research quality. For instance, where quantitative results do not provide sufficient explanations, as in our research, qualitative data support the problem solving process by improving and explaining the results. Therefore, the mixed method improves the accuracy of the research (Creswell, 2009, p.98). Sequential descriptive pattern, a mixed method design, was used in this study. In the descriptive design, quantitative research is first conducted and then qualitative research is applied. The main purpose of this research design is to examine and elucidate the findings reached through quantitative research through qualitative research (Creswell and Clark, 2007, p.56). The quantitative data obtained within the scope of the research were analyzed using the statistical analysis software SPSS. In addition, content analysis management was used in the analysis of the qualitative data obtained within the scope of the research.

Population and Sample

This chapter of the study elaborates on the characteristics of the sample and the population in the quantitative and qualitative research.

The research population consists of white collar employees and managers working in the private sector in Istanbul. Quantitative data were collected from a total of 220 people including 173 white-collar employees and 47 managers working in 15 different companies in the metropolis, which all together comprise the sample group.

Qualitative data were obtained through interviews with 10 white-collar employees and 5 managers working in 10 different companies in Istanbul. Maximum variation sampling method, which is among the purposeful sampling methods, was used in determining the sample groups of the study.

Data Collection Tools

The 34-item "California Critical Thinking Disposition Inventory" and "Personality Information Form" were used to determine the critical thinking perception of employees in business life, while semi-structured interviews were conducted with 10 white-collar employees and 5 managers to further elaborate on the findings.

Collection of quantitative data

Quantitative data were obtained via use of the Personal Information Form and California Critical Thinking Disposition Inventory. The Personal Information Form included information on gender, age, educational background, faculty of graduation, seniority in the profession, position in the organization individuals work, number of different organizations they work for, participation in professional activities, and educational level of their parents.

The California Critical Thinking Disposition Inventory was developed in 1990 by the American Philosophical Society and adapted to Turkish by Kökdemir (2003). The Cronbach's alpha coefficient of the inventory was 0.80 for the sample of this study. The internal consistency coefficients (Cronbach's α) of the scale related to dimensions are given in Table 1.

Table 1. Critical Thinking Disposition Inventory Internal Consistency Coefficients

Dimensions	**α**
Truth-seeking	0.71
Inquisitiveness	0.80
Open-mindedness	0.72
Self-confidence	0.81
Total	**0.80**

Collection of qualitative data

Qualitative research enables researchers to understand and see the causes of individuals' behaviours and, in this context, allows researchers to reach various conclusions. In this research, interview method was used. This method makes visible through interviews what cannot be seen via quantitative tests (Büyüköztürk, 2005, p.134).

Table 2. Qualitative Research Questions and Scope

	Qualitative Research Questions	Scope
1	What do you think critical thinking means?	Critical thinking approaches of white-collar employees and managers
3	How can critical thinking skills be developed?	
4	What do you think about your subordinates/superiors having critical thinking?	
2	How do you think the individual with critical thinking should be?	Characteristics of individuals with critical thinking
5	What do you think it means to be open-minded in one's work life?	Reasons for the effect of open-mindedness and truth-seeking sub-dimensions on critical thinking
6	What are the effects of being open-minded in work life on critical thinking?	
7	Can you explain an event that you have experienced/encountered with regard to being open-minded in your work life?	
8	How do you think your superiors/subordinates' level of education is related to their open-mindedness? Can you explain this with an example?	
9	What do you think it means to search for the truth in work life?	
10	What are the effects of being open-minded in work life on critical thinking?	
11	Can you explain the effects of the department you have graduated in your work life on truth-seeking along with the reasons?	

Findings

Quantitative Findings

Table 3 shows the mean critical thinking disposition scores of the employees participating in the study according to gender. The mean score of women's critical thinking ($\bar{X}$=175.41, S.D.=18.07) was higher than the mean score of men's critical thinking ($\bar{X}$=171.09; S.D.=20.04). The difference between the open-mindedness scores, which is one of the sub scales comparing the critical thinking disposition of the employees working in the private sector according to gender, was found to be statistically significant ($p \leq 0.05$).

Table 3. Relationship between Gender and Mean Scores of Employees' Critical Thinking

CCTDI and Sub Scales	**Female** n = 115 Mean S.D.	**Male** n = 105 Mean S.D.	**S.D.**	**t**	**p**
Open-mindedness	47.67 ± 6.32	44.38 ± 6.87	218	3.69	0.00
Truth-seeking	40.21 ± 8.58	38.87 ± 8.53	218	1.16	0.24
Self-confidence	41.36 ± 7.03	41.66 ± 8.94	218	-0.26	0.78
Inquisitiveness	46.16 ± 7.32	46.17 ± 8.68	218	0.14	0.98
Total	175.41 ± 18.07	171.09 ± 20.04	218	1.67	0.09

According to the results of one-factor analysis of variance, there was no significant difference between employees' critical thinking dispositions according to age groups (F (2.217) = 0.38, p>0.05).

