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To cite this article:

Akca, F. & Kavak, G. (2021). Scale of Visual Creativity in Art: A study on scale development and construct validity. *International Journal on Social and Education Sciences (IJonSES)*, 3(3), 439-456. <https://doi.org/10.46328/ijones.94>

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International Society for Technology, Education, and Science (ISTES): www.istes.org

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Article Info

Article History

Received:

28 October 2020

Accepted:

15 April 2021

Keywords

Primary school

Creativity

Scale of visual creativity

Art

Construct validity

Abstract

Although visual creativity in art affects all variables of the learning and teaching process, no measurement tool has been found in the Turkish literature regarding the level of students' visual creativity in art. In this study, a measurement tool was developed to measure visual creativity levels of primary school students in art and evidence regarding the construct validity and reliability of the scale was determined. The research was carried out with 381 primary school students in the 1st and 4th grades of primary school. 48.5% (185) of the students are female and 51.5% (196) of them are male. The scale, whose content validity was provided by expert opinions and literature review, was one-dimensional and had high construct validity based on confirmatory and exploratory factor analyzes. In addition, it was found that the Scale of Visual Creativity in Art had correlation with the perceived visual creativity scale and the scale developed had high criterion validity. Exploratory and confirmatory factor analysis results showed that the scale is structurally one-dimensional and had a high validity. The Cronbach Alpha reliability coefficient of the one-dimensional form of the scale is .95. In addition, results of item-total correlations of the scale were tested and discussed.

Introduction

While creativity is used to create something new, it also has the feature of dynamicity. It is seen that this concept, which expresses both emotional and intellectual life, has been perceived as a phenomenon unique to the field of fine arts for a long time, even though its history dates back to old times. However, creativity is not only a skill for art or art education, but also a basic skill that exists in all areas of human life (Bicer, 2021; Daher & Anabousy, 2020; O'Byrne et al., 2018; San, 2017; Saricam & Yildirim, 2021). Many researchers have defined the concept of creativity, which is a flexible field with divergent thinking dimensions. According to Torrance (1995), creativity is "the process of sensing difficulties, problems, gaps in information, missing elements, something askew; making guesses and formulating hypotheses about these deficiencies; evaluating and testing these guess and hypothesis; possibly revising and retesting them; and last, communicating the results". He emphasizes the process. Hendrick (1986) expressed creativity as "extraordinary thinking" (cited in Isbel, Raines, 2003). According to Bartlett, it means "getting away from the main track, breaking out of the mould and being open to experience." Getzels stated, "regardless of the field, it is based on the unity of rational

imagination and emotion and decoding skills, imagination and control, outward thinking (divergent) and inward thinking (convergent)” (San, 2017).

Theories of domain-specific creativity often emphasize knowledge, and in particular domain-specific knowledge (e.g. Vincent, Decker, & Mumford, 2002; Weisberg, 2006). Although academic grades are generally unrelated to creativity (Holland & Richards, 1965), domain-specific knowledge influences domain-specific creative performances (Amabile, 1990; An & Runco, 2016; An, Song, & Carr, 2016; Vincent et al., 2002). Similarly, domain-specific creativity is associated with personality, different domains having different profiles of contributing traits (e.g., Feist, 1999). As seen in the definitions, the common point is to do what has not been thought and done until now, that is, to be the first and original. If these are not present in a study that has been done, it will be a repetition of the previous ones and in this case it is not possible to talk about creativity. It is an obvious fact that societies develop and have different resources with the innovations introduced. Art has been in life ever since human existence. Gombrich (2000) expressed this as “there was no art when there was no man”. This shows the relationship established with the creation and design of art by man. Art questions the relationship of the represented with the visible and transforms it into symbols, metaphors or signs while simulating the shape in the mind through the filter of existence. The unlimited nature of art is perhaps due to the power of design (Aykut, 2018; Dođru, 2020; Kara, 2020a).

