Psychometric Properties of the Gifted Students' Coping with Anger and Decision Making Skills Scale

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Abstract

The purpose of this study is to develop the scale concerning gifted children's' skills for making decisions and coping with anger and to examine the validity and reliability of the scale. A total of 324 students, which 151 were female and 173 were male, studying in 3 different Science and Arts Center's (BILSEM) in Istanbul during 2014-2015 academic period participated in the study. Content and construct validity tests were conducted for the validity of the scale, internal consistency and test-retest tests were conducted for the reliability and total correlation analysis was conducted. 48.19% of the total variance was explained with the factor analysis. The scale, which consisted of 16 items, demonstrated a two-factor structure titled as coping with anger and decision making. Factor loads of the scale were between .54 and .78. The Cronbach alpha reliability coefficient was .76 for the whole scale, and .88 and .73 for the coping with anger and decision making sub-scales respectively. The test-retest reliability coefficients for the whole scale was .81, and .88 and .70 for the coping with anger and decision making sub-scales respectively. It was observed that the item-total correlations of the scale ranged between .44 and .72. Based on these findings, it can be concluded that the Scale for Gifted Children's' Coping with Anger and Decision Making Skills is a valid and reliable assessment instrument that can be used for education and psychology.

Keywords: Gifted children, coping with anger, decision making, reliability, validity

1. Introduction

There are different views on who gifted children are and how they can be defined. According to Ataman (2000, 2003, 2004), children who display higher performance than their peers in intellect skills and intelligence or who have potentials, whose creativity is strong and who do not give up on a work before completing it are defined as gifted children, and these children show 98% higher performance than a cluster selected randomly among their peers. Gifted children are defined as children who, regarding art and leadership skills, display higher performance than their peers and who, in order to improve these skills, need service or activities that cannot be provided by the school (Ministry of National Education [MEB], 2007). Gifted children are also defined as individuals who have the potential to contribute to the development of a society in many fields (Kulaksizoglu, 2004).

Giftedness is closely related to the three main characteristics of individuals and the relationship between these characteristics. These characteristics are "high-level skill", "creativity" and "motivation" (Renzulli, 1986, 1999). Emotional features and needs of gifted and talented children are more intense than their peers with normal intelligence (Ogurlu & Yaman, 2010). The emotional and social experiences of a gifted child is affected by both internal and external factors. When a gifted child interacts with the external environment, factors such as attitudes towards differences and the social environment they belong to influences their social and emotional experiences (Schmitz & Galbrath, 1991).

Gifted individuals have some features that are different and more superior than normal children. Many researchers in the field have underlined that, when compared with their normal peers, gifted children undergo different processes concerning mental, social, personal and physical dimensions (Clark, 2002; Kahraman & Beduk, 2014). When compared with their peers, gifted children gain a personal awareness and show social and moral sensitivity at younger ages (Gunduz, 2010; Howard-Hamilton, 1994). On the other hand, their perspectives, reactions and interests on events are different from their peers, along with their decision making and coping with anger skills.

Studies on gifted children express that these children enjoy taking over responsibilities, trying to complete these responsibilities perfectly and making an effort for this. Gifted children have crucial factors, which make them superior to their peers, such as conducting a more advanced analysis and using abstract thinking, reasoning and thinking skills more effecting (Akkanat, 1999; Ataman, 2004; Davis, Rim & Siegle, 2013; Renzulli, 1986, 1990; Tannebaum, 1983). Thus, their decision making skills are expected to be more developed than their peers. Emir

and Acar (2007) found that decision making skills scores of gifted children are significantly higher than decision making skills scores of normal children.

Gifted children have a higher proportion of self-control, empathizing and problem solving skills, which are effective in coping with anger, than their peers. Gifted children know how to express their feelings appropriate for the circumstances. They give emotional responses suitable for the setting (Ataman, 2004; Colangelo &Davis, 1991;Caglar, 2004; Renzulli, 1986). They resort to the authority less and avoid being strict and harsh. When they confront problems they chose to findings solutions rather than getting angry. According to Silverman (1993), gifted children are furnished with empathetic dispositions which are accepted as a crucial variable in anger control (Dogan, Unguren & Algur, 2010). They value other peoples' needs, emotions and opinions. Gifted individuals are individuals whose skills for coping with anger are better.

