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Original article

THE CORRELATION BETWEEN CRITICAL THINKING DISPOSITION AND INTERNAL-EXTERNAL LOCUS OF CONTROL OF CANDIDATE STUDENTS WHO PARTICIPATED IN SPECIAL TALENT EXAMINATION IN SCHOOL OF PHYSICAL EDUCATION AND SPORTS EGE UNIVERSITY

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Abstract

The aim of this study was to investigate the critical thinking disposition levels and the locus of control in terms of the gender, high school type and doing regular sports among the candidate PE students who participated in special talent examination in physical education and to determine the correlation between the critical thinking disposition and the internal-external locus of control.

Methods. The population of the study was 526 candidate PE students who participated in special talent examination of School of Physical Education and Sports, Ege University during 2010-2011 academic year. Sample of the study were 356 candidate PE students (119 female students and 237 male students) who were recruited using random sampling method. As the data collection tools; California Critical Thinking Disposition Scale (CCTDI) adapted into Turkish by Kökdemir (2003) and Rotter's Internal-External Locus of Control Scale developed by Rotter (1966) and adapted into Turkish by Dağ (1991) and a personal information form were used.

Results. It was found that there was significant difference in critical thinking disposition of the candidate students according to the high school type. In addition, internal-external locus of control of the candidate students were found significantly to be different in gender variable. It was seen that there was a significantly negative correlation between critical thinking disposition and internal-external locus of control of the candidate students ($r=-.144$, $p=.007$; $p<.05$).

As a conclusion it is important to instill students critical thinking ability against problems of school life and daily life as well as to teach them the belief that control over future outcomes depends mainly on them. Moreover; the study can be conducted with different samples.

Key words: Internal-external locus of control, critical thinking and critical thinking disposition, special talent examination.

Introduction

Individual differences in education are important factors that influence success of the students. The factors affecting one's success may include motivation, intelligence, abilities, locus of control, thinking skills and attitudes and learning types. These factors constitute the foundation of human education. Özden (2000) argues that thinking skills consist of critical thinking, problem solving, reading comprehension, scientific thinking, creative thinking and creative problem solving abilities. The effective use of critical thinking ability leads to high level of thinking. Taking the place of the studies investigating thinking ability; critical thinking tries to explain how individuals think and decide (Kazancı, 1989).

The term critical thinking disposition refers to a person's internal motivation to think critically when faced with problems to solve, ideas to evaluate or decisions to make. These values, attitudes and inclinations are dimensions of one's personality which relate to his likelihood to approach problem identification and problem solving by using reasoning (Giancarlo, Blohm, & Urdan, 2004).

Critical thinking may not always be employed. The first reason is not to have the ability to think critically. In cases where individuals do not have necessary tools, a healthy critical thinking does not occur. The second reason is that if we are of the opinion that we can do but cannot do, it is due to the fact that critical thinking is regarded as a difficult and uncomfortable thing. In this case; it is clear that we do not have critical thinking tendency needed to think critically (Gündoğdu, 2012). According to Gündoğdu (2012); individual with critical thinking possesses some characteristics, too. Those who can manage to think critically can think analytically, are open-minded, seek the truth and are systematic. Those without analytical thinking are unable to think critically. Being open-minded, another feature of the critical thinking, is also important to attain the correct outcome. Those who are not open-minded fail to criticize properly because they are blind to the truth. Those with critical thinking seek the truth. Another prerequisite for critical thinking is being systematic. A thinking style not systematic is left to chance and is not suitable for critical thinking. Besides; each of these above-mentioned critical thinking characteristics are identified as "subscales" of critical

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thinking (Watson and Glasser, 1994; Kazancı, 1989; Halpern, 1996).

In sum, critical thinking is closely linked to cognitive processes. For this reason, it can be expected to influence behavioral tendencies of individuals in a relationship. However, control beliefs are also crucial in explaining behavioral tendencies (Bandura, 2001).

Locus of control is a personal characteristic that influences directly correct decision-making behaviors. The term of locus of control has been the focus of many researches for over 35 years and its relation to numerous personality variables or personality behaviors has been examined (Dağ, 1991).

The concept of locus of control has its origin in social learning theory of Rotter (1954, 1966). In general, locus of control refers to a personality or dispositional variable reflecting the tendency to perceive events as being either a consequence of one's own actions or a consequence of outside factors such as fate, chance or powerful others that are beyond one's personal control (Bearinger& Blum, 1997; Marks, 1998).