In addition, the results of one-factor analysis of variance also showed that there was a significant difference between the critical thinking of the private sector employees based on the level of education (F (2.217) = 8.71, p<0.05) (Table 4). Tukey results indicate that individuals holding graduate degrees had higher scores of open-mindedness ($\bar{X}$=48.43 ± 6.93/ $\bar{X}$=42.25 ± 6.69) and truth-seeking ($\bar{X}$=42.88 ± 6.69/$\bar{X}$=36.38 ± 10.05) when compared with those holding associate degrees. On the other hand, individuals holding undergraduate degrees were found to have higher scores of open-mindedness ($\bar{X}$=46.24 ± 6.37/$\bar{X}$=42.25 ± 6.69) compared to those holding associate degrees (Table 5).

Table 4. Results of One-Factor Analysis of Variance Related to Critical Thinking Disposition According to Educational Background

Variance Source		Sum of Squares	S.D.	Mean of Squares	F	P
Open Mindedness	Within Groups	767.80	2	383.90	8.95	0.00
	Between Groups	9307.50	217	42.89		
	Total	10075.30	219			
Truth-seeking	Within Groups	891.25	2	445.62	6.37	0.00
	Between Groups	15174.46	217	69.92		
	Total	160.65	219			
Self-confidence	Within Groups	76.51	2	38.25	0.59	0.55
	Between Groups	13893.57	217	64.02		
	Total	139.70	219			
Inquisitiveness	Within Groups	234.00	2	117.00	1.84	0.16
	Between Groups	13730.23	217	63.27		
	Total	13964.23	219			
Total	Within Groups	5953.44	2	2976.72	8.71	0.00
	Between Groups	74110.85	217	341.52		
	Total	80064.29	219			

Table 5. The Relationship between the Mean Scores of Employees' Critical Thinking Disposition Score and Their Education Level

CCTDI and Sub Scales	Associate's Degree n = 34 Mean S.D.	Undergraduate n = 138 Mean S.D.	Graduate n = 48 Mean S.D.
Open-mindedness	42.25 ± 6.69	46.24 ± 6.37	48.43 ± 6.93
Truth-seeking	36.38 ± 10.05	39.20 ± 8.42	42.88 ± 6.69
Self-confidence	40.16 ± 7.87	41.84 ± 7.82	41.48 ± 8.58
Inquisitiveness	44.63 ± 7.69	45.94 ± 8.29	47.91 ± 7.05
Total	163.44 ± 17.15	173.23 ± 19.08	180 ± 17.54

Examination of the critical thinking disposition scores of the employees in the private sector and their position at the workplace reveals that the white collar employees' score was $\bar{X}$=173.13±19.88 while that of the managers was $\bar{X}$=174.14±16.17. There was no significant difference between the level of critical thinking disposition and the position of private sector employees (t(218)=0,32; p>0.05).

There was no statistically significant difference between participation in cultural activities and critical thinking disposition scores (t(218)=-0,56; p>0.05). There was, however, a significant difference between the education level of the mothers of the employees and their critical thinking dispositions (F(5,214)=3,19; p<0.05). A positive correlation was found between the education level of the mother and the individual's critical thinking disposition (Table 6).

Table 6. Results of One-Factor Analysis of Variance Related to Education Level and Critical Thinking Disposition of Individuals' Mothers

Variance Source		Sum of Squares	S.D.	Mean of Squares	F	P
Open Mindedness	Within Groups	623.90	5	124.78 44.16	2.82	0.01
	Between Groups	9451.40	214			
	Total	10075.30	219			
Truth-seeking	Within Groups	1584.25	5	316.852 67.67	4.68	0.00
	Between Groups	14481.45	214			
	Total	16065.71	219			
Self-confidence	Within Groups	128.42	5	25.68 64.68	0.39	0.85
	Between Groups	13841.66	214			
	Total	13970.09	219			
Inquisitiveness	Within Groups	209.501	5	41.90 64.27	0.65	0.66
	Between Groups	13754.73	214			
	Total	13964.23	219			
Total	Within Groups	5560.42	5	1112.08 348.14	3.19	0.00
	Between Groups	74503.87	214			
	Total	80064.29	219			

Analyzing the multiple comparison Tukey test results showing which paired groups and subdimensions caused the differences, a significant difference was found in the open mindedness sub-dimension between individuals whose mother holds an undergraduate degree and is literate. In the sub-dimension of searching the truth, there was significant difference between those whose mother holds undergraduate degree ($\bar{X}$=43.03) and those whose mother is primary school graduate ($\bar{X}$=36.60) as well as a significant difference between those whose mother is a high school graduate ($\bar{X}$=41.49) and those whose mother is a primary school graduate ($\bar{X}$=36.60) (Table 7).