Studies suggests that gifted individuals have higher perfectionist levels compared to their peers. This perfectionist feature can influence gifted individuals' decision making skills and feelings of anger. This perfectionist feature causes these individuals to suppress their anger and to fail to healthily cope with it (Fletcher & Speirs-Neumeister, 2012; Hewitt, et al., 2002). This perfectionist personality structure of gifted individuals causes them to group events only as right and wrong without considering the different extents between "right" and "wrong" and to ignore the alternatives while making decisions. This way of thinking can also lead them to experience anger (Leana-Tascilar & Kanli, 2014; Leana-Tascilar et al., 2014).

Gifted children were regarded as having superior physical, mental, social, personality, moral, learning, sensibility and professional characteristics than children with normal intelligence levels and many assessment instruments were developed in order to reveal these differences (Akkanat, 1999; Colangelo &Davis, 1991; Caglar; 2004). However, when the literature is examined, there are no valid and reliable assessment instruments in Turkey concerning gifted children's' decision making and coping with anger skills. Thus, the purpose of this study is to develop an assessment instrument to evaluate gifted children's' decision making and coping with anger skills and to examine its validity and reliability.

2. Method

2.1. Research Design

This is a descriptive study aiming at developing a scale which would determine the level of gifted children's' coping with anger and decision making skills.

2.2. Participants

Participants of this study are 324 students, 151 female and 173 male, who study in year 5, 6, 7 and 8. in 3 Science and Arts Centers (BİLSEM) in Istanbul. The participants were selected with the simple random sampling method.

2.3. Setting and Procedures

The study was conducted during the 2014-2015 academic year. Permission no (IRB# MEB-357908) dated 13.01.2015 was obtained from the Istanbul Provincial Directorate for National Education to perform the study. Teachers working in the related BİLSEM's were informed and were asked for help as implementers. For the participants to give sincere answers, they were informed that the data would be kept confidential and that the purpose, importance of the study and their personal information were not necessary. The data were collected from the participants according to voluntary principles. Participants were informed about how to answer the questions. The participants were observed to complete the questions in almost 25 minutes.

2.4. Developing the Scale

The scale development process was completed in four stages. These are creating the scale items stage, resorting to expert opinion stage, pretesting stage and reliability-validity evaluation stage (Karasar, 2014).

During the scale item creation stage, studies in the literature about anger and decision making of gifted children were examined. In addition, gifted students attending the Science and Art Centers were asked to write compositions. Outstanding expressions gathered from the content analyses conducted on the literature and written compositions were turned into questions and a tentative scale was created. According to Cittir (2003), emotional, cognitive and behavioral elements that are crucial during the scale items creations stage were considered while developing the scale. 4 point Likert scale was used during the tentative scale development stage. 59 tentative items were recorded and were valued as "Never, Sometimes, Frequently, Always". A guideline which included information about the scale was prepared. The tentative scale was examined by 12 people, of whom 3 were experts, 6 were instructors and 3 teachers working in BILSEM, and their opinions regarding whether the statements in the items were relevant with the research subject were gathered. The experts were

asked to express the convenience of the items for the scale with a 3 point rating scale (1:Should be removed, 2: Should be Revised, 3: Should stay). A space was left under each item for the experts to provide their statements and they were noted that they can make corrections on the items when its necessary. After the opinions regarding the scale were gathered, the content validity rates of each item were determined. Content Validity Rate (KVR) is determined by dividing the number of experts who expressed their opinions on a specific item to the half of the number of total experts who expressed their opinions on the item and then subtracting by 1 (Yurdugul, 2005; Sencan 2005). 6 items were deleted from the scale due to KVR value. In addition, 9 items that were detected as problematic according expert opinions were corrected. The tentative scale was set with 53 items and the researchers moved to the pretesting stage. A pilot practice was conducted because there may have been unnoticed spelling, expression or form mistakes on the items. The pilot practice was conducted on a group of 64 people. According to the feedbacks received from the students as a result of the practice, the scale's form was decided to undergo a change. The main practice was conducted after these preparations. The practice was conducted on a total of 324 students studying in 3 BİLSEM centers in Istanbul. 48 forms were not included in the analysis due to reasons such as giving more than one answer or giving missing answers. Analyses aiming at developing a scale were conducted on the remaining 276 samples. The chi-square value resulting from the Barlett test which was conducted to determine the convenience of the sample, was .00. The most convenient method for determining a Likert type scale reliability is through the cronbach alpha coefficient (Tavsancil, 2010). Thus, the cronbach alpha internal consistency coefficient was evaluated. A test-retest was conducted in order to test the reliability of the scale. Content validity and construct validity was examined in order to determine the validity of the scale. Expert opinions were gathered for content validity. Opinions of 3 field experts, 6 instructors and 3 teachers working BILSEM were gathered for the content validity of the scale. It was suggested that the scale items which were corrected according to expert, instructor and teacher opinions evaluated the desired feature and represented the desired field. Item-total correlations of the scale items were also examined.

