Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesi Dergisi ISSN:1302-8944 Yıl: 2017 Sayı: 42 Sayfa: 240-253

Adaptation of Thinking Creatively in Action and Movement Test for Turkish Children[1]

Eylem ve Harekette Yaratıcı Düşünme Testi'nin Türk Çocuklarına Uyarlanması

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Başvuru Tarihi: 30.09.2016 Yayına Kabul Tarihi: 14.03.2017 DOI: 10.21764/efd.26968

Abstract: This study was planned for implementation of Torrance's (1981) Thinking Creatively in Action and Movement test for Turkish preschool students. First of all, the test was translated into Turkish then content validity examined through expert opinions. Forms generated through expert opinions were used for 170 children and correlation of the test's evaluation criterion was examined. Concerning to the internal consistency, the reliability coefficient was determined as .74 for whole test. Test retest correlation was determined as .99 for fluency, .99 for imagination, .99 for originality and it was shown that the relation between two test results was plausible ($p<.05$). According to the scores of the test, it was stated that a significant difference occurred between low 27% segment and high 27% segment ($t=-25,1$), the power to distinguish the test's evaluation criteria from internal consistency were at a high level. With the help of the obtained findings, it was specified that Thinking Creatively in Action and Movement test was appropriate for children attending to the nursery class.

Keywords: *Thinking creatively in action and movement test, validity, reliability, preschool period*

Özet: Bu araştırma Torrance (1981) tarafından geliştirilen Eylem ve Harekette Yaratıcı Düşünme Testi'nin (Thinkig Creatively in Action And Movement Test- TCAM) anasınıfına devam eden Türk çocuklarına uyarlanması amacıyla planlanmıştır. Testin öncelikle Türkçeye çevirisi yapılarak uzman görüşleri doğrultusunda kapsam geçerliliği incelenmiştir. Uzman görüşleri doğrultusunda oluşturulan formlar 170 çocuğa uygulanmış ve testin değerlendirme ölçütlerinin korelasyonuna bakılmıştır. İç tutarlılığa ilişkin güvenirlik katsayısı testin tümü için .74 olarak belirlenmiştir. Test- tekrar test korelasyonu akıcılık boyutu için .99, hayal gücü boyutu için .99 ve orjinallik boyutu için .99 olarak belirlenmiş olup iki test sonuçları arasındaki ilişkinin anlamlı olduğu görülmektedir ($p<.05$). Testin puanlarına göre alt %27, üst %27'lik dilimlerde ($t=-25,1$) anlamlı derecede farklılık olduğu, testin değerlendirme ölçütlerinin ayırt etme gücünün ve iç tutarlılığının yüksek olduğu görülmüştür. Elde edilen bulgular doğrultusunda Eylem ve Harekette Yaratıcı Düşünme Testi'nin, anasınıfına devam eden çocuklar için geçerli ve güvenilir bir ölçme aracı olduğu belirlenmiştir.

Anahtar sözcükler: *Eylem ve harekette yaratıcı düşünme testi, geçerlilik, güvenirlik, okul öncesi dönem*

Introduction

Understandings of contemporary education's purposes are up skilling through information transfer, developing interests and skills, revealing the creative ability existing of an individual, reintegrating people who are positive, creative and productive into the society, reaching a kind of society which produces novel (new) products in both scientific and technical fields and intellectual, artistic and cultural fields (Isenberg and Jalongo, 1993). Creativity has an important role to get these aims.

As for creativity, there have been many definitions until now and scientists internalized a common definition within the frame of these definitions. According to this definition, creativity is the ability of looking cases

[1] Doktora tez çalışmasına dayanılarak hazırlanmış ve "*ECER 2013-Creativity and Innovation in Educational Research. 9-13 Eylül, İstanbul.* Sunulmuştur.

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from different perspectives, making a line (correlating) between past experiences and present situation, breaking rigid sort of viewpoints, finding solutions except from traditional ones while solving the problem, forecasting the future with the help of obtained information, creating unique and original sort of products or ideas (Duffy, 2006). Isenberg and Jalongo (1993) state that in order to speak of the existence of creativity, there has to be innovation, uniqueness, extraordinariness, exceptionalness, fluency and flexibility and all these characteristics have to be in a combination in accordance with a balanced proportion.