Creativity in art means to be able to add an imagination and signifying ability on perception and to use the power of intuition for this (Erinç, 1998). It is necessary to distinguish between creativity in technique and science and creativity in art in terms of their general ties. Conrad defines creativity as the beginning of a creative search, research and finding process that includes the concept, emotion and imagination, the birth of an effective metaphor born of perception, associated with sensation and emotions. The word metaphor meets brand new arrangements, new forms, and concepts obtained through meaning transfer or analogy, which is called „eđretilem“ in Turkish. For instance, transferring feelings and thoughts of a piece of music to notes is a metaphor. The element of creativity in art appears in two ways. The first of these is the practical mental activity, that is, the way to draw the imaginary model of life, as a result of the creative activity of the imagination. Second, as a practical-material investment, that is, as a special form of labor, from stone, metal, sounds, words, body movements, etc., to create the objective bearer of an artistic content. In the first, the internal form of art, that is, the image concretization of the content of art; in the second, the external form of art, that is, the material body of the artistic image, emerges (San & Gleryz, 2004; Yılmaz, 2001).

Art, which has always been a debated phenomenon since its existence, has been perceived to have the same meaning with creativity for a long time. When creativity is considered both as a process and as an original product at the end of the process, it can be said that aesthetic concepts are at the forefront in the artistic creative process. It is common knowledge that there should be different factors in creativity in science and technology. These factors can be addressed in scientific creativity as being aware of the problem and limiting it, hypothesizing for a solution, testing the hypotheses, finding the result, accepting, rejecting or fixing it (Snmez, 1993). Ideas in the formation of the concept of artistic creativity are diverse. Fromm talks about two kinds of creativity in the field of art. The first of these is a work that can be developed and learned by practicing with

different methods, depending on ability such as painting, writing poetry or novel, and composing music, and revealed after this process (Anand & Hsu, 2020; Raba" & Harzallah, 2018). The second is the creative attitude and behavior that is the basis of creativity in all areas. This type of creativity may not produce a work. While the first is defined as ability, the second is the character trait that is formed by the development of competences such as seeing, perception and reacting (San, 2017).

There is growing and convincing evidence that engaging in creative arts activities can promote improvements in perceived physical and mental health, social functioning and wellbeing in long-term conditions (Franklin, 2017; Fincher, 1991; Grewal, et al, 2019; Huss et al, 2015; Kaimal& Arslanbek, 2020; Kara, 2020b; Keefer & Haj-Broussard, 2020; Olagbaju & Popoola, 2020; Secker et al., 2017). It is sometimes argued that the richness of the personal visual imagination of people relates to the ability to create artistic / creative images (Pérez-Fabello & Campos, 2007; Yilmaz & Argun, 2018). For example, this was measured by the Vividness of Visual Imagery Questionnaire (McKelvie, 1995), which asks participants to read a scene description and then rate the vividness of their mental image resulting from it. It was reported by Kottlow, Praeg, Luethy and Jancke (2011) that artists scored higher than

Although the artistic creation of an artist contains certain content within itself, socially-historically and objectively, it also carries a unique personal feature such as a deep meaning and uniqueness. Features such as personality, world-view and experiences play an important role in artistic creativity (Artut, 2013). Creativity is a phenomenon that can produce products in all areas of our lives, from art to science and technology. The most important feature that a person must have in order to produce a product is curiosity. Qualities such as wondering, researching, dreaming, not being afraid of making mistakes, continuing to try when unsuccessful, going beyond known taboos and producing original works are included in the artistic creation process (Buyurgan & Buyurgan, 2020). Perception skills, imagination and use of intuition are of great importance in this process. There are various methods for measuring creativity ability. Dennis Hocevar summarized these as tests of divergent thinking, attitude and interest inventories, personality inventories, biographical inventories, teacher and peer nominations, supervisor ratings, judgments of products, eminence and self-reported creative activities and achievements (as cited in Çetin et al.2015). These methods are as follows;

Guilford (1967), one of the pioneers of divergent thinking tasks, asked children to list the different uses of objects such as a brick or newspaper in a given time period in the tasks he used, and the responses were evaluated according to four components: originality (frequency of answers in the answer pool), fluency (number of answers given), flexibility (number of categories in given answers) and elaboration (amount of detail in given answers). The creativity tasks developed by other pioneers, Wallach and Kogan (1965), include three verbal tasks and two visual tasks. In these tasks, the participants are asked to list different examples of the same concept (such as round, strong, noisy), to list the different uses of objects, to establish similarities between concepts, and to diversify as much as possible what they liken figures to. Scoring is similar to Guilford's tasks and is evaluated on fluency, originality, cognitive flexibility, and elaboration.