Tezbasaran (2004) states that, while examining the desired attitude in likert type scales, evaluating the correlation between the item score pattern of each item and the scale items' pattern is the first objective review suggested by the Likert. A factor analysis was conducted for construct validity.

3. Results

The tentative scale developed to ensure construct validity was implemented on 324 gifted students studying in Science and Arts Centers. How many dimensions that scale had and what each of these dimensions were, were determined with the factor analysis conducted to test the construct validity of the scale. Kaiser-Meyer-Olkin test and the Barlett test were conducted to determine whether data structures were convenient for the factor analysis. The values are given in Table 1.

Table 1. Results of the KMO and Barlett Tests of OKBO

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.90
Bartlett's Test of Sphericity	Approx. Chi-Square	1477.59
	df	120
	Sig.	.00

Kaiser-Meyer-Olkin (KMO) test and Barlett test were conducted in order to determine whether the data gathered from 59 items were convenient for the factor analysis so as to develop the gifted children's' anger and decision making skills scale. KMO coefficient is a statistical method used while determining that the data and sample size is sufficient and convenient for analysis (Tavsancil, 2010; Buyukozturk, 2012). When the KMO coefficient is close to 1, this shows that the data are perfect but they cannot be accepted if the coefficient is below .50. The KMO value of the scale was .90. Because this value is above .50, it can be said that the data pattern is convenient for a factor analysis. The Barlett test is a statistical technique that can be used to determine whether the data come from a multivariate normal distribution. Because the chi-square test statistics were significant, this suggests that the data come from a multivariate normal distribution (Tabachnick &Fidell, 2006). The Barlett test is significant ($p < 0.00$). Because the KMO value was above .60 and because the Barlett test was significant, the data were accepted as being convenient for the factor analysis (Stevens, 2009). The slope graphic which demonstrates how many sub-factors are in the data pattern is given in figure 1.
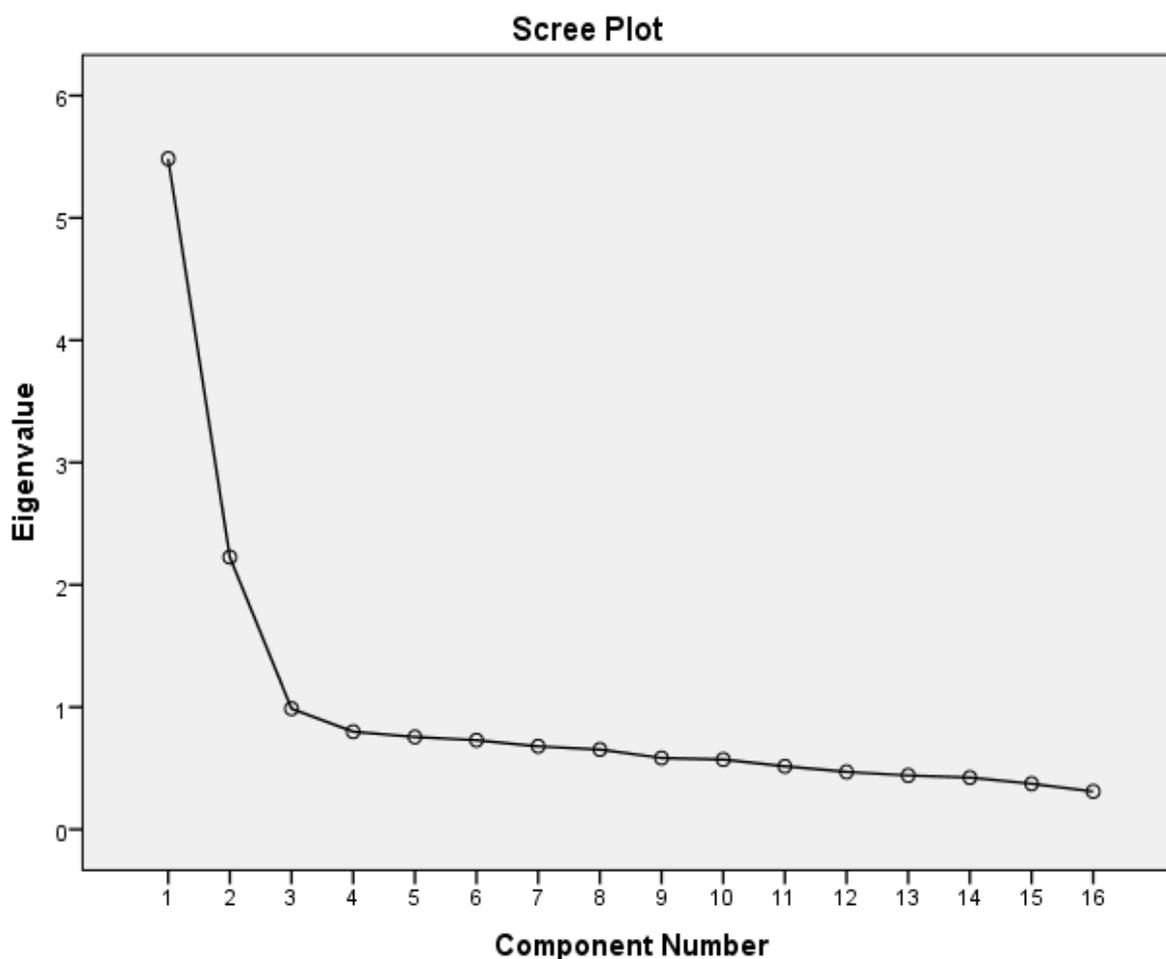
Scree Plot