If studies examined about concept of creativity, the rareness of the studies about creativity's motor domain stood out. Motor creativity is directly related to the creativity. It was expressed that if somebody found different and original ways when coming across a stimulant or a case, these would have an important role for creativity. Ruiz (1995) directly associated motor creativity with creativity and he stated that when a person came across a stimulant or a kind of situation, s/he could produce many different and original responses. Bournelli and Mountakis (2008) defined creativity as a perception of novel and original structure's combination. Motor creativity was a solution of an unconfigured problem, explaining of an idea or a feeling through the body (Bournelli and Mountakis, 2008). According to Maestu and Trigo, (1995) motor creativity was defined in all its parts as an individual's capacity of revealing novel ideas by using one's cognitive, sensory and motor potential and using his or her body while doing this (Murcia, Vargesand Puerto, 1998). Most of the common concepts of motor creativity are based on Guilford's (1967, 1977) theory and factors of divergent production. The sub-factors of divergent production – fluency, originality, flexibility, elaboration – are thought be the main components of creativity. Authentic ideas come up after a long sequence of ordinary ideas and fluency is related to authenticity. Although creativity is one of the most admirable characteristics of a human being, motor creativity of children is defined as a phenomena studied modestly (Sternberg and Lubart, 1993)

It was clear that studies about motor creativity were not enough to explain the relation between creative thinking and motor creativity (Kim, 2006). Being aware of the motor creativity development of children had an important place to evaluate and support motor creativity. Justo (2008) stated that human beings had the creativity inherently and creative motor skills were realized firstly via free plays for preschool children. Torrance (1981) underlined that preschool children were in the sensory motor period developmentally and movement was the best way to express their thoughts and feelings for them. For that reason it was stated that children in this period expressed their creativity mostly through movement. He noted that creative thinking included cognitive areas such as fluency, flexibility and originality also motor creativity included motor fluency, motor flexibility and motor originality. In this regard it was thought that motor creativity should be measured via valid and reliable tools. In this way, it would be advantageous to evaluate and support it. Chae (2003) noted that preschool children had difficulty in understanding written (worded) tests, so developing and configuration of tests for children was getting difficult (Can Yaşar and Aral, 2011). Studies showed that 'Thinking Creatively in Action and Movement' test developed by Torrance (1981) was used to evaluate

preschool children's motor creativity (Scibinetti, Tocci and Pesce,2011; Zachopoulou, Trevlas and Konstadinidou 2006; Sturza- Milic 2012). Thus, the purpose of this study was to implement Torrance's Thinking Creatively in Action and Movement test for Turkish preschool children attending to the nursery class and to evaluate children's motor creativity levels, to examine the study of validity and reliability and to bring in these studies in the field of preschool education.

Method

In this part, information related to the research group, data collection tools and data analysis will be presented.

Characteristics of the participants

In this study general screening model was put to use to implement Torrance's Thinking Creatively in Action and Movement test (TCAM) for Turkish children on the purpose of evaluating children's motor creativity levels. Screening models were research approaches aimed at describing a circumstance which exists in the past or present in a bare fact way (Karasar, 2005).

The research was carried out with children attending to the nursery classes at primary schools in the center of Afyonkarahisar province. This study consisted of a sample of 170 (Selçuklu Elementary School-35, Erenler Elementary School- 28, Mehmet Yağcıoğlu Elementary School - 40, Atatürk Elementary School- 27, Şemseddin Karahisari Elementary School- 40) children from five primary schools' nursery class and their development processes were normal. The number of subjects in the research was determined using the "Gpower" package program. It was stated that 54,7% of them were boy, 45,3% of them were girl, 20% of them were 55-60 months, 53,5% of them were 61-66 months and 26,5% of them were 67-72 months and 85.9% of them did not attend to a preschool center before. In this study general ınformation form was filled to gather information about children and 'Thinking Creatively in Action and Movement' test (TCAM) was utilized to study on validity and reliability.