Another tool used to measure creativity is the Remote Associates Test (RAT) developed by Mednick (1962).

The creativity measurement is based on the ability to associate. These skills are examined through associations. Children are presented with a set of words belonging to divergent categories and are expected to produce an associative new word from these words. Torrance Tests of Creative Thinking (TTCT), the most widely used to measure creativity, was developed by Torrance in 1966. The test has two verbal and figural forms and each has A and B forms. The verbal test contains seven subtests - asking, guessing causes, guessing consequences, product improvement, unusual uses, unusual questions, just suppose, and the figural testing has three subgroups - picture construction, picture completion, and parallel lines. Scoring is based on fluency, originality and cognitive flexibility performances. The validity of the test was .97 (Torrance 1999, Cropley 2010). The Turkish language equivalence, validity and reliability studies of the test, which was first adapted into Turkish by Yontar (1985), were carried out by Aslan (1999). In the reliability study, correlation coefficients were between ($r=0.38$) and ($r=0.89$) for internal consistency analysis of verbal creativity obtained by applying Spearman Brown, Guttman and Cronbach Alpha techniques and scores of other age groups except for the preschool age group.

Self-reporting instruments that measure creativity by asking questions to participants try to evaluate creativity more generally (Kaufman & Baer, 2002). Test of Divergent Thinking, Test of Divergent Feeling, and The Williams Scale (Williams, 1980), which was adapted to Turkish culture by Erdoğan (2006), which reveals how children's creativity is perceived by parents and teachers; the Scientific Creativity Scale (Hu & Adey, 2002), which aims to measure unusual uses, problem finding, product development, scientific imagination, problem solving, science experiment and product design and adapted into Turkish by Çeliker and Balım (2012) and the What Do You Think of Creativity Scale (Seng, Keung, & Cheng, 2008) developed to measure implicit opinions regarding creativity and adapted into Turkish by Dikici are all used as self-reporting tools.

With methods such as performance evaluation, creativity skills of individuals can be examined in a specific field, as well as methods such as self-reporting instruments that measure individuals' general creativity skills (Baer, 1991; Conti, Coon, & Amabile, 1996; Han, 2000; Runco, 1989). Creativity skills are assessed based on the performance of individuals through applications in a specific field such as literature, mathematics or art. Therefore, this method should be used to measure creativity skills specific to a field rather than research that evaluates creativity from a more general perspective and deals with divergent thinking (Karadayı, 2018).

Another instrument to measure creativity is the Group Inventory for Finding Creative Talent (GIFT) and its extension Group Inventory for Finding Interests (GIFFII and GIFFIII) (Davis & Rimm, 1982). Interest and behaviors related to creativity are defined in this scale. The GIFT scale is in three levels from kindergarten to grade 2, grades 3-4, and grades 5-6. GIFFI has two levels for secondary and high school students. Children rate themselves by saying yes or no to sentences such as "I like to create my own lyrics" or "easy puzzles are more fun". Test scoring consists of curiosity, originality, independence, flexibility or risk taking. Davis and Rim (1982) stated that internal consistency is between .80 and 0.88 and validity is .56. For GIFFI I and GIFFI I, it is .88 and .94, respectively (Cropley, 2010).