Rotter's (1966) original locus of control classification places generalized beliefs concerning who or what influence consequences on a bipolar dimension from internal to external control. *Internallocus of control* is the term used to describe the belief that control for future outcomes resides primarily in oneself.

That is, people with internal locus of control believe that outcomes are consequences of their own actions
Table 1. Information about the Candidate Students

rather than luck/chance, fate or others. They also believe that their own experiences are controlled by their own skills and efforts. By contrast, *externallocus of control* refers to the expectancy that control of outcomes is outside of oneself. People who tend to have externallocus of control tend to attribute their experiences and outcomes to external factors such as fate, chance or luck (Lefcourt, 1982).

Departing from the idea that locus of control and critical thinking play a key role in the education of the students; we thought that examination of the correlation between these two terms was necessary. Individuals should be educated by instilling critical thinking and internal locus of control so that they can be successful in different areas, can develop a positive personality under any circumstances, can live and think productively, creatively and positively to maximize their life perceptions.

Method

Participants. The population of the study consisted of 526 students who were enrolled in special talent examination of the School of Physical Education and Sports, Ege University during 2010-2011 academic year. The study was conducted with 356 candidate PE students (119 female students and 237 male students) who were recruited using random sampling method. Table 1 included information on the candidate students.

Variables		n	%
Gender	Females	119	33.4
	Males	237	66.6
High School Type	General	198	55.6
	Vocational	65	18.3
	Anatolian	93	26.1
Academic Field studied at high school	Turkish-Social	138	38.8
	Math-Natural	80	22.4
	Turkish-Math	138	38.8
Place of Residence	Village	55	15.4
	County	78	21.9
	Province	94	23.6
	Metropolitan City	139	39.0
Status of doing Sportive activities regularly	Yes	296	83.1
	No	60	16.9
Total		356	100



Data Collection

As the data collection tools; California Critical Thinking Disposition Scale (CCTDI) and Rotter's Internal-External Locus of Control Scale developed by Rotter (1966) and adapted into Turkish by Dağ (1991) and a personal information form were used. The administration of the scales and the form were made after enrollment for the examination.

California Critical Thinking Disposition Scale (CCTDI)

The scale was developed as a result of Delphi project organized by American Philosophy Association in 1990 (cited by Kökdemir, 2003). CCTDI is a Likert-type scale, consists of 75 items with 7 subscales and is designed to measure critical thinking disposition of the university students. The subscales are Curiosity, Open-mindedness, Systematicity, Analyticity, Truthseeking, Self-Confidence, and Maturity (Facione et al., 1995; Kökdemir 2003). Turkish adaptation of the scale was performed by Kökdemir (2003) on 913 students. As a result of item-total score correlation and principal component analysis; the scale was reduced to 51-item scale from 75-item scale; to 6 subscales from 7 subscales. Internal consistency coefficients of the new scale with 6 subscales ranged from .61 to .78 and total internal consistency coefficient of the scale was calculated 0.88 (Kökdemir, 2003). The internal consistency coefficients of CCTDI ranged from .57 to .72 and total internal consistency coefficient of the scale was calculated .89 in this study. Minimum score to be obtained from a subscale is 10 while maximum score is 60 in CCTDI. High scores to be obtained from the subscales indicate that participant's disposition to that subscale is high, too. A score <40 obtained from a subscale indicates low level of critical thinking disposition while a score >50 indicates high level of critical thinking disposition. Addition of the subscale scores yields total score. The lowest total score is 60 while the highest total score is 360. In this regard, a score < 240 indicates low level of critical thinking disposition while a score > 300 indicates high level of critical thinking disposition (Kökdemir 2003). CCTDI is also utilized for the validity of the educational programs designed to improve the critical thinking tendencies and/or critical thinking skills. Kökdemir

(2003) defines it as a scale which was designed with the help of critical thinking literature and possessed a rich institutional base.

Rotter's Internal-External Locus Of Control Scale

The scale, developed by Rotter (1966) and adapted into Turkish by İhsan Dağ (1991), defines internal locus of control and external locus of control on the results of the events, reflects a generalized expectation and classifies individuals as internally controlled and externally controlled. Validity and reliability tests of the scale were performed on university students. Test-retest reliability coefficient was .83. Reliability coefficient calculated by KR-20 technique was .68 and Cronbach Alpha internal consistency coefficient was .70. Because no standard score table and norm table were presented for the assessment of the scale; statistical analyses were made with raw scores. Despite being composed of 29 pair-items; 23 pair-items are used for scoring and other six items were filler items. They are not scored as part of the scale. Respondents must choose the statement -A or B- for scoring. The scores to be obtained from the scale vary between 0 and 23. Higher scores indicate high level of one's belief in external locus of control.