Data Collection Tool

Genel bilgi formu: General Information Form: In this study, in order to collect demographical information such as children's gender, number of siblings, time-length of attendance to a preschool center. This form was filled out by the researcher together with the preschool staff in charge.

Thinking creatively in action and movement test (TCAM): Thinking Creatively in Action and Movement test (TCAM) is designed to evaluate children's motor creativity skills by preparing four different activities for 3-8 year old children and implementing individually or groups of three-four. Thinking Creatively in Action and Movement test (TCAM) examines three sub dimensions of creativity; fluency, originality and imagination. Fluency evaluates to find another way to reveal ability, flexibility evaluates to modify easily in different ways and originality evaluates to find out unusual and novel ideas. This test consists of four activities. The

first, third and fourth activities are scored for fluency and originality, while the second activity is scored for imagination. The test is implemented to children individually and implementation takes about 45-60 minutes, although it depends on the child's age and level of development. Every activity is evaluated in accordance with the assessment criteria. With reference to the reliability and validity issues of the test, the process of analysis for four activities of the test is different from the rest. In the case of the second activity, the activity is divided into 6 items and these items are scored as 1 (no action), 2 (a little action), 3 (adequate), 4 (better), 5 (Perfect). For the first, third and fourth activities the validity and reliability is met only via the content validity and expert opinions since the items are open-ended and there is no probability of a standard response.

That was the process of the test assessment, estimating total scores of fluency, originality and imagination and standard scores corresponding to total scores. The second activity was evaluated at the time of implementation, while other three activities were evaluated just after the test's implementation. Total score obtained from all measures in statistical assessment informed about the level of motor creativity. Moreover, it was suggested that the test should be implemented in a comfortable environment where distractions were kept away from the environment as much as possible and it was implemented by individually (Torrance, 1981).

In English version of Thinking Creatively in Action and Movement test (TCAM) the validity and reliability with twenty one children ranging in age from three to five were examined and test retest reliability coefficient was determined as .84. The validity was examined by using similar assessment instruments and it was noted that consistency existed between assessment instruments and obtained scores (Torrance, 1981).

Data Analysis

During the validity and reliability determination of Thinking Creatively in Action and Movement test (TCAM), the activities are implemented individually on the participants. The scores of the children participated in the study were recorded on the individual test record form. These scores were obtained from general information form and Thinking Creatively in Action and Movement test. Data on the individual test record form were transferred into the computer and they were evaluated by studying on necessary statistical (test of normality, t test, croanbach alfa, Correlation Analysis among Scores of Evaluators, ıtem total correlation) analysis.

There were differences for the analysis processes of the test's four activities in the study of the test's validity and reliability. The analysis processes of validity and reliability could be provided by viewpoints of specialists – content validitybecause there weren't any standard responses, but open ended ones. Studies were based on assessments of specialists in child development and preschool field on the process of content

validity and content validity of rate (CVR) was estimated for each item through the viewpoint of specialists. Coefficients of total item score reliability and Cronbach's Alpha internal consistency coefficient were estimated for the process of test's reliability. Significance of the differences between high 27% and low 27 % groups' item mean scores were analyzed via "t test", while harmony of the scores among evaluators was analyzed via " Correlation Analysis among Scores of Evaluators" because children's scores obtained from the test presented normal distribution for the process of validity. In addition to this, test retest correlation was estimated.

Findings

In this part, information about validity and reliability findings of the test is presented.

First Phase: On the process of Thinking Creatively in Action and Movement test's Turkish adaptation, test translated into Turkish by two different English Language Experts then test retranslated into English again by two different people good at both two languages by using re-translate technique. Difference in meaning was examined by an expert good at both Turkish and English by comparing these two translations with original expressions. The Turkish translation of the test was examined by a Turkish Language expert and redesigned via the viewpoints of the expert.

Second Phase: For the adaptation of Turkish culture and the context validity of implementation instruction and assessment criteria were evaluated by nine experts, two volunteer preschool teachers and seven specialist from child development and preschool education field. Individual implementation instruction of Turkish version of "Thinking Creatively in Action and Movement" test's forms, assessment criteria and original copy of the test were represented to the experts. It was asked from the experts to evaluate the instructions and assessment criteria in that expediency and clarity on the triple rating scale in the form of "appropriate"," not appropriate" and "should be changed". First, viewpoints of experts were collected, and then they were reunited on a single form for each item.