Figure 1. Slope Graphic

The point where the graphic curves shows a rapid fall in the slope graphic on Figure 1 is where the second factor is. It can be observed that the curve moves the same direction after the second factor. Thus, it was decided to limit the number of factors in the scale to two.

A factor analysis was conducted in order to reach a significant structure regarding the anger and decision making skills of gifted children and to reveal the structure or structures that are called factors and which are evaluated by the scale items. Varimax orthogonal rotation technique was used to analyze the construct validity of the scale. The values resulting from the factor analysis are given in Table 2.

Table 2. Findings Regarding the Factors as a Result of the Factor Analysis

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	5.19	32.41	32.41
2	2.53	15.78	48.19

It was observed that there are 2 factors with eigenvalues higher than 1 in the scale. The first sub-factor consists of 11 items (10, 16, 17, 19, 21, 29, 32, 36, 41, 48, 49). The eigenvalue of the first factor was 5.19. This sub-factor explains 32.41% of the scale variance by itself. The second sub-factor consists of 5 items (2, 26, 28, 38, 46). The eigenvalue of this factor was 2.53. This sub-factor explains 15.78% of the scale variance. These two sub-factors together explain the 48.19% of the scale variance. This explained variance is suggested to be sufficient. This high variance rates resulting from the analysis indicates that the factor structure of the scale is strong. Findings underline that the scale is sufficient in enabling construct validity.

Items of the sub-dimensions of the scale and the factor loads related to them are given in Table 3.

Table 3. Findings of the Items as a Result of the Factor Analysis

Rotated Component Matrix[a]

	Component	
	Coping With Anger	Decision making
V36	.78	
V41	.77	
V29	.75	
V49	.72	
V32	.67	
V19	.67	
V17	.65	
V10	.65	
V21	.63	
V48	.61	
V16	.54	
V46		.70
V28		.69
V38		.69
V26		.67
V2		.66

The factor loads of the scale items ranged between 0.54 and 0.78. The loads regarding the items of the first factor range between 0.54 and 0.78. The loads regarding the items of the second factor range between 0.66 and 0.69.5. The total-items correlations were examined. Item correlations ranged between 0.44 and 0.72. This indicates that the scale items have the same structure with the whole scale.

The Cronbach alpha coefficient was regarded for the reliability of the scale. The Cronbach alpha reliability coefficient regarding the scale and the sub-dimensions are given in Table 4.

Table 4. Reliability Coefficients for the Whole Scale and the Sub-factors.

Factors	Item Number	Cronbach alpha
Anger	11	.88
Decision making	5	.73
Total	16	.76

Cronbach alpha reliability coefficient for the whole scale and for each sub-dimension were evaluated with regards to the reliability of the scale. Cronbach alpha coefficient for the whole scale was .76; Cronbach alpha coefficient for the first sub-factor was 0.88 and Cronbach alpha coefficient for the second sub-factor was 0.73. Findings regarding the reliability of the scale indicate that the scales reliability is at a satisfactory level. In addition, a test-retest was conducted to determine reliability. The test-retest coefficient for the anger sub-dimension was .88; .70 for the decision making sub-dimension and the test-retest coefficient for the overall scale was .81.