Table 7. The Relationship between the Mean Scores of Employees' Critical Thinking Disposition and Their Mothers' Education Level

CCTDI and Sub Scales		Open-mindedness	Truth-seeking	Self-confidence	Inquisitiveness	Total
Illiterate	Mean	45.66	33.14	39.42	43.75	161.98
n = 5	S.D.	± 4.22	±11.57	±6.43	±8.24	±16.60
Literate	Mean	39.16	38.57	42.00	44.50	164.23
n = 5	S.D.	± 7.50	±9.20	±7.99	±12.20	±30.86
Primary School	Mean	45.34	36.60	41.87	45.60	169.43
n = 80	S.D.	± 6.77	±8.73	±7.92	±8.12	±19.49
Middle School	Mean	44.74	40.71	40.04	45.07	170.57
n = 32	S.D.	± 6.69	±10.49	±9.00	±8.3	±19.38
High School	Mean	46.95	41.49	41.45	47.15	177.06
n = 66	S.D.	± 7.12	±6.84	±8.44	±7.49	±17.72
University	Mean	48.77	43.03	42.41	47.26	181.48
n = 32	S.D.	± 5.19	±6.01	±6.51	±7.44	±15.54

According to the results of one-factor analysis of variance, there was a significant difference between employees' critical thinking dispositions according to the faculty they graduated from ($F(5,214)=6.34$; $p<0.05$) (Table 8).

Table 8. Results of One-Factor Analysis of Variance Related to Critical Thinking Disposition of Individuals' According to the Departments they Graduated From

Variance Source		Sum of Squares	S.D.	Mean of Squares	F	P
Open Mindedness	Within Groups	1686.31	5	337.26	8.60	0.00
	Between Groups	8388.98	214	39.201		
	Total	10075.30	219			
Truth-seeking	Within Groups	1622.14	5	324.42	4.80	0.00
	Between Groups	14443.56	214	67.49		
	Total	16065.71	219			
Self-confidence	Within Groups	534.41	5	26.61	0.41	0.84
	Between Groups	13429.81	214	64.65		
	Total	13964.23	219			
Inquisitiveness	Within Groups	534.41	5	106.88	1.70	0.13
	Between Groups	13429.81	214	62.75		
	Total	13964.23	219			
Total	Within Groups	10340.48	5	2068.09	6.34	0.00
	Between Groups	69723.80	214	325.81		
	Total	80064.29	219			

Analyzing the multiple comparison Tukey test results showing which paired groups and subdimensions caused the differences, significant differences were found in the open-mindedness sub-dimension between individuals who graduated from Vocational School of Higher Education ($\bar{X}$=41.56) and Engineering ($\bar{X}$=45.25), Architecture ($\bar{X}$=51.42), Faculty of Law ($\bar{X}$=48.84) and Faculty of Economics and Administrative Sciences ($\bar{X}$=47.03) in addition to the difference between the graduates of Architecture ($\bar{X}$=51.42) and Engineering ($\bar{X}$=45.25). In the sub-dimension of truthseeking, there was a significant difference between the graduates of the Faculty of Engineering ($\bar{X}$=44.89) and Vocational School of Higher Education ($\bar{X}$=36.38), as well as the Faculty of Engineering ($\bar{X}$=39.58) and Faculty of Law ($\bar{X}$=33.62) (Table 9).

Table 9. The Relationship Between the Mean Scores of Employees' Critical Thinking Disposition Score and the Faculty They Graduated From

CCTDI and Sub Scales		Open-mindedness	Truth-seeking	Self-confidence	Inquisitiveness	Total
Vocational School of Higher Education n =34	Mean	41.56	36.38	40.79	44.85	163.60
	S.D.	±7.00	±10.01	±7.14	± 6.97	± 15.76
Faculty of Engineering n =72	Mean	45.25	39.58	41.25	45.50	171.59
	S.D.	± 6.89	± 7.02	± 6.47	± 7.88	± 17.88
Faculty of Science and Literature n = 28	Mean	45.71	39.69	41.83	45.98	173.22
	S.D.	± 7.04	± 8.53	± 10.18	± 10.07	± 19.99
Architecture n = 28	Mean	51.42	44.89	43.01	49.68	189.02
	S.D.	± 5.05	± 5.90	± 8.08	± 6.78	± 16.26
Faculty of Law n = 13	Mean	48.84	33.62	42.96	48.55	173.99
	S.D.	± 3.87	± 11.22	± 8.85	± 7.23	± 18.90
Faculty of Economics and Administrative Sciences n = 45	Mean	47.03	40.28	40.88	45.47	173.68
	S.D.	± 5.19	± 8.54	± 9.12	± 7.97	± 19.41