Context validity of rate (CVR) was estimated for each item in order to evaluate expert viewpoints. Then, context validity index was determined by taking average of estimated CVR. This index was used to determine that whether an item was necessary or not, from experts' viewpoint for each item (Yurdugül, 2005). This value was estimated for items' level of convenience. If CVR was more than 0,75 it meant that context validity was existed, because of the number of experts, nine. When findings of four activities in Thinking Creatively in Action and Movement test's context validity were examined, CVR was estimated as 1,00 for the level of convenience of all kinds of questions.Thus, this value showed that questions were convenient. The value of CVI was also estimated as 1,00 by taking average of these values.

Third Phase: After then, a kind of pro-implementation was performed in a kindergarten of minister of education with the purpose of determining the test's level of assessment for an abstract concept properly, in the context of behavior to be measured (Büyüköztürk, 2005). 40 children participated in the pilot study of Thinking Creatively in Action and Movement test formed with the help of experts' viewpoints and suggestions. According the demographical findings, of the 40 children participated the reliability coefficient and item total correlation analysis, 60% were male, 40% were female, 12% were 55-60, 35% were 61-66 and 53% were 67-72 months old while 79% did not attend to a preschool center before.

When item analysis results of Thinking Creatively in Action and Movement test's second activity related to the assessment criteria was examined, it was determined that the reliability coefficient (α=0,778) and most of the total item correlation were on the sufficient level.

Fourth Phase: Consistency among three independent evaluators was examined in order to increase reliability on scoring the Thinking Creatively in Action and Movement test's activities. The Score reliability of two or more observers was measured with the harmony of score settings for the same children (Büyüköztürk at al., 2009). "Correlation Analysis of Scores among Evaluators" was used with the purpose of examining the harmony of three experts' viewpoints and determining the relation of obtained scores in order to make firm reliability.

Table 1.*Correlation Analysis of Scores among Evaluators Regarding Thinking Creatively in Action and Movement test*

Thinking Creatively in Action and Movement test		**Fluency U2**	**Fluency U3**
Fluency U1	r	1.000	1.000
	p	.000	.000
	n	20	20
Fluency U2	r		1.000
	p		.000
	n		20
		Originality U2	**Orignality U3**
Originaliy U1	r	1.000	1,000
	p	.000	0.000
	n	20	20
Originality U2	r		1.000
	p		0.000
	n		20
		Imagination U2	**Imagination U3**
Imagination U1	r	.949	.952
	p	.000	.000
	n	20	20
Imagination U2	r		.965
	p		.000
	n		20

When Thinking Creatively in Action and Movement test's results of correlation (n=20) were examined, total harmony was achieved among specialist 1, specialist 2 and specialist 3 (r=1.000) for fluency, total harmony was achieved among specialist 1, specialist 2 and specialist 3 (r=1.000) for originality while harmony was achieved between specialist 1 and specialist 2 (r=0.949), between specialist 1 and specialist 2 (r=0.952) and between specialist 2 and specialist 3 (r=0.965) for imagination. It was noted that there was not any important difference among the scores ($p<.05$). According to this finding, it can be argued that inter-rater reliability among the evaluators was established.

Fifth Phase: Explanatory factor analysis was conducted for the Creative Thinking Test on Action and Movement, but the opinions of the experts were reapplied for the reason that the findings were not at the desired level. Cronbach's alpha (α) reliability and item-total score reliability were considered to be sufficient to perform exploratory factor analysis in the sense of expert opinion. In this phase, Cronbach alfa (α) reliability and item-total score reliability of Thinking Creatively in Action and Movement test was investigated.