Data Analyses

Descriptive statistics included frequencies (n), percentages (%), arithmetic means (\bar{X}) and Standard deviation (Sd). To explore the differences; non-parametric tests -Mann-Whitney U and Kruskal Wallis tests- were employed because conditions of normal distribution and homogeneity did not occur in variables of gender, high school type (the school from which participants graduated) and academic field in high school. The correlation between CCTDI and locus of control was tested using Spearman correlation coefficient.

Findings

Findings Related To Critical Thinking Dispositions Of The Students

Mean CCTDI score of the students was 253.40±32.62. Table 2 included the data about whether or not CCTDI scores of the students differed in terms of gender, high school type and academic field in high school.

Table 2. Results regarding mean CCTDI scores of the Students in terms of gender, High School Type (high school from which participants graduated) and academic field at high school.

Variable	n	Mean Rank	P difference			
Gender	Females	119	172.88			
	Males	237	181.32			
	General	198	186.03			
High School Type	Vocational	65	146.63	$\chi^2=7.638$.022*	2-1



	Anatolian	93	184.75		2-3
Status of doing sportive activities regularly	Yes	296	179.48		
	No	60	173.67	U=-.399	.690

*p<.05

When Table 2 was investigated; it was found out that there was a statistically significant difference between students' mean CCTDI scores, and high school where the students studied ($\chi^2=7.638$; $p=.022$; $p<.05$) and academic field at the high school ($\chi^2=14.975$; $p=.001$; $p<.05$) whereas no statistically significant difference was found between students' mean CCTDI scores and gender ($\chi^2=-.730$; $p=.465$; $p>.05$). Mean CCTDI scores of the students who graduated from vocational high schools were lower than those who graduated from Anatolian High Schools (a kind of general high school to which academically more successful students

attend) and General High Schools. Mean CCTDI scores of the students who studied Turkish-Math were lower than those who studied Turkish-Social Sciences and Math-Natural Sciences.

Findings Related To Rotter's Internal-External Locus Of Control Scale

Mean score of the internal-external locus of control scale of the students was 11.24 ± 2.68 . Table 3 included the data about whether or not Rotter's Internal-External Locus of Control Scale scores of the students differed in terms of gender, high school type and academic field in high school.

Table 3. Results regarding internal-external locus of control scale of the Students in terms of gender, High School Type (high school from which participants graduated) and academic field at high school.

Variable		n	Mean Rank		P
Gender	Females	119	211.72		
	Males	237	161.82	U=-4.357	.000**
High School Type	General	198	177.58		
	Vocational	65	189.72	$\chi^2=1.114$.573
	Anatolian	93	172.62		
Status of doing sportive activities regularly	Yes	296	177.45		
	No	60	183.68	U=-.431	.666

*p<.05

When Table 3 was investigated; it was found out that there was no a statistically significant difference between CCTDI total scores, and high school where the students studied ($\chi^2=1.114$; $p=.573$; $p>.05$) and academic field at high school ($\chi^2=.875$; $p=.646$; $p>.05$) while a statistically significant

difference was found between students' mean CCTDI scores and gender ($\chi^2=4.357$; $p=.000$; $p<.05$). Mean locus of control score of female candidate students was higher than male candidate students; which means that male candidate students were more internally controlled than female students.

The Correlation Between Critical Thinking Tendencies Of The Students And Their Locus Of Control

Table 4 were presented Spearman Correlation Coefficients calculated through mean scores of "CCTDI" and "Locus of Control" Scales.

Table. 4. Correlation between CCTDI and Locus of Control Scales.

CCTDI	Open-mindedness	Analyticity	Inquisitiveness	Self-Confidence	Systematicity	Truth-seeking	CCTDI Total
Locus of Control	$r=-.142^{**}$ $p=.007$	$r=.200^{**}$ $p=.000$	$r=-.086$ $p=.104$	$r=-.120^{*}$ $p=.024$	$r=-.141^{**}$ $p=.008$	$r=-.019$ $p=.726$	$r=-.144^{**}$ $p=.007$

**P<.01, *p<.05



As seen in Table 4; when students' ($n=356$) means scores obtained from CCTDI subscales and CCTDI total and mean scores obtained from locus of control scale were analyzed; it was seen that there was a negative and significant correlation between Locus of Control Scale and CCTDI Open-mindedness ($r=-.142$, $p=.007$; $p<.01$), CCTDI Analyticity ($r=-.200$, $P=.000$; $p<.01$), CCTDI Self-Confidence ($r=-.120$, $p=.024$;