Reliability and validity analyses for the anger and decision making skills scale developed in order to determine gifted children's' coping with anger and decision making skills were completed and the scale reached its final form.

4. Conclusion

Gifted children, who are defined as individuals that are identified by field experts as displaying high performance compared to their peers (MEB, 2007), are different than their peers in many ways. According to

Akkanat (1999), wrong attitudes and assumptions that need to be changed can emerge in parents and teachers concerning the differences of gifted children. Thus, it is crucial to develop reliable assessment instruments that can enable gifted children to be properly recognized by their close and far environments and also which can prevent wrong assumptions concerning them to arise. Thus, the purpose of this study was to develop an assessment instrument to evaluate gifted children's' decision making and coping with anger skills. With this purpose, the Gifted Children's' Coping With Anger and Decision Making Skills Scale was developed.

The sample of the study consisted of 324 secondary school students studying in three different BILSEM centers in Istanbul. The study sample is sufficient in number required for statistical analyses. An extensive literature review was conducted and other scales concerning gifted children were examined during the scale development stage. Scales developed for coping with anger and decision making skills for other sample groups were also examined. The information gathered after these examinations were written down as scale items and an item pool with 59 items was created. 6 items were deleted from the scale based on the opinions of 12 experts and the pilot practice conducted on 64 students and the reliability and validity analyses were conducted on the remaining 53 items.

Kaiser-Meyer-Olkin test and the Barlett test were conducted to determine whether data structures of the scale were convenient for the factor analysis. Items with factor loads below .30 according to the factor analysis conducted to determine construct validity of the scale were deleted and a two-factor assessment instrument with 16 items that explains 48.19% of the total variance was developed. These two factors were titled as coping with anger skills and decision making skills according to the features of the items. The factor loads of the study range between from 54 to .78. The factor loads resulting from the factor analyses are higher than the accepted value .30 of the literature (Buyukozturk, 2012; Cokluk, Sekercioglu &Buyukozturk, 2012). When the findings of the validity analyses are considered, it can be said that the scale is valid.

Internal consistency coefficients resulting from the reliability tests were .76 for the overall scale, .88 for coping with anger skills and .73 for decision making skills. The internal consistency coefficient resulting as .76 indicates that the items are consistent with each other and therefore that internal consistency related to reliability is high. The coefficients obtained from the test-retest for reliability were .81 for the overall scale, .88 and .70 for the sub-dimensions respectively and this is a crucial result for the scale's stability. According to the item analysis, the corrected item-total correlations ranged between .44 and .72 . The item-total test correlation explains the relationship between the scores obtained from the test items and the total score of the test (Buyukozturk, 2012). When the reliability results of the scale are examined, the Cronbach alpha internal coefficient, item-total correlation coefficient and the correlation coefficients of the test-retest are at an acceptable level. The minimum value of the Cronbach alpha internal consistency reliability coefficient in the literature is .70; and because the corrected item-total correlation values were above the .30 criterion (Erkus, 2012), the scale can be said to be convenient with the psychological assessment instrument development and adaptation criteria.

In conclusion, findings of the analyses suggest that the 16-item scale, resulting from the reliability and validity analyses conducted on the Gifted Children's' Coping With Anger and Decision Making Skills Scale, can be used for evaluating the level of gifted children's' coping with anger and decision making skills in a reliable and valid manner. When it is taken into account that there are no related scales in the literature, developing a reliable scale to evaluate gifted children's' coping with anger and decision making skills will compensate for the major gap in special education and psychology fields. However, because the study group consisted of secondary school students, there is a need to conduct reliability and validity tests of the scale on other student groups. The construct validity of the scale should be tested again with a confirmatory factor analysis (CFA) on other studies with more and different sample groups. Every research conducted with psychological assessment instruments will contribute to clarifying the psychometric features. Thus, every study that is to be conducted with the Gifted Children's' Coping With Anger and Decision Making Skills Scale is crucial for the scale to execute more stable evaluations. Finally, examining the relationship between the scale and other scales that are related to coping with anger and decision making skills that are found to have sufficient psychometric structures will contribute to both domestic and also foreign studies and will empower the scale's psychometric structure.

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