Another measurement tool is the Child Creativity Test (The Test de Creatividad Infantil-TCI) (Romo, Alfonso-Benlliure, & Sánchez-Ruiz, 2008). This test is based on the "problem-finding" theoretical framework developed

by Getzels and Csikszentmihalyi (1976) and adapted for children aged 5-6. It follows the problem finding process and evaluates the process according to its results. It consists of two stages. First, the problem is formulated, and the child is expected to develop a model by using stickers to describe family members in accordance with the age group. It evaluates the originality of these variables and exploratory behaviors made by stickers. The purpose of both variables is to identify the features of the creativity process and multidimensional thinking. The second stage, which is problem solving, involves creating a drawing from the model given in the first stage. It evaluates the following variables: changing materials (using more than one material while drawing), interaction (two or more elements in the drawing being consciously and clearly related to each other), verbal elements (accompanying the drawings by titles, dialog boxes, numbers, acronyms, etc.) and the shapes created later (how many shapes are different from both the stickers and the model in the drawing). Finally, in this second step, the difference from the model variable is evaluated (the drawing turns into a different structure and meaning from the original model). It expresses the innovative contribution of the product created by the child. The variables in the second stage (being different from the model, verbal items and created shapes) are evaluated as divergent variables, and changing materials and interaction are evaluated as convergent variables. The total score of the participant is the scores obtained from all variables individually and ranges from 0 to 12. The correlation coefficient of the test between classes was .95 (Benlliure, 2013, as cited in Çetin et al. 2015).

Another instrument to measure creativity is the Creative Activities Checklist. Suitable for grades 5 to 8, the test simply asks participants how often they have been involved in 6 events in their lives: literature, music, drama, arts, crafts, and science. Scoring is simply given by the number of participation in these activities per year (e.g. writing a poem or story, playing at school, attending club activities, attending science fairs, etc.). In some studies, participants were able to list only 3 creative activities. These can then be proportioned for the degree of creativity. Runco (1987) found the reliability between scores as .90 (Runco, 1987).

The Creativity Checklist (CCL) is also a 5-point scale scored from “never” to “always” for individuals of all age groups. Observers assess behaviors of participants in 8 dimensions, three of which are cognitive dimensions such as fluency, flexibility, and constructional skills and five of them belong to structural skills such as ingenuity, resourcefulness, independence, positive self-referencing and preference for complexity. Inter-rater reliability score ranges between .70 and .80 (Johnson, 1979).

The Test for Creative Thinking–Drawing Production TCT-DP was developed by Urban and Jellen (1996) to evaluate the creative thinking skills of children. The translation and validity and reliability study of the test, which can be applied to all individuals over the age of five (5-95 years) individually or as a group, was carried out by Togrol (2012). The scale was used in a study conducted in 2011 to determine the effect of socioeconomic level and parental education level on creative thinking skills of six-year-old children (Can Yaşar & Aral, 2011). Similarly, the Creativity Scale for Diverse Domains (CSDD: Kaufman & Baer, 2004; Silvia, Kaufman & Pretz, 2009 for a review) measures creative self-concepts, or people’s view of themselves as creative. The scale consists of five dimensions “math/science,” “empathy/interpersonal,” “hands-on creativity,” “visual art/aesthetic creativity”). This scale is intended for grades K5 and K–12, and is often used with teachers to rate giftedness in creativity, art, music, drama, and communication, using creative achievements or activities (Chan

and Zhao, 2010; Kaufman & Baer, 2012; Pelowski, Leder & Tinio, 2017).

In addition, a study was carried out by Erol (2019) in order to reveal artistic creativity indicators. Grade levels of primary school 1, 2, 3 and 4 were included in this study. As a result of this research aimed at developing the Scale of Artistic Creativity, it was seen that artistic creativity and general creativity indicators have a meaningful relationship, and it has a distinctive feature in the diagnosis of creativity and the measurement of artistic creativity. Although visual creativity in art affects all variables of the learning and teaching process (Yağışan, Sünbül & Yücalan, 2007), no measurement tool has been found in the Turkish literature regarding the level of students' visual creativity in art.

This study is based on the need for a reliable and valid measurement tool that measures the primary school students' visual creativity in art. For this purpose, evidence regarding the construct validity and reliability of the Scale of Visual Creativity in Art was determined in a large sample of Turkish primary school students. The answer to the following question has been addressed to achieve this goal: What are the psychometric properties of the scale for measuring the visual creativity of students in primary school?