Qualitative Findings

In order to understand what the working group understood about the concept of critical thinking, the interview was started with an open-ended question. The frequency distribution in Tables 10 and 11 was formed by coding the received responses.

Table 10. Opinions of White Collar Employees About the Concept of Critical Thinking

THEMES	CODES	f
Open-mindedness (f:13)	Free thinking	6
	Respect for different views	3
	Being unbiased	2
	Empathy	2
Truth-seeking (f:5)	Neutrality	1
	Inquiry	2
	The effort to find the truth	2
Analysis (f:3)	Accurate evaluation	2
	Comparison	1

Table 11. Opinions of Managers about the Concept of Critical Thinking

THEMES	CODES	f
Open-mindedness (f:5)	Respect for different views	3
	Free thinking	1
	Empathy	1
Truth-seeking (f:2)	Neutrality	1
	The effort to find the truth	1
Analysis (f:2)	Accurate evaluation	1
	Comparison	1

Here it can be seen that the opinions of the white collar employees and managers about the concept of critical thinking are concentrated under the theme of open-mindedness. Pertaining to open-mindedness, it was observed that the most commonly used expression by the white-collar employees was free thinking (f:13), while the most commonly used expression by the managers was respect for different views (f:3).

Some of the white collar employees' views are as follows:

"… Being able to make accurate assessments, **being open to different ideas**… (E1)

"…Expressing your thought **freely** and **without prejudice**, and making research **to reach the truth**..."(E2).

Some of the managers' views are as follows:

"…Evaluating what is right and wrong and thus, reaching what is right…"(M1)

"…Evaluating impartially and making comparisons, **expressing the outcome of the work freely..**."(M2)

Under this theme, the answers of the participants to the question "How do you think the individual with critical thinking should be?" are given. The code frequencies formed by the responses are presented in Tables 12 and 13.

Table 12. Views of Managers about the Characteristics of Individuals with Critical Thinking

THEMES	CODES	f
Analytical thinker (f:8)	High knowledge accumulation	3
	Careful	3
	Educated	2
Truth-seeking (f:3)	Researcher	2
	Curious	1
Open-mindedness (f:2)	Open to innovation	1
	Respect for opposing views	1
Self-confident (f:2)	Consistent	1
	Leader	1

Table 13. Views of White-collar Employees about the Characteristics of Individuals with Critical Thinking

THEMES	CODES	f
Open-mindedness (f:15)	Open to innovation	7
	Respect for opposing views	4
	Advanced level of empathy	2
	Unbiased	2
Analytical thinker (f:8)	High knowledge accumulation	3

	Educated	2
	Careful	2
	Reading a lot	1
Truth-seeking (f:6)	Researcher	4
	Eager to learn	1
	Following the agenda	1
	Curious	1
Self-confident (f:4)	Consistent	2
	Leader	1
	Experienced	1

White collar employees gather the characteristics of individuals with critical thinking under the theme of being open-minded (f:15), and managers fathered them under the theme of analytical thinking (f:8). Pertaining to open-mindedness, it was observed that the most commonly used expression by the white-collar employees was being open to innovation (f:7); and pertaining to analytical thinking, the most commonly used expression by the managers was high knowledge accumulation and being careful (f:3).

Some of the white collar employees' views are as follows:

"… Must be well-educated, knowledgeable, able to respect people, empathize and be **open to innovation**..." (E1)

"… open to innovation and able to think **without prejudice**…" (E8)

Some of the managers' views are as follows:

"…Must be highly **knowledgeable, curious and eager to research** in order to find **the right thing**…" (M1)

"…Well-educated and highly knowledgeable, supporting innovation..." (M 2)

Under this theme, the answers of the participants provided the question "How do you think critical thinking skills can be developed?" are given. The code frequencies formed by the responses are presented in Tables 14 and 15.