Table 2. *Cronbach alfa (α) reliability and item-total score reliability of Thinking Creatively in Action and Movement test Criteria Results (n=170)*

	Mean Score when the item was romoved	**Variance when the item was removed**	**Item Total Correlation**	**Cronbach's Alpha Coefficient when the item was removed**
ITEM 1	16.070	14.634	.182	.822
ITEM 2	15.323	13.427	.568	.691
ITEM 3	15.382	13.149	.615	.679
ITEM 4	15.047	12.909	.624	.675
ITEM 5	15.064	13.670	.546	.698
ITEM 6	15.141	13.554	.547	.697

When total item correlation and Cronbach alpha results (n=170) related to the assessment criteria of Thinking Creatively in Action and Movement test were examined, reliability coefficient, Cronbachalpha, .74 and most of the total item correlation were on the sufficient level for the second activity. It was stated that most of the assessment criteria of total item correlation and value of alpha were high, as a result of the item analysis. It was noted that total item correlation of assessment criteria was under 0.20 for the first item of the second activity. If this criterion was removed from the scale, Cronbachalpha coefficient, reliability coefficient of the second activity, would be 0.82. According to Alpar (2012), the reliability coefficient calculated for a psychological measuring instrument indicates that a developed test, which is between .60 and .79, is highly reliable. It was approved that it was to remain in the original structure of the test, since the level of the reliability would remain unchanged, if criterion were removed from the scale. The correlation among total scores of Thinking Creatively in Action and Movement test was at a sufficient reliability level, .74, in order to measure the motor creativity skills.

Sixth Phase: The students' scores of Creative Thinking in Action and Movement Test were analyzed via Shapiro-Wilk Test to find out whether they show normal distribution or not. At the result of the test, it was seen that the scores showed normal distribution. Therefore, the significance of the difference between items means scores of upper and lower groups of 27 % were analyzed via T Test.

The T-test results belong to the item average scores of high 27% and low 27% groups consisting of the scores of Thinking Creatively in Action and Movement test were represented in table 3:

Table 3. *The T Test Results Belong To The Item Average Scores Of High 27% And Low 27% Groups Consisting Of The Scores Of Thinking Creatively In Action And Movement Test*

		N	**X**	**median**	**Minimum**	**Maximum**	**sd**	**t**	**p**
Activity 2 Score	Low %27 Segment	57	11.9	12	5	14	1.9	-25.1	0.00
	high %27 Segment	34	21.6	21	20	25	1.5		0.00

When table 3 was examined, it showed that scores of t test (t=-25.1) of Thinking Creatively in Action and Movement test were significantly different (p<.0.05).

Seventh Phase: Test-retest reliability was examined in order to demonstrate the stability of the test from one implementation to the other. This study meant that the same group was tested twice at certain intervals via a test then correlation among obtained scores examined. Although it changed occasionally, between two implementations, measured behavior and target group, about four weeks were appropriate (Büyüköztürk, 2005). Four weeks later, the first implementation of the Thinking Creatively in Action and Movement test, it re-implemented for 40 children randomly chosen. Test-retest correlation was estimated in order that the test gave temporal stabile scores or not.

Table 4. *Test – Retest Reliability Coefficients of Thinking Creatively In Action And Movement Test (n=40)*

Thinking Creatively In Action And Movement Test		Fluency Standart Score (Retest)	Originality Standart Score (Retest)	Imagination Standart Score (Retest)
Fluency Standart Score (Pretest)	r	.999		
	p	.000		
	n	40		
Originality Standart Score (Pretest)	r		.999	
	p		.000	
	n		40	
Imagination Standart Score (Pretest)	r			.999
	p			.000
	n			40

When the results of test retest were examined, it was noted that correlation (reliability coefficient) between scores obtained from the first and second implementations were high of Thinking Creatively in Action and Movement test. According to the analysis results, it was determined as .99 for fluency, .99 for imagination and .99 for originality then it was proved that the relation between two test results were meaningful ($p<.05$).