Method

The general survey model was used in the study aiming to develop a scale measuring the visual creativity levels of primary school students in Art. In this method, events, facts and variables are described without any intervention. The procedures for collecting relevant data, defining measured variables, processing and analyzing data are described in detail (Babbie, 2010; Karasar, 1984; Muijs, 2010). In this way, it is ensured that a standard measurement of the Visual Creativity in Art of the primary school students will be obtained. The test development work benefitted from the principles of scale development of AERA, APA and the International Test Commission as conveyed by Hambleton and Patsula (1999).

Participants

The participants of this research are the students who attend elementary school in Turkey. As the target population is large and it covers all elementary school students in Turkey, the study was conducted with a study group. Primary school students studying in the central districts of Ankara, İstanbul, Konya, Yalova, Samsun, Giresun, Antalya, and İzmir were included in the study group.

For the implementation studies of the scale, a total of 381 students selected from the primary school classes in the central district of the aforementioned provinces were included in the scale development study group in the 2019-2020 academic year. 48.5% of the participants are female and 51.5% are male students. The cluster sampling method was used in selecting the students. The characteristics of the children participating in the study were obtained through the personal information form developed by the researcher. Practices for the students included in the sampling were carried out by their teachers in the classrooms of the schools where they received education.

Results

Creating the Item Pool

Studies in the literature were reviewed (Aral, 1999; Aziz-Zadeh, Liew, & Dandekar, 2013; Boccia, Piccardi, Palermo, Nori & Palmiero, 2015; Dietrich & Kanso, 2010; Ellamil, Dobson, Beeman, & Christoff, 2012; Niu & Sternberg, 2001; Runco & Jaeger, 2012; Sünbül, 2005; Ülger, 2016) and a draft form consisting of 28 items was prepared to improve the measuring tool. Expert opinion was obtained for the draft form by interviewing an academician working in the fields of visual arts education, assessment and evaluation and program development in education. 7 items were removed from the draft form in line with the opinions of the experts. The draft form consisting of 21 items was administered to 381 participants, and the validity and reliability study was carried out using the data obtained.

Validity and Reliability Study of the Scale of Visual Creativity in Art

The factor structure of the Scale of Visual Creativity in Art was first examined by exploratory factor analysis in accordance with the purpose of the research (see Appendix). Some assumptions were checked before factor analysis. Whether the sample size is sufficient and whether the data are suitable for factor analysis should be investigated beforehand (Field, 2013). Kaiser-Meyer-Olkin (KMO) coefficient was calculated and Bartlett Sphericity test was applied. The results showed that the sample size was sufficient and the scale data were suitable for factor analysis (KMO=0.98; Bartlett Sphericity ($\chi^2(210)$)=13463.96; $p<0.001$). The analysis result revealed a single factor with eigenvalue above one. It revealed a plateau after the first factor in the eigenvalue factor graph. In addition to this information, it is understood that the first factor explains a significant proportion of the variance, while the variance explained by the second and subsequent factors is limited. This information indicated that the items of the scale tend to be collected under a single factor. In the next step, the analysis was carried out by forcing the scale items to a single factor. Factor loading was taken as 0.32 in the cut-off analysis process. It was stated that items with a factor loading of 0.32 and higher contributed significantly to the variance (Tabachnick & Fidell, 2007). In the analysis process, no item with a factor loading was detected below the cut-off point of factor loading. The factor structure of the Scale of Visual Creativity in Art as a result of the factor analysis is shown in Table 1.

The factor analysis showed that the scale had a single factor structure. Factor loadings of the items ranged from 0.83 to 0.95. The rate of variance explained by the single factor scale was 83%. It is sufficient for the variance rate explained in single factor scales to be 30% or higher (Büyüköztürk, 2007; Yurt & Sünbül, 2012). The single-factor structure of the Scale of Visual Creativity in Art is highly over this level. The reliability of the Scale of Visual Creativity in Art was examined by calculating the Cronbach Alpha coefficients. The fact that the Alpha coefficient is close to 1 indicates that the reliability based on internal consistency is high. Alpha coefficients between 0.60-0.80 show that the scale is quite reliable and Alpha coefficients between 0.81-1.00 show that the scale is highly reliable (Özdamar, 2004; Yılmaz & Sünbül, 2004). The Alpha coefficient for the Scale of Visual Creativity in Art is 0.95. This value indicated that the reliability of the scale based on internal consistency was high.