Table 14. Views of White-collar Employees about How to Develop Critical Thinking Skills

THEMES	CODES	f
Educational Factors (f:8)	Participation in seminars and similar events	4
	Increasing the level of education	3
	Learning different cultures	1
Environmental factors (f:6)	Meeting people with different perspectives	3
	Tracking different sources of opinion	2
	Team work	1
Familial Factors (f:4)	Direction by the family	3
	Training individuals with high self-confidence	1
Individual Factors (f:3)	Self-criticism	2
	Compliance with Technology	1

Table 15. Views of Managers about How to Develop Critical Thinking Skills

THEMES	CODES	f
Educational Factors (f:6)	Increasing the level of education	4
	Participation in seminars and similar events	1
	Learning different cultures	1
Environmental factors (f:3)	Meeting people with different perspectives	2
	Team work	1
Familial Factors (f:3)	Direction by the family	2
	Communication between mother and child	1
Individual Factors (f:2)	Thinking without prejudice	1
	Analytical thinker	1

White-collar employees and managers most frequently referred to educational factors on how to develop critical thinking skills. Pertaining to educational factors, it was observed that the most commonly used expression by the white-collar employees was participation in seminars and similar events (f:4), while the most commonly used expression by the managers was increasing the level of education (f:4).

Some of the white collar employees' views are as follows:

"...the direction of the family is very important, then follows increasing the **level of education**, as well as attending events and conferences…" (E2)

"…with the increasing level of education, reading the authors of different ideas and the news; renewing yourself and **keeping up with technology ...**" (E3)

"…**first and foremost the right direction of the family**, and then participation in professional activities, listening to speakers with different ideas, attending seminars on different topics…" (E4)

Some of the managers' views are as follows:

"…One has to develop by means of education. One has to enter different environments and communicate with different people..." (M1)

"…One must break down his prejudices, think analytically, read continuously and increase his level of education. Teamwork with individuals from different perspectives…" (M3)

This theme includes the views of the participants in response to the question, "Do you think your subordinates/superiors have critical thinking and what do you think about having them?" The code frequencies formed by the responses are presented in Tables 16 and 17.

Table 16. White-collar Employees' Views of Their Superiors' Critical Thinking

THEMES	CODES	f
Reasons why managers do not support critical thinking (f:11)	Manager's ego	5
	Managers do not value the views of their subordinates	4
	Managers fear loss of authority	2
Consequences that may occur when managers support critical thinking (f:15)	Increased success	6
	Providing an environment of free thinking	3
	Generating new ideas	2
	Increased motivation of subordinates	2
	Increased sense of belonging of subordinates	2

Table 17. Managers' Views on their Subordinates' Critical Thinking

THEMES	CODES	f
Negative consequences of critical thinking of subordinates (f:7)	Stubborn behaviour of subordinates	4
	Disrespectful attitudes of subordinates	3
Possible outcomes of support for subordinates' critical thinking (f:6)	Generating new ideas	3
	Increased success	2
	Providing an environment of free thinking	1

Pertaining to subordinates' perception of superiors' critical thinking disposition, the most frequent expression by white collar employees was of the absence of manager support for critical thinking (f:11). These employees mostly understood the cause of this issue to be the manager's ego (f: 5). Regarding subordinates' critical thinking disposition, the managers' sentiments mostly centered on the negative consequences of critical thinking by subordinates (f:7), making frequent reference to their stubborness (f:4). The opinions of some white collar employees in this vein are as follows:

"…**They don't value our opinions**, even if they **pretend to listen to us**, they will not accept our opinions since they think this will undermine their authority; if an environment of critical thinking is provided, the motivation and success of individuals will increase…" (E1)

"…They don't assess our opinions; **if they value our opinions, our motivation will increase.** In this way, the sense of belonging to the organization will increase. As a result, success rates will increase..." (E3)

Some managers' views on this issue are presented below.

"... It is nice that subordinates have critical thinking, as they sometimes come up with new ideas. But being very determined and **stubborn about their ideas can cause problems.** After all, they should not be disrespectful to experience..." (M1)

"...Subordinates who are full of bias do not usually empathize but live with the manager patterns in their heads. They have critical thinking, but **because of their stubborn behaviour they can cross borders, they should not abandon respect;** in fact, their ideas will produce new ideas and all of us will increase our success..." (M3)

Under this theme, and here below, the views of white collar employees with regard to the dialogue with their superiors, on the one hand, and, on the other, the views of managers with regard to the dialogue with their subordinates are provided in the form of responses to the question, "Can you tell us about a dialogue or incident regarding open-mindedness with your superior/subordinate in your working life, or an incident experienced by those around you?" The code frequencies formed by the responses are presented in Tables 18 and 19.