Dıscussion and Results

In the study, by adapting Thinking Creatively in Action and Movement Test- TCAM, developed by Torrance (1981) to Turkish children, it was aimed to carry out a validity – reliability research and to contribute to the field for the purpose of evaluating the motor creativity of kindergarten children. The results found in accordance with this aim are:

In the study of validity and reliability of the Thinking Creatively in Action and Movement Test, the test was first adapted to Turkish and Turkish culture. Expert opinion was consulted for the appropriateness of Turkish culture and all the items in the test have were found out to meet the content validity criterion. Then, in order to define the construct validity of the test, the test was applied to 40 children in a public kindergarten of National Ministry of Education. It was determined that total item correlation and alpha value were high for the most of the assessment criteria at the end of the item analysis. The consistency among three different evaluators was checked to increase reliability in scoring in Thinking Creatively in Action and Movement Test. Therefore, it was stated that a significant difference wasn't available among independent evaluators when data of reliability and validity were compared on the level of clarity, 0.05. According to this result, it was determined that score reliability was available among evaluators. In the study of Zachopoulou et al. (2006) harmony correlation was determined as .89 between two independent evaluators. In Bolen's (1976) study, reliability coefficient among evaluators was determined as .96.

When item total correlation and Cronbach Alpha results (n=170) regarding the evaluation criteria of Thinking Creatively in Action and Movement Test are analyzed, reliability coefficient (Cronbach Alpha) for the second activity is found as ,.74 and most of the item total correlations were found to be high enough. At the result of item analysis, item total correlation and Cronbach Alpha value of most of the evaluation criteria are found to be high. If we talked about a psychological sort of test, it would be generally sufficient that estimated reliability coefficient is .70 and over (Büyüköztürk, 2005). Can Yaşar and Aral (2011) stated that the Cronbach alpha coefficient was 0.77 in the study of adaptation of Creative Thinking – Drawing Test to adapt for Turkish children aged 61-72 months. Kıray (2013) in the study of adaptation of Khatena-Torrance's Creative Perception Inventory reported Cronbach alpha coefficient as 0.89.

The students' scores of Thinking Creatively in Action and Movement Test were analyzed to find out whether they show normal distribution or not via Shapiro-Wilk Test. According to the result of the test, it was seen that the scores showed normal distribution. Hence, it was said that Thinking Creatively in Action

and Movement test's distinctiveness of the assessment criteria and internal consistency were high. Can Yaşar and Aral (2011) stated the A form U=6.5, B form U=17 of Creative Thinking- Picture Building Test of high and low 27% segments in their studies and they made out scores which were significantly different from each other. Can Yaşar and Aral (2011) stated U=6.5 for Form A, U=17 for Form B of Creative Thinking-Drawing Test and they presented scores which were significantly different from each other. This result supported that Thinking Creatively in Action and Movement test's power of distinctiveness and internal consistency were high. Deniş Çeliker and Balım (2012), in their study aiming the adaptation of Scientific Creativity found out that the relevance of the difference between the Cronbach Alpha coefficient and the groups of low %27 segment and high %27 segment is acceptable.

With the aim of showing the consistency of the test from one application to another, test – retest method of reliability was carried out. Upon analyzing the results of test – retest applications, it was seen that the correlation (reliability coefficients) between the scores obtained from first and second applications of second activity of Thinking Creatively in Action and Movement Test was considerably high. It could be said that Thinking Creatively in Action and Movement test was in a temporal stabile structure. Torrance (1981) found a test-retest reliability coefficient of .84, which was performed at intervals of two weeks. Erdoğdu (2006) reached a test-retest reliability coefficient of .76, which he conducted twenty days apart in the study of adaptation of Creativity Evaluation scale to Turkish culture. The test-retest correlation of the scientific creativity scale, which was developed by Hu and Adey (2002), was stated as 0,91.

Findings obtained from the searchers determined the Thinking Creatively in Action and Movement test as a valid and reliable tool in order to evaluate the level of motor creativity of children who were developmentally normal and were attending the nursery classes. It will make a great contribution to the researchers for their studies on motor creativity. According to the gathered results:

- Due to the fact that there are no studies or training sessions on motor creativity yet in our country, researchers can plan and organize media (seminars, conferences, brochures, newspapers) for educators and families

- The Creative Thinking Test on Action and Movement is an instrument that can be applied to 3-8 age groups. In this study, adaptation study was made only to kindergarten age groups. For this reason, following adaptation studies can be carried out for different age groups and at different settings.
- There is no instrument in our country that measures or evaluates the motor development part as a dimension of creativity. For this reason, new measurement tools can be developed that can evaluate motor creativity during early childhood.