Table 1. Factor Structure of the Scale of Visual Creativity in Art

Items	Factor loading	Eigenvalue	Explained variance (%)	Cronbach Alfa
Item21	0.95			
Item17	0.95			
Item18	0.95			
Item19	0.94			
Item6	0.94			
Item5	0.93			
Item4	0.93			
Item10	0.93			
Item11	0.93			
Item12	0.92			
Item13	0.92	17.43	83.00	0.95
Item20	0.92			
Item15	0.92			
Item3	0.91			
Item14	0.91			
Item9	0.90			
Item7	0.89			
Item1	0.86			
Item8	0.85			
Item2	0.83			
Item16	0.83			

In the following step, confirmatory factor analysis was performed. The single-factor structure of the Scale of Visual Creativity in Art was checked using confirmatory factor analysis. Confirmatory factor analysis is one of the most used techniques to test the construct validity of measurement tools. In confirmatory factor analysis, the correlations between observed and latent variables can be examined simultaneously on a model. As a result of factor analysis, it is examined to what extent the collected data are consistent with the factor structure of the measurement tool (Kline, 2011). Goodness of fit index is calculated to determine if the model is fit for the study by confirmatory factor analysis. The fit values found for the single factor model are shown in Table 2.

The confirmatory factor analysis showed that the tested model was significant. The goodness of fit values calculated to test the model met the criteria and the single factor structure was verified. According to the goodness of fit values, the single-factor structure of the Scale of Visual Creativity in Art fitted the collected data. As a result of the confirmatory factor analysis of the Scale of Visual Creativity in Art, it was found that the factor loadings of the scale items varied between 0.81 and 0.95. The confirmatory factor analysis diagram of the single factor model is shown in Figure 1 ($X^2=489.25$; $Sd=170$; $p<0.001$). All of the path coefficients (factor loadings) in the diagram were statistically significant ($p<0.001$).

Table 2. Fit Values Regarding the Single Factor Structure of the Scale of Visual Creativity in Art

Criteria	Good fit	Acceptable fit	Values	References
(χ^2/sd)	≤ 3	$\leq 4-5$	2.88	<u>Marsh & Hocevar, 1985</u>
RMSEA	≤ 0.05	0.06-0.08	0.07	<u>Browne & Cudeck, 1993</u>
SRMR	≤ 0.05	0.06-0.08	0.02	
CFI	≥ 0.95	0.90-0.94	0.98	Bentler, 1990
IFI	≥ 0.95	0.90-0.94	0.98	<u>Bollen, 1989</u>
GFI	≥ 0.90	0.89-0.85	0.89	<u>Tanaka & Huba, 1985;</u>
AGFI	≥ 0.90	0.89-0.80	0.85	<u>Jöreskog & Sörbom, 1984</u>