Table 18. Opinions of White Collar Employees on their Experiences with Managers Regarding Open-Mindedness

THEMES	CODES	f
The psychological pressure of the manager (f:10)	Fears of subordinates of loss of work	4
	Manager's threats	3
	Managers' underestimation of the subordinates	3
The manager does not respect his subordinates (f:9)	Managers do not value the views of their subordinates	6
	Ignoring the views of subordinates	2
	Non-empathy towards subordinates	1
Managers are not open to innovation (f:9)	Managers are prejudiced	5
	Managers are members of Generation X	2
	Managers fear of losing authority	2

Table 19. Opinions of Managers on their Experiences with Subordinates Regarding Open Mindedness

THEMES	CODES	f
Subordinates do not respect their managers (f:9)	Subordinates do not respect their managers' experience	4
	Subordinates distrust managers' decisions	2
	Subordinates ignore the views of their managers	2
	Subordinates disrespect status	1
Subordinates are open to innovation (f:5)	Subordinates are members of generation Y	2
	Subordinates produce new ideas	2
	Subordinates follow technological developments	1

Pertaining to open-mindedness, white collar employees mostly referred to psychological pressure by managers (f:10). The most common reference by

white collar employees when asked about psychological pressure from managers was the fear of the loss of their job (f:4). Pertaining to open-mindedness experiences with their subordinates, managers mostly dwelled on the disrespect they perceived from subordinates (f:9). Managers often expressed disrespect to their subordinates 'managers' experiences. (f:4).

Some white collar employees' views on this issue are presented below.

"...We usually see that there are problems with intergenerational open-mindedness. **Our manager**, who is a member of **generation X, closes himself to new developments and doesn't listen to us**…" (E1)

"...He acted with his prejudices and said this is my decision without listening to other views. **It seems as if accepting other views would cause loss of authority**..." (E2)

"...If you **express a negative opinion**, .. he will devalue you in society and **threaten you with your work**..." (E3)

"...when I shared my question with the top manager, it was me who was wrong, …. This even caused me to **worry about losing my job..."** (E4)

"…. If you are stubborn in your open-mindedness, after a while you will come into conflict with your manager and he will **threaten you and you will start fearing the loss of your job...**" (E6)

"...they do not value your ideas because **they think they will suffer a loss in their authority...**" (E9)

Some managers' views on this issue are presented below.

"... open-mindedness is good, **but there must be a limit**; at first, there were disagreements, our team made inquiries without demonstrating respect for my experience, not trusting my decisions. But **at the end of the day, my team saw that what I said was true...**" (M1)

"...I don't think that open-mindedness is to tell whatever comes into your mind at any given time. Some of our colleagues **express their opinions without any limit,** regardless of whether there are managers present. We were unable to work together with one of our employees because of one such situation, and **we decided to separate ways since this was creating a tense** environment. **They may be open-minded, but they should not disrespect their managers' experience...**" (M2)

"...I had problems with an employee who stated that he was open-minded, but **he usually didn't listen to me**. **He did not trust my decisions**; he constantly **questioned my decisions** and did not trust my experience. This

situation reduced the motivation of his team as well and as a result, **this employee quit the job on his own after a while since he was also demoralized...**" (M4)

"... **generation Y especially wants to say and have almost everything,** but we want them to evaluate things calmly **without disrespecting our experience**..." (M5)

Discussion and Conclusion

The dual aims of this study were to explain the critical thinking disposition of white collar employees and managers and to understand both the factors that may affect this disposition and their possible effects. For this purpose, the research methodology, which comprised a mixed design, was a comparative analysis of quantitative and qualitative findings to understand and explain these two groups' concepts of critical thinking.

Research results showed that managers (Mean=174.14; S.D= 16.17) and white collar employees (Mean=173.13 S.D.= 19.88) had a moderate level of critical thinking disposition, with scores between 160 and 180 on a scale where the highest score was 240. The quantitative results showed that the critical thinking dispositions of the two groups were close to each other.

However qualitative research results demonstrated the differences between the two groups' perspectives on critical thinking. And so the reasons for these differences were questioned. As a matter of fact, the responses given to the questions regarding the open-mindedness dimension by white collar employees indicated that their managers did not listen to them, the managers made them feel worthless, the managers often applied their authority, they did not ask for critical thinking behaviour from their employees, and that they even perceived those who had critical thinking disposition as a threat. And indeed, it was also evident in the managers' responses that they do not welcome critical thinking disposition among subordinates. The managers stated that their employees should limit themselves in terms of critical thinking, and that employees will gain if they make inquiries and question situations initially, at the beginning, and then stop once decisions are made. They further stated that it is unacceptable to express opinions to managers "without limits" since they believed such open expression may cause tension. It was observed that those who insisted on their ideas were dismissed from or quit

their jobs and. It was, in short, perceived as disrespectful for generation Y to openly express their opinions.