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Geniş Özet

Amaç

Araştırmada, anasınıfına devam eden çocukların motor yaratıcılık düzeyini değerlendirmek üzere Torrance (1981) tarafından geliştirilen "Eylem ve Harekette Yaratıcı Düşünme Testinin (Thinking Creatively in Action And Movement Test- TCAM)" Türk çocuklarına uyarlanarak, geçerlilik ve güvenirlik çalışmasının yapılması ve alana kazandırılması amaçlanmıştır.

Yöntem

Genel tarama modelindeki araştırmanın evrenini 2012-2013 öğretim yılında Türkiye'de Afyonkarahisar il merkezinde bulunan Milli Eğitim Bakanlığına bağlı beş ilkokulda, basit tesadüfî örnekleme yöntemiyle seçilen, anasınıfına devam eden ve normal gelişim gösteren 170 çocuk dâhil edilmiştir. Veri toplama aracı olarak çocuklar hakkındaki kişisel bilgileri toplamak amacıyla araştırmacı tarafından geliştirilen *Genel Bilgi Formu ve motor yaratıcılıklarını değerlendirebilmek için Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking Creatively in Action And Movement Test- TCAM) kullanılmıştır.* Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking Creatively in Action And Movement Test- TCAM) çocukların motor yaratıcılık becerilerini değerlendirmek için dört farklı etkinlik hazırlanarak, üç-sekiz yaş arasındaki çocuklara bireysel veya üç-dört kişilik gruplar halinde uygulanmak üzere tasarlanmıştır. Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking creatively in action and movement test- TCAM) akıcılık, orijinallik ve hayal gücü olmak üzere yaratıcılığın üç alt boyutunu incelemektedir.

Araştırmaya dahil edilen çocuklara test bireysel olarak uygulanmıştır. Çocuklara ait olan kişisel bilgiler ve Eylem ve Harekette Yaratıcı Düşünme Testi'nden aldıkları puanlar bireysel test kayıt formuna kaydedilmiştir. Bireysel test kayıt formundaki veriler, bilgisayar ortamına aktarılarak gerekli istatistiksel analizler yapılarak değerlendirilmiştir. Araştırmada, Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking

creatively in action and movement test- TCAM)'nin Türkçeye uyarlama çalışması için; test çevirisi yapılarak kapsam geçerliği çalışması, test tekrar test güvenirliği, pilot uygulama, güvenirliği artırmak için birbirinden bağımsız üç puanlayıcı arasında tutarlılığı, ölçütlerine ilişkin madde toplam korelasyonu ve Cronbach alfa katsayısı, puanlarına göre oluşturulan alt %27 ve üst %27'lik grupların madde ortalama puanları ile analiz edilmiştir.

Sonuçlar

Eylem ve Harekette Yaratıcı Düşünme Testinin (Thinking Creatively in Action And Movement Test-TCAM)" Türk çocuklarına uyarlanarak, geçerlilik ve güvenirlik çalışmasının yapılması amacı doğrultusunda ulaşılan sonuçlar şöyledir:

Birinci Aşamada Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking Creatively in Action and Movement Test- TCAM)' nin Türkçeye uyarlama çalışmasında test önce Türkçeye daha sonra Türkçeden tekrar İngilizceye çevrilerek, Türkçe ve İngilizce formlar arasında farklılık olmadığı belirlenmiştir.

İkinci Aşama: Türkçeye çevirisi yapılan testte yer alan uygulama yönergesinin ve değerlendirme ölçütlerinin kapsam geçerliliği ve Türk kültürüne uygunluğu için uzman görüşüne başvurulmuş ve testteki tüm soruların gerekli olduğu, kapsam geçerliğinin sağlandığı sonucuna ulaşılmıştır.