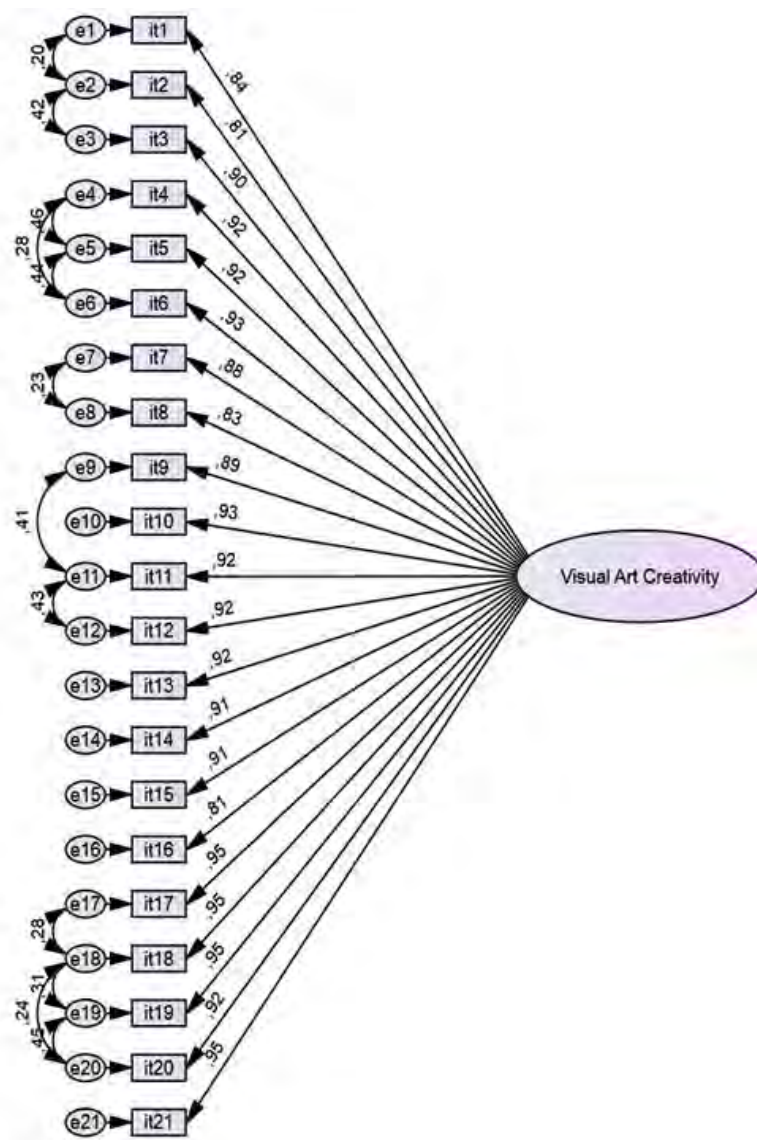


Figure 1. Confirmatory Factor Analysis Diagram of the Scale of Visual Creativity in Art

As a result of the validity and reliability study, it was found that the Scale of Visual Creativity in Art had a single factor structure. The scale consisting of a single factor explained a large proportion of the total variance. The scale data were consistent with the single factor model. The reliability of the scale was high based on internal consistency.

Conclusion

In this study, evidences for the construct validity and reliability of the visual creativity scale developed to measure the visual creativity in art levels of primary school students were obtained. The scale is 5-point Likert type. For this reason, a valid, reliable and easy-to-apply scale was developed for visual creativity in art based on the scale development process, and this whole process was clearly defined. According to Reuterberg and Gustafsson (1992), the validity test is mostly done with theoretical analysis. One of these theoretical analyzes is called construct validity (model validity). It is the analysis of the degree to which a measure correctly measures its targeted variable. The scale, whose content validity was provided by expert opinions and literature review, was one-dimensional and had high construct validity based on confirmatory and exploratory factor analyzes. In addition, it was found that the Scale of Visual Creativity in Art had correlation with the perceived visual creativity scale and the scale developed had high criterion validity. According to Hartling et al. (2012), when developing a new scale, it is important to test the construct and content validity both statistically and logically. In the statistical dimension, exploratory and confirmatory factor analyses variance levels of the dimensions and factor loadings must meet certain criteria. Logically, a comprehensive literature review and obtaining expert opinions are important elements of the scale development process. In the process of developing the “Scale of Visual Creativity in Art”, most of the statistical and logical procedures were carried out to keep the construct and content validity high. In this regard, the values regarding the validity of the scale were well above the acceptable levels.