Concerning the gender of the employees, it was concluded that there was no significant difference between the two genders in terms of their critical thinking skills, while women had relatively higher scores in the open-minded dimension than men. A study conducted on the relationship between gender and critical thinking by Akar (2017: 741-762) measured 224 elementary school teacher candidates' critical thinking using the CCTDI test on. Akar found that there was no significant difference in critical thinking skills according to the gender of the prospective teachers. Similarly, Aral (2005: 44-50), in a study on the critical thinking skills of students studying at private and state schools, found no significant difference between students' critical thinking skills and gender. Qualitative findings showed that the open-mindedness sub-dimension was more frequently mentioned by women than men when defining the concept of critical thinking. Therefore, the open-mindedness sub scale found in the quantitative results supports the conclusion that the difference according to gender is significant.

On the other hand, it was concluded that there was no significant difference between the critical thinking skills of employees according to their ages. The result is consistent with the findings of Bal (2011). In his research on preschool teachers, Bal (2011: 66) formed 5 different age groups and, after his elaborate assessments, found no significant difference in critical thinking skills according to age. However, it was seen in the present study that qualitative findings do not fully support quantitative findings. Managers stated that 25-30 year old employees who have just started their work life have critical thinking skills but that they can perform better analysis via the inclusion of the opinions of more experienced colleagues. In addition, they used language supporting a rising parallel between critical thinking skills and increasing age. On the other hand, employees stated that new recruits were more open to producing new ideas and more experienced people were not open to change or innovation, and the 25-30 age group had higher critical thinking skills. Hence, the opinions of white-collar employees and managers do not support the quantitative findings in the literature. A literature review demonstrates that these findings may vary according to certain independent variables such as the size of the sample group or age ranges.

On the other hand, there was a significant difference between the critical thinking dispositions of the employees according to their education level. In the literature, the studies conducted by Howenstein et al. (1996: 102) and Beeken (1997: 275) on nurses found that educational level had a positive effect on critical thinking and the difference between educational level and critical thinking was significant. Gloudemans et al. (2013: 82) also found that nurses holding an undergraduate degree had a higher critical thinking disposition score than nurses who do not hold a degree. Wootton et al. (2000: 82-84) conducted a study on university students, and found a positive correlation between the students' critical thinking disposition and their academic achievements (0.36), referring to the fact that critical thinking disposition has a positive effect on educational level. These earlier studies support the findings of this research. White-collar employees and managers most frequently referred to educational factors to describe how to develop critical thinking skills, in the study's qualitative analysis. Managers and white-collar employees stated that the level of education positively influences critical thinking, but still emphasized that the level of education could not be of uniquely high importance as the only variable, as family structure and other characteristics also play important roles.

According to the findings obtained as a result of the comparison between managers and employees, the difference between managers (Mean 174.14; SD = 16.17) and white collar employees (Mean 173.13; SD = 19,88) was not significant. Balcı (2015, pp. 107-108) found that managers had a low level of critical thinking disposition in a study on the critical thinking disposition of managers and nurses. There was no significant difference between the participants at the level of management in terms of critical thinking disposition. The reason for the low level of critical thinking disposition of the managers was determined by factors such as work load, habits, and senior management approaches that do not support critical thinking.

While defining the concept of critical thinking in the qualitative research findings, white-collar employees and managers commonly referred to the themes of open-mindedness, truth-seeking, and analysis. White collar employees were asked how they regarded the critical thinking disposition of their superiors, while managers were asked the same question regarding their subordinates. Both groups stated that the respective group possessed critical thinking disposition. It was observed that employees in particular see

their managers as having critical thinking disposition in their social lives, yet they believed the managers did not value employee views in work life, and this due to reasons including managers' ego and fear of losing authority and status. In fact, employees frequently stated that they experienced psychological pressure from their managers because they were open-minded. For this reason, it can be said that managers do not support the critical thinking of their subordinates in their work life, even if they do apply critical thinking in their social life. While managers thought that their subordinates evinced critical thinking disposition, they expressed that their critical thinking skills would increase with experience and respect for their managers. It was concluded through quantitative findings that there was no difference between the critical thinking dispositions of managers and white-collar employees, however, qualitative findings demonstrated that managers provide limited support for the critical thinking of their subordinates even if they have this disposition and this they associate with the concept of respect.