Üçüncü Aşama: Bu aşamada testin yapı geçerliliğini belirleyebilmek amacı ile Milli Eğitim Bakanlığı'na bağlı bir anaokulunda, pilot çalışma kapsamında 40 çocuğa uygulanmıştır. Ön uygulama sonucunda, Eylem ve Harekette Yaratıcı Düşünme Testi'nin ikinci etkinliğin değerlendirme ölçütlerine ilişkin madde analizi sonuçlarına bakıldığında, testin ikinci etkinlikte yer alan altı madde için güvenirlik katsayısı 0,778 ve madde toplam korelâsyonlarının çoğunluğunun yeterli düzeyde olduğu belirlenmiştir. Madde analizi sonucunda, testteki değerlendirme ölçütlerinin çoğunluğunun madde toplam korelasyonu ve alfa değerinin yüksek olduğu tespit edilmiştir. Pilot çalışması sonrasında da test ile ilgili düzenlemeler yapılarak, test geçerlilik ve güvenirlik çalışması için belirlenen örneklem grubunda uygulamaya hazır hale getirilmiştir.

Dördüncü Aşama: Eylem ve Harekette Yaratıcı Düşünme Testi'nin etkinliklerin puanlanmasında güvenirliği artırmak için birbirinden bağımsız üç puanlayıcı arasında tutarlılığa bakılmıştır. Değerlendirme sonucunda, geçerlik ve güvenirlik verilerinin karşılaştırmasında bağımsız değerlendirmeciler arasında anlamlı farklılığın olmadığı saptanmış ve değerlendiriciler arasında puan güvenirliğinin sağlandığı görülmektedir.

Beşinci Aşama: Eylem ve Harekette Yaratıcı Düşünme Testi'nin değerlendirme ölçütlerine ilişkin madde toplam korelasyonu ve Cronbach alfa sonuçları (n=170) incelendiğinde; güvenirlik katsayısının ikinci etkinlik için Cronbach alfa .74 ve madde toplam korelasyonlarının çoğunluğunun yeterli düzeyde olduğu görülmektedir. Madde analizi sonucunda, testteki değerlendirme ölçütlerinin çoğunluğunun madde toplam korelasyonu ve alfa değerinin yüksek olduğu tespit edilmiştir.

Altıncı Aşama: Eylem ve Harekette Yaratıcı Düşünme Testi'nden aldıkları puanların normal dağılım gösterip göstermediği Shapiro-Wilk Testi ile incelenmiştir. Buna göre puanların normal dağılım gösterdiği belirlenmiştir. Buna göre, Eylem ve Harekette Yaratıcı Düşünme Testi'ndeki değerlendirme ölçütlerinin ayırt ediciliğinin ve iç tutarlılığının yüksek olduğu söylenebilir.

Yedinci Aşama: Testin bir uygulamadan diğerine kararlılığını göstermek amacıyla *test-tekrar test güvenirliği* çalışması yapılmıştır. Test tekrar test sonuçları incelendiğinde, Eylem ve Harekette Yaratıcı Düşünme Testi'nin ikinci etkinlik için birinci ve ikinci uygulamalarından elde edilen puanlar arasındaki korelasyonun (güvenirlik katsayıları) yüksek olduğu görülmektedir. Buna göre, Eylem ve Harekette Yaratıcı Düşünme Testi'nin zamana bağlı olarak kararlı bir yapı gösterdiği söylenebilir.

Araştırma sonucunda; Eylem ve Harekette Yaratıcı Düşünme Testi (Thinking Creatively in Action and Movement Test- TCAM)' nin anasınıfına devam eden, normal gelişim gösteren çocukların motor yaratıcılık düzeylerinin değerlendirilmesinde geçerli ve güvenilir bir araç olduğu saptanmıştır. Bu testin araştırmacılara, motor yaratıcılık ile ilgili yapacakları çalışmalarda büyük katkılar sağlayacağı düşünülmektedir. Elde edilen sonuçlar doğrultusunda;

- Eylem ve Harekette Yaratıcı Düşünme Testi 3-8 yaşa gruplarına uygulanabilen bir araçtır.bu çalışma dahilinde sadece anasınıfı yaş gruplarına uyarlama çalışması yapılmıştır. Bu nedenle Afyonkarahisar ili dışında ve farklı yaş gruplarına uyarlama çalışması yapılabilir.
- Ülkemizde yaratıcılığın bir boyutu olarak motor kısmını ölçen veya değerlendiren bir araç bulunmamaktadır. Bu nedenle erken çocukluk döneminde motor yaratıcılığını değerlendirilebilecek yeni ölçme araçları geliştirilebilir.