Another important dimension of this scale development study is the findings regarding the reliability of the “Scale of Visual Creativity in Art”. According to Cronbach (1990) and Yılmaz and Sünbül (2008), although many reliability methods are used in Likert type or interval scale forms, one of the most effective is the Cronbach’s alpha technique. Therefore, the Cronbach’s alpha reliability coefficient of the Scale of Visual Creativity in Art was calculated for participants in the middle school and high school and was 0.95. According to Briones Robinson (2015) and Sünbül (2004), the reliability coefficient of a newly developed scale should be above 0.70. In addition, the scale with a coefficient of 0.80 and above has a high level of reliability. In this respect, the Cronbach’s alpha coefficient calculated for the Scale of Visual Creativity in Art shows that the scale has a high internal consistency and reliability. As a result, “Scale of Visual Creativity in Art” is a scale that was based on self-evaluation of primary school students in Turkey, developed in terms of content and cultural context, and tested for reliability and construct validity. The implementation of this scale in schools in countries outside of Turkey will help researchers determine students’ visual creativity levels in art and provide the scientific basis of data for the development of creativity in the visual arts lessons in general and art lessons in particular. In addition, the developed scale is for primary school students. In the future, research and scale development studies on Visual Creativity in Art for students in preschool, middle school and high school will

fill an important gap in the literature. It is recommended to test the developed scale on student groups studying at different school levels and educational institutions, and to conduct norm determination studies of the scale in the future.

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Appendix. Scale of Visual Creativity in Art

A. English Form

Items:	5	4	3	2	1
Very High: 5 High: 4 Medium: 3 Low: 2 Very low: 1					
1. His/her work reflected the imagination.					
2. He/she constantly asked different questions.					
3. He/she came up with new ideas.					
4. He/she made studies that encouraged multi-dimensional thinking and saved it from monotony.					
5. He/she created products that reflect the original idea.					
6. He/she created original products.					
7. He/she brought different semantic expressions to events or situations.					
8. He/she expressed his own thoughts comfortably.					
9. He/she organized artistic activities of his/her own will.					
10. His work was far from imitation.					
11. He/she transformed the materials in his/her hand into different shape, expression, form.					
12. He/she used different materials and techniques in his/her activities.					
13. He/she expressed feelings and thoughts with original pictures and shapes.					
14. He/she did things he/she hadn't tried/experienced before.					
15. He/she took a courageous approach by taking risks in his/her work.					
16. He/she was open to new experiences.					
17. He/she combined different techniques and tools in a unique product.					
18. He/she used a wide variety of rich images and signs.					
19. The use of art elements and principles was varied and rich.					
20. Art elements and principles were unconventionally flexible.					
21. He/she worked with an interesting approach or point of view.					

B. Turkish Form

Ölçek Maddeleri:	5	4	3	2	1
Çok Yüksek:5 Yüksek:4 Orta:3 Düşük:2 Çok düşük: 1					
1. Yaptıkları çalışmalar hayal gücünü yansıtıyordu.					
2. Sürekli ve farklı sorular sordu.					
3. Yeni fikirler ortaya koydu.					
4. Çok boyutlu düşünmeye sevk eden ve tek düzelikten kurtaran çalışmalar yaptı.					
5. Özgün düşünceyi yansıtan ürünler ortaya koydu.					
6. Orijinal ürünler meydana getirdi.					
7. Herhangi bir olaya ya da duruma farklı anlamsal ifadeler getirdi.					
8. Kendine özgü düşünceleri rahatça ifade etti.					
9. Kendi isteğiyle sanatsal etkinlikler yaptı.					
10. Yaptığı çalışmalar taklitten uzaktı.					
11. Elindeki malzemeleri farklı bir şekle, ifadeye, forma vb. dönüştürdü.					
12. Yaptığı etkinliklerde farklı malzeme ve teknikler kullandı.					
13. Duygu ve düşünceleri özgün resim ve şekiller ile ifade etti.					
14. Daha önce denemediği/deneyimlemediği şeyler yaptı.					
15. Çalışmalarında risk alarak cesaretli bir yaklaşım sergiledi.					
16. Yeni yaşantılara karşı açıktı.					
17. Farklı teknik ve araçları özgün bir üründe birleştirdi.					
18. Çok çeşitli ve zengin imge-göstergeler kullandı.					
19. Sanat elemanları ve ilkelerinin kullanımı çeşitli ve zengindi.					
20. Sanat elemanları ve ilkeleri gelenekselin dışında esnekti.					
21. İlginç bir yaklaşım veya bakış açısıyla çalışmalar yaptı.					