Discussions

The following results were obtained from the study which was conducted so as to evaluate critical thinking and locus of control of the students who participated in special talent examination in terms of gender, types of the high school and status of doing regular sports and to explore the correlation between critical thinking dispositions and locus of control:

It may be argued that candidate students had positive and moderate level of mean scores. In the studies of Kökdemir, (2003) Korkmaz and Yeşil (2009), Saçlı (2008), Certel and Yaçınkaya (2011) and Certel et al. (2011a); similar results were obtained. In the study, gender and doing regular sports did not influence critical thinking tendency. There are many studies that concluded that gender did not influence critical thinking tendency among the university students (McDonough, 1997; Scott et al. 1998; Çekiç, 2007; Saçlı, 2008; Certel and Yaçınkaya, 2011; Certel et al. 2011a). CCTDI of the candidate students differed in terms of the academic fields which they studied and graduated from. Critical thinking scores of the students who graduated from vocational high schools were lower than those who graduated from other high schools. Because mean scores of locus of control of the students were near to average scores of the scale; it may be considered as moderate. In the study; it was found out that male candidate students were more internally controlled than female candidate students. In the study of Yeşilyaprak (1988); no correlation was found between locus of control and gender while in the studies of Korkut (1986) and Arıcağ (1995), it was discovered that male students were more internally controlled than female students; which concurred with our study. In the study; it was concluded that type of the high school from which students graduated and status of doing regular sports did not affect locus of control. In the study; it was seen that there was a negative and significant correlation between Locus of Control Scale and CCTDI Open-mindedness, CCTDI Analyticity, CCTDI Self-Confidence, CCTDI Systematicity and CCTDI total. In the study of Saracaloğlu and Yılmaz (2011) on candidate classroom teachers; it was noted that there was a positive and low correlation between locus of control and CCTDI total scores. Teachers with external locus of control had higher critical thinking attitude scores. In the study of Derelioğlu (2004) on university students; there was a negative and significant correlation; which was in line with our study. It is known that those with critical

$p<.05$), CCTDI Systematicity ($r=-.141$, $p=.008$; $p<.01$) and CCTDI total ($r=-.144$, $p=.007$; $p<.01$). On the other hand; no statistically significant correlation was found between Locus of Control Scale, and CCTDI Inquisitiveness ($r=-.086$, $p=.104$; $p>.05$) and CCTDI Truth-seeking ($r=-.019$, $p=.726$, $p>.05$).

thinking tendency possess such positive characteristics as effective problem-solving, producing effective solutions, ability to be open-minded, ability to face their own prejudices and ability to be open to experience. Kökdemir (2003) found that students with high critical thinking tendency gave more rational answers to the questions of decision-making as compared with those with low critical thinking tendency. Besides; Skinner (1996) emphasized that individuals who have internal control perceive higher level of control over events, keep trying and do not surrender when they face difficulties. Although the literature is not rich in interaction between critical thinking and locus of control; Williams and Stack (1972) and Ducette and Wolk (1973) reported that those with internal locus of control were quicker in finding clues that facilitate right decision-making than those with external locus of control. Also; those with internal locus of control can remember past performances better than those with external locus of control and can get use of these past performances in order to predict the future performance correctly. In this sense; that individuals with internal locus of control had higher level of critical thinking tendency – that is, a negative correlation- was in agreement with the literature.

As a conclusion; it is important to instill students critical thinking ability against problems of school life and daily life as well as to teach them the belief that control over future outcomes depends mainly on them. Moreover; the study can be conducted with different samples.

References

- Arıcağ, T. (1995). The Correlation Aggression, Self-esteem and locus of control among University Students; Unpublished Master Dissertation, Istanbul: Marmara University Educational Sciences Institute.
- Bandura, A. 2001. Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Bearinger, L. H., & Blum, R. W. 1997. The utility of locus of control in predicting adolescent substance use. *Research in Nursing & Health*, 20, 229-245.
- Certel, Z., Yaçınkaya, M. 2011, Critical Thinking Dispositions of Students of School of Physical Education and Sports. 7th National Physical