The quantitative findings showed that the difference between participation in professional activities and the critical thinking disposition was not significant. Although the critical thinking disposition score of the participants in cultural activities was higher than those who did not participate in cultural activities, this difference was not statistically significant. In the literature, Kürüm (2002: 60-62) found that teacher candidates who participate in cultural activities had higher critical thinking scores than teacher candidates who do not participate in such activities. Similarly, Dirişimeşe (2006: 58) found by means of interviews on nurses' critical thinking dispositions that participation in cultural activities has a positive effect on the critical thinking disposition. To the question of how critical thinking skills could be developed in the working group, white-collar employees and managers often referred to "participation in events such as seminars and conferences" under educational factors, and also referred to "meeting new people"and "knowing different cultures" under the dimension of environmental factors.

Concerning the level of education of their mothers, a significant difference was found with regard to their critical thinking disposition. It was observed that the critical thinking disposition of the employees whose mothers were university graduates was high (181.48 ± 15.54) . It was concluded that the difference between the open-mindedness and truth-seeking sub scales was significant on the scale of critical thinking disposition of employees whose

mother was university graduate. Bal (2011: 64-66) conducted a study on teachers and found that the teachers whose mother had postgraduate education had a significantly higher critical thinking disposition than those whose mother had a lower level of education. Günay and Earıkçı (2018: 435) conducted a study on students' critical thinking disposition, and found that there was a significant difference between their critical thinking disposition according to their mothers' level of education. It can be said that the difference particularly in the open-mindedness sub-dimension indicates that family, as the first step in one's education, is fundamentally significant, and also that one's mother's attitudes and behaviours are significant in determining the critical thinking disposition. This finding was also investigated in qualitative analyses and the working group often referred to the importance of family in the questionnaire. Furthermore, the working group underlined the relationship between mother and child as well as mother's effect on an individual. In this vein, both qualitative and quantitative findings and several studies in the literature suggest that the development of critical thinking disposition is predominantly shaped by family and particularly the communication between mother and child.

In addition, the study revealed that there was a significant difference in individuals' critical thinking dispositions according to the departments they graduated from. It was observed that graduates of the department of architecture had a higher critical thinking disposition score than other faculty graduates. In a similar study in the literature investigating the critical thinking disposition of university students Taş, Doğanay and Erdem (2007: 512) observed that there were significant differences in the critical thinking of students studying at different departments. In our study, the responses to the question regarding the effect of the department they study on truth-seeking, asked to white collar employees and managers within the scope of the qualitative research, are supportive of the findings obtained through quantitative research. From this perspective, architects stated that there is not a single truth for them and that the right design is the design that best provides comfort to people. They further stated that they were constantly searching for the truth during their education. As a result of these findings, it can be deduced that the structure of education and the work carried out shapes an individual's critical thinking disposition.

In summary, important results were obtained regarding both the method and the critical thinking concept in this study. In the context of method, it is understood that a mixed method is the right choice for such research, since there are contradictions between the qualitative and quantitative findings. It is evident that a mixed method provides better explanations to the research hypotheses, particularly for cases that might involve bias and partiality in the research group. As a matter of fact, "natural" and necessary responses were given to the questions in the survey, from which it was observed that critical thinking is still not yet at the desired level in the business world.

Within the scope of the findings, it was concluded that critical thinking was (partially) related to gender and education; there were differences between perspectives towards critical thinking as well as biases; teaching critical thinking starts in the family; the mother's level of education has a particularly important effect on critical thinking disposition; and that it is important to raise awareness about critical thinking in public institutions, society, and organizations since critical thinking is regarded among the important skills of today and the future. Moreover, the change in the critical thinking disposition created by the level and type of education reveals that this concept is learnable and changeable by various factors. Both of these findings impose significant responsibilities on the state, organizations, and families. In this vein, increasing the level of education of women and providing conditions to allow them to spend more time with their children will require the use of new behavioural and mental education techniques and models in education to facilitate their acquisition of critical thinking skills.

On the other hand, in order to provide the opportunity for managers and white-collar employees to think critically in workplaces, corporate policies should be developed and senior management should provide the necessary support. At the same time, companies should develop new strategies so that managers support their subordinates' critical thinking disposition. Human resources departments should perhaps inspect managers in this regard. Finally, financial and moral support should be provided to employees for education, including graduate and PhD studies, in order to increase their level of education.

Considering the limited number of studies in the literature regarding this field, there is a need for more comprehensive research related to the critical thinking disposition of white collar employees and managers, investigating a

broader sample than this study, which dwells only on white collar employees and managers serving in Istanbul's private sector. Detailed exploratory and explanatory research that will identify the precursors of critical thinking disposition may be undertaken, as a parting suggestion to future researchers.

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