- Education and Sports Teaching Congress. 25-27 May Van.
- Certel, Z., Çatıkkaş, F., Yalçınkaya, M. . 2011a. Examination of Emotional Intelligence and Critical Thinking Dispositions of Candidate Physical Education Teachers Selçuk University Physical Education and Sports Science Journal, 2011; 13 (1): 74-81
- Çekiç, S. 2007. Examination of critical thinking power of Undergraduate Students of Mathematics Teaching. Unpublished Master Dissertation Thesis, Dokuz Eylül University, Education Sciences Institute, Izmir
- Dağ, İ. 1991. Validity and Reliability of Rotter's Internal-External Locus of Control Scale among university students. Psychology Journal, 7(26), 10-16.
- Derelioglu, Y. 2004. Examination of Correlation between Critical thinking and Locus of Control Scale among university students Marmara University Education Sciences Institute, 37-48.
- Facione, P. A. 1990. Critical Thinking, A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction "The Delphi Report" (Executive Summary), California Academic Press Millbrae.
- Halpern, F. D. 1996 Thought and knowledge: an introduction to critical thinking, Lawrence Erlbaum Associates
- DuCette, J., & Wolk, S. 1973. Cognitive and motivational correlates of generalized expectancies for control. Journal Personality and Social Psychology, 26, 420-426.
- Giancarlo, C. A., Blohm, S. W., & Urdan, T. 2004. Assessing secondary students' disposition to critical thinking: Development of the California measure of mental motivation. Educational and Psychological Measurement, 64, 347-364.
- Gündoğdu, H. (2012). Why cannot we think critically?: Barriers to Critical thinking, Education in Science and Enlightenment, S. 146, pp.43-52.
- Kaya, H. 1997. Critical Reasoning Power among University Students. Doctoral Dissertation. İstanbul University. İstanbul.
- Kazancı O, 1989, Critical Thinking and Teaching Critical Thinking in Education. İstanbul: Kazancı Book Company
- Korkmaz, E. Yeşil, R. 2009. Critical thinking levels in line with Teaching Stages. Ahi Evran University Education Faculty Journal 10,(2): 19-28
- Korkut, F. 1986. The effect of some variables of primary school students and their families upon locus of control. Unpublished Science Expertise Thesis, Hacettepe University, Ankara.
- Kökdemir, D. 2003. Decision-making in cases of uncertainty and problem solving. Unpublished Thesis. Ankara University.
- Lefcourt, H. M. 1982. Locus of control: Current trends in theory and research (Second Ed.). New Jersey: Lawrence Erlbaum Associates.
- Manger, T., Eikeland, O. J., & Asbjornsen, A. 2002. Effects of social cognitive training on students' locus of control. School Psychology International, 23, 342-354.
- Marks, L. I. 1998. Deconstructing locus of control: Implications for practitioners. Journal of Counseling & Development, 76, 251-260.
- McBride, R., & Bonnette, R. 1995. Teacher and at-risk students' cognitions during open minded activities: structuring the learning environment for critical thinking. Teaching and Teacher Education, 11, 373-388.
- McDonough M. 1997. An Assessment of Critical Thinking At The Community College Level. Unpublished Doctoral Dissertation. Columbia University Teachers College.
- Özden, Y. 2000. Learning and Teaching, Ankara: Pegem-A Publication.
- Rotter, J. B. (1954). Social learning and clinical psychology. Englewood Cliffs, NJ: Prentice-Hall
- Rotter, J. B. 1966. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs: General and Applied, 80 (1, Whole No. 609).
- Saçlı, F. 2008. Determination and comparison of critical thinking levels of the students who studied physical education and sports teaching; training and recreation programs. Hacettepe University. Health Sciences Institute. Master Dissertation. Ankara.
- Saracaloğlu, A.S. Yılmaz, S 2011. Elementary Education Online, 10(2), 468-478.]: <http://ilkogretim-online.org.tr>
- Scott, J., Markert, R.J., Dunn, M.M. 1998. "Critical Thinking: Change during Medical School And Relationship To Performance in Clinical Clerkships." Medical Education, 32: 14-18.
- Skinner, E. A. 1996. A guide to constructs of control. Journal of Personality and Social Psychology, 71, 549-570.
- Watson, G. & Glaser, M. E. 1994. Watson-Glaser Critical Thinking Appraisal Manual Form S, New York: Harcourt, Brace & World Inc.
- Williams, J. G., & Stack, J. J. 1972. Internal-external control as a situational variable in determining information-seeking by Negro students. Journal of Consulting and Clinical Psychology, 39, 187-193.
- Yeşilyaprak, B. 1988. Factors affecting being internally controlled or externally controlled among high school students. Unpublished Doctoral Thesis. Ankara: Hacettepe University Social Sciences